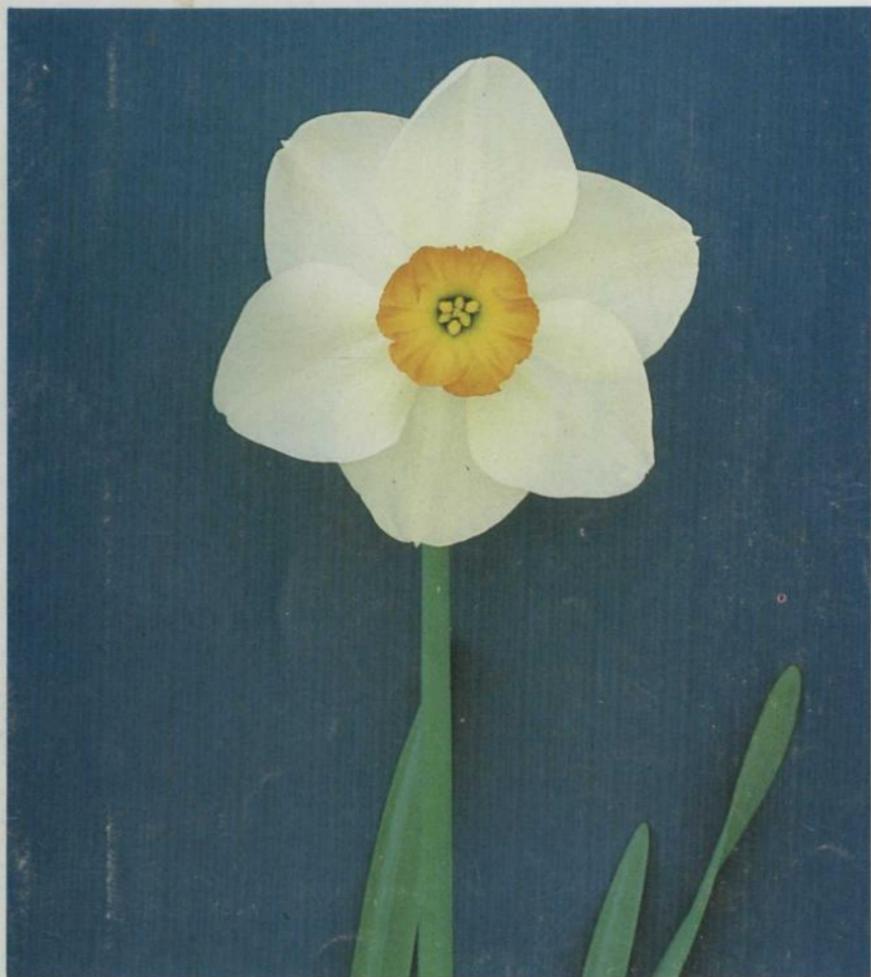


*The*  
**Daffodil  
Journal**

VOLUME 22    NUMBER 4    JUNE 1986



AMERICAN DAFFODIL SOCIETY, INC.

# The Daffodil Journal

ISSN 0011-5290

Quarterly Publication of the American Daffodil Society, Inc.

Vol. 22

JUNE 1986

Number 4

---

## OFFICERS OF THE SOCIETY

DR. THEODORE SNAZELLE, *President*

418 McDonald Dr., Clinton, MS 39056

MRS. MARVIN V. ANDERSEN, *First Vice President*

7 Perth Drive, Wilmington, DE 19803

J. S. ROMINE, *Second Vice President*

2065 Walnut Blvd., Walnut Creek, CA 94596

MS. MARILYNN HOWE, *Secretary*

11831 Juniette, Culver City, CA 90230

MRS. P. R. MOORE, JR., *Treasurer*

16 Maple Ave., Newport News, VA 23607

---

Executive Director — MISS LESLIE E. ANDERSON

Rt. 3, 2302 Byhalia Rd., Hernando, MS 38632

(Tel. 601-368-6337)

All correspondence regarding memberships, change of address, receipt of publications, supplies, ADS records, and other business matters should be addressed to the Executive Director.

---

THE DAFFODIL JOURNAL is published quarterly (March, June, September, and December) by the American Daffodil Society, Inc., Hernando, MS 38632. Second class postage paid at Hernando, MS, and additional mailing office. Subscription price (including membership) is \$10.00 per year, \$27.50 for three years. Single copies of current or back numbers are \$2.00

© 1986 American Daffodil Society, Inc.

---

Chairman of Publications  
David Karnstedt  
1790 Richard Circle  
West St. Paul, MN 55118  
(Tel. 612-455-6177)

Editor, Daffodil Journal  
Mrs. Paul Gripshover  
3757 Adriatic Way  
Santa Clara, California 95051  
(Tel. 408-246-9058)

Articles and photographs (glossy finish) on daffodil culture and related subjects are invited from members of the Society. Manuscripts should be typewritten double-spaced, and all material should be addressed to the new Editor, 1018 Stonewall Dr., Nashville, TN 37220.

DEADLINE FOR THE NEXT ISSUE IS JULY 5, 1986

---

## SCHEDULE OF MEMBERSHIP DUES IN THE AMERICAN DAFFODIL SOCIETY

Individual .....	\$10.00 a year or \$27.50 for three years
(Juniors, through 18 years of age, \$5.00 a year)	
Family .....	\$15.00 a year for husband and wife, with one copy of the Journal, or \$35.00 for three years.
Individual Sustaining Member .....	\$15.00 a year
Individual Contributing Member .....	\$25.00 or more a year
Overseas Member .....	\$7.50 a year or \$20.00 for three years
Individual Life Membership \$150.00	

---

## ADVERTISING RATES

Advertising rates for the *Journal* are as follows: full inside page, \$75.00; one-half page, \$45.00; one-quarter page, \$30.00. For additional information, write the Chairman of Publications, David Karnstedt.

## IN THIS ISSUE

ADS Convention—1986 .....	195
Citation for the Silver Medal .....	200
Citation for the Gold Medal .....	201
Some Pink History .....	H.G. Cross 202
Meet the President .....	210
Meet the New Editor .....	211
Moby Daff—My Search for the Great White Trumpet .....	Kenneth E. Weir 212
In Support of a Cultivar Show .....	W. R. Mackinney 216
In the Last Ten Years .....	Charles Wheatley 217
Basal Rot—A Modern Aid .....	George Tarry 221
Beginners' Corner .....	Frances Armstrong 223
Brian Duncan, Ireland's Daffodil Man .....	William O. Ticknor 224
Financial Statement .....	Wells Knierim 230
Bulletin Board .....	232
ADS Board of Directors .....	235
Tissue Culture and the Micropropagation of Daffodils .....	Martin C. Mathes 237
Colonization of Daffodils .....	Helen K. Link 252

### THE COVER PHOTO

is of Doctor Hugh 3 W-GOO (Mahmoud × Don Carlos), bred by Brian Duncan and registered in 1975. Doctor Hugh has won many prizes in Britain and was included in Brian's winning Engleheart collection in 1985. (Gripshover photo)

## ADS CONVENTION—1986

The thirty-first annual convention of the American Daffodil Society was held in Memphis, Tennessee, on April 3-5, 1986. This was a return visit for the ADS, which first came to call in 1980. We were greeted in Memphis by summer-like weather, and were told that the area was suffering from a prolonged drought.

Although the convention didn't formally open until Thursday, activities for many began Wednesday evening with the staging of blooms for the National Show, presented by our hosts, The Garden Study Club of Hernando. One of the large banquet rooms in the hotel was the setting for the show, and arrangements had been made to keep the room cool for the flowers.

Blooms came from the District of Columbia and many of the twenty-seven states represented at the convention. Exhibitors worked late into the night preparing their flowers, and by the time entries closed, there were many beautiful blooms on display.

At the cocktail buffet on Thursday evening, we were welcomed to the convention by Miss Judy Faggard, President of the Garden Study Club, after which Elizabeth Entrikin and Mildred Scott presented the show awards. The Gold Ribbon went to Sally Stanford, Tennessee, for her bloom of New Penny. Donald King, Virginia, was awarded the Gold Quinn Medal and Helen Link, Indiana, was the winner of the Gold Watrous Medal. Eve Robertson, South Carolina, won the coveted Grant and Amy Mitsch Trophy for her vase of three standard seedlings, while Roberta Watrous, Washington, D.C., repeated as the winner of the Larus Trophy for her vase of three miniature seedlings. The Rose Ribbon went to Harold Koopowitz for his 8 W-P, bred from Lilac Delight by an 8 W-Y.

Growers had brought blooms from Oregon, Virginia, England, and Northern Ireland for us to admire (and covet!). It was here that we could see the blooms of the future, and all during the convention people could be seen in front of the exhibits making their "wish lists."

Friday began with the Miniature Growers' Breakfast. Joy Mackinney, Miniature Committee Chairman, kept the lively discussion going. Following breakfast, Harold Cross, of Tasmania, presented a lecture on double daffodils. Before he got into his topic, however, he gave us a quick tour of Tasmania, and urged us all to come to "Daffodils 88 Down Under" in Tasmania in September of 1988. Brent Heath, of Virginia, followed with a photographic world tour of daffodil gardens.



New Penny



Koopowitz X78/1

In the afternoon we were free to do as we liked. Some took advantage of the opportunity to take a Mississippi Riverboat Cruise. Others found the Memphis Botanic Garden to their liking, some chose to view slides which Elise Havens and Wells Knierim had brought, while still others chose to stay in the massive hotel lobby chatting with old friends—and new.

After dinner, the annual meeting was called to order by our president, Mrs. Goethe Link. Our treasurer, Wells Knierim, announced that the Society is in good financial condition. Members were then asked to vote on the changes in the by-laws which were proposed by the Board. All amendments passed as written in the *December Journal*. Mrs. Link then announced the resignations of Wells Knierim and Mary Lou Gripshover, and the Society responded with standing ovations in appreciation for jobs well done.

Mrs. Link then presented the Silver Medal for “outstanding and distinguished service to the Society” to Dr. William Bender, and the Gold Medal for “creative work of a pre-eminent nature in the understanding and advancement of daffodils” to Brian Duncan. Those in attendance indicated their approval with a standing ovation for each recipient.

The Nominating Committee presented its slate which was unanimously accepted (see list elsewhere in this issue), and Mrs. Link introduced Dr. Theodore Snazelle as the next president of our Society.

A breakfast for hybridizers was the opening item on Saturday’s agenda. Dr. Bender fielded the questions and kept the discussion going. Both of the breakfast meetings have grown considerably in size over the past few years.



KNIERIM

“Just four oldtimers”—Richard Ezell, Bill Bender, Wells Knierim, Bill Roesé

During the night, the Memphis area had received some much needed rain, so raincoats and umbrellas came along on the bus tour. Fortunately, they weren't needed. The rain necessitated a change in plans for the tour, however, and the committee quickly came up with "Plan B" and used their cars to shuttle people back and forth between Leslie Anderson's garden and the garden of Judy Faggard and Sharon Anderson. The third garden on the tour was that of Mrs. Wayne Anderson (Martha), and we enjoyed a delicious lunch at the home of Martha's daughter, Talullah Redding, and her family. The gardens were a bit soggy after the all night rain, but there were goodies in the garden as well as inside. As an added bonus, both Leslie and Martha have extensive "daffodilia" collections, and it was interesting to look at all the daffodil items. Martha even has daffodils painted on her kitchen cabinets—a representative cultivar of each division on each door. At Leslie's one could also browse through the ADS Library.

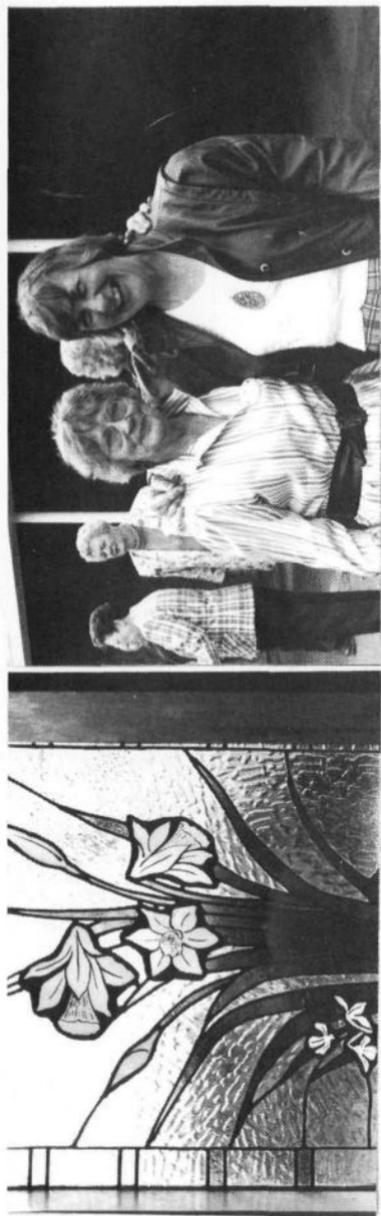
At the evening banquet, we had a chance to express our gratitude to our hosts—Mrs. Joleta Carter and Mrs. Jean Davis, co-chairmen of the convention, and their hard-working committees. Following dinner, Harold Cross presented "Some Pink History," illustrating the development of pink daffodils and his quest for short-cupped pinks,

Thus ended the thirty-first annual convention. We came to be educated, to enjoy the flowers, to see old friends and to make new ones. Perhaps Harold Cross summed it up best when he said, "I didn't feel like a foreigner, but as a friend among friends." So we said goodbye to Memphis, but we look forward to Columbus, and to being once again "among friends."

GRIPSHOVER



Leslie Anderson greets visitors to her garden.



Top left: The daffodil window in Leslie Anderson's home; top right, Estella Evans and Elise Havens; bottom, Lunchtime! (Gripshover photos)

## CITATION FOR THE SILVER MEDAL

The ADS Silver Medal is awarded for "outstanding and distinguished service to the American Daffodil Society." Since 1962, eighteen Silver Medals have been awarded. This year's recipient is a quiet, gracious gentleman who received many nominations with high praise for his accomplishments and his service to the Society.

His individual achievements include serving as Regional Director, Director at Large, First Vice-President, and President of the ADS. He is currently serving as Chairman of the Breeding and Selection Committee, and also serves as Chairman of Hybridizers' Breakfast Forums.

This congenial gentleman of many talents gives graciously of his time. One nominating letter characterized him as "adviser, teacher, hybridizer, gentleman, and one who always has the best interests of the Society at heart."

He is a hybridizer of note, and a producer of excellent prize-winning cultivars. Two recent introductions are Pops Legacy and Coldbrook.

On behalf of the ADS it is an honor to present the Silver Medal for 1986 to Dr. William A. Bender.



Dr. Bender and Mrs. Link

KNIERIM



KNIERIM

Mr. Duncan and Mrs. Link

## CITATION FOR THE GOLD MEDAL

The ADS Gold Medal is awarded for "creative work of a pre-eminent nature in the understanding and advancement of daffodils." Fifteen Gold Medals have been awarded since 1959.

The deserving recipient of Gold Medal number sixteen is one of the world's foremost hybridizers. He has made many contributions to the daffodil and its culture and is recognized wherever daffodils are grown. He has won the Gold Medal for the best trade exhibit at the Royal Horticulture Society Daffodil Show in London for many years. Last year he added the coveted Engleheart Cup to the list of his achievements.

In 1985 he also won first prize for twelve seedlings in the R.H.S. Competition, the Championship of Ireland, the Guy L. Wilson Trophy, and the Royal Mail Trophy.

He has been an officer of the Northern Ireland Daffodil Society and a Director of the ADS. For the past twelve years he and his associate have operated Rathowen Daffodils and have given the world some excellent pink cyclamineus hybrids; e.g. Elizabeth Ann, Swing Wing, and Urchin. Other introductions of note are Pink Paradise, Mount Angel, Premiere, Fragrant Rose, and there are more yet to come. His 1985 Engleheart Cup entry included six seedlings under number. The 1986 Rathowen catalog lists twenty new introductions.

On behalf of the ADS it is an honor to present the Gold Medal for 1986 to Mr. Brian S. Duncan of Northern Ireland.

(Word has reached us that he won the Engleheart Cup again in 1986.—Ed.)

## SOME PINK HISTORY

H. G. CROSS, *Geilston Bay, Tasmania*

(*A talk prepared for the ADS Convention, Memphis, 1986*)

No, the subject is not concerned with admirers of Karl Marx, but with some of those who worked hard in the development of pink daffodils. With the benefit of hindsight, it is obvious that the topic should have been seriously pursued when those who bred the early pink daffodils were available. As that is not now possible, one has to rely on what records have survived.

Some people, such as the late C.E. Radcliff, kept quite comprehensive records of the crosses made; his family still have them. Others kept records, but those into whose hands they fell did not appreciate their value. Yet others kept records that were destroyed by accident. Fred Silcock told me that Alister Clark kept records which were, late in his life, accidentally left out in heavy rain for several days and reduced to a squashy mass of pulp. And of course, there were those who kept few, if any, records.

There is also another problem which is illustrated by the sad tale of a young man who lived in a small town where everybody knew what everybody else was doing. Now this young man was sowing wild oats with gay abandon—much to the concern of numerous mothers and of his local priest. This went on for a year. Then one day the priest found the young man at confession. The session began and the young man having confessed to one rather innocuous sin stopped. The priest, happily concluding that the penitent was too overcome with shame and remorse to continue, proffered assistance by quietly saying, “And what else, my son?” There was a pause. Then the blithe response was, “I think that’s about all, Father.” The priest exploded, “A whole year and you can recall only one sin! What about the other sins you’ve committed?” There was another pause before the penitent said hopefully, “Well, Father, I guess it all depends on what you call ‘sin’.”

