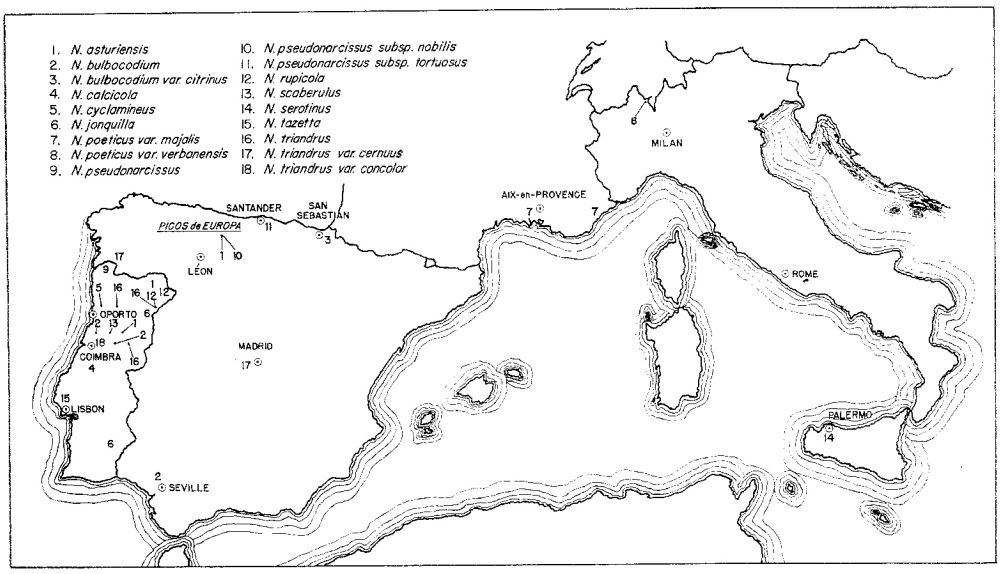
Reprinted from the April 1961 issue of THE AMERICAN HORTICULTURAL MAGAZINE

Exploring for Wild Narcissus

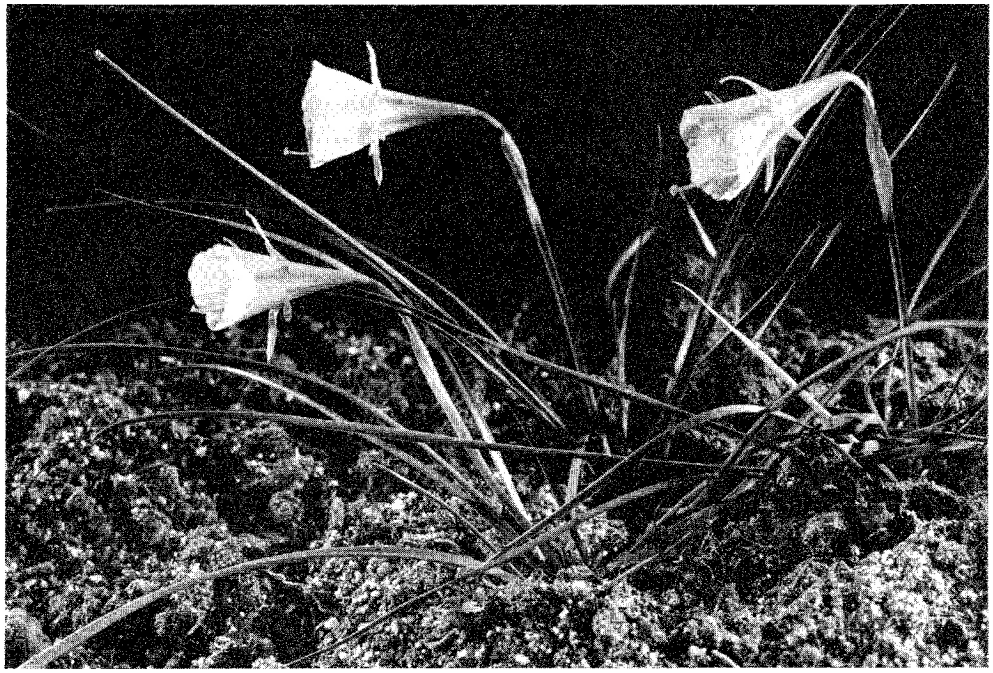
FREDERICK G. MEYER



Location of the species of Narcissus collected on the U. S. Department of Agriculture-Longwood Gardens expedition to the Mediterranean in 1957.

