

3. GENETICS AND BREEDING

THIRTY YEARS WITH DAFFODILS

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My first introduction to daffodils was in 1921 when we moved from Massachusetts to Maryland. There was growing on the place that we rented a half dozen varieties including EMPEROR, EMPRESS, BARRII CONSPICUUS, VON SION, and two small Leedsii. In 1925, just before the quarantine on *Narcissus* and other plants was made effective by the Federal Horticultural Board, I imported from Holland 5 or 10 bulbs each of 47 popular varieties including 8 species. The only ones remaining here are EMPRESS, MAXIMUS, SIR WATKIN, WILL SCARLET, BEATRICE, ELVIRA, BARRII CONSPICUUS, *N. bulbocodium conspicuus*, *N. cyclamineus major*, *N. triandrus albus*, *N. jonquilla*, and *N. odorus rugulosus*, all of which have been growing in the grass for many years. The others have been superseded by better varieties and few, if any, are now grown commercially.

The late Dr. David Griffiths suggested that I do some crossing and produce varieties better adapted to American conditions than many of those then grown. I got some experience in hybridizing in 1926 but no daffodils that were better than their parents. From KING EDWARD x BERNARDINO in 1927 and from ALBATROSS x MRS. ROBERT SYDENHAM I obtained two very good flowers with some red or pink in the crowns.

I imported each year under special permit for breeding a half dozen or more of the best new varieties that I could afford to buy. This new blood began to tell and, as I made many crosses each year, I obtained a few very good things. Until I quit hybridizing in 1947 I had made several thousand crosses, produced more than 60,000 seedlings of which 60 were named and introduced.

The most valuable parent by a long ways was FORTUNE and some of its progeny but it never produced anything worth while as a seed parent although other breeders have obtained some fine things from it; as a pollen parent it was unsurpassed. Bred to BERNARDINO it gave me FORBER, POCAHONTAS, NANSEMOND, and several other good ones that were not named. BOKHARA, a son of FORTUNE, on BERNARDINO produced BASHBISH, and on SUNSTAR, CATSKILL, possibly the most stunning bicolor medium trumpet that I have produced. Other outstanding progeny of FORTUNE were the bicolors ANOKA from SERAGLIO, IROQUOIS from PROSPERITY, KATHADIN and ONTARIO from ROBIN HOOD, and the big white trumpet NASHUA from KENBANE. NEVIS x NAXOS produced the early

white trumpet AGAWAM and NEVIS x GODOLPHIN the reversed bicolor trumpet ITASCA.

At one time I used *N. jonquilla* and *N. triandrus albus*, as pollen parents and from the latter obtained many attractive hybrids that were useful for decorative purposes. Unlike the experience of many English breeders they proved to be hardy and long lived. From BEACON x *N. triandrus calathinus* I obtained HAVILAH, a tall white flower with many on a stem and very prolific. TREVISKY x JONQUILLA gave a red-eyed hybrid of good form and substance.

It is difficult to name favorites in a big family of fine children but a few unusual crosses have given progeny in which I take much pride. One is CHICOPEE, a first-early from *N. obvallaris* x *N. cyclamineus*, a small flower but unlike anything that I have seen. Another is HIAWASSEE, a hardy tazetta from CASSANDRA x PAPER WHITE. About the latest to bloom in its class is NAKOTA from PHYLLIDA x GAZA, a fine large white medium trumpet. The older varieties PILGRIMAGE and WHITE EMPEROR as seed or pollen parents produced some progeny of very good form, clear color, and excellent substance.

When I began to use my seedlings as one or both parents the pedigrees became too lengthy and involved to record here but I obtained some of the finest things that I have produced. I made my last crosses in 1947 and am looking forward to see what many of the flowers will be when they bloom next spring. Some should be pretty good if good parents are responsible for good children, a proposition that has been borne out about 100 percent in my experience.

NARCISSUS BREEDING REPORT

W. R. BALLARD, *Maryland*

During the 1952 blooming season in my garden there were probably in the neighborhood of 800 seedlings in bloom. In general the best of these flowered in the early part of the period. It has been noted that in the last two years most of the more promising seedlings were past their prime at the time of the National Capital Narcissus Shows. However, in the spring of 1951 two seedlings entered in the Show scored 82 and 85 respectively. These were ALCIDA x MRS. BACKHOUSE and a BICOLOR x BEERSHEBA crosses.

One of the difficulties so far experienced is to find time to evaluate the seedlings, to make selections of the best and to describe them accurately. The task of making new crosses and keeping records is demanding. It would be easier if attention could be devoted exclusively

to the narcissus project, but always there is the pressure of other garden work to interfere.

When the next blooming period arrives it is planned to remove the more promising seedlings and to plant them together in a bed where they can more readily be compared. There will still remain the problem of deciding how to dispose of those left behind. Many, of course, are worthless and they will be destroyed. However, a considerable proportion have merit and, while not good enough to name and introduce, could furnish good cutting material or be used in landscape plantings. Some of them could possibly be turned over to public institutions such as parks.

Until a more careful study can be made of the seedlings it is not possible to report in much detail the results to date. Most of the more exciting forms have been bicolors or whites of various sorts. There are both short cups and long trumpet forms. Seedlings of John Evelyn seem to give a fairly high percentage of fringed cups. So far no pink seedlings have appeared but this is not surprising since most of the direct pink crosses are yet to bloom. One interesting seedling, a WHITELEY GEM x ROXANE cross has a broad symmetrical white perianth with a wide, rather flat, cup of buff. A few good yellow trumpets with excellent finish have appeared from Jonquil crosses.

Many of the seedlings have shown sufficiently good qualities to warrant their use in other crosses and several have been combined with named varieties as well as with each other. In addition to these selected seedlings a number of new named varieties have been added to my collection and these will be used in future crosses. Breeding of this sort is a continuing process and the accumulated stock becomes of increasing value with the passing of the years. With so many types to work with the possibilities seem endless. For this reason one worker can have only a very small part in the development of the narcissus of the future.

BREEDING NARCISSUS FOR VARIOUS CLIMATIC REGIONS

J. S. COOLEY, *Maryland*

The wild species of *Narcissus* occur in relatively restricted regions in Europe, Asia and Africa. The horticultural varieties of *Narcissus* however, are grown in many places over the world. This involves a wide range of climate and soil. Many of the varieties now available may be very satisfactory when grown under optimum conditions, but when grown in conditions that prevail in certain places may be very unsatisfactory.

A very encouraging thing for the daffodil fancier who may be located in some region where sub-optimal conditions prevail is the fact that *Narcissus* breeders are now located in many places over the world. These breeders are therefore breeding and selecting the progeny where diverse climatic conditions prevail.

Each of these breeders is selecting seedlings that show promise when growing in his particular locality with its climatic peculiarities. However, seedlings that might be meritorious in some other environment are discarded. Furthermore each breeder has his own particular objective in choosing his parents and in selecting the progeny. The ultimate outcome of all these divergent efforts will undoubtedly greatly enlarge the scope of this flower and also enhance its utility and appreciation.

The breeding of *Narcissus* has its tedious time consuming and laborious aspects as well as the long waits for results. It has also its thrills in watching a bed of seedling bloom for the first time—always with the hope and expectation that may be this bed will produce a highly superior flower.

Considering how satisfactory *Narcissus* are as garden plants and also as cut flowers, it seems strange that it is not more extensively used and appreciated by gardeners. No doubt the patient efforts of the many breeders located at various places over the world will help to increase the use and enhance the appreciation of this beautiful spring and autumn flower.