So it is with our daffodils. What is a pink daffodil? Is it a pink daffodil if the pink just fleetingly occurs in certain situations only? Is it a pink if the cup has just a trace of a thin wire rim of pink to it? In 1926, Engleheart registered a 1b named Rosary. Why he waited so long to register it, I don’t know, but the 1937 *Yearbook* states he had sent a bulb of it to The Brodie in 1917. The Data Bank records it as having a white perianth and pink trumpet. This puzzled me because I understood that the first pink trumpet was Radcliff’s Pink ‘o Dawn. Then I came across a chapter in Calvert’s 1929 publication entitled *Daffodil Growing for Pleasure and Profit*. On page 255 in an article written by Guy Wilson I found, “Rosary, of Mr. Engleheart’s raising, is really an Ajax by measurement and is a large flower with white perianth and trumpet of velvety cream which in favourable weather becomes flushed throughout with shell pink.” In the 1936 *Yearbook*, p. 56, Mr. F. Herbert Chapman said of Rosary, “If cut early it

never went pink, but had to be left on the plant to develop the colour." Certainly Engleheart did not claim it as a real pink because he apparently wrote in April, 1929, "If the Powers that be would grant me another six or seven years I think I ought to have some real pinks of which I have quite a clear strain coming on." (1937 *Yearbook*)

Of course, not all the daffodil fraternity, let alone those outside it, were enamored of the early pinks. On page 30 of the 1936 *Yearbook* we read that Mr. Frank Galsworthy was far from impressed. He said, "Personally I have not yet seen a pinkish one that has touched any chord in my constitution. That untidy thing they call Mrs. R. O. Backhouse is, to my mind, quite unpleasing, and all the pinkish shades on Trumpet Daffodils remind me of the nose of an unhealthy person in an east wind."

Perhaps at this stage I'd better talk for a few minutes about *Narcissus* Mrs. R. O. Backhouse. On page 26 of Volume 2 of his book *Hardy Bulbs*, the late Cyril Coleman wrote, "Mrs. R. O. Backhouse (1857-1921), daughter-in-law of William Backhouse, will always be remembered for the first of the 'pinks,' the well-known Mrs. R. O. Backhouse which she raised a short while before she died in 1921 and which was subsequently named after her."



Mrs. R. O. Backhouse  
(from the *RHS Daffodil Yearbook*, 1939)

Now Mr. Coleman had a long association with daffodils and a reputation for care with facts. Imagine then my surprise when I read on page 30 of the 1933 *Yearbook*, "A great sensation was created when she (i.e., Mrs. Backhouse) brought up to the Midland Daffodil Show in 1905 a new hybrid with whitish perianth and a pretty shell-pink trumpet. This was afterwards christened Mrs. R. O. Backhouse and given an Award of Merit by the RHS Narcissus Committee in 1906."

So then I referred to the *RHS Classified List* and found no mention of an Award of Merit for this daffodil. Also, I had found no mention of this flower before the 1920s and surely such a sensational flower would have been used every single year for breeding by anybody who could get a scrap of pollen from it. So in desperation, I wrote to Mrs. K. Donald of the RHS and I quote from her reply dated 2 July 1985:

Mrs. R. O. Backhouse seems to present something of a mystery, and I am beginning to wonder whether an earlier cultivar was given this name, and then the name re-used for a superior, but later, hybrid.

The RHS Registers usually give 1923 as the year of introduction—perhaps because this was the year "in which Mr. and Mrs. R. O. Backhouse showed the first pink daffodil of any consequence." (*The Story of the Royal Horticultural Society* by H. R. Fletcher.) This date would appear to be extremely late for a cultivar which would have caused a veritable sensation in 1905.

Curiously, the original file card has the A. M. for 1906 deleted—another reason to suppose that the cultivar name was quietly switched to another more worthy seedling. Incidentally, the parentage is given variously as Lord Kitchener × Red Cup hybrid, and Will Scarlett × Lord Kitchener. The latter hybrid sometimes exhibited a pink tinge to its corona. Lord Kitchener's year of introduction is given as 1905 (the year it has been presumed that Mrs. R. O. Backhouse was introduced—which would seem impossible unless Lord Kitchener was named a long time after it had been raised, OR the Mrs. R. O. Backhouse in question was indeed raised later than 1905 and took its name from a cultivar contemporaneous with Lord Kitchener).

In the front of the *Daffodil Yearbook* 1913 there are two colored drawings of small red-cupped narcissus with yellow perianths tinged very slightly with pink. It does seem odd that if such a slight pink coloring merited the frontispiece in 1913, that such a richer color found in Mrs. R. O. Backhouse would have been ignored. In the circumstances, I think that it is most likely that two cultivars are indeed involved. Looking through the early Lists (1908, 1910, 1914, and 1916) I can find no reference to Mrs. R. O. Backhouse—simply a Mrs. Backhouse which was raised by Edward Leeds. I imagine that this is the cultivar which received an A. M. in 1906. (Neither the year of introduction, nor Awards were given in these early Lists.)

Certainly when this daffodil arrived in Australia, it was not greeted as a sensation. On my behalf, Mr. Fred Silcock, whom some of you met in 1984, visited Mrs. Murray in Victoria to seek her recollections of early pinks in Victoria. He wrote later, "Mrs. Murray did say she remembers the flower Mrs. R. O. Backhouse being regarded as the first accepted pink daffodil and the scoffing of Victorian breeders who declared that Alister Clark had produced one or more pinks well before Mrs. R. O. Backhouse arrived on the scene."

Another pointer to pink arriving on the scene later than 1905 comes from *Daffodil Growing for Pleasure and Profit*. Noted daffodil authority, P. D. Williams who wrote a chapter entitled, "The Progress of the Daffodil from 1890 to 1910," makes no mention of pink in daffodils. Had it been there to see in 1905, a color break of pink would surely have been mentioned in considerable detail.

Before I leave the development of early pinks in England, may I mention pink perianths? Writing in 1927 or 1928, Guy Wilson wrote on p. 254 of *Daffodil Growing for Pleasure and Profit*, "Several flowers of *Barrii* type have appeared showing a distinct break of red colouring matter in the perianth. Twinkle and June are examples; these have pale rosy buff perianths." At the 1936 RHS Daffodil Dinner, several speakers referred to pink tones in the perianth—and without exception they spoke unfavorably of it. Is it not odd that nobody took up the challenge of emerging pink perianths for so many years after the signs clearly became apparent?

One important point about pink daffodils in England and in Australia is that when the first ones came they were completely unexpected and nobody was sure where the pink color had come from. Engleheart said that Mrs. Backhouse may have had her pink through Lord Kitchener, but that his had come some other way. Guy Wilson was of the opinion that the pink color may have come from *Weardale Perfection* which was one of Lord Kitchener's parents. Another school of thought said that blending yellow and white gave pink. Rev. Pearce asserted in the 1936 *Yearbook* that none of his pinks had Lord Kitchener as an ancestor and attributed the pink to red-cupped varieties. In the 1940 *Yearbook*, he claimed to have raised a pink from two red and yellow flowers. Richardson said at the 1936 dinner that although he had raised several pink-tinted varieties he had never made any cross with that end in view. All his pink-cupped seedlings including the new *Kenmare* had come from open pollinated *White Sentinel*.

Now let us turn to what was happening in Australia. There is no doubt that the first pink colored daffodil to be seen in Australia came quite unexpectedly in the seedling beds of Leonard Buckland of Camperdown about 100 miles southwest of Melbourne. The flower had a canary yellow cup with a distinct margin of salmon pink about an eighth of an inch wide. Its parentage was not known and it was registered in 1914 as *Pink 'Un*. Some guessed it had come via Lord Kitchener while others guessed it had come from a flower named *Maria Magdalene de Graaff*.

Apart from Buckland, there were several other hybridists in Victoria who were using their own seedlings and stock imported from England. The best known of these was Alister Clark. Fred Silcock, who went to a lot of trouble trying to track down more information on these early pinks for me, tells me that Clark began buying from Engleheart in 1897 and in the same year made his first crosses. A good many American flowers owe much to him because he raised Mabel Taylor, which, as you would all know, figures very prominently in the breeding done by Grant Mitsch. Clark continued breeding for over fifty years and died in 1959. The Peter Barr Memorial Trophy was awarded to him in the year before he died—and few have done so much to earn it.

Another Victorian contemporary of Clark's was D. V. West who turned to breeding daffodils in 1905 when he saw the results being achieved by Buckland and Clark. West, and his son-in-law Fell, raised several flowers that were used extensively in Tasmania in the 1930s. Among them were Mrs. Moodie, Mary Blewitt, Shirley Wyness, and Rene. Yet another Victorian who struck pink quite early in his career as a hybridist was Harry Brawn. Mrs. Ethel Breen tells me that his first one came from crossing Pink 'Un with Bernardino in 1923 giving rise to Pink-a-dell which was registered in 1935.

These early hybridists had raised the standard of pink daffodils in Victoria to such a level that page 104 of the 1939 *Yearbook* records Mr. P. Williams saying in a report on his visit to Australia in the previous year, "As far as the production of pink Daffodils was concerned, Australia was far in advance of England. He had seen more pink Daffodils in Mr. Alister Clark's garden than there were in the whole of England." Just three pages further on in the same *Yearbook* is a report that West's son-in-law, Mr. Hubert Fell, had judged at Hobart and had said he "was much impressed by the pinks he saw there and said he considered the much ahead of the Victorian pinks."

Thus it seems that England was in this respect well behind Victoria which in turn was well behind Tasmania. So, what had happened in Tasmania that pink daffodils there had reached such a high standard at the end of the 1930s?

The early records are scanty. In an article in the 1937 *Yearbook*, C. E. Radcliff related that about 1890 a man named Petterd and another named Hinsby were both breeding daffodils. Petterd died about 1900 and from then till 1923 Hinsby was the only one in Tasmania doing any crossing. It is known that Hinsby was in contact with both Clark and Buckland but he does not seem to have raised any pinks. But in the 1930s the situation changed dramatically.

It began in 1931. Just as in England the first pinks had come as a surprise, so also did they arrive quite unexpectedly in Tasmania in the seedling beds of C. E. Radcliff. Radcliff himself said later, "The pink (Pink o' Dawn) was a tremendous surprise as I had been crossing some Leedsii without any idea or prospect of pink." There is some doubt as to whether the seed parent was Lemon Star or Lord Kitchener. Both of those were large-cupped flowers with white perianths and yellow cups. Radcliff, in an

article in the 1936 *Yearbook*, appeared to favor Lord Kitchener but his own meticulous records show the seed parent as Lemon Star followed by a question mark. There was no doubt that the pollen parent was an all white trumpet of unknown ancestry raised by West and Fell as long ago as 1910 and named Mrs. Moodie. With a white and yellow pollinated by an all white it is no wonder that Radcliff was surprised to find among the progeny a trumpet that was distinctly pink and which he named Pink o' Dawn.

Fortune had indeed smiled upon Radcliff and he wasted not one little bit of it. The only two daffodils available to him with anything pink about them were Pink 'Un and Engleheart's Rosary. Every bit of Pink o' Dawn pollen was used, and in 1935 Rosary crossed by Pink o' Dawn produced Dawnglow; and pink daffodils of what was for those days outstanding quality came from Radcliff's seedling beds until the early 1950s.

Dawnglow appeared first as a parent in 1939. Of the 49 pinks named by Radcliff from 1940 to 1946, Dawnglow appears as pollen parent for 35 (just over 70%) but only once as seed parent. As if to counter the pollen dominance of Dawnglow, the seed parents were almost promiscuous—twenty-four different ones. Obviously in cattle terms, Dawnglow was the stud bull.

The development of pinks was spurred on by Tom Raphael—a horticulturist who had emigrated from Northern Ireland to Tasmania—who provided a special cup to be awarded to the best pink daffodil shown at the Hobart Show. It was contested for the first time in 1938 and in the first eleven years it was won by Radcliff flowers no fewer than nine times (3 Rosario, 3 Roselands, 3 Karanja). The missing two occasions were 1940 when Jackson won it with Pinkess and 1946 when Bisdee won with his Lady Binney. Both Pinkess and Lady Binney had a Radcliff flower as one parent. Lest you wonder if that record of nine wins in eleven years suggests poor opposition, let me say that part of the opposition came from two Jacksons and Arthur Roblin and Stephen Bisdee.

Radcliff's dominance was also shown by his record in the Hobart Cup twelve—the most prestigious class at the Hobart Show. In 1945 and 1946 there were no fewer than nine separate entries. C. E. Radcliff won in both years. His Cup twelves included five pinks in 1945 and six pinks in 1946—not what we might consider good balance, but the quality was such that on each occasion he defeated eight competitors.

After the death of C. E. Radcliff came a period of nearly twenty years during which the Raphael Cup in Hobart was won by no fewer than nine different exhibitors. Then William Jackson, who had won this cup only twice in twenty years, took over with a vengeance and his flowers won it twelve times in fourteen years. The first flower of real note was Cathlin which was followed by the paler but much better Verran. The mating of those two produced Vahu and a repeat of the cross give rise to Obsession.

Nowadays in Launceston in the northern part of Tasmania the competition is generally stronger than in Hobart. Here the Jackson flowers have continued to perform well with the strongest opposition coming from Ross Glover. The best of overseas cultivars have been imported for the past fifty years or more, but have been hard pressed to

meet the standards set by the local flowers many of which can show three or four generations of nothing but Tasmanian raised cultivars in their ancestry.

Tasmanian hybridists have some claims to being in the forefront in two other aspects of the development of pink daffodils. The first of these in chronological sequence involves pink doubles and William Jackson who, to avoid the confusion that so often arises when father and son have the same given names, was generally known as Tim. He spelled out the history of his work on doubles in an article in the 1969 *Yearbook*.

The story began in 1951 when he found two seedlings which each had extra pink petals in their cups. He crossed those two flowers together and crossed one of them on to Alister Clark's flower called Hugh Dettmann which sometimes had one or two extra petals. The cross with Hugh Dettmann produced in 1958 a seedling which was subsequently named Lawali. Tim described it as "really a pink large cup but the majority of its blooms have the cup nearly full of additional pink and white petals and often the perianth has additional petals. I call it semi-double but it does not always show this tendency to double and often there are some blooms that are pink large cups."

The two un-named seedlings that were crossed in 1951 produced in 1959 a better pink double which was named Chimeon and promptly crossed with Lawali. From 1960 onwards came a succession of pink doubles of varying quality and Lawali or Chimeon or both appeared in the parentage of each.

It is of interest that Tim Jackson found that a number of his pink doubles had a tendency to degenerate towards single flowers. When I was in the early stages of preparing this talk, I asked David Jackson to photograph for me the most double flower of Lawali that he could find. Here is his slide of it. I checked my stock of several hundreds and could not find a better one. Now compare it with this one of Lawali that was published in the 1968 *Yearbook*. There seems little doubt about the degeneration and I wonder if this has been noted about any other doubles. [We regret the photos are not available.]

My own pink doubles came much later and from a different direction. Earlier in this convention I showed a slide of Pink Camilla which came quite unexpectedly from the late Ken Heazlewood's white and red double called Glowing Red. Several have come from pollen from Jackson pink doubles on to Mitsch's large cupped pink named Precedent. In the season just past, I had some very attractive and interesting pink doubles from crossing Mitsch's Tropic Isle both ways with some of my own pink doubles.

Now let us turn to the small-cupped pinks. The first Australian one to which I have found reference is something of a mystery. On page 61 of the 1949 *Yearbook*, C. O. Fairbairn wrote, "Mr. Alister Clark showed a small-cupped pink called Jean Cox which had the best colour that I have seen on a well-shaped flower." Now Jean Cox does not appear in the *Classified List* nor does it appear in the Data Bank. I also find it most odd that Fairbairn appears so phlegmatic about a small-cupped pink. Even if

it was not the first one he had seen, one would have expected it to rate more than a single sentence, especially as it had both good color and good form. I know nothing more about this Jean Cox.

One of the Tasmanians who was breeding pink-cupped daffodils in the late 1930s was Stephen Bisdee from Bagdad near Hobart. He won the Raphael Cup for the best pink cup at Hobart Show in 1946 with a seedling named Lady Binney after the wife of the then Governor of Tasmania. In 1955, he estimated that he had raised 10,000 seeds from pink crosses in the preceding decade. Then, about 1960 he flowered a seedling small-cupped pink which was later named Kerstin. It came from Chinese White by pollen from one of his own seedlings named Chiffon.

Kerstin's cup is flattish and pale pink, while the perianth is quite good, too. By measurement, about two in every three flowers come into the short-cup category—or perhaps I'd better say that that is what happens in my beds. With me, the remaining one-third of the flowers just miss out by measurement.

When Stephen gave me a bulb of Kerstin, I decided to try to decrease the length of the cup and hoped that there might be an occasional one with deeper color. If the greater depth of color did not come of its own accord, then it should only be a matter of time before crossing the best of what I expected to get should solve that problem. So I crossed Kerstin both ways with a number of small-cupped whites. But most of the progeny had no color and those that did had only a wire-rim of pink. Few reached the standard of this next slide, and you will not need any magnifying glass to detect the sad deterioration in the perianth.

I bought Caro Nome in the hope that this would help, but as it flowered for me it was nowhere near a small cup and hung its head badly, too. Richardson's Jewel Song was also used because its large cup was not excessively large. But all my efforts failed to produce anything that looked as good as Kerstin, let alone anything better. So I gave up and decided that pink large-cups looked better, gave you more for your money, and at least I could get somewhere with them.

Then one day I remembered reading somewhere that somebody had suggested that Richardson's Cascade might be useful in breeding pink small cups. I had a small stock of Cascade which was bred from Brodie's 3c Altyre by pollen from a Green Island seedling that was a sibling to Rose Caprice.

So Cascade and Kerstin were crossed both ways for several years. The results were somewhat better than the earlier ones but a big proportion had no pink at all and most of those that did were plagued by hanging heads—a fault that Kerstin fortunately does not have.

Generally the perianths were better. One was definitely a small-cupped pink when it opened, but the pink cup gradually faded to leave a pink rim.

Some of this strain show a definite yellow tone in the middle and eye zones. In others the faint but definite pink eye and middle zone of the cup fade to give a flower with a faded center but a brighter reddish-pink rim.

I hope that it is not too presumptuous to think that the worst of the problems are over and that with a number of reasonable quality flowers to work from, it will not be long before quality small cupped pinks will be coming from Tasmania.

Perhaps we will even have some to show you when you all come trooping along in your hundreds to "Daffodils 88 Down Under" in Tasmania in September, 1988.

---

## MEET THE PRESIDENT

Our new president, Ted Snazelle, is known around the world for his expertise on pests and diseases of daffodils. His seven-part series, "Daffodil Diseases and Pests" which appeared in the *Journal* from June, 1979, to March, 1981, was widely acclaimed. He has spoken on that same topic at our conventions, and was featured in New Zealand on the Springworld '84 program. He is an accredited judge, and is an instructor in our judging schools.