Narcissus bulbocodium from a bog near Coimbra, Portugal. Flowers are a deep orange-yellow.

LONGWOOD GARDENS, G. HAMPFLER



Exploring for Wild Narcissus

FREDERICK G. MEYER*

As harbingers of spring, few garden flowers in this country are more highly esteemed than the trumpet daffodil (*Narcissus pseudonarcissus*) and its numerous hybrids. The common name of the daffodil, we may note, stems from the word "daffodilly," or "daffodowndilly," as this plant was sometimes called in 16th and 17th century England. The lent-lily in English country churchyards is this plant. In Europe, where it is a native species, the trumpet daffodil is one of the oldest of cultivated garden flowers.

In the course of a plant exploration trip to the Mediterranean region for ornamentals in 1957, twelve of the wild species of *Narcissus* were collected in Spain, Portugal, southern France, and Italy. This was a trip sponsored by the United States Department of Agriculture in cooperation with the Longwood Gardens of Longwood Foundation, Inc., Kennett Square, Pennsylvania.

The genus *Narcissus,* with about 30 to 35 species, is entirely of Old World origin. The greatest concentration of species occurs in Spain, Portugal, and North Africa. Narcissi also occur in France, Italy, and the mountains of central Europe. In parts of the Swiss alps the poet's narcissus (*N. poeticus* subsp. *radiiflorus*) occurs often in great abundance in alpine meadows. At least two species, *N. tazetta* and *N. serotinus,* occur around the perimeter of the Mediterranean. *N. tazetta* is the most widely distributed species, ranging from the Atlantic coast of Portugal to the Pacific shores of Japan. The paper-white narcissus (*N. tazetta* var. *papyraceus*) and the Chinese sacred-lily (*N. tazetta* var. *orientalis*) are widely cultivated. Several of the modern *N. tazetta* hybrids, especially those of the poetaz groups (*N. poeticus* × *N. tazetta*) are now widely grown in northern gardens. A half dozen species commonly cultivated include *N. bulbocodium, N. jonquilla, N. poeticus, N. pseudonarcissus, N. tazetta,* and *N. triandrus.* Hybrids of these furnish the greatest proportion of narcissi grown today. In recent years, the miniature species, especially *N. cyclamineus, N. jonquilla,* and *N. triandrus,* have contributed to a host of new hybrids.

Almost all of the species are interfertile. Hybrids are easy to produce, even by the amateur. *N. serotinus* has thus far been an exception to this. Attempts to produce hybrids using this autumn flowering species as a parent have been unsuccessful, reportedly as a result of abnormalities in the pairing of the chromosomes. Improvements in cultivated narcissi should be expected by the use of additional germ plasm from wild sources resulting in: (1) the development of new characteristics in hybrid lines (breeders of exhibition daffodils could benefit from a reservoir of wild material); the development of new types more adaptable under the special climatic conditions of southeastern United States where it is now difficult to grow trumpet daffodils developed largely in Europe for northern gardens; wild material could be useful in the development of types for naturalizing; and (2) disease resistant types. The development of narcissi resistant to sclerotinia "smoulder" disease, ramularia leaf "scorch," basal rot, and a "decline disease" caused by a virus, conceivably might result from a reservoir of new *Narcissus* germ plasm introduced from wild sources.

A summary of observations recorded in the field indicates (1) the wide range in habitat preference of the species of *Narcissus,* and (2) a picture of natural variation which points out emphatically the need for further collecting in an effort to bring about a more profound understanding than we now have of the species and their relationships. Without a modern monograph of the species, it is not easy to know well even the material now in hand. The field notes as recorded below will be of particular interest to growers without a ready source of information of this kind. Data about

