

PRODUCTION OF NEW NARCISSUS

EDWIN C. POWELL, *Maryland*

Although more than 7,500 *Narcissus* clones have been registered with the Royal Horticultural Society the production and introduction of new clones seems endless. Thousands of old clones have gone out of existence or are no longer obtainable and thousands of others have been superseded by better ones. Fortunately for amateur growers and the trade many of the newer kinds make their bow and soon pass on because they are not adaptable to either widespread popularity or cultivation. Some that succeed admirably in Europe have proved only commonplace on this side of the ocean.

A few American growers, both amateur and commercial, have taken up the breeding of *Narcissus* and have produced some outstanding clones. I was led into it nearly 25 years ago by a conversation with the late Dr. David Griffiths who, for many years, was in charge of the bulb investigations of the United States Department of Agriculture. I had then a collection of about 75 good popular clones, and he said to me: "Why don't you try breeding? What we need is good varieties produced in America and better adapted to American conditions." And so I began to cross the best clones that I had and each year added a few of the newer introductions that were promising as parents. Since 1925 I have made more than 5,500 crosses and produced more than 60,000 seedlings from which I have retained 70 for breeding, further testing, or introduction.

The aim of all breeders is, or should be, to produce clones that are superior to others in one or more important characters. If they are to become popular they must have strong constitutions, vigor, excellent substance, clear color, good form, and adaptability to grow well under

different conditions of soil and climate. Amateur growers especially are interested in new clones that will fill in the gaps in the flowering periods—later trumpets and earlier flowering Barriis and Poets.

The usual flowering season of *Narcissus* in most gardens covers a period of four to six weeks, but through a better selection of species and varieties it may be extended to eight or ten weeks. The first flowers



Fig. 164a. Hybrid *Narcissus*—*Katonah*; raised by Edwin C. Powell, Rockville, Maryland.

of *Chicopee* and *N. cyclamineus* opened in my garden on March 5 and 6, 1946, and the last ones, *N. recurvus* and *N. albus plenus odoratus*, faded on May 15. In 1947 the first two opened on March 25 and 26 and *Jonquilla Helena* was still in flower on May 27. A difference in the two seasons accounted for the difference in dates—1946 being unusually early and 1947 correspondingly late.



Hybrid *Narcissus*—two seedlings from the cross, *Tantalus* x *Jonquilla*. Photo by Edwin C. Powell.

One of the earliest most successful crosses was *Bernardino* X *Fortune*. From it I obtained 87 seeds and planted out 62 bulbs two years later. They produced a lot of fine yellow *Incomparabilis* with red or orange-red crowns from which I selected *Forber*, *Nansemond*, and *Pocahontas*. Some years ago I used the pollen of the species *Jonquilla*



Fig. 165. Hybrid *Narcissus*—*Crystal Queen* X *Triandrus albus*, raised by Edwin C. Powell, Rockville, Maryland.

and *Triandrus albus* on quite a few clones (Fig. 165). The pollen of these is very potent. *Jonquilla* on yellow Trumpets or *Incomparabilis* generally produces yellow flowers of pleasing form and good substance, but on a white flower it may produce a white or cream-colored Jonquil hybrid. *Cheyenne* and *Kiowa* are two of this color, the former being particularly prolific.

Although *Triandrus albus* was used on several classes of flowers the best results were obtained from the Leedsiiis. Most of the seedlings were pure white and useful as garden flowers and for making arrangements because of their informal shape. However, I have two fall whites that appear promising, one good yellow, one with a primrose cup, and *Oconee* which has a flaring light yellow crown and produces two or three flowers on a stem.

Two outstanding clones are *Chicopee* and *Hiawassee*. The former is from *Obvallaris* X *Cyclamineus* and is the first variety to open, coming out either a day before or behind *Cyclamineus*. *Hiawassee* came from *Cassandra* X *Paper White*, grows 12 to 15 inches high and produces several small white flowers with pearl-colored cups on a stem.

Flowers that have a wide appeal and commercial possibilities have received the most attention. Other than *Hiawassee* no attempt has been made to produce Poetaz clones, and there have been few seedlings in the Barrii class. There has been a goodly proportion of Trumpets, large-crowned Leedsiiis, some Poets, and a superabundance of Incomparabilis.

The production of seedling *Narcissus* has had its pitfalls and tragedies. About half of the crosses fail to set seed, and about half of the seeds fail to sprout, or the seedlings to reach flowering size. A tiny flower was produced by a *Cyclamineus* bulb the third year in a pot. A few flowers are thrown by fourth-year seedlings; about 50 percent bloom the fifth year and half of the others the sixth year. Bulbs that do not flower by the sixth year are now discarded as none had ever produced a worth while flower. The finest white Trumpet that I ever saw was noted one year in the seedling bed, duly marked, and then increased to four bulbs; all died before the next season. A tall and very large small-crowned Leedsii was increased to a dozen or more bulbs and then lost—a careless laborer when digging them placed the label in the lot behind it (which was discarded) instead of the lot ahead of it.

The technique of breeding is simple and easy to practice. Clones that are exceptionally good in one or more characters are selected as parents to be mated with equally good ones with the hope of intensifying some character, overcoming some weakness, or obtaining an earlier or later flowering variety—*Chicopee* as an example on the one hand and *Nakota* (the latest of the large-crowned Leedsiiis) on the other. The late Rev. G. H. Engleheart said: "The male is prepotent in determining both the form and color of the hybrid. In color this is most marked."