Professionally, Ted is currently Professor of Biology at Mississippi College in Clinton, Mississippi, where he has established a test garden to show the great variety of daffodils which will grow in that area. This is where he is conducting tests to find an alternate to benomyl as a control for basal rot of narcissus.

Ted is actively involved in promoting daffodils in his locality, and was instrumental in forming the Central Mississippi Daffodil Society. An avid exhibitor, who has several winning Quinn collections to his credit, he is also a hybridizer of note having won several Rose Ribbons. His interests in hybridizing include breeding for basal rot resistant reverse bicolors, and orange-flushed perianths.

Ted and his wife, Bea, are the parents of two children, Blaine and Gretchen, both of whom have grown and exhibited their own daffodils.



## MEET THE NEW EDITOR

Beginning with the September issue, the *Journal* will have a new editor, Mrs. Richard Frank, Jr.

The new editor of the *Journal* is no stranger to the daffodil world. Kitty Frank, along with her husband, Dick, has been growing and exhibiting daffodils for many years. Kitty and Dick have each won the Quinn Medal. Now they exhibit as a team and have won a further Quinn Ribbon exhibiting together.

Kitty is a past president of the Friends of Cheekwood in Nashville, and currently serves as a docent in the gallery, and also as a garden guide. She is active in planting and maintaining the Louise Hardison daffodil garden there, and also is a past president and show chairman of the Middle Tennessee Daffodil Society. She and Dick are also members of the Camellia Society.

She is an accredited judge, and brings a knowledge and love of daffodils to her new position.



GRIPSHOVER

---

### MRS. J. ABEL SMITH

*Offers*

### PINK DAFFODILS

Also other choice EXHIBITION and DECORATIVE varieties including NEW HYBRIDS raised at —

### Orchard House

Letty Green nr. Hertford, England

*Descriptive list free on application*

## MOBY DAFF MY SEARCH FOR THE GREAT WHITE TRUMPET

KENNETH E. WEIR, *Toronto, Canada*

To most Canadians, *Empress of Ireland* conjures up images of the worst maritime disaster in our country's history, in which the great Canadian Pacific liner of that name sank in the St. Lawrence River after being rammed by a Norwegian collier in a dense fog. The great white Empress took with it more than a thousand souls, including an entire Salvation Army band on its way to London. That was on the 29th of May, 1914. Thirty-eight years later, Guy L. Wilson, the doyen of Irish daffodil breeders, chose the same name for his most beautiful flower, a white trumpet of unrivalled grace and character. Was Wilson aware of the somber significance of the name when he registered it with the Royal Horticultural Society in 1952? Undoubtedly. He was 28 years old when the Empress of Ireland went down, and he lived less than 50 miles from the greatest shipyard in the world, Harland and Wolff's Queen's Island yard, birthplace of the greatest of all maritime disasters, Titanic. Ulstermen have a long tradition of shipbuilding and seagoing; a tragedy of such proportions could not fail to touch them. So the daffodil Empress of Ireland may have been, in a sense, Guy Wilson's memorial to the victims. In any case, a flower of that name, from that source, had more appeal for me than the common run of daffodils such as King Alfred, Mount Hood, and Golden Harvest. I decided to grow it, but I could not find it.

Let me go back a little. I began growing daffodils a few years ago in the uncompromising clay of my North Toronto garden. The location was one where nothing else had grown in living memory—at the north end of the lot, just beyond where the grass had given up in despair because of the shade of the scrub maples along the fence. The shallow roots of the maples made spading almost impossible and had robbed the topsoil of most of its nutrients. Even the most persistent weeds found the going rough there and survived only in the most dilatory way. On that baked clay, twenty-five years ago my father-in-law, a German mechanical engineer, built, of steel and cast iron, the strongest, most durable set of children's swings ever made by one man for one small girl. So the clay was tramped by children. What hope had daffodils? Well, more than you might think.

Into this clay, undug and unimproved, I plunged, with the help of a bulb planter, about 300 Dutch narcissus bulbs: 100 from Cruickshanks, a naturalizing mixture, and 200 from White Rose bought for 10¢ each at the end of the planting season, King Alfreds. By that time the ground was softened by the fall rains, and the deep freeze was a week or two away. My wife said I was wasting my time. Everyone knows that ground must be dug and fertilized before anything will grow. Daughters of German engineers hate to see people going off half-cocked.

In the spring as the snows receded, I noticed a battalion of narcissus spikes poking bravely through the unpromising terrain, uniformly strong and moss green at the King Alfred end, in a variety of shades and shapes at the mixture end. What fun! Day by day they grew taller and stronger, a late snowfall no more than a minor setback. On April 13, my first-ever daffodil bloomed. It was a tall, vibrant yellow trumpet, a King Alfred. A trained show judge would have found faults, but I saw only grace and beauty. Never had invested dime paid such dividends! A week later there were, literally, hundreds of blooms, a scene admittedly less than Wordsworthian but just as thrilling as the poet's immortal glimpse by Derwentwater. My wife, I am pleased to report, was speechless.

As well as thoughts of Wordsworth and Grade 4, these blooms stirred up memories of the daffodils of my childhood at Carnreagh Cottage, near Hillsborough, County Down, where the recent Anglo-Irish Accord was signed. There at Carnreagh, in the early 40s, the yellow trumpets bloomed in their thousands through the grass, relics of an earlier garden and of a gardener long gone to his reward.

It was in that context—my own daffodils in bloom and my memories of County Down—that I read, to my amazement and pleasure, an article by Henry Mitchell of the *Washington Post*. In his article, Mitchell makes the point that Irish daffodils are among the best in the world. This was a revelation. Till then I had no idea that there was such a thing as a distinctively Irish daffodil. He mentions several varieties that everyone should try: *Passionale*, *Ceylon*, *Falstaff*, and particularly the great white trumpet *Empress of Ireland*. Well, Cruickshanks had *Passionale*, but no bulb dealer in southern Ontario had *Ceylon* or *Falstaff*, and no one had heard of the *Empress of Ireland*. This was frustrating. If Irish daffodils were so good, and if they were readily available in Washington, D.C., why were they not available in Toronto?

At that point, in the Civic Garden Centre Library, I discovered several books about daffodils. In these books Irish varieties are mentioned frequently, many of them named after Irish towns like *Armagh*, *Limerick*, *Downpatrick*, *Newcastle*, *Banbridge*, *Portrush*, *Enniskillen*, and even districts in Belfast: *Woodvale*, *Ormeau*, *Willowfield*, *Ravenhill*. Lovely names, half-legendary names. None of these was available in the Toronto area. However, I found that some of the Dutch bulbs had originated in Ireland; so I planted them in year two: *Sun Chariot*, *Foresight*, determined than ever to find the great white trumpet, *Empress of Ireland*.

By happy chance, at that very time, my sisters were vacationing in Ireland, and I asked them to bring back some Irish bulbs. Another disappointment! Everywhere they went, nothing but Dutch bulbs: *Golden Harvest*, *Unsurpassable*, *Mount Hood*. They hinted that I had probably sent them on a wild goose chase. However, they brought back with them a column from the Dublin newspaper, *The Irish Times*, by garden correspondent Rosemary Brown, in which she mentions Irish breeders of the past and present, but she gave no addresses. So I immediately dashed off a letter to the paper. At that point, I felt that the trail was heating up, that the

Empress of Ireland was almost within my grasp. At about the same time I wrote to the American Daffodil Society at an address in North Carolina given to me by a librarian at the CGC. Weeks went by, then months. Nothing from *The Irish Times* and nothing from the ADS, and not a word from the Royal Horticultural Society in Vincent Square, to whom I had also written. Nothing! The trail had grown cold.

In January things suddenly improved. By the same post I received a letter from Dublin and one from Mississippi. Rosemary Brown of *The Irish Times* very kindly sent me the addresses of three Ulster breeders and an invitation to visit her family in County Wicklow. And Leslie Anderson, the Executive Director of the American Daffodil Society, wrote me a charming letter from Hernando, Mississippi, and enclosed an application form. Before long I had catalogues from England, Ireland, and the United States. Three of them offered bulbs of Empress of Ireland for approximately \$4 a piece. At last! Now the problem was to get them into the country. This requires an Import Permit from Agriculture Canada for each supplier and a set of labels for the outside of the parcels. The dealer must enclose a Phytosanitary Certificate from his local agricultural authority. These are the proper channels. Permit in hand, I boarded a charter flight for Belfast to investigate the world of Irish daffodils and to find out why they are so hard to find in Ontario.

This was the first question I put to Crosbie Cochrane, the Chief Horticultural Officer for Northern Ireland, in his office on the outskirts of Belfast. Mr. Cochrane is a tall, handsome man, urbane and articulate, a former lecturer at the Greenmount Agricultural College, where the famous rose breeder Sam McGredy III was one of his students. Why, I asked him, if Irish bulbs are the best in the world, are we offered only Dutch ones? Why, in a country like Northern Ireland with so many economic problems and high unemployment, is this resource not exploited more fully? Here is the gist of his reply.

First of all, the daffodil world is not one world but three: garden, show, and commerce. In the garden world, little people like you and me buy bulbs of consistently good quality at a very reasonable price. We often plant them in unsuitable situations without much preparation, and we get far better results than we deserve. The commercial world is based in Holland and England although Virginia, Oregon, and British Columbia have had commercial scale ventures, too. However, although the English have a greater acreage of daffodils than anyone else, it is the Dutch that flood the North American market with bulbs. The third narcissus world belongs to the true fanatics, the hybridizers and the show people. They organize, enter, and attend shows, form societies, publish journals, and produce year by year an endless stream of beautiful varieties. They may be found everywhere, even in the Soviet Union, but mainly in English-speaking countries like England, America, Australia, and New Zealand. However, the greatest concentration is in Northern Ireland, where the Guy Wilson—Empress of Ireland tradition is carried on by Rathowen, Carncairn, and Ballydorn, and by Tom Bloomer, who used Empress of Ireland to produce his own superb white trumpets White Star and Silent

Valley, the first named for the shipping line that built Titanic and the second for the reservoir in the Mourne Mountains that supplies Belfast with its water.

Are Irish breeders in competition with the Dutch? Not really. The Dutch have a multi-million dollar enterprise of national importance aimed mainly at producing healthy and colorful garden varieties of reliable habit at a reasonable price for the world market. They are still selling bulbs that were introduced many years ago: King Alfred (1899), Mount Hood (1937), Golden Harvest (1920). Fortissimo, advertised by both Cruickshanks and Gardenimport as a "new introduction," was registered in 1964. The Ulster breeders, on the other hand, are gifted amateurs for whom daffodils are an obsessive hobby. Even the best-known breeders have other jobs: Kate Reade is a farmer but she also paints and rides to hounds; Frank Harrison was a lawyer and a judge before he retired, and he was knighted for his work in redrawing the electoral boundaries of Northern Ireland; Brian Duncan manages a creamery in County Tyrone. They breed mainly for show, and if they reckoned their time at even the minimum wage, they would probably not cover expenses. With them, even outstanding varieties become obsolete very quickly. For example, Arbar, introduced in 1948, Award of Merit 1949, First Class Certificate 1961, is no longer in commerce.

Do Irish raisers sell bulbs to the Dutch? Yes, they do, but it takes 20 years or more to make a new variety commercially feasible by increase. Here are a few varieties that have gone that route, as well as the ones mentioned earlier: Salome, Armada, Foresight, Spellbinder, another Wilson flower of noble carriage and the almost magical quality of changing color day by day. It is well named.

Are the new varieties better than the old? They are. Not perhaps significantly so to indiscriminate eyes, but the relentless search for improved substance, posture, smoothness, color, endurance, increase, sun-fastness, and so on has paid off.

Did I finally find the Empress of Ireland? Yes, I did. I brought back two bulbs along with about 50 other Irish varieties. The long search is over; the story has just begun.



Empress of Ireland  
(from the *RHS Daffodil & Tulip Yearbook*, 1957)

## IN SUPPORT OF A CULTIVAR SHOW

W.R. MACKINNEY, *West Chester, Pennsylvania*

In horticultural competition, there are basically two types of shows—the Color Show and the Cultivar or Variety Show.

In a Color Show, the entries are grouped according to color and bloom type and are judged against each other. In this type of show many entries do not receive the recognition they deserve.

In a Cultivar Show, all entries of one cultivar are judged against each other or against perfection if only one entry of a cultivar is exhibited in the class.

Several articles which have appeared in the *Daffodil Journal* recently have convinced me that perhaps some ADS members do not fully understand what constitutes a Cultivar Show, or the Cultivar System of judging.

In a Cultivar Show blue ribbons are not awarded indiscriminately as has been suggested. To receive a first award an entry must score 90 points or more. In a Color Show with, for instance, ten entries in a class, perhaps four different cultivars may score at least 90 or more, but only one blue ribbon may be given. The other three would then receive a red, yellow or H.M. In a Cultivar Show four blue ribbons could be given, thus rewarding excellence. Cultivar judging also requires judges to place more emphasis on individual blooms, their merits, and faults. It is especially encouraging to new exhibitors to know that their entry has been evaluated and if deserving could be awarded a blue ribbon. Is not encouraging new growers one of the objectives of the ADS?

Cultivar judging would greatly simplify the judging of such blooms as the rimmed and nonpredominant classes.

Another fallacy is that a Cultivar Show takes longer to judge than a Color Show with standard judging. In most instances it takes less time. As an example, a Camelot 2 Y-Y scores 90 and a Butterscotch 2 Y-Y also scores 90, but the judges do not have to select between the two. They may give each a first award which they rightly deserve.

In an ADS show cultivar judging would only apply to single and triple bloom entries.

I am a member of several plant societies, and the American Daffodil Society is the only one in which I exhibit or judge that has not adopted the Cultivar Show and the Cultivar System of judging.



## IN THE LAST TEN YEARS

CHARLES WHEATLEY, *Mongo, Indiana*

The following list of named cultivars was compiled from *The Daffodil Journal* from 1975 through 1985. Each cultivar was given one point for each gold ribbon and one point for each white ribbon. In addition reports from England, Ireland, Tasmania, New Zealand, Australia and Western Australia were used. One point was given for each best bloom in the show. The foreign winners are from the last few years.

The stars represent American winners. The asterisks represent English and Irish winners. The bullets represent winners from Australia.

### Won 10 or More Times

Angel ★11	Wilson	1960	3 W-GWW
Broomhill ★13 ★2	Board	1965	2 W-W
Canisp ★12	Lea	1960	2 W-W
Cantatrice ★9 ★1	Wilson	1936	1 W-W
Daydream ★17	Mitsch	1954	2 Y-W
Festivity ★16	Mitsch	1954	2 W-Y
Golden Aura ★11 ★5 ●1	Richardson	1964	2 Y-Y
Shining Light ★9 ★3	Board	1965	2 Y-ORR
Torridon ★5 ★5	Lea	1964	2 Y-R



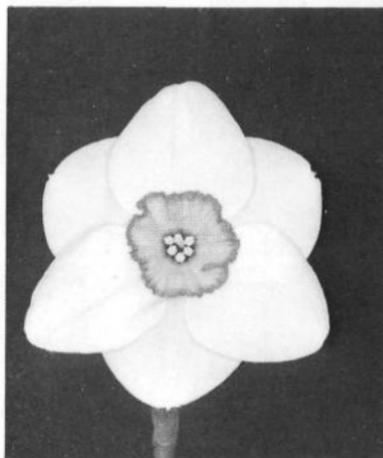
Left, Daydream; right, Golden Aura, the most consistent winners in the last ten years. (Knierim photos)

### Won 6 or More Times

Ariel *6	Richrdson	1960	3 W-OOY
Ave *6	Wilson	1935	2 W-W
Bethany *6	Mitsch	1958	2 Y-W
Chiloquin *9	Mitsch	1968	1 Y-W
Court Martial *8	Richardson	1956	2 Y-R
Foundling *6	Carncairn	1969	6 W-P
Gull *6	Mitsch	1979	2 W-GWW
Homestead *8	Pannill	1972	2 W-W
Merlin *4 *4	Richardson	1956	3 W-YYR
Ormeau *6 *1	Dunlop	1949	2 Y-Y
Rockall *4 *2 •1	Richardson	1955	3 W-R
Willet *8	Mitsch	1966	6 Y-Y

### Won 5 Times

Achduart *2 *2 •1	Lea	1972	3 Y-R
Aurum *5	Mitsch	1971	1 Y-Y
Beryl *5	Williams	1907	6 Y-O
Carrickbeg *5	Richardson	1963	1 Y-Y
Charity May *4 *1	Coleman	1948	6 Y-Y
Charter *5	Mitsch	1964	2 Y-W
Inverpolly *5	Lea	1980	2 W-W
Pure Joy *5	Mitsch	1971	2 W-Y
Unique *5	Richardson	1961	4 W-Y
Viking *3 *2	Richardson	1956	1 Y-Y