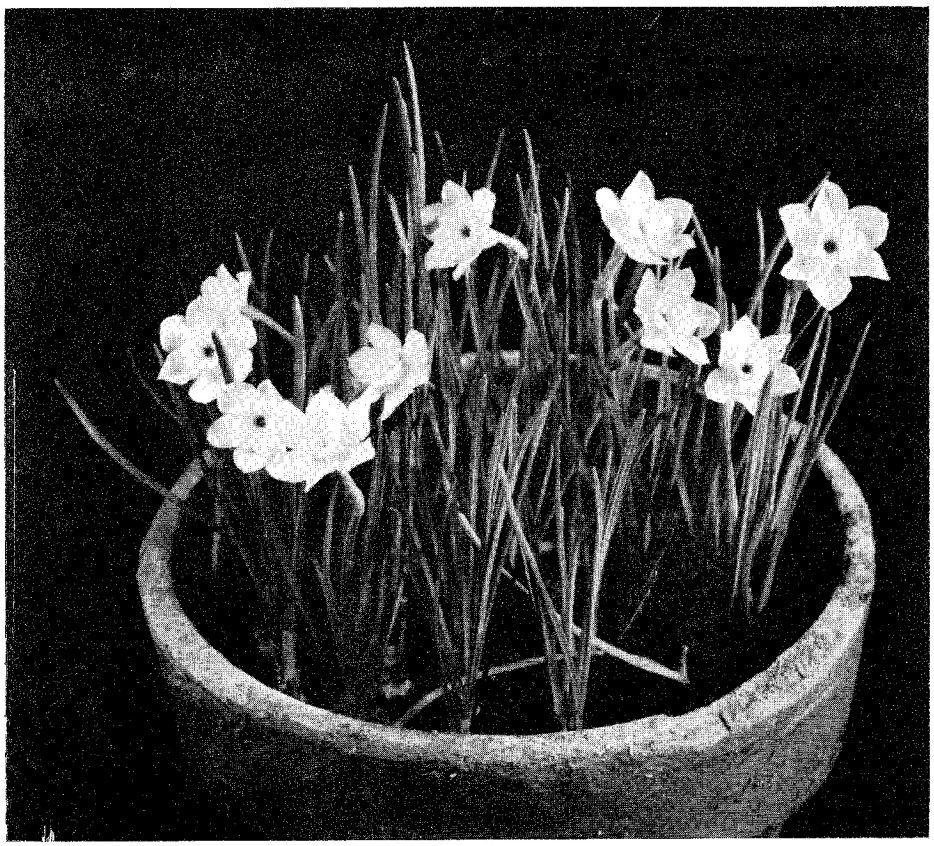
*New Crops Research Branch, Plant Industry Station, Beltsville, Maryland.

F. G. MEYER

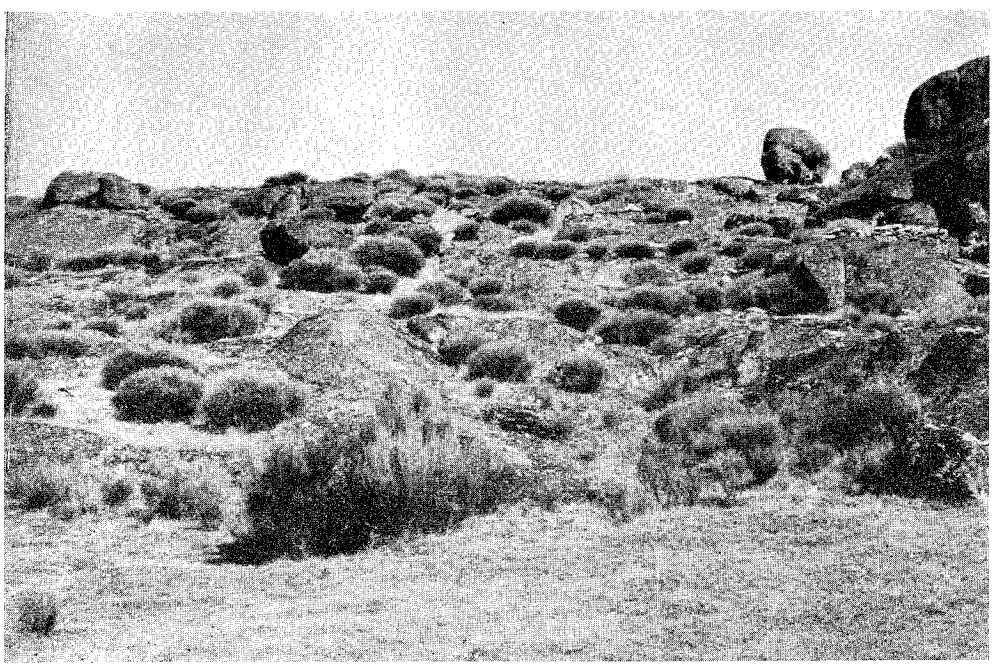
Grassy hillsides in the foothills of the Picos de Europa, Province Santander, northwestern Spain, are the home of Narcissus pseudonarcissus subsp. tortuosus. A close-up view of the wild plant is shown below.