Early in the morning as the flowers open, in some clones before they open, the anthers are removed with the fingers or tweezers. Any that are wanted for their pollen to be used on later flowering varieties are placed on three-inch squares of leadfoil and when dry the foil is folded and placed in a coin envelope. As soon as the flower is deanthiered, or shortly afterwards, the pistil is daubed with pollen, the bud sheath folded back, and a small stringed price tag, on which is written the number of the cross, is looped around the stem just below the ovary. The cross is recorded in the record book in which there are two extra

columns for the number of seeds gathered and of bulbs planted two years later. As the pollen is not wind-bourne and few insects visit the flowers there is little chance for stray pollen to fertilize the flower if it is promptly pollinated upon opening.

The seeds are gathered as they ripen and planted as soon as possible, those from each cross in a flowerpot in which is placed a metal tag with the cross number stamped upon it. The pots are plunged to their top in a frame where they remain until the bulbs complete two years growth. When the seeds begin to sprout in late winter the frame is covered with glass sash to prevent alternate freezing and thawing and the consequent heaving which would throw out the sprouting seed.

After the tops die down the second year the pots are lifted, the contents knocked out onto a wire screen, and the small bulbs and numbered tag picked out, counted, and placed in small containers (paper drinking cups) until planted out in rows in the garden. A hole is punched in the tag which is hung on a 12-inch No. 12 wire and set just ahead of the bulbs. Three or four years later when the first flowers appear the most promising are selected, duly lifted for testing, and to increase the stock for such purposes as may be considered desirable. From the hundreds of seedlings there will be many fine ones and few poor things if good parents are selected. It is a long wait between making the cross and appearance of the flowers, but if some crosses are made each year the time lag does not seem so important after the first crop of seedlings flower.

A FEW NARCISSUS CROSSES

C. W. CULPEPPER, *Virginia*

My interest in growing *Narcissus* from seeds was stimulated by the excellent results obtained by Mr. E. C. Powell in a locality not far from my own. The limited amount of time available for making the crosses and growing the plants to maturity made it necessary to adopt a very simple procedure. Consequently it was decided to limit the crosses to two varieties; *Fortune* and *Dick Welband*. It was thought that crosses of these two varieties might result in seedlings with large red-crowned flowers that would hold up better in this locality during periods of hot weather than existing varieties. As my stock of the two varieties would have to be limited it would be necessary to repeat the cross year after year for a number of years in order to get a sufficient number of seedlings to be reasonably sure that there was a good chance for the best combinations to appear.

To begin the experiment bulbs of each of the two varieties were secured and planted in large pots and kept in an unheated pit greenhouse during the most severe part of the winter. In spite of efforts to get them to flower at the same time *Dick Welband* flowered a few days after *Fortune* but *Fortune* still looked to be in good condition and the pollinations were made both ways. No seed set with either variety. With confidence that a better adjustment of the time of flowering could

be made another season the same procedure was followed the second year. Three flowers of *Fortune* and two of *Dick Welband* opened at nearly the same time the second year and the flowers of each variety were pollinated with the pollen of the other. Again no seed was produced. It was evident that nothing could be accomplished if seed could not be obtained. Without bothering to figure out the cause of the failure it was decided to change the procedure. The bulbs were planted outside in good garden soil. The unemasculated flowers as soon as open were pollinated with the pollen of the variety *Red Cross* and two to four days later the pollen of *Hades* was applied to the stigmas of the same flowers. This very unorthodox method, however, did result in a good set of seed with *Fortune* and a very few seed with *Dick Welband*. The same procedure was adhered to for the following five years. Several hundred seedlings of *Fortune* have now flowered. Only a very few seedlings of *Dick Welband* have been raised to maturity and they have been an uninteresting lot.

The *Fortune* seedlings varied rather widely in many characteristics such as time of flowering, height of stem, character of foliage, and size, form and color of the flowers. A large part of them were red crowned types, many of which might be considered superior to *Red Cross* and *Hades*. Many of them have had much more red in the crown than is the case with *Fortune*. Among the seedlings are individuals that are practically identical to such varieties as *Whitely Gem*, *Damson*, *Rustom Pshaw*, *Fortunes Bowl*, *Fortunes Crest*, *Fortunes Blaze* and *Red Abbott*. I do not consider any of the seedlings to have the all-round excellence and garden usefulness as *Fortune*. Whether any of the seedlings are better suited to the climate of this locality than the varieties already introduced will have to be decided in the future.

During these years the bulbs of these varieties have increased greatly so that I now have an abundance of flowers not only for crossing but for cutting as well. In the meantime I have disposed of sufficient bulbs to return the high price paid for the original bulbs.

The program has been much expanded during the last few years. Some of my own seedlings as well as other *Fortune* seedlings on the market have been used in crosses both ways with *Fortune*. Some crosses have also been made among the yellow trumpets. I would particularly like to secure a very late yellow trumpet superior to those that exist at present. *Lucinius*, *Statendam*, *Megaphone* and *Robert Sydenham* have been used. Some crosses with white varieties have also been made using *Ada Finch*, *Beersheba*, *Kantara* and *Brunswick*. I wait anxiously for these to come to flower.

Although there is a very long wait after crosses are made before results can be seen I think that crossing *Narcissus* will give one as much fun and excitement as can be had from crossing any other flower.