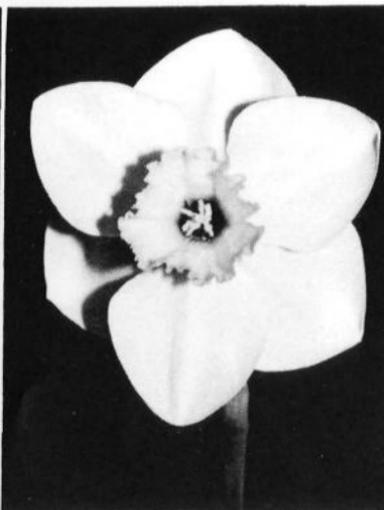


TARRY



WHEELER

Left, Merlin; right, Euphony



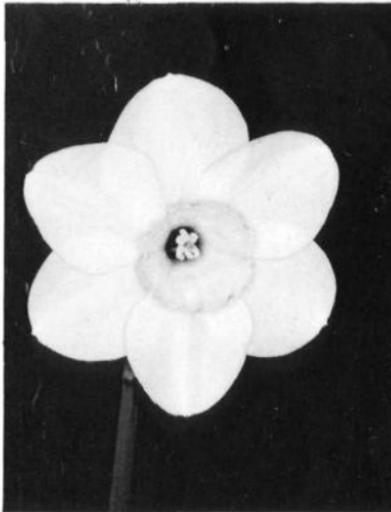
Left, Unique; right, Pure Joy

## Won 4 Times

Amber Castle *4	Richardson	1976	2 Y-WWP
Arctic Gold *4	Richardson	1951	1 Y-Y
Ben Hee *2 *2	Lea	1964	2 W-W
Bushtit *4	Mitsch	1960	6 Y-Y
Dove Wings *4	Coleman	1949	6 W-Y
Eminent *3 *1	Mitsch	1968	3 W-GYY
Euphony *4	Mitsch	1968	2 Y-Y
Falstaff *2 ●2	Richardson	1960	2 Y-R
Flaming Meteor *4	Mitsch	1962	2 Y-R
Foxfire *4	Evans	1968	2 W-GWO
Golden Joy *3 *1	Bloomer	1973	2 Y-Y
Golden Rapture *3 *1	Richardson	1952	1 Y-Y
Ice Follies *4	Konynenburg	1953	2 W-W
Jenny *4	Coleman	1943	6 W-W
Jetfire *4	Mitsch	1966	6 Y-R
Merry Princess ●4			2 W-W
Ocean Breeze *4	Mitsch	1979	6 W-W
Old Satin *4	Mitsch	1967	2 W-Y
Palmyra *4	Mitsch	1970	3 W-YYR
Purbeck *3 *1	Blanchard	1971	3 W-YYO
Quetzal *4	Mitsch	1965	9 W-GYR
Rainbow *1 *3	Richardson	1961	2 W-WWP
Resplendent *4	Mitsch	1977	2 Y-R
Silent Valley *3 *1	Bloomer	1964	1 W-GWW
Stainless *4	Wilson	1960	2 W-W
Surfside *4	Mitsch	1972	6 W-Y
Top Notch *4	Mitsch	1970	2 Y-Y
Woodvale *4	Dunlop	1947	2 W-WWY

### Won 3 Times

Arbar *3	Richardson	1948	2 W-O
Ashmore *3	Blanchard	1974	2 W-W
Bee Mabley *3	Fitzwater	1973	3 W-YYO
Churchman *3	Ballydorn	1968	2 W-GWW
Cool Crystal *3	Mitsch	1966	3 W-GWW
Corofin *3	Richardson	1943	3 W-YJR
Daviot *3	Brodie	1950	2 W-OOY
Drumboe *2 *1	Wilson	1960	2 W-P
Empress of Ireland *1 *2	Wilson	1952	1 W-W
Erlicheer *3		1951	4 W-W
Glenwherry *3	Dunlop	1947	3 W-R
Green Linnet *3	Richardson	1967	3 W-GGO
Harmony Bells *3	Fowlds	1962	5 Y-Y
Jobi *3	Jackson	1966	1 Y-Y
Loch Hope *2 *1	Lea	1970	2 Y-R
Patricia Reynolds *3	Reynolds	1963	1 W-P
Preamble *1 *2	Wilson	1946	1 W-Y
Rushlight *3	Wilson	1957	2 Y-W
Salome *3	Richardson	1958	2 W-PPY
Shadow *3	Evans	1977	2 W-GWW
Silver Chimes *3	Martin	1916	8 W-W
Starmount *3	Pannill	1970	2 W-W
Stratosphere *3	Mitsch	1968	7 Y-O
Tahiti *3	Richardson	1956	4 Y-R
Verona *3	Richardson	1958	3 W-W
Wahkeena *3	Evans	1965	2 W-Y



GRIPSHOVER

Left, Ashmore; right, Shadow

## BASAL ROT—A MODERN AID

GEORGE TARRY, *Cheshire, England*

I have been surprised that the *Journal* still recommends benomyl as the best material in the constant struggle to control Fusarium, Basal Rot. In Britain, this compound has lost favor in recent years primarily because so many diseases have developed strains which are resistant to its action. The British official publication, *Approved Products for Farmers and Growers*, lists page after page of fungicides to protect every possible crop from a full range of diseases; and whenever possible, serious growers use a rotation of these compounds to eliminate the possibility of resistant strains.

Basal rot can be a major problem for all daffodil growers especially as it is virtually impossible to preserve a bulb once the attack has reached the stage when the rot is noticeable. In a normal season, dipping in solutions of formaldehyde and benomyl will keep losses to a low, but barely acceptable, level particularly when a small stock of a recent acquisition becomes involved. In abnormal conditions such as the British summer of 1984 when temperatures soared to 30°C and above for day after day, the amateur finds it impossible to maintain the conditions which are recommended to exercise control over fusarium, and losses reach a level which initiates a search for a better standard of protection.

Having sustained heavy losses of some cultivars in 1984, I set out on such a search. The first lead was found in RHS *Daffodils 1984-5* where Andrew Tompsett's article on "Recent Developments in Hot Water Treatment of Narcissus" mentions the inclusion of thiabendazole in the HWT tank. Acquisition of the reports made available to visitors to Rosewarne EHS on their "Open Days," and their careful perusal showed that this material had been used in trials for about ten years and was giving an improved rate of protection. One of the most susceptible cultivars, Golden Harvest, had responded so well that the level of diseased bulbs was now below 1%, which at one time would have been considered resistant.

At the RHS Hall in April, 1985, the Glasshouse Crops Research Institute staged an informative display on their work on basal rot and its control and I had a most useful discussion with Dr. David Price, a leading research worker in this field. This filled in many of the gaps in information required for a program of treatment, but I still had to obtain a supply of thiabendazole. I remembered that some years earlier I had read that Rosewarne were using this substance, but I had been unable to trace a supply and the low level of basal rot in my stocks had led me to abandon the search. As the need was now more pressing, the search was resumed but enquiries of all the normal sources of horticultural requirements within 50 miles of home brought an interesting and varied range of responses but no compound. The final move was a direct approach to the manufacturers which brought the desired result, not only a source of supply, but further

literature giving more practical guidance. In all, I have enough paper on this subject to fill at least three issues of the *ADS Journal*, but of course much of it is repetition and some is irrelevant as it is concerned with other crops.

In Britain, thiabendazole is available in two forms for the treatment of daffodils, a wettable powder and a liquid. There are other compounds for other purposes so it is essential that a suitable material is selected, as one form that is readily available here is for the treatment of potatoes for long term storage. This includes a growth inhibitor which would be disastrous if used on many other crops including daffodils.

The trials at Rosewarne employed the wettable powder which is effective when properly used. The powder is added to the water and formaldehyde in the HWT tank and effective circulation is essential to ensure even distribution of the powder throughout the tank. There is always the possibility that with dirty bulbs some of the powder will be retained in the soil and debris at the bottom of the tank and will not be available to the bulbs. Most amateurs, however, will clean their bulbs sufficiently to eliminate this problem. In the liquid form, the thiabendazole is in solution with the water and the problem of maintaining even dispersal throughout the tank is overcome. In addition tests have shown that thiabendazole may enter the bulbs from the solution to give protection from attack after the bulbs are planted, a critical stage in the effort to combat the disease. To me, though, the most important factor which gives a significant advantage over benomyl, which must be mixed fresh daily, is that thiabendazole is stable in solution; and HWT can continue with the same water plus thiabendazole plus formaldehyde for up to two weeks, long enough for most amateurs to complete the treatment of their stock of bulbs.

For those not using HWT, thiabendazole may be used, with formaldehyde, in the precautionary dip shortly after lifting, and for the pre-planting dip. For the large grower, experimental work is proceeding on a system of spraying the bulbs as they are loaded mechanically into containers in the fields. The use of cold dips is, however, under suspicion as they may be responsible for the spread of eelworm throughout stocks where HWT is not used regularly.

Having obtained a stock of liquid thiabendazole, I had to finalize a program for its use. After some thought I decided to dry the lifted bulbs as thoroughly as possible by the use of electric fans over slatted trays. Then I sorted and cleaned, setting aside those required for pots and those for disposal and surplus to requirements. The next stage was to set up the HWT tank with water, formaldehyde, and thiabendazole and to dip for half an hour at 112°F all the bulbs from which I needed flowers in the first season. My main stock of bulbs is grown on the two-year system and received the full period of HWT of three hours at 112°F. They were then cooled in the usual way by laying out on slatted trays, and when cooled, dried thoroughly for several days again with the aid of electric fans. The weather was much cooler than the previous summer and at planting time losses from basal rot appeared to be very low although an accurate

assessment can only be made when growth has emerged in the spring. Even then it will be impossible to attribute the improvement to a healthier stock at the outset, more suitable storage conditions, or the use of thiabendazole. A final assessment must await the performance after several years experience.

Any grower who is suffering significant losses from basal rot and is not satisfied with the results of his present procedures may wish to consider the use of thiabendazole as an aid in a continual struggle to achieve control. There can be no assurance of success as after more than ten years of tests the scientists engaged in this work are most guarded in their recommendation: "To date this material shows promise."

## BEGINNERS CORNER

FRANCES ARMSTRONG, Covington, Virginia

Have you sent away your order for new daffodils to be planted this fall? If not, you should do so at once. Some dealers have a July cut off date for orders. A few new daffodil faces next year will add extra joy to spring's return.

Have you dug your daffodil bulbs that have become too thick? Foliage is disappearing and this task should be done as soon as possible. Digging can be quite exciting when we discover nice clumps of fat bulbs where we planted only one several years ago. Clean each bulb carefully and check for softness. If the bulb seems suspect, cut into it to see what the trouble is. You may find a small maggot, the larva of the narcissus bulb fly. More likely you will find brown rings and rotted tissue indicating *Fusarium oxysporum* f. *narcissi*, commonly known as basal rot. In any event get rid of the remains of the bulb and sterilize your knife. If you find you have cut into a healthy bulb, that's too bad—just chalk it up to a learning experience. You will know better next time.

Before storing your bulbs give them plenty of time to dry in the shade. Sunlight will burn the bulb. Do not cram too many bulbs into your storage containers which usually will be net bags or shallow boxes. They tend to heat up in the middle if crowded. Basal rot develops with too much heat and moisture. Therefore, select a well-ventilated place for storage. If possible, check your bulbs during summer storage and remove any which have developed troubles.

Later in the summer prepare your beds for fall planting. Be sure your soil is loose, friable, and well drained. While bulbs like a lot of moisture available to their roots, they dislike sitting in water.

Daffodils do well in climates like Oregon and England that are moist and cool. They also do well in hot climates that are dry as long as they have temperatures low enough in winter to bring about root development, and irrigation during their growing season. It is the combination of heat and moisture which encourages basal rot. Give daffodils the conditions they like and they will give you years of pleasure in return.

## BRIAN DUNCAN, IRELAND'S DAFFODIL MAN

WILLIAM O. TICKNOR, *Tyner, North Carolina*

*(from the Newsletter of the Northern Ireland Daffodil Group, October, 1985)*

Fortunate is Ireland! W. Baylor Hartland, Guy Wilson, Lionel Richardson and now, Brian Duncan. Great personalities as well as palladins of daffodil culture, these four men have added a new dimension to the Emerald Isle.

How nice to achieve greatness by adding beauty to the world! Many of us in America think of Ireland, first, as a land of daffodils and secondly, as one of our ancestral lands. Those of us who participated in the great World Daffodil Convention of 1979 know Northern Ireland as an outstandingly courteous and hospitable land filled with beautiful scenery and beautiful women—and a strong and determined band of daffodil lovers. The leader of this band is Brian Duncan.

Why in the world is an American writing to tell members of the Northern Ireland Daffodil Group about their own Brian Duncan and his flowers? I was awarded this pleasure so that you might see him as he is seen 3,000 miles away. The Bible tells us that a prophet is not without honor except in his own country. I suspect that Brian is honored in his own country. If he is not, then send him, his family, and his daffodils to America!

In April, 1976, it was the uncommon good fortune of Laura Lee and me to have Jack Goldsmith and Brian Duncan as guests in our home. Jack's fame was well known to us—Brian was nearly a stranger. A few hours of daffodil talk and Brian had us, and we became members of his daffodil band. His warm, rich, personality and modest nature overwhelmed us. That first evening was an event! To become better acquainted we three sipped on a half gallon of bourbon. With Brian's encouragement, Jack poured out his knowledge of hybridizing and Richardson daffodils—as I poured out the bourbon. I learned an enormous amount about daffodils that night. Unfortunately, I recalled very little next morning!

That year and that ADS Convention was Brian's first appearance in the daffodil milieu of the new world. He gained instant recognition and enormous good will. Since 1976, Laura Lee and I have got to know Brian and Betty Duncan and their two children quite well; and we are well acquainted with Rathowen daffodils.

Brian was born in February, 1934, the youngest of five boys and three girls, at Lennymore, Crumlin, Co. Antrim. His family were dairy farmers and that influence has stayed with him. He was educated at Gortnallon Primary School, Friends School, Lisburn and Ballymena Academy. His further education was at Nottingham University. His family background have him a good head start on his first job as a Dairy Adviser for the Ministry of Agriculture to Northern Ireland. He is presently Marketing Director, Sales Director, and one of the leading lights of the Leckpatrick Co-operative Agricultural and Dairy Society Ltd. Laura Lee and I never buy a carton of "shelf milk" without thinking of Brian. I tend to credit him with inventing it.

He began his business career in North Antrim and shortly afterwards was transferred to Omagh. On his first night there he found an Irish beauty named Elizabeth Ann. Combining his keen eye for selection with his persuasive nature, Brian made Betty his wife. Betty, too, had a farming background. She has served for community well as a teacher. Although more quiet than Brian, she is his match in personality—high praise indeed.

It is uncertain as to what turned Brian to daffodils but he is a natural horticulturist, a perfectionist, and a lover of beauty—so daffodils were inevitable. In August, 1960, he used daffodils as “fillers” in his shrub border. By 1962, he was ordering fine things from Guy Wilson. On May 6th, 1963, at the Omagh H.S. Daffodil Show, he first staged show entries and a daffodil star had appeared. At that time Tom Bloomer became his mentor and good friend.

Any story of Brian Duncan must also tell of Tom Bloomer, Clarke Campbell, and other Ulster friends. Tom was a disciple of Guy Wilson and a friend and neighbor of W. J. Dunlop, and he absorbed knowledge of daffodils from both. Entirely likeable, Mr. Bloomer was a thoughtful selector of daffodil parents and children. In 1971 he founded Rathowen Daffodils. His quiet nature and late start have obscured his fame as one of daffodil's great hybridizers. Even today, many of his seedlings are recognized as exceptionally fine daffodils.

Roman Emperors passed their greatness on to adopted sons—from Julius Caesar to Caesar Augustus to Tiberius. In some such way Brian, through Tom Bloomer, is heir to Guy Wilson's eminence.

Brian's first success at Omagh in 1963 led him to the R.H.S. show in 1964 where renowned exhibitors passed their staging skills through receptive eyes to an absorbing mind. Pollen from Lionel Richardson at that show began Brian's serious hybridizing.

In 1973 Tom Bloomer felt it necessary to give up his business and his first thought was that only his protege could provide the care that the Rathowen Daffodils deserved. Deeply challenged but short of time and without land, Brian formed a partnership with Clarke Campbell, a fellow amateur exhibitor, and they undertook the building of an internationally renowned daffodil business. Clarke is, from my experience, a quiet, completely reliable person whose obvious good nature obscures great talent as a grower and lover of daffodils.

If Brian Duncan is famous for nothing else, Rathowen's incredible trade displays at the London Shows entitle him to a place in the Daffodil Hall of Fame. For his first effort in 1974 Rathowen was awarded a gold medal and, incredibly, has won the gold medal for ten straight years. Brian ranks as the P. T. Barnum of daffodils. I will never forget my own reaction to seeing their stand in 1979 at the time of the first great World Convention. I was in a state of shock soon after entering the hall. The show was still in preparation and in the busy sea of working persons, many of whose names I knew and whose faces I did not, and the many stands filling with flowers, there were against the wall some stands with an incredibly large number of blooms. I was told that it was the Rathowen

Trade Stand but that Brian, Clarke, Sandy McCabe and others were away for the moment and, with elbows lifted, were deliberating on matters of high policy. The staging was being done by their wives. There was great beauty at that stand—and the flowers were lovely, too.

While there was ever so much more to see at the show—all that a daffodil lover could desire—a prolonged study of the Rathowen Stand in itself would have made the visit worthwhile. The Rathowen Trade Stand was great in size yet delicately beautiful in all its parts. It was 30 feet long and four tiers high with a few vases above the fourth tier. There seemed to be countless vases filled with large daffodils of great substance and brilliant color. A central display of various white trumpets, such as White Star and White Empress, surrounded a vase of the double Pink Paradise. Beyond the white trumpets were yellow perianths with yellow, red, or pink cups. Beyond these were vivid pinks and all yellows. Scattered carefully were various brilliant and spectacular daffodils. Slipped in behind the vases were sprays of grey-green foliage of spruce and fir. With an enormous expenditure of energy, Brian and his band had contrived a stand that wondrously pleased the eye and seemed naturally to merit the highest award.

Nearly as awesome as his trade stands is Brian's pursuit of the Engleheart Cup. John Lea, with his magnificent yellow reds and marvellous pinks, succeeded Lionel and Mrs. Richardson in the possession of that most prestigious award. How unbeatable have been John Lea's flowers! His seedlings would have daunted almost anyone; but like a hunting dog with his nose to the scent, Brian began his pursuit of the cup. As Guy Wilson knew, it is not easy, weatherwise, for a Northern Irishman to compete for the cup. The Engleheart Cup Class requiring twelve different daffodils exhibited by their raiser, is an enormously difficult class for a hybridizer to seriously enter. Great skill at growing and exhibiting is vital but that is not nearly enough. The exhibitor must have a large stable of his own things to choose from—many blooms of many things, and Brian has been hybridizing for a comparatively short time. Yet, he has been in contention for the cup since 1977, getting nearer and nearer to first place. Now that John Lea exhibits at a celestial level it will be interesting to see what will happen at the London Show. Undoubtedly English hybridizers will make renewed efforts but inevitably, in the near future, Brian will return the Engleheart Cup to Ireland.

In the United States, Brian Duncan's flowers are not the daffodils of yesterday or even today, but they are the novelties of today and the sure winners of tomorrow. As with his Engleheart Cup entries, Brian's own raised cultivars have not yet burgeoned into the quantities one needs for selection for shows and they are just becoming well known. I think this is also true of British shows. I note that his numbered seedlings are frequent winners.

