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SEE ARTICLE P. III KENYON L. REYNOLDS
STEPS IN PRODUCING HYBRID NARCISSUS¹ NARCISSUS
FROM SEED
KENYON L. REYNOLDS, *California*

1. As a flower starts to open the anthers are removed with a small pair of forceps. This makes chance pollination very unlikely. The flower is then left for about three days, when it is ready to receive the pollen from some other flower. (See Fig. 98, upper left.)



Fig. 98. Steps in *Narcissus* breeding: upper left, step 1; upper right, step 2; lower left, step 3; and lower right, step 4. See text for details.

2. If it is desired to save the pollen for use on other flowers, the anthers when removed should be placed in an open container of some kind, like a small vial, watch-glass or piece of tin-foil where it can be exposed to the drying action of calcium chloride in a cookie-jar or similar container. If such a dessicator is not available the anthers should be

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placed in the shade in the open air until the pollen "comes up" and appears in the form of yellow powder on the anther. (See Fig. 98, upper right.)

3. When the flower has been open a couple of days the dry anther from some other variety is taken in the forceps and the pollen is applied to the stigma which can be easily found in the center of the flower. (See Fig. 98, lower left.)



Fig. 99. Steps in *Narcissus* breeding (continued): upper left, step 5; upper right, step 6; lower left, step 7; and lower right, step 8. See text for details.

4. A tag with the number of the cross is then tied around the neck of the flower tightly enough so it will not slide down the stem. (See Fig. 98, lower right.)

5. The name and number of the cross is then recorded in a note book which is kept for permanent reference. (See Fig. 99, upper left.)

6. About two months later the seed-pod should be watched. If it rattles when snapped with the finger, it should be harvested and the seed placed in an envelope marked with the name and number of the cross. (See Fig. 99, upper right.)

7. The seeds should then be planted about one inch deep in soil which has good drainage and has been enriched with some bonemeal. They may either be placed in the open ground in the place where they are to be left to bloom, in which case they should be at least one and one half inches apart each way; or they may be planted much closer in a frame or box (not a flat) and transplanted after they go dormant at the end of the second year. Planting may be done immediately or at the end of the summer. (See Fig. 99, lower left.)



Fig. 100. Steps in *Narcissus* breeding (continued): step 10. See text for details.

8. In December or January the first leaves will appear above ground. The ground should be kept fairly moist from then until the leaves die down in June or July. The second year they will reappear with two or more leaves which will be larger and flat as seen in the rear frame in this picture. (See Fig. 99, lower right.)

9. About twenty five to fifty per cent of the seedlings will flower in the fourth year.

10. Most of the remainder will flower in the fifth and sixth year and from then on they are treated like any other bulbs of new varieties.

NARCISSUS FROM SEEDS

KENYON L. REYNOLDS, *California*

Narcissus are easily grown from seeds and do not require expert handling or special equipment. Furthermore, bulbs grown from seeds will almost invariably be healthier and more vigorous than any which can be purchased. Each bulb grown from seeds will be a new variety

and no two will be exactly alike, but once a bulb has flowered it may be perpetuated by propagating the increase from that particular bulb. The only negative consideration is the time required from seeds to first bloom. This is usually four years. The procedure is as follows:—

If plenty of space is available it is a little less work to plant the seeds where they may be left in one place for the entire time from seed to bloom. If garden space is a consideration it is advisable to plant the seeds in a frame or boxes or large pots. The soil in any case should be at least 8" deep. Any garden soil will do. If the drainage is not good it should be improved by adding peat and sand. Bone meal and wood ashes may also be added, an ounce or two of each to the square yard, but they are not necessary. Other fertilizers are not recommended.

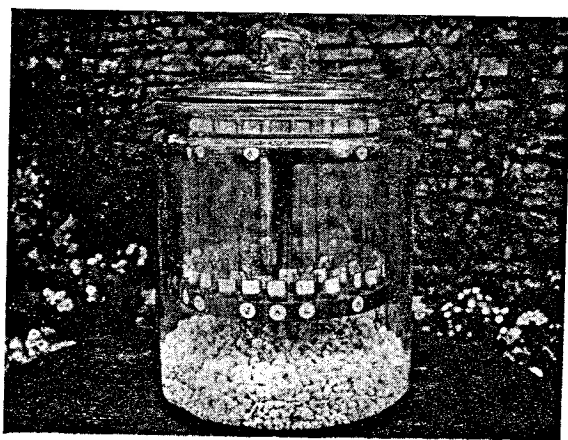


Fig. 101. Desiccator for preserving *Narcissus* pollen.
See preceding article for details.

The seeds may be planted at any time after they ripen in May or June, but should be in the ground by mid-October at the latest. Cover the seeds with about an inch of soil. A quarter inch of peat on the top is desirable but not necessary. In pots, arrange the seeds at least one half inch apart. In boxes or frames plant in rows 3" apart but the seeds may be as little as one fourth inch apart in the row. If the seeds are planted where they are expected to mature they should be 1½" apart in the row and the rows should be 6" apart.

It will add greatly to your pleasure if the seeds from each cross are kept separated and carefully labeled. If you are trying them for the first time it may not seem important now, but you will surely regret it if you do not know the cross when blooming time comes. Remember, when making the labels that they must last for six years or more.

Water sparingly until October 1st. After that supplement the rains with frequent watering. Keep the weeds pulled. The plants will appear above ground between December and February depending upon the lateness of the variety. The first year they produce a single round leaf which may grow six or eight inches long. If watering is not neg-

lected they will continue to grow until early summer. Then they will turn yellow and die down. The dead leaves may then be removed and watering practically stopped until the following October, but it is well not to let the soil remain powder-dry if an occasional light sprinkling is practical.

The cut-worm is about the only enemy of these plants during their first two years. They eat the leaves from the top down and if not checked they may destroy a whole year's growth, but seldom kill the plant. If their presence is observed the plants may be sprayed with an arsenic coating spray. The safest procedure however is to go out after dark with a flashlight and gather the worms. They will almost always be found at the top of the leaf and at first they are very small, perhaps less than a half inch long and only as thick as the lead of a pencil, but later they are easy to find. Usually they can be eliminated after a few nights attention.

The second year the plants usually have two or more leaves of the characteristic shape and coloring of daffodil foliage, but they seldom exceed a quarter inch in width and a foot in length.

If the seeds were planted in close quarters, the little bulbs should be dug at the end of the second growing season. They will be found to have drawn themselves down so the bottom of the bulb is about four inches under ground. The bulbs will be about the size and shape of peanuts or smaller and usually have one or more fleshy roots attached. They should be planted back without removing these roots the same day they are dug if possible. The bulbs should be set in rows 6" apart and 3" or 4" apart in the row. They should be from 3" to 5" deep at the bottom depending upon the size which will vary considerably. An easy way to dig the bulbs without mixing them or losing any is to take one lot at a time, soil and all, and place them on a $\frac{1}{4}$ " mesh screen gently shaking the soil through and leaving the bulbs on the screen.

After they are re-planted they will need no further attention except for water during the growing season. They may be left in the same spot until they have bloomed for two or three years.