F. G. MEYER

F. G. MEYER



Narcissus rupicola, a dwarf species, flowering in cultivation from wild material collected in Portugal. The rocky hills of northern Portugal (illustrated below) are the natural habitat of this dwarf and other upland species of narcissi.



F. G. MEYER

the habitats of wild *Narcissus* are almost wholly lacking in much of the readily available horticultural literature. Of value to know is that the phase commonest in gardens of the hoop-petticoat daffodil (*N. bulbocodium*) occurs in meadows often flooded with water several inches deep at flowering time, later dried out for several months over a long hot summer. Of interest is my experience with *N. pseudonarcissus* subsp. *nobilis,* a large-flowered phase with bicolored flowers, found in a meadow of western Spain so wet at flowering time it was necessary to recover the bulbs through mud and water a foot deep. In contrast, I scraped bulbs of *N. scaberulus,* an upland species, off tops of huge granitic boulders in pine-woods near Oporto, in Portugal. Mistakes in growing the rock-garden or upland species might be partly overcome if growers would be more careful to provide the sharp drainage requirements of these species with fastidious habitat requirements. On the other hand, it is not difficult to understand why it is more easy to grow *N. pseudonarcissus* and other meadowland species once these plants are observed growing in the wild.

Handling Bulbs of Wild Narcissi

The most practical time for digging wild narcissi covers a few weeks in early spring while the plants are still in flower. Bulbs dug at this time are not necessarily killed or even seriously retarded. In fact, most of the narcissi sent in March-April of 1957 flowered in the spring of 1958 at the U. S. Plant Introduction Station, Glenn Dale, Maryland. It is usual for freshly collected wild bulbs not to flower before the second season. They should be dug carefully to prevent injury, washed free of soil, packed in just barely moist sphagnum moss and immediately dispatched to the destination by air, appropriately covered by a plant import permit. Bulbs of wild narcissi dug at flowering time should not dry out. This is perhaps the chief consideration. Long drying in open air may kill or seriously injure the rock-garden or upland species, such as *N. rupicola, N. scaberulus, N. cyclamineus,* and *N. triandrus* with thin bulb-coats. Probably for this reason, the mortality in commercial bulbs of the rock-garden species is often relatively high. The small-bulbed narcissi should be dug and transplanted while still in flower or when the leaves have begun to turn yellow and wither. Drying out of the bulbs in open-air should be prevented. Bulbs stored in soil, even in soil that dries out completely for several months, usually are uninjured. Bulbs of *N. pseudonarcissus, N. poeticus,* and other meadowland species, are much less affected by storage in open air; in fact, there is no real problem with this group or with the hybrids involving the rock-garden species. In the wild, narcissi receive an abundance of moisture during the growing months of spring, followed by a complete rest over the nearly rainless summer until growth of the roots begin with the first autumn rains.

Species of wild *Narcissus* collected on this trip may thus be divided into two major groups: (1) upland or rock-garden species, (2) meadowland species. Introductions numbered 33 collections representing 12 of the known species.

Group 1. Species of rocky uplands, usually in decomposed granitic (acidic) soils, often found growing in humus in rock pockets. In cultivation these species require better drainage than ordinarily provided for the species in group 2.

N. asturiensis
N. calcicola
N. rupicola
N. scaberulus
N. serotinus (usually near the sea)
N. tazetta (usually near the sea)
N. triandrus

Group 2. Species of open woodlands and grassy meadows (sometimes river banks) often flooded or very wet at flowering time but dry throughout the summer.