With all of this immense activity, what actually has Brian done for daffodils? He has written articles and given talks that show a depth of feeling and knowledge of daffodils and their potential that is hardly

matched today. With his quiet but talented partner he has made available to us all the fine things of Tom Bloomer—for example, White Star and Golden Joy. He had the willingness and energy to secure and sell to us many great things from the Richardsons and from J. M. de Navarro. Beyond this, though, he has entered the ranks of the great hybridizers and we can grow and exhibit and win with Duncan daffodils. I am fortunate in growing fourteen Duncan cultivars and unfortunate in not having more. While Laura Lee's and my taste in daffodils runs the entire gamut, we have a special penchant for cyclamineus hybrids and we grow and enjoy small pink Nymphette and Snoobie. Both do well and are welcome in the house, as bouquets to friends, or at the show. Delta Wings, 6 W-P, is something else. It is an aristocrat of flowers and is by no means to be put down as "one of the other divisions." For us it has been smooth, large and colorful, and distinct and attractive in form. A mid-season flower, it has won for us a single entry and in a vase of three stems. It has won best in show more than once. A tight triple nose bulb in 1980, it was large triple nose, one large double nose, and one large round in 1982. In the spring of 1984, we were able to pick and choose half a dozen blooms of it.

Two Duncan all yellows have not only increased nicely but they consistently produce good flowers. Scoreline, 1 Y-Y, is valuable as a late mid-season, smooth, reliable trumpet. Joyland, 2 Y-GYY, is a precise flower but distinctive in color and form. Both of these are potential single entry winners and are excellent for collections. To date, yellow perianths have been Brian's weakness in major competition. Having said this, and knowing Brian, I expect his seedling beds to explode with blooms that will pale Lionel Richardson's brightest.

Four Duncan pinks make our spring more welcome. The best "doer" is Fellowship, 2 W-YYP, a Rainbow-style daffodil with a bright pink rim. Two bulbs in 1978, it is a sizeable clump now. Most impressive and quite different is another rim, Pismo Beach, 2 W-WWP. Its bowl-shaped cup offers delightful color contrast and it is a top competitor in pink classes. To see it is to want it. Vocation, 2 W-P, is a large, smooth, tall, strongly colored flower and a good doer. Violetta, 2 W-GPP, is quite different. It, too, is strongly colored and it is a bit on the blue side of pink rather than on the yellow side. All four of these pinks are good show candidates and we have won ribbons with them.



Pismo Beach

Silver Surf, 2 W-W, is well named as an eye-catching large white. A child of Easter Moon × Empress of Ireland, it has the roundness and whiteness of one parent and the majesty of the other.

A red jewel in a white frame, Dunskey, 3 W-R, is a smooth, consistent, welcome show and garden flower. Form Master, 1 W-Y, is a sibling of Joyland, 2 Y-GYY, and both are children of Joybell, 6 W-Y, × Empress of Ireland, 1 W-W, all of which adds up to Brian's being a magician. I think he mixes a little hocus pocus in his pollen, but he is deriving fine things from this cross. Who would expect the self yellow Joyland, or the superb form of Form Master, from the cross of a small cyclamineus by a huge white trumpet? In two years, elegant Form Master has gone from a very large double nose bulb in 1980 to one triple nose and three double nose in 1982. It will be a large clump when we dig it next year.

There are many Duncan daffodils that we would like to grow but have not done so yet. Awesome and famous are his pink doubles, Pink Pageant and Pink Paradise. A vase of them is as eye boggling as the Topkapi museum treasure house in Istanbul. His new Smokey Bear, 4 O-R, is another breather. One feels that a fire extinguisher should be kept near it. There are daffodil people who don't care for doubles, and many do not please me, but the Duncan doubles are the wave of the future.

The small cup white with red or orange is a marvellous type of daffodil and they are a large and competitive group. Sir Frank Harrison, with his green-eyed beauties, is a giant in this field; but persistent, determined Brian competes strongly here too. His Lighthouse, 3 W-R, was "Best Division Three" at the London Show and has received rave notices since. Perhaps equally fine is Doctor Hugh, 3 W-GOO, and both Mt. Angel, 3 W-YYR, and Slowcoach, 3 W-GYO, keep them company. Rimmon, 3 W-GWY, is a fine round small cup and a color code defier. Rivendell, 3 W-GYY, is noted as a fine doer and show flower with a richly colored buff cup.

I mentioned earlier that Brian was weak in yellow perianths. On second thought I am not so sure. Aside from Smokey Bear and the others mentioned above, his Sportsman, 2 Y-R, offers a lot of color in a fine daffodil and is nearly sunproof. Ulster Bank, 3 YO-ORR, with its fiery cup and deeply colored perianth is a consistently good show flower. Verdant, 1 Y-GYY (another sibling of Joyland and Form Master) is large and lovely with bright green eye and is a show winner. Jumbo Gold, 1 Y-Y, sounds as though it is a great mass of color—which it is—but it is also Engleheart Cup quality and another winner. Kingsbridge, 1 Y-Y, is a consistently good yellow trumpet. Brian's seedling D.745 may well be the leader in the orange perianth race.

Brian has used Easter Moon a lot as a parent and he has not hesitated to use Empress of Ireland. This cross brought him a winner in Silver Blaze, 2 W-GWW. A soft, smooth appealing flower, it, too, is Engleheart quality. Another fine child of Easter Moon is his White Ermine, 2 W-GWW.

Pink daffodils are the order of the day and Duncan cultivars, High Society, 2 W-GYP, and Modest Maiden, 2 W-P (they certainly sound like a

contrast), have won top ribbons in America. High Society, with its delicate rim and classy form, is most impressive. Fragrant Rose, 2 W-GPP, is in a class by itself. In years gone by, sweet aroma was an endearing attraction of daffodils and is a characteristic neglected by hybridizers. Brian, who won't be limited in any direction, has produced in Fragrant Rose not only a colorful show quality flower but also one with a delightful fragrance.

Brian has restrained his hybridizing, so far, to one flower on a stem but he has gone nicely beyond the usual Division 1, 2 and 3. His doubles are phenomenal and his cyclamineus are delightful. We think of Kate Reade and Carncairn and Foundling when we think of pink cyclamineus but here, too, Brian has entered the field. In addition to those named already, his Lilac Charm and Lavender Lass, both 6 W-GPP, are well known. New Reggae, 6 W-GPP, drew a lot of attention at the 1983 London Show. I have not seen Brian's pink cyclamineus, Elizabeth Ann, but with such a name it must be a lovely thing indeed. Division 9, restrictive as it is, has drawn Brian's attention and he offers five new poets. Champion, Chesterton, Lyric, Thackeray and Webster are all available for late shows and enjoyment at the end of the season.

So! Brian has already done much for daffodils. Highly imaginative, deeply knowledgeable and with restless energy, he seems likely to continue his pursuit of beauty and perfection in daffodils. More power to Brian Duncan—we all benefit from his genius.

## Memorial Contributions

Charles Anthony .....	Helen A. Grier Mr. and Mrs. Wellington Wells Northern New England Daffodil Society
Otis Etheredge .....	Delia Bankhead Marilynn Howe
Venice Brink .....	Mr. and Mrs. Merton Yerger Mrs. M. B. Adams
Maurice Worden .....	Mrs. Frank Harrington
Mrs. James Tracey .....	Delaware Daffodil Society



DAFFODIL  
DISEASES  
AND  
PESTS

### Dr. Theodore Snazelle's DAFFODIL DISEASES AND PESTS

Now available in booklet form.

\$4.00 postage paid U.S.

\$4.50 postage paid foreign

Order from:

MTDS  
1018 Stonewall Dr.  
Nashville, TN 37220

**AMERICAN DAFFODIL SOCIETY, INC.**  
**INCOME AND EXPENSES — YEAR ENDED DECEMBER 31, 1985**

**INCOME:**

Dues Paid in 1985 .....			\$12,923.11
Life Memberships Paid in 1985 .....			1,950.00
Memorial Gifts .....			1,157.00
Sale of Books, Supplies, etc.:	Income	Expenses	
R.H.S. Yearbooks .....	\$ 405.00	\$ 328.50	
A.H.S. Handbooks .....	263.00	—	
Daffodils to Show and Grow .....	2,922.01	2,597.15	
Handbook for Judges .....	512.29	—	
Old RHS and Out of Print Books .....	443.75	—	
A.D.S. Publications .....	264.00	—	
A.D.S. Membership Pins .....	188.50	225.00	
Data Bank Printouts and Binders .....	665.00	#	
Binders for Journal .....	229.50	—	
Show Entry Cards .....	968.00	—	
Daffodils in Ireland .....	30.00	—	
Medals and Ribbons .....	342.25	565.86	
Registration Fees .....	90.00	—	
	<u>\$7,323.30</u>	<u>\$3,716.51</u>	3,606.79
Advertising in Journal .....			795.00
Judges and Refresher Fees .....			428.54
Slide Rentals .....			187.50
Interest Received .....			6,437.52
Capital Gain on Sale of C.D.s .....			558.00
Convention Surplus .....			3,367.39
Profit on Auction at Convention .....			200.00
Repayment of Advance .....			1,000.00
Miscellaneous .....			<u>88.09</u>
<b>TOTAL INCOME</b> .....			<b>\$32,698.94</b>

**EXPENSES:**

Daffodil Journal Printing and Mailing .....			\$14,363.23
Balance on Roster .....			711.02
Office Expense:			
Printing, Postage, Tel. and Supplies .....	\$2,888.14		
Executive Director and Clerical .....	5,800.00		
Social Security Tax .....	410.92		
Computer Printouts, Lists and Labels .....	952.90		10,051.96
Regional Vice-Presidents (Newsletters) .....			688.46
Secretary .....			66.05
Committees .....			230.19
Trophy Insurance and Bond .....			263.00
Grants from Educational and Research Fund:			
Mississippi College (Basal Rot Study) .....	\$ 800.00		
William and Mary College (Bulb Scaling) .....	1,000.00		
A.D.S. Health and Culture Committee (Nutrition) .....	1,263.46		3,063.46
Dues - National Council of State Garden Clubs .....			15.00
Miscellaneous, Refund, etc. ....			<u>22.79</u>
<b>TOTAL EXPENSES</b> .....			<b>\$29,475.16</b>

# Included in Office Expenses

**AMERICAN DAFFODIL SOCIETY, INC.**  
**BALANCE SHEET — DECEMBER 31, 1985**

**ASSETS:**

Cash in Bank - Bank of Mississippi .....		\$ 2,995.41	
Money mart Assets - Prudential-Bache .....		6,039.00	
C.D. Homestead S&L. MPRG, 13.15% due 5-30-89 .....		11,000.00	
C.D. Bank of Mississippi, 7.5% due 5-26-86 .....		3,500.00	
Prudential-Bache Government Plus Fund, 11.40% .....		28,080.54	
Ford Motor Credit Corp., 8½% Bonds due 3-15-91 .....		10,000.00	
Accrued Interest not due on Ford Bonds .....		247.50	
Inventories of Publications, etc.:			
R.H.S. Yearbooks (75) .....	\$ 262.50		
Old RHS Yearbooks (140) .....	490.00		
A.H.S. Handbooks (400) .....	400.00		
Daffodils to Show and Grow (840) .....	1,092.00		
Handbooks for Judges (250) .....	250.00		
A.D.S. Membership Pins (43) .....	225.75		
Show Entry Cards, large (25M) .....	318.75		
Show Entry Cards, min. (18M) .....	216.00		
Daffodils in Ireland (10) .....	10.00		
Data Bank Printouts (9) .....	135.00		
Brief Guide to Growing Daffodils (30) .....	18.00	3,418.00	
Inventories of Medals and Trophies:			
Medal Dies .....	15.00		
Gold and Silver Medals .....	496.50		
Larry Mains Silver Trays (min.) (5) .....	225.00		
			<u>736.50</u>
<b>TOTAL ASSETS</b> .....			<b>\$66,016.95</b>

**LIABILITIES:**

Dues Paid in Advance (in whole or in part) (partly estimated) .....		\$ 6,995.61	
Life Memberships .....		21,000.00	
Memorial Fund .....		1,982.00	
Education and Research Fund:			
John Larus Memorial .....	10,000.00		
Other Contributions .....	160.28		
Interest on Fund Assets (on \$20,000 C.D. + Gov't. Plus) ...	12,786.67		
Convention Surpluses Added .....	10,595.41		
Less Grants, 1981 to 1984 .....	3,865.00		
Less Grants in 1985 .....	3,063.46	26,613.90	
Net Worth .....		<u>9,425.44</u>	
<b>TOTAL LIABILITIES</b> .....			<b>\$66,016.95</b>

WELLS KNIERIM, Treasurer  
February 17, 1986

**AUDIT STATEMENT**

The above income statement and balance sheet for the year 1985 were prepared using the cash receipts and disbursement records maintained by the Executive Director. The balances were verified with the bank statement and account statements of the financial institutions indicated. The inventory of publications is shown at cost except that no value is included for surplus ADS publications. In addition to the assets shown, the Society has a substantial library of books on daffodil culture, many of which are rare and valuable, and several colored slide collections. It also has a number of memorial silver trophies awarded at convention shows. The slides, books and trophies were mostly contributed and no value is included.

Dues received in the current year, covering periods beyond the end of the year, were prorated and amounts covering such future periods are shown as a liability as are life memberships.

Receipts for dues and other income were verified with deposit slips and disbursements were checked with suppliers' invoices and cancelled checks signed by the Treasurer and the Executive Director.

Based on this review, it is my opinion that this report presents an accurate statement of the financial condition of the Society and that the records are being maintained in a sound and orderly manner.

JANE A. MOORE, Auditor

## BULLETIN BOARD

### FROM THE PRESIDENT'S DESK

As your new president, I am flattered that I was elected president and humbled by the responsibility the position implies. What can I promise you? Although I would like to promise you a great number of things, wisdom dictates that I only promise you that I will try very hard to live up to the expectations that you may have for me. This is no easy task; however, I will try to do my best.

It has been said that a chain is only as strong as its weakest link. Paraphrasing the preceding, I would like to offer that the American Daffodil Society is only as strong as its most distant member. In a recent letter from an ADS member, I quote the following: "... We have very little contact with the national ADS officers leaving us with the impression that we're on the sidelines." This comment makes me wish that it were possible for me to visit all corners of the nation (and world) where ADS members live in order that I might get to know them all personally. Well, unless my finances greatly improve, that will never happen. However, distance from many of you does not keep me from wondering what are your needs, and what are your thoughts. Let me hear from you. I do want to represent you well. It is in *The Daffodil Journal* that most of you will learn about what is happening in the world of daffodils. Thus, let our new editor, Mrs. Richard Frank, Jr., know what we might be able to add to the *Journal* to help you as you progress in growing daffodils. Our *Journal* is the vehicle through which I began my serious study on daffodils many years ago. I look forward as eagerly today for the *Journal's* arrival as I did when I first joined ADS.

The daffodil has served to bring me into contact with many wonderful people that I would have never gotten to know had I not pursued my interest in daffodils. Let me encourage each of you to be as active in the Society as your situation permits. Attend any shows that may be in your area, and when you do, take a friend with you. Cultivate interest in daffodils in others by sharing freely of what you know. Give that friend a few named cultivars. In so doing, you will be making a positive contribution to ADS by perhaps bringing new members into the Society or by helping that first-year member make that vital decision to renew his/her membership.

In closing, I would like to express my thanks to my predecessor, Mrs. Goethe Link, for her efforts on behalf of the American Daffodil Society. Also, I would like to express my appreciation to Mrs. Paul Gripshover for her tenure of service as Editor of *The Daffodil Journal*.

Ted Snazelle

## DAFFODIL SLIDE RENTAL INFORMATION

"Show Winners for 1985," set #1, is available until November 1, 1986, and "Show Winners for 1986" will be available after December 1, 1986. Set #13, American Hybridizers, will be withdrawn from the shelf due to lack of interest and the slides used to a better advantage. A new set of Mitsch cultivars has been offered to the library by Grant's family and this will be a great addition to the ADS slide library.

Please place ADS slide rental requests for August, September, October, and November usage before July 15, 1986, to avoid disappointment. Due to extended travel plans, the Photography Chairman will not be able to ship slides from August 1 until November 15. It is my hope that this will cause no serious program problems.

All sets are updated and upgraded as newer cultivars and better slides are available. Daffodils in landscapes and floral arrangements would be most appreciated as these are hard to come by. Also new daffodil introductions seem to be ever in demand and in short supply. Remember all slides donated are a tax deduction.

An outstanding set of 56 slides was donated by Harold Cross with taped commentary titled, "Breeding Double Daffodils". This would make an excellent program for the serious and interested hybridizers.

MRS. KELLY SHRYOC, Chairman

## NOTICE

The RHS book, *Daffodils 1985-86*, arrived minus the insert of newly registered daffodil names. If you purchased the book and want the list, please write to the Executive Director requesting a copy.

## DAFFODIL TOURS

I am interested in organizing a tour, of approximately two weeks duration, in May, 1987, to visit flower shows, botanical gardens, and daffodil hybridizers in the Soviet Union. We would visit major flower shows in Moscow and Leningrad, and meet some of the leading Soviet daffodil hybridizers in Riga, the capital of Latvia and center of the daffodil industry in the Soviet Union. If you would be interested, or would like further information, please contact Carol Sisson Regehr, 1001 Colorado, Manhattan, KS 66502.

The Tasmanian Daffodil Council is planning "Daffodils 88 Down Under," for September, 1988. The "Tasvention" will be held September 6-21. More information can be had from Harold Cross, 254 Geilston Bay Road, Geilston Bay, Tasmania 7015, Australia.

## FROM THE EDITOR'S DESK . . . THE OLD . . .

Well, here I sit with mixed emotions. I'm going to miss editing the *Journal* each quarter, and yet I know that it's time for me stop. It will be good for the *Journal*, too. After eight years, a fresh perspective is certainly in order.

There are so many of you who have helped make the *Journal* so successful—authors, photographers, artists, friends whom I've called on at the last minute, saying, "Help! I need an article and the deadline was last week!" You know who you are, and I thank you, each and every one. Thanks, too, to the good folks at Williamson Sales and Printing who have been so helpful in physically getting the *Journal* printed. And I would be remiss if I didn't thank those of you who took the time to write when you particularly enjoyed an issue—you made it all worthwhile.

These last eight years have been memorable; I've made some very good friends. I thank the Society for allowing me to serve as editor, something which I have so thoroughly enjoyed.

MARY LOU GRIPSHOVER

## . . . AND THE NEW

From time to time, all of us must face change. At the present, ADS is faced with one. We will miss Mary Lou's sure guidance in the back room of *Journal* manufacture, and wish for her fun and joy as she takes up whatever new challenge. (More hybridizing?) Thank you, Mary Lou, for all the good things you have done for us.

The distinction that the *Journal* has had over the last eight years can be continued, but it will depend entirely upon the material that the members choose to submit. With the wide geographical area which we encompass, it is impossible not to have different ways to achieve similar results. Methods from one region can be adapted by another, but someone must make a report. Is your daffodil society the oldest? Tell how you have changed and continue to grow. Is yours a new group? Tell us how you are starting. Need help? Ask a question. Found a way to kill fly? Share the news.

In the past, the *Journal* has had articles dealing with soil, stripe, and seeds; growing, showing, and judging; people, places, and classes. Now is no time to stop. As the new editor of the *Journal*, I look forward to your input because this *Journal* is yours to write, read, and share. The ultimate quality of this quarterly rests squarely in your hands. Please nurture it as tenderly as you deal with your harbingers of spring—daffodils, not birds.

KITTY FRANK

# AMERICAN DAFFODIL SOCIETY, INC.

## BOARD OF DIRECTORS 1986-87

President: Dr. Theodore E. Snazelle, 418 McDonald Dr., Clinton, MS 39056  
First Vice President: Mrs. Marvin V. Andersen, 7 Perth Drive, Wilmington, De 19803  
Second Vice President: J. S. Romine, 2065 Walnut Blvd., Walnut Creek, CA 94596  
Secretary: Ms. Marilyn J. Howe, 11831 Juniette, Culver City, CA 90230  
Treasurer: Mrs. P. R. Moore, Jr., 16 Maple Ave., Newport News, VA 23607

## REGIONAL VICE PRESIDENTS

New England: Mrs. Wellington Wells, RFD Box 308, Marlborough, NH 03455  
Northeast: W. R. Mackinney, 535 Woodhaven Rd., West Chester, PA 19380  
Middle Atlantic: Mrs. Edward H. Ould, III, 4704 John Scott Dr., Lynchburg, VA 24503  
Southeast: Mrs. Jaydee Ager, Rt. 1, 115 Chris Dr., Hawkinsville, GA 31036  
Midwest: Mrs. Neil Macneale, 524 Abilene Trail, Cincinnati, OH 45215  
Southern: Mrs. Wayne Anderson, Rt. 3, 2668 Byhalia Rd., Hernando, MS 38632  
Central: Michael L. Heger, R.R. 1, Box 64, Waconia, MN 55387  
Southwest: Mrs. James K. Kerr, 3920 Cobblestone Dr., Dallas, TX 75229  
Pacific: Robert L. Spotts, 3834 LaColina Rd., El Sobrante, CA 94803

## DIRECTORS AT LARGE

1987: William G. Pannill, P.O. Box 5151, Martinsville, VA 24112  
1987: William H. Roese, 903 Amberley Place, Santa Maria, CA 93454  
1988: Mrs. R. H. Barnes, 518 State St., Natchez, MS 39120  
1988: Joseph Stettinius, 311 Oak Lane, Richmond, VA 23226  
1989: Mrs. J. Abel Smith, Orchard House, Letty Green, NR Hertford, SG14 2 NZ England  
1989: Mrs. Wynant Dean, 1629 Cowling Ave., Louisville, KY 40205

## REGIONAL DIRECTORS

### New England Region

1987: Mrs. Richard M. Turner, R.D. 1, Mt. Hygeia Rd., Foster RI 02825  
1988: Mrs. Robert J. Mrak, RFD 2, Evans Road, Durham, NH 03824  
1989: Mrs. Charles H. Anthony, "Moorings," Noyes Neck Rd., Weekapaug, RI 02891

### Northeast Region

1987: Mrs. R. Kenneth Fairman, 88 N. Stanworth Dr., Princeton, NJ 08540  
1988: Mrs. Joseph Dickenson, 980 Leidig Drive, Chambersburg, PA 17201  
1989: Mrs. Johannes Krahmer, 2201 Kentmere Pkwy., Wilmington, DE 19806

### Middle Atlantic Region

1987: Mrs. Thomas W. Smith, 1800 Greenspring Valley Rd., Stevenson, MD 21153  
1988: Miss Delia Bankhead, 489 Arnon Meadow Rd., Great Falls, VA 22066  
1989: Mrs. J. Raymond Moore, 904 Applewood Lane, Baltimore, MD 21212

### Southeast Region

1987: Mrs. Herman P. Madsen, Rte. 1, Box 53, Black Mountain, NC 28711  
1988: Mrs. Jack Yarbrough, 3700 Thaxton Rd., S.W., Atlanta, GA 30331  
1989: Willis Wheeler, 2902 N.W. 13th Court, Gainesville, FL 32605

#### Midwest Region

1987: Mrs. William Pardue, 2591 Henthorne Rd., Columbus, OH 43221

1988: Donald Sauvain, 1400 E. Hillside Dr., Bloomington, IN 47401

1989: Ms. Evadene Holyoke, 608 S. High St., Yellow Springs, OH 45387

#### Southern Region

1987: Mrs. Raymond Roof, 2015 Lone Oak Rd., Paducah, KY 42001

1988: Mrs. Orville Nichols, 11119 College Rd., Olive Branch, MS 38654

1989: Mrs. Harold Stanford, Rt. 3, Box 213 Lebanon, TN 37087

#### Central Region

1987: J. Donald Frantz, 2905 Gilmore Ave., Des Moines, IA 50312

1988: K. H. Beach, P.O. Box 13246, Edwardsville, KS 66113

1989: Mrs. Carol Sisson Regehr, 1001 Colorado, Manhattan, KS 66502

#### Southwest Region

1987: Mrs. Bert Pouncey, Jr., Hughes, AR 72348

1988: Mrs. J. C. Dawson, 367 Donaghey Ave., Conway, AR 72032

1989: Mrs. Jesse Cox, 228 Daffodil Lane, Hot Springs, AR 71901

#### Pacific Region

1987: Mrs. A. Eugene Cameron, 410 S. Paseo Estrella, Anaheim Hills, CA 92807

1988: Mrs. Richard Havens, Rt. 1, Box 149, Hubbard, OR 97032

1989: Robert E. Jerrell, 162 Crestview Dr., Orinda, CA 94563

### ADS COMMITTEE CHAIRMEN

Awards: Mrs. Hubert Bourne, 1052 Shadyhill Dr., Columbus, OH 43221

Breeding & Selection: Dr. William Bender, 533 S. Seventh St., Chambersburg, PA 17201

Classification: Mrs. Walter Thompson, 2907 Southwood Rd., Birmingham, AL 35223

Data Bank: Dr. Tom D. Throckmorton, 1200 Pleasant St., Des Moines, IA 50308

Editor of Journal: Mrs. Richard Frank, Jr., 1018 Stonewall Dr., Nashville, TN 37220 (effective with the September issue)

Library: Mrs. W. D. Owen, 4565 Rheims Pl., Dallas, TX 75205

Membership: Mrs. R.L. Armstrong, Rt. 5, Box 26, Covington, VA 24426

Miniatures: Mrs. William Mackinney, 535 Woodhaven Rd., West Chester, PA 19380

Photography: Mrs. Kelly Shryoc, 2933 Owenwood Rd., Fort Worth, TX 76109

Publications: David Karnstedt, 1790 Richard Circle, West St. Paul, MN 55118

Public Relations: Charles Wheatley, P.O. Box 150, Mongo, IN 46771

Registration: Mrs. Kenneth Anderson, 4810 Palm Dr., LaCanada, CA 91001

Research, Health & Culture: Julius Wadekamper, 10078 154th Ave., Elk River, MN 55330

Round Robins: Mrs. F.C. Christian, 1600 Westbrook Ave., Apt. 107, Richmond, VA 23227

Schools & Judges: Mrs. James Liggett, 4126 Winfield Rd., Columbus, OH 43220

Show Reporter: Mrs. Herman McKenzie, 1018 Birchwood Rd., Jackson, MS 39206

Test Garden & Wister Award: Mrs. Nancy Whitlock, Rt. 3, Box 239, Berlin, MD 21811

Past President: Mrs. Goethe Link, Box 84, Brooklyn, IN 46111

## EXECUTIVE DIRECTOR

Miss Leslie Anderson, Rt. 3, 2302 Byhalia Rd., Hernando, MS 38632

## NOMINATING COMMITTEE

Chairman, Mrs. W. Lee Wiley, Pennsylvania; Mrs. Cathleen Riley, Connecticut; Mrs. W. D. Owen, Texas; Mrs. Raymond Roof, Kentucky; Mrs. William Roese, California.

## EXECUTIVE COMMITTEE

Dr. Theodore Snazelle, Mrs. Marvin Andersen, J. S. Romine, Ms. Marilynn Howe, Mrs. P. R. Moore, Jr., Mrs. Goethe Link, and Mrs. Richard Frank, Jr.

## COMING EVENTS

April 23-25, 1987	ADS Convention, Columbus, Ohio
April, 1988	ADS Convention, Washington, D. C.
March, 1989	ADS Convention, San Francisco, CA

---

## TISSUE CULTURE AND THE MICROPROPAGATION OF DAFFODILS (1)

### II. RESULTS

MARTIN C. MATHES

*Professor of Biology*

*College of William and Mary*

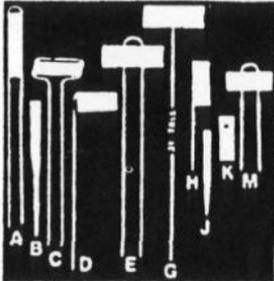
*Williamsburg, Virginia*

Research dealing with isolated plant tissues was indirectly suggested as early as 1838 by Schleiden and Schwann, who recognized the cellular basis for living systems. Their postulation that cells were capable of autonomous growth was followed by a series of investigations of the process of plant wound healing and the associated production of a mass of cells (callus). The work of Reehinger (1893), who investigated the growth of sub-divided plant parts, was focused by Haberlandt in 1902. His vision projected the potential of plant cells to produce whole plants from isolated cells and provided insight into the production of embryos without

- (1) This study was funded by a grant by American Daffodil Society. Technical assistance was provided by Barbara Wallace. The cooperative efforts of T. H. Banko, John Berryman, Frank Perkins, and Diane Gerlach are gratefully acknowledged.

sexual fusion. Haberlandt used simple nutrient solutions and reported his conclusions using single cells isolated from diverse sources. His attempts to create an artificial chemical environment for plant tissues lead to the formulation of tissue culture media and the delineation of conditions which were required to support the continued division isolated plant cells. The experiments of White (1934) using sterile technique and complex media demonstrated that isolated plant parts (tomato roots) could be grown for an unlimited period. Further investigations showed that a complex medium additive, yeast extract, contained certain B vitamins which were required for active, sustained root growth. The elimination of the yeast extract and the incorporation of appropriate vitamins produced the first totally defined chemical medium for the growth of plant tissues. At the same time, Gautheret was investigating the factors required to maintain cambial cells in culture. He incorporated the findings of West and Nobecourt in a report dealing with the cultivation of isolated carrot cambial cells in media containing a plant hormone (auxin). The auxin (IAA-indoleacetic acid) was shown to induce the proliferation of isolated cells in culture. In 1957, Skoog and Miller isolated and characterized a chemical substance which was involved in the control of all division. These materials (cytokinins) were shown to be hormones which could, in combination with auxins, also control the process of organ differentiation to form roots or shoots from isolated plant tissues. As a result of these investigations, it was possible to alter the ratio of auxin to cytokinin and selectively control the direction of development to produce either roots or shoots or undifferentiated callus. These chronological discoveries clearly illustrated that the cells of isolated plant tissues were totally-potent in the presence of chemically defined media containing inorganic ions, hormones, and an energy source. The production of large numbers of vegetatively produced plants under controlled conditions has opened a new revolution in plant biology. The statement of Haberlandt that "the technique of cultivating isolated plant cells solutions permits the investigation of important problems from a new experimental approach" has continued to be a heuristic paradigm.

**THE PERMANENT METAL LABEL**



A—Hairpin Style Markers .....	30 for \$7.65
B—Plant/ Shrub Labels .....	100 for \$6.30
C—Cap Style Markers .....	30 for \$8.10
D—Swinging Style Markers .....	30 for \$6.50
E—Rose Markers .....	30 for \$7.20
F—Tall Display Markers .....	30 for \$10.15
G—Tall Single Staff Markers .....	30 for \$7.45
H—Flag Style Markers .....	30 for \$6.15
J—Small Plant Labels .....	100 for \$6.30
K—Tie-On Labels .....	100 for \$7.40
M—Miniature Markers .....	30 for \$6.10

**PAW PAW EVERLAST LABEL COMPANY**

P.O. Box 93-S
Paw Paw, Michigan 49079-0093

Quantity Prices Available
Postage Prepaid

Experimental results, using tissue samples from a wide variety of species and locations within the body, have reinforced the premise that any plant cell (including protoplasts—without a cell wall and pollen grains) which is capable of division may also differentiate to form small plants. Researchers must “simply” find the chemical and environmental “keys” to allow the total expression of the full developmental potential of plant cells to produce a large number of plantlets in a tissue culture system.

The propagation of daffodils occurs as a result of the natural production of daughter bulbs. According to Rees (1) this slow multiplication, at a rate of approximately 1.6 bulbs per annum, requires 16 years to produce 1000 bulbs. Initial attempts to increase the rate of bulb multiplication involved subdivision to produce bulb segments which produced bulbils. Propagation by leaf cuttings and additional methods of asexual reproduction, including cross-cutting, have been shown to be relatively slow (Stone, 2). The efficiency of multiplication can be increased by planting vertically divided bulb segments. Alkema (3, 4) and Tompsett (5) further sub-divided the segments into small twin-scales containing a conjoining portion of the basal plate. General procedures involved in the current twin-scale method have been reviewed by Hanks and Rees (6). They listed varietal differences in the production of bulbs from twin-scales derived from one large bulb in the first season—Golden Harvest (21.0), King Alfred (23.9), Magnificence (25.5), Fortune (47.8), Carlton (59.0), and Grand Soleil d’Or (61.6). The factors affecting the rates of production of bulbs from twin-scales were also investigated by Hanks and Rees (7). Stone, Brunt and Hollings (8), using the method of Everett (9), explored the methods, logistics and problems in the production, distribution and use of virus-free clones of *Narcissus tazetta* cv. Grand Soleil d’Or. This “chipping” technique was used to produce virus-free foundation clones of more than twenty major narcissus cultivars. A comparison of the approximate multiplication rates of field and grown twin-scaled bulbs is shown in Table 1. The advantages of the twin-scale procedure include a lack of complexity and the use of inexpensive materials.

The potential for significant increases in the multiplication rate of daffodil bulbs has been examined using tissue culture techniques in programs designed to produce a large number of clonal plants in a relatively short time. The formulation of media (Table 2) by Murashige (10) and extensive research has led to the delineation of factors which influence the development of plant tissues in a controlled environment. A number of publications have described a typical tissue culture laboratory, associated equipment, and media components used to grow explants from a wide variety of plants (daffodil, Mathes - 11). In 1975 Hussey (12) reported the production of daffodil plantlets using a modified twin-scale technique in a tissue culture system. Seabrook, Cumming, and Dionne (13) investigated the induction of roots and shoots on narcissus tissue. They used cold treated bulbs (6-8 weeks at 11°C), including Chinese White, Forerunner, Fortune, Grand Soleil d’Or, King Alfred, Lord Nelson, and Mount Hood, as a source of explants. Small samples from leaf

Table 1 - A comparison of the bulb multiplication rates obtained using a variety of methods.

Investigator	Plant Part	Tissue Culture System Conditions	Propagation Rate/Bulb	Conditions Before Planting	Field Growth	
					Total Time Required for Flowering	Size Bulbs
Hanks and Rees (7)	Twin Scale	-	1000 bulbs	-	6-7 years	
Rees (1)	Bulb	-	1000 bulbs	-	Approximately 16 years	
Seabrook (13)	Leaf Base Section	10 mg/1 BAP and 1.0 mg/1 NAA	2620 Plantlets	-	-	
Hussey (12)	Basal Plate Region	2-16 mg/1 Bap 0.25-4 mg/1 NAA	500-2000 Bulbils	10 weeks at 5°C	5 years	
Hosoki and Asahira (14)	Flower Stalk	5 mg/1 BAP 1 mg/1 NAA	140 Bulbs	0.1 mg/1 NAA	(Established in soil approximately 4 months after explanting)	
Steinitz and Yahel (16)	Twin-Scale Base	Dark 5 gr/1 Activated Charcoal 10 mg/1 BAP 1 mg/L NAA	200-300 Bulbils	Half Strength Medium 18°C 0.1 mg/1 NAA	(Established in soil approximately 8 months after explanting)	

Table 2 - Daffodil Tissue Culture Media (miligrams/liter)

Chemical	Murashige and Skoog Salt base (10)	Hosoki and Asahira (14)	Seabrook (13)	Hussey (12)	Steinitz and Yahel (16)
$\text{NH}_4\text{NO}_3$	1650.00	+	+	+	+
$\text{KNO}_3$	1900.00	+	+	+	+
$\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$	330.00	+	440.00	+	+
$\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$	181.00	+	370.00	+	+
$\text{KH}_2\text{PO}_4$	170.00	+	-	-	+
FeNaEDTA	36.00	+	37.25	+	+
$\text{H}_3\text{BO}_3$	6.2	-	+	+	+
$\text{MnSO}_4 \cdot \text{H}_2\text{O}$	16.90	-	22.300	+	+
$\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$	8.60	-	+	+	+
KI	0.830	-	+	+	+
$\text{NaMoO}_4 \cdot 2\text{H}_2\text{O}$	.250	-	+	+	+
$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$	.025	-	+	+	+
$\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$	.025	-	+	+	+
$\text{NaH}_2\text{PO}_4 \cdot \text{H}_2\text{O}$	-	-	300.00	300.00	-

bases ( $2 \times 10$  mm), inverted scape segments ( $3 \times 3$  mm) and, subdivided ovaries produced shoots in culture. The culture medium (modified Murashige and Skoog salt base (10)—Table 3 containing 10 mg/liter of cytokinin (6-benzylaminopurine—BAP) and 1.0 mg/liter of auxin (naphthalene acetic acid—NAA) resulted in the formation of shoots. More than 2500 shoots were produced from two leaf base sections after five months of culture. Optimal cv. Lord Nelson growth of shoots following the initiation of shoots, was obtained in the presence of 2 mg/liter of cytokinin (BAP) and 0.05 mg/liter of auxin (NAA) while root production was promoted on one-half strength nutrient medium (MS), vitamins, sucrose, and no growth regulators. Callus tissue was formed in the presence of high auxin (NAA) levels (15-25 mg/liter). Free cells, in liquid shake cultures, were obtained in the light or dark using medium containing 1 mg/liter of BAP and NAA. This work very clearly demonstrated the magnitude of the

Table 3 - Additives to Basal Salt Daffodil Tissue Culture Media (mg/liter)

	Murishige and Skoog Minimal Organics (10)	Hosoki and Asahira (14)	Seabrook (13)	Hussey (12)	Steinitz and Yahel (16)
NAA (variable)	-	1	-	0.5	1.0
BA (variable)	-	5	-	-	10.0
Thiamine	0.40	-	0.50	1.0	-
Myoinositol	100.00	-	+	+	-
Pyridoxine	-	-	1.00	5.0	-
Nicotinic Acid	-	-	5.00	5.0	-
Glycine	-	-	2.00	2.0	-
Adenine sulphate	-	-	160.00	100.00	-
Casein hydrolysate	-	-	1000.00	-	-
<hr/>					
Sucrose	-	20.0 gm	30 gm	30 gm	30 gm
Agar	-	7.0 gm	-	8 gm	8 gm
Activated Charcoal	-	-	-	-	5 gm
<hr/>					
Conditions:					
<hr/>					
Temp:		27 + 2°C	25°C		25°C
Light		4000 lux 16 hr day	300 t.c. cool water flourescent 16 hr day	6000 lux 16 hr day	Dark or 16 hr light day
pH		5.6	5.5 + .01	5.7	5.7
<hr/>					

propagation potential of a variety of tissues isolated from daffodils. The *in vitro* propagation of *Narcissus* was confirmed by Hosoki and Asahira (14). Buds were produced from ovaries, leaves and young flower stalks on media (Table 3) containing 5 mg/liter BA plus 1 mg/liter NAA. Roots were produced when elongating shoots were transferred to a medium containing only auxin (0.1 mg/liter NAA). Plantlets of *Geranium* and *Fortune* were established in vermiculite. Hussey, (15) in a comprehensive study, outlined the potential advantages of using tissue cultures for rapid propagation and reported the results of basic research dealing with the sequential development of narcissus shoots. The results confirmed that multiple shoots can be induced on leaf scale and stem tissues from flowering size bulbs. A wide range of cytokinin (BAP-6 benzlamino-purine 2-16 mg/liter) and auxin (NAA 0.25-4.0 mg/liter) concentrations resulted in the differentiation of shoots. Shoots were found to originate in actively dividing cells associated with two superficial layers in the area of the basal plate. Bulbs from Barrett Browning, Carlton, Sempre Avanti, Invergowrie, Fortune, Hollywood, Pink Smiles, Scarlet O'Hara, and Golden Harvest were used. A recent report by Steinitz and Yahel (16) further explored the development of daffodil tissue cultures. Twin-scale bases were cut from *Narcissus tazetta* cv. Grand Soleil d'Or and placed in the dark on Murashige and Skoog medium containing activated charcoal 10 mg/liter BA and 1 mg/liter NAA. Bulblet formation, promoted by the addition of activated charcoal, was associated with the basal plate which conjoined the scale-bases. Bulblet differentiation which did not require the addition of growth regulators, was optimal in the dark in the presence of activated charcoal auxin and cytokinin. Root production was obtained in the light at 18°C. The number of plantlets was further increased by incubating the halves of longitudinally culture-derived bulblets. Plantlets with an established root system and at least two roots, were transferred directly to the soil in open field plots (80-90% survival rate).

Our experience with daffodil explants from a range of varieties and plant parts has confirmed the results of Steinitz and Yahel (16) using small twin scales, (approximately 10 × 15 mm). Bulbs were prepared using standard methods for the surface sterilization of explants. Large, healthy bulbs (Goldent Harvest, Binkie, or Paperwhite) were trimmed to remove dry outer scales and surface sterilized in 1% sodium hypochlorite (20% chlorox) for 15 minutes. Using aseptic techniques, the whole bulbs were cut transversely, the upper two-thirds discarded and the lower portion sub-divided into 4 (8 or 16—depending on the size of the bulb) sections. Each section was trimmed to produce uniform (40-60 per average size bulb) twin-scale based plate sections. After each step the sections were immersed in sterile distilled water in order to reduce oxidation at the outer surfaces. The trimmed sections were immersed for an additional two minutes in the hypochlorite solution and the explants were placed on the surface of medium solidified with (0.8%) agar. The medium (Table 4) was autoclaved (15 minutes at 120°C) and placed in snap-top vials (approximately 15 ml in 60 × 100 mm) at 25-27°C in the light (1000 ft in cool-white

fluorescent light at a 16 hour photoperiod) or dark. Two explants were placed in each container and the cultures were placed in clear-plastic shoe boxes in order to reduce moisture loss during the incubation period. Using this procedure, minimal contamination (less than 5%) was obtained. A series of experiments involving the amount of charcoal, incubation conditions, and various types and concentrations of hormones confirmed the development of bulblets on Murishige and Skoog medium with 30.0 grams sucrose, 8.0 grams agar and 5.0 grams of activated charcoal which was supplemented with 10.0 mg per liter of benzyladenine (BA) and 1.0 mg per liter of naphthalene acetic acid (Figure 1). The size of bulblets (approximately 200 from/bulb in about 8 months) was increased by the addition of 5.0% coconut milk (heated to 60°C, cooled and filtered before addition). Addition of 1.0 ppm 2,4-D (2, 4-dichlorophenoxyacetic acid) inhibited bulblet formation and promoted unorganized callus development. Callus tissue transferred to medium in the absence of growth regulators resulted in the production of a mass of very short, thick roots which were covered with root hairs. These roots produced chlorophyll in the light but did not produce shoot primordia. The production of normal, actively growing roots by isolated bulblets was promoted by the addition of 0.2 ppm NAA at 18°C in the light. These conditions resulted in the establishment of a root system by approximately 70% of the bulblets. The results, using Golden Harvest grown on Steinitz medium containing 5.0% coconut milk, 10.0 ppm benzyladenine and 1.0 ppm naphthalene acetic acid (Table 4) show a wide range of bulblet formation in the light (16 hour

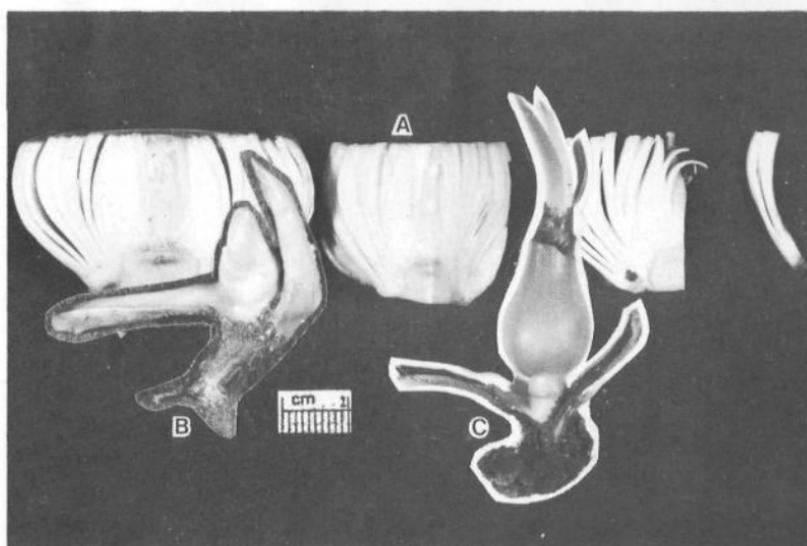


Figure 1.

The experimental sequence showing the method of twin-scale excision and the formation of bulblets between the scales.

photoperiod). Explants, grown on this medium for two months, were transferred to Steinitz medium containing 0.2 ppm naphthalene acetic acid and incubated at 18°C in the light. Certain bulblets formed extensive root systems (Figure 2) while others formed numerous small bulblets (Figure 3). The growth of narcissus explants at lower temperatures will be further investigated. Table 4 contains a summary of the conditions used in a selected variety of daffodil tissue culture systems. Additional experiments were designed to duplicate the results of Seabrook (13), who obtained plantlets from callus initially grown on medium containing 1.0 ppm 2, 4-D and transferred to shoot-inducing medium. Initial experiments with suspension cultures, grown on 1.0 ppm 2, 4-D, have not resulted in the production of shoots or bulblets. Daffodil tissue cultures, utilizing 2, 4-D liquid cell suspensions to produce a mass of callus, could be exposed to a toxin produced by pathogens such as narcissus fire (19) or basal rot (20). Cells which grew in the presence of the toxin could produce shoots or plantlets and may result in disease resistant daffodil varieties.

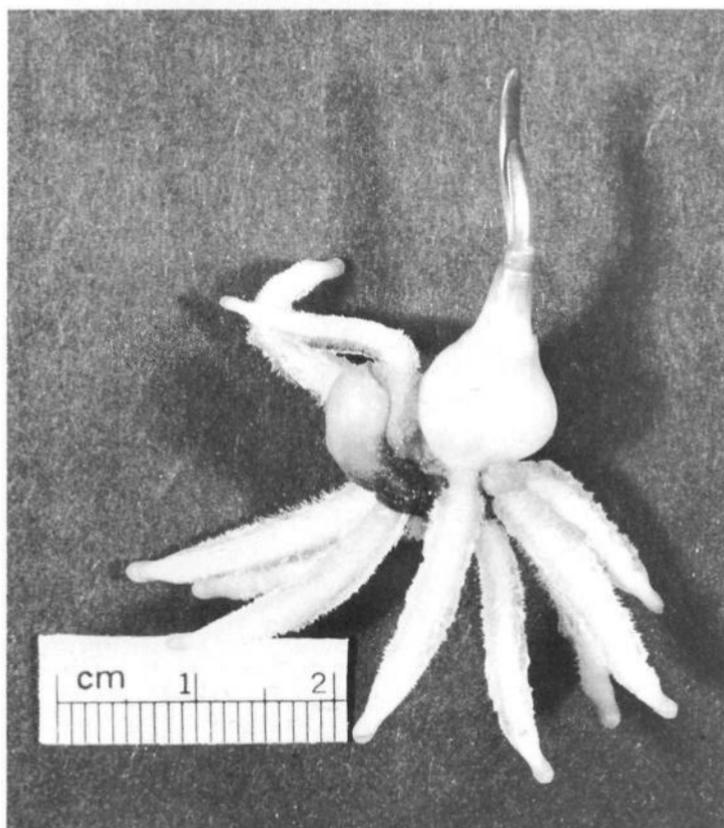


Figure 2.

Golden Harvest bulblet which illustrates an extensive root system formed on root inducing medium in the light (16 hour photoperiod) at 18°C. Photographed ten months after explant isolation.

Table 4 - The production of daffodil plantlets in tissue culture systems.

Investigators	Medium Components	Explants	Shoot Formation	Root Formation	Light Conditions	Culture Container
Steinitz and Yahel (16)	MS 30 gr sucrose/1 8 gr agar/1 5 gr AC/1	Twin Scales 5 x 10 mm 50/60 per Bulb	BA-10 ppm NAA-1 ppm (bublets)	$\frac{1}{2}$ strength MS 18°C NAA-.1 ppm	Light Repressed Regeneration and Growth	Tubes 25 x 100 mm 1 explant per tube with 10 ml medium
Hosoki and Asahira (14)	MS Ringe Nitsch (17) Minor Elements 20 gr sucrose/1 7 gr agar/1	1 mm Flower Stalk Ovary Leaf Sections	BA-5 ppm NAA-1 ppm (buds)	NAA-1 ppm	16 hours Cool white Flourescent 4 k. lx.	Tubes 20 x 200 mm 20 ml medium
Seabrook (13)	MS Ziv Minor Elements (18) 6 gr agar/1 30 gr/1 sucrose	Flower Stalk Ovary Leaf Base. 2 x 10 mm	BA-10 ppm NAA-1 ppm	$\frac{1}{2}$ strength MS No growth Regulators	16 hours 300 ft. c. Cool white Flourescent	6 oz. culture Bottles

Hussey (15)	MS with KH PO <sub>4</sub> Replaced with NaH PO <sub>4</sub> 30 sucrose/1 Casein Hydrolysate	Twin Scales 2.3 x 8-10 mm	BA-2 to 16 ppm NAA-0.25 to 4.0 ppm	BA-.25 ppm IBA-2.0 ppm	16 hours 6 k. lx.  Fluorescent	30 ml screw- Topped poly- styrene tubes 10 ml medium
Mathes (11)	MS 30 gr suc- rose/1 8 gr agar/1 5 gr AC/1 5% coconut milk	Twin Scales 15 x 20 mm 40-60 per Bulb	BA-10 ppm NAA-1 ppm 5% coconut milk	MS- $\frac{1}{2}$ Str. 18°C NAA-0.2 ppm Light	Dark for Bublet Production Light for continued growth 1000 ft. c.	100 mm Snap-top Jars 15 ml medium 3 explants per container

Abbreviations:

MS- Murashige and Skoog Medium (10)

AC- Activated charcoal

k. lx.- kilolux

ft. c.- foot candles

IBA- indolebutgic acid

BA- benzyl adenine

NAA- naphthaleneacetic acid

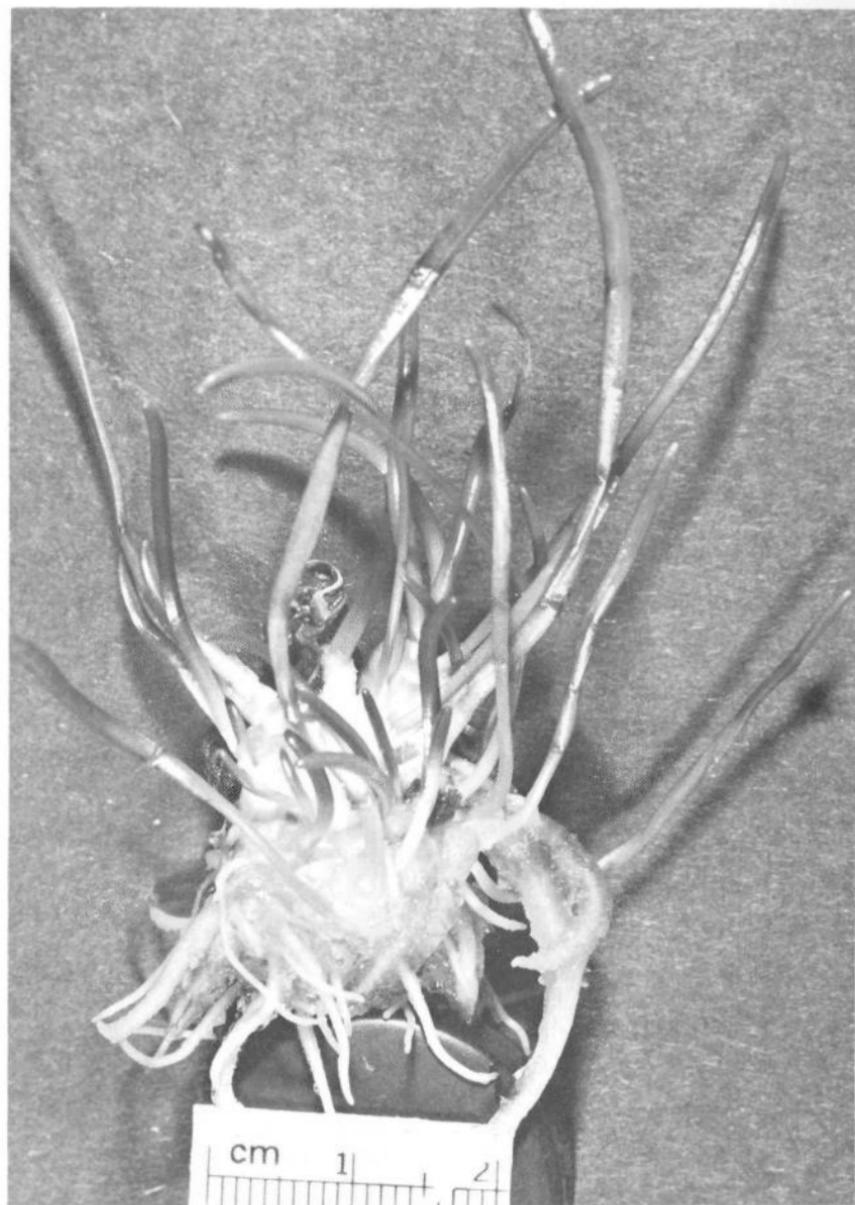


Figure 3.

Multiple (23) bulblet formation from a Golden Harvest bulblet grown on root inducing medium in the light (16 hour photoperiod) at 18°C. Photographed ten months after isolation.

The controlled differentiation of relatively large numbers of daffodil bulblets in a short time is a routine accomplishment which has been attained in a number of laboratories. After the establishment of a root system, the bulblets are usually cold-treated and placed in a peat mixture for further hardening and growth. We are currently evaluating the use of Oasis trays covered with clear plastic domes and a hydroponic system to stimulate the rapid growth of small bulblets.

Small bulblets were excised from the original twin-scale explant, (Figure 2) or from small clumps of bulblets (Figure 3), and placed in split Oasis blocks (Figure 4) enclosed in a clear plastic dome (21) and irrigated with a complete hydroponic nutrient solution (22) containing trace elements (10-8-22). Initial results have shown active root and leaf growth. The methods employed in the tissue culture laboratory (11) and the results obtained using a range of daffodil explants have emphasized the potential of these techniques in the efficient propagation of daffodils, the elimination of virus infection from diseased plants and the development of varieties which may be selected for desirable characteristics such as disease resistance.

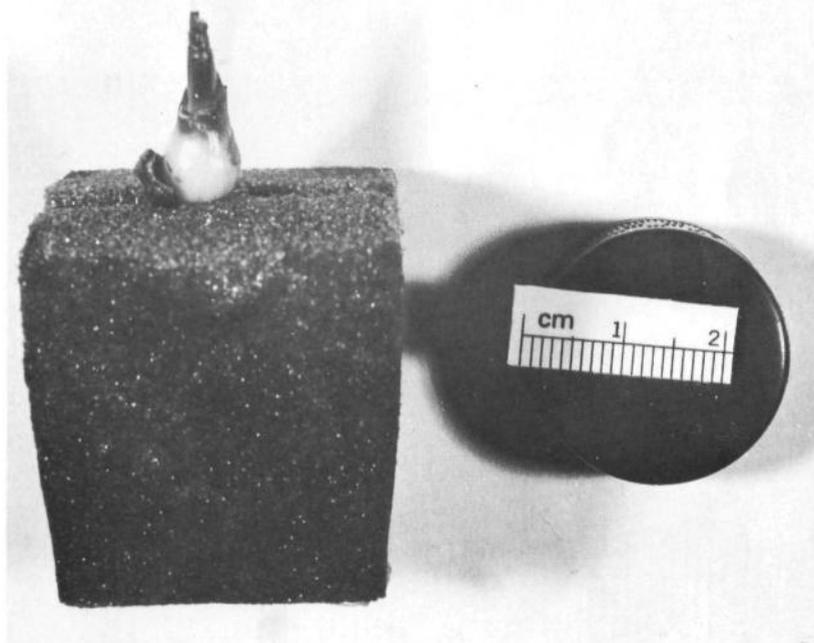


Figure 4.

Isolated Golden Harvest bulblet which was formed by a twin-scale explant. The excised bulblet was grown in a split Oasis block and grown in a complete hydroponic solution.

## References

- 1- Rees, A. R. 1969. The initiation and growth of *Narcissus* bulbs. *Ann. Bot.* 33: 277-288.
- 2- Stone, O. M. 1973. The elimination of viruses from *Narcissus tazetta* cv. Grand Soleil d'Or, and rapid multiplication of virus-free clones. *Ann. Appl. Biol.* 73: 45-52.
- 3- Alkema, H. Y. 1975. Vegetative propagation of daffodils by double-scaling. *Acta Hort.* 47: 193-199.
- 4- Alkema, H. Y. 1970. Vegetative veimenejvuldiging van bolgeuassen. Jaarverslag Laboratoria. Laboratorium vs or Bloembollenonderzoek, Lisse. 1969-1970: 95.
- 5- Tompsett, A. A. 1972. Vegetative propagation of narcissus using bulb dissection techniques. *Daffodils*, pp. 26-29.
- 6- Hanks, G. R. and A. A. Rees. 1979. Twin-scale propagation of *Narcissus*: A review. *Scientia Hort.* 10: 1-14.
- 7- Hanks, G. R. and A. R. Rees. 1978. Factors affecting twin-scale propagation of *Narcissus*. *Scientia Hort.* 9: 399-411.
- 8- Stone, O. M., A. A. Brunt and M. Hollings. 1977. Methods, logistics and problems in the production, distribution and use of virus-free clones of *Narcissus tazetta* cv. Grand Soleil d'Or. *Glasshouse Crops Res. Instit. Ann. Report*.
- 9- Everett, T. H. 1954. *The American Gardener's Book of Bulbs*. New York, Random House.
- 10- Murashige, T. and F. Skoog. 1962. A revised medium for rapid growth and bio-assays with tobacco tissue culture. *Physiol. Plant.* 15: 473-497.
- 11- Mathes, M. C. 1985. Tissue culture and the micro-propagation of daffodils. *The Daffodil Jour.* 21: 153-161.
- 12- Hussey, G. 1975. Totipotency in tissue explants and callus of some members of the Liliaceae.
- 13- Sbrook, J. E. A., B. G. Cumming and L. A. Dionne. 1976. The *in vitro* induction of adventitious shoot and root apices on *Narcissus* (daffodil and *Narcissus*) cultivar tissue. *Can. Jour. Bot.* 54: 814-819.
- 14- Hosoki, T. and T. Asahira. 1980. *In vitro* propagation of *Narcissus*. *HortScience* 15: 602-603.
- 15- Hussey, G. 1982. *In vitro* propagation of *Narcissus*. *Ann. Bot.* 49: 707-719.
- 16- Steinitz, B. and H. Yahel. 1982. *In vitro* propagation of *Narcissus tazetta*. *HortScience* 17: 333-334.
- 17- Ringe, G. and J. P. Nitsch. 1968. Conditions leading to flower formation on excised *Begonia* fragments cultured *in vitro*. *Plant and Cell Physiol.* 9: 639-652.
- 18- Ziv, M., A. H. Halevy and R. Shilo. 1970. Organs and plantlet regeneration of *Gladiolus* through tissue culture. *Ann. Bot. (London)* 34: 671-67.
- 19- Chastagner, G. A. 1983. Narcissus fire: Prevalence, epidemiology and control in western Washington. *Plant Disease* 67: 1384-86.
- 20- Snazelle, T. E. 1984. Daffodil diseases and pests. 3rd International Daffodil Convention, Hamilton, New Zealand.
- 21- Clean Start System, Clear Canopy. Smithers-Oasis, Box 118, Kent, Ohio. 44240.
- 22- Chem-Gro. Hydro-Gardens, Box 9707, Colorado Springs, Colorado, 80832.

## THE DAFFODIL SOCIETY



was established in Britain in 1898 to cater for the needs of all daffodil enthusiasts and now has members in all the countries where daffodils are grown seriously.

The Society issues two publications each year to all members and welcomes contributions from all growers on the complete range of topics.

Minimum membership subscription is £3.00 per annum; overseas members £8.00 for three years (optional); payment by STERLING International Money Order please to:

Hon. Don Barnes, Secretary, 32 Montgomery Ave., Sheffield S7 1NZ, England

Does Your Garden Color End Too Soon?

## Join the NATIONAL CHRYSANTHEMUM SOCIETY

and enjoy colorful blooms until frost.

Your membership includes 5 issues of The CHRYSANTHEMUM. Also free BEGINNER'S HANDBOOK.

Annual Dues \$8.50 Write to:

B. L. MARKHAM  
2612 Beverly Blvd., SW  
ROANOKE, VA 24015

## PEONIES, Queen of Flowers

Spectacular beauty, fragrant endurance unlimited, practically a permanent perennial. Excellent for use in landscape as an accent plant during blooming season, foliage decorative until hard frosts. Peonies—a permanent investment—will bloom for years.

*Join the American Peony Society  
Dues \$7.50 paid annually. Bulletin published quarterly  
Send for list of publications*

AMERICAN PEONY SOCIETY  
250 INTERLACHEN RD., HOPKINS, MINN. 55343



## HEMEROCALLIS (Daylilies)

Enjoy this wonderful flower when your daffodil season is finished. Its long bloom season will greatly expand your garden enjoyment.

Constant improvements in color, size, form and habits insure rapid growth of interest in this fine plant.

Four colorful journals a year filled with informative data on varieties, culture, performance and progress. Many Round Robins open to participation.

ONLY \$12.50 PER YEAR

Join THE AMERICAN HEMEROCALLIS SOCIETY

Joan D. Senior, Secretary DeQueen, Arkansas 71832



## COLONIZATION OF DAFFODILS

HELEN K. LINK, *Brooklyn, Indiana*

For those growers who are fortunate enough to have an orchard or other open areas where there is plenty of sunshine, thought might be given to colonizing clumps of daffodils. The edge of a woods is another area which might be used provided there is sufficient sun to ripen the foliage, and not too many tree roots to interfere with planting and the competition for nourishment.

Since the daffodil makes its growth during the rainy season in most areas, and matures before the hot, dry summer begins, it is an ideal plant for spring color in the landscape.

Not all cultivars are adaptable to growing well under less than ideal conditions. Many of the newer hybrid cultivars are not as strong as some of the older ones which have survived for many years. I have some old time cultivars which were planted in the sod almost 50 years ago and still produce some small blooms among lots of foliage. They have received no fertilizer in 25 years.

Many years ago I started planting the surplus bulbs in an old apple orchard in drifts among the trees. As the trees died out more drifts were added and dogwood (*Cornus florida*) and redbud (*Cercis canadensis*) trees were planted in clumps to add interest to the terrain. Today I have fifteen acres covered with drifts of my favorite flower.

It is interesting to walk among the drifts to see how many cultivars I can identify. I do not keep a record of where certain cultivars are planted, but usually the name will appear from my memory bank when I study the flowers, especially if the blooms have any particular form or color combination such as Lilac Delight of Bushtit.

Many times when wandering among the drifts, I find blooms which are of show quality, especially if they are not more than five years down. Often they are better than like cultivars grown in the display garden; for instance, many years ago I planted a drift of Bushtit on the south hillside just above the lake, and each year I can gather a blue ribbon vase of three from that drift.

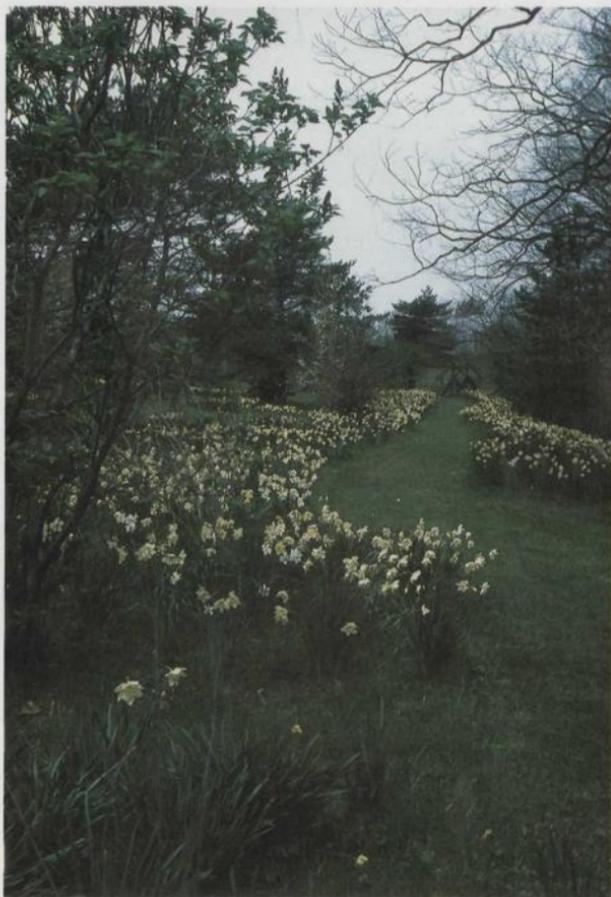
A few years ago I planted a drift of Jet Fire at the edge of the woods in a swail; they lasted only three years. many of the cyclamineus do well and last for years when colonized; some examples are: Beryl, Roger, Perconger, March Sunshine, February Gold, and Little Witch. They are especially appreciated because of the early bloom.

Many of the older trumpets are excellent for their strong, yellow color; examples are: Inca Gold, Golden Riot, Goldcourt, Golden Cockerel, and Arctic Gold. I have never been able to keep King Alfred although I bought it as one of my first cultivars.

The bicolor trumpets (1 W-Y) have not been as prolific in their bloom as some other divisions. Birthright (1 W-W), Preamble, Spitzbergen, and Countess of Stair have stayed with me longer than some of the newer originations.

One large drift of Vigil and another of Panache seem quite content in the sod. Empress of Ireland is another which does well, but blooms are so large that the wind tears the perianth segments badly, and their blooms do not last long.

A number of the older reverse bicolor cultivars have survived several years. Daydream, down about 15 years, still blooms well as do Pastorale and Honeybird.



"In never-ending line" (Link photo)

There are many large cups, too numerous to mention, which make up much of the planting. A few which are old, but still such good bloomers that they deserve mentioning are: Easter Moon, Interim, Festivity, Wahkeena, Ormeau, Golden Aura, Amberjack, Chemawa, Velvet Robe, and Rubra. Easter Moon, down several years, won Best of Show in Indiana recently. Accent disappeared after three years.

From Division 3, Fairy Circle (Brodie, 1913) has made a nice drift. Rockall, Green Jacket, Eminent, Circlet, Perimeter, Montego, and Green Meadows make good late drifts. Reprieve has been especially successful for late blooms.

A number from Division 4 have been colonized over the years, but with little success. Van Sion, planted nearly 50 years ago, blooms only occasionally, and then only as a lopsided, greenish blob. The best of the colonized doubles has been Sweet Music, so welcome at the end of the season, and a fair bloomer. The Cheerfulness group is also very good for late flowers.



Many of the old cultivars from Division 5 have stayed with me for years. Thalia, Shot Silk, Pearly Queen, Moonshine, Lemon Drops, and Yellow Warbler colonize well. Drifts of Thalia and Shot Silk add interest to the landscape, their heads "fluttering and dancing in the breeze".

The jonquilla, both cultivars and species, are very dependable. They flourish in the sod like they do along the roadsides in the deep south. In front of my tractor shed are large drifts of Aurelia, Ripple, Sierra Gold, Hesla, Buttercup, Golden Goblet, and Golden Sceptre. The colonies are long lasting and good bloomers.

Division 8 is one of my favorites for colonizing because most of the cultivars produce beautiful, multiple-flowered heads which make colorful drifts. The division as a whole likes the sod and the fact they are undisturbed once planted. I have a very large drift of Orange Cup, down thirty years, which is magnificent each spring. When this colony was planted, I was very busy and gave my handyman, who was a Sicilian, a basket of bulbs and told him how and where to plant them. The next spring when they bloomed I discovered he had planted them a foot apart in a perfect square. When I asked him why he planted them in a square he told me he had been trained in Sicily for work in a formal garden and that was the way to plant them.

The best cultivars for colonizing from Division 8 are Cragford, Orange Blossom, Orange Cup, Geranium, Laurens Koster, Early Perfection, Matador, Aspasia, Sparkling Eye, Orange Prince, and Irmelin. Silver Chimes grows beautifully when planted deeply, about eight inches.

Division 9 is unique in that so far I have not found any from this division which will not colonize well, although I have not tried some of the very newest cultivars. *N. poeticus recurvus* grows like a weed, and the blooms last well into May.

The species and some of the miniatures have a place in the sod too. The jonquil species seem to thrive on neglect. I have planted drifts around the base of blue bird box posts and they flourish. The pseudo narcissus varieties are also happy in the sod.

About twenty-five years ago, I planted a drift of Mite at the edge of the limb drip of an Austrian Pine tree. I could not get them to grow well in the display garden and decided they needed drastic measures. They have bloomed and multiplied well and have been the source of prize winning vases of three stems for years. I planted surplus bulbs of Tanagra and Wee Bee at the outer limb drip of dogwood trees where they seem perfectly happy.

The split coronas are attention getters in the garden; Hillbilly, Hillbilly's Sister, Evolution, and Gold Collar have thrived on the Oh's and Ah's from the hundreds who visit my garden each spring.

Lastly, a few words about planting bulbs in the sod. Using a broad spade, make two cuts lengthwise and a horizontal cut at each end, then lift back the sod, dig up the dirt in the bottom of hole, remove some to proper depth, sprinkle in about a tablespoon of potato fertilizer (low nitrogen), work into the soil, place a couple of inches of dirt over the fertilizer and set in bulbs. About three to five bulbs can go into the hole depending on the size of bulbs and hole. Bulbs should be six to eight inches deep. A series of holes makes the drift. Bulbs are never dug or fertilized again.

Foliage should not be cut until it has turned yellow, which means after July 4th. I use a tractor with a sickle bar attachment in order to mow well under the limb drip of the trees. The hay is raked and used as mulch under the trees which helps keep down weeds. The turf is mowed as needed until ground freezes. The sod is a fine winter mulch for the bulbs.

---

### SERVICES AND SUPPLIES

#### Slide Sets:

- |  |  |
|--|--|
| 1. Show Winners                          | 8. Classification and Color Coding                         |
| 2. Symposium Favorites                   | 9. Poeticus Daffodils in Present Day Gardens               |
| 3. Novelties and Newer Varieties         | 10. Landscaping with Daffodils                             |
| 4. Daffodil Primer (Garden Club Special) | 11. Artistic Daffodil Designs                              |
| 5. Miniatures                            | 12. Breeding Double Daffodils                              |
| 6. A Survey of Pink Daffodils            | 13. Mitsch-Havens New Cultivars                            |
| 7. Species and Wild Forms                | 14. Today's Seedlings—Tomorrow's Daffodils (Mitsch-Havens) |

Slide rental \$7.50 per set to ADS members, \$15.00, non-members. Confirm dates well in advance. Address all correspondence concerning slides to:

Mrs. Kelly Shryoc, 2933 Owenwood Drive, Fort Worth, Texas 76109  
817-923-2513

---

Membership application forms. No charge.  
ITEMS FOR SALE

Daffodil Pin (tie back, pin back, or ring back) .....	\$8.00
Handbook for Growing, Exhibiting, and Judging Daffodils, 1981 .....	3.50
The Daffodil Handbook, 1966 .....	Paper Cover 4.50
Print-out of Daffodil Data Bank .....	\$15.00; with binder \$20.00
Set of at least 15 numbers of Daffodil Journal (no choice) .....	7.50
Single copies of Daffodil Journal .....	2.00
Journal Binders, \$7.50 East of the Mississippi \$8.50 Canada and West of the Mississippi, \$10.00 Overseas .....	
ADS Approved List of Miniatures, 1985 .....	two 22-cent stamps each.
Show Entry Cards - Large - 500 for \$15.00; 1000 for \$25.00 Miniature - 500 for \$13.00; 1000 for \$18.00	
Daffodils in Ireland .....	\$5.00
RHS Yearbook, Daffodils, 1979 .....	4.25
RHS Yearbook, Daffodils, 1980-81, 1982-83, 1983-84, 1984-85, 1985-86 .....	5.00
Older RHS Yearbooks on Daffodils, 1946, '48, '49, '50, '53, '58, '60, '71 Write for prices.	

Make checks payable to American Daffodil Society, Inc. Prices include postage. Correspondence is invited concerning out-of-print publications on daffodils. Copies of these are sometimes available or names will be placed on want list.

AMERICAN DAFFODIL SOCIETY, INC.