N. bulbocodium
N. cyclamineus
N. jonquilla
N. poeticus
N. pseudonarcissus

Wild Collections of 1957

Narcissus asturiensis

The smallest of the trumpet-flowered narcissi, 3 to 7 in. tall; flowers about 1 in. long, deep lemon-yellow. Native of a few areas in Portugal and adjacent western Spain. Origin of introductions:

(1) Open grassy slopes near the summit of Puerto de San Gloria, Picos de Europa, alt. 4827 ft., Prov. Santander, Spain. In full flower, and abundant on edge of melting snow-fields, March 16. P.I. 238523. [P.I. refers to Plant Introduction number, U. S. Department of Agriculture]

(2) Scrub-oak woodland growing in rich humus soil, Serra da Noqueira, alt. 3000 ft., near Bragança, Portugal. In flower March 23. P.I. 238699.

(3) Open grassy slopes in granitic soil, near summit of Serra da Estrella, alt. 5100 ft., Portugal. In flower March 26. P.I. 238700.

Narcissus bulbocodium

The hoop-petticoat daffodil is one of the common narcissi of the Iberian peninsula where it is often abundant in meadows. It occurs also in southwestern France. Sometimes one must dig bulbs of this species in water nearly to his shoetop, the meadows are so wet during the season of flowering. Often it grows in great abundance, turning meadows aflame with the deep yellow flaring trumpets. Along the banks of the Rio Esla at Riaño in the Picos de Europa of northwestern Spain, several acres are carpeted with this species in March. Origin of introductions:

(1) A very robust phase with flowering-scapes 25 in. tall in fruit (normally about 12 in.), from a bog (usually this species inhabits meadows), 25 mi. north of Coimbra along main road to Oporto, Portugal. Mostly past flowering on April 6. P.I. 238777.

(2) Flowering-scapes nearly 1 ft. tall. In a wet meadow along Penacova-Luso road, 1½ mi. from Penacova, about 12 mi. northeast of Coimbra, Portugal. Seeds collected on April 3. P.I. 238877.

(3) Flowering-scapes, 6 to 8 in. tall. From a wet swale on otherwise open hilly slopes dominated by *Cistus ladinifolius,* near Val de Flores, 35 mi. n. of Seville, Prov. Huelva, Spain. This local colony is indicative of the kind of habitat preferred by this phase of *N. bulbocodium,* namely a site adjacent to a water seep which dries up in late spring. Past flowering when gathered on April 12. P.I. 239061 (bulbs), 239062 (seeds).

(4) Flowering-scapes 3 to 5 in. tall, with deep yellow flowers. Wet meadows along the Rio Elsa, Picos de Europa, alt. 3000 ft., Riaño, Spain. In flower March 17. P.I. 238524.

Narcissus bulbocodium var. *citrinus*

A distinct geographical variety of the species restricted to northwestern Spain and adjacent southwestern France with pale lemon-yellow flowers 1½ in. across; one of the largest flowered variants of this species. On steep grassy north-facing slopes in sandy acid soil growing among heather above the sea beyond Pesajes de San Juan, near San Sebastian, Prov. Guipuzcoa, Spain. In flower March 14. P.I. 238029.

Narcissus calcicola

Dwarf species related to *N. juncifolius* and *N. rupicola,* 5 to 6 in. tall, with yellow, scented flowers ½ in. across. In rock crevices in pockets of nearly pure humus, Serra do Sico, alt. 1200 ft., near Ramalhaes, west of Pombal, Portugal. Past flower on April 5. The species is restricted to a few localities in Portugal. P.I. 238778.

Narcissus cyclamineus

The earliest of the trumpet narcissi to flower, beginning at the end of January in Portugal. This species is restricted to a few localities in Portgual and adjacent areas of northwestern Spain and is now nearly extinct as a result of indiscriminate digging by collectors. Not a good grower and short-lived in cultivation in most parts of the United States, but the hybrids of this species are excellent growers, long-lived in cultivation and rank among the most distinctive of the new daffodil hybrids. The present introduction comes from a private garden in Oporto, Portugal where it naturalizes in abundance, the original stock of which came from moist banks of the Fareira River near Valonga, Portugal, the type locality of the species. P.I. 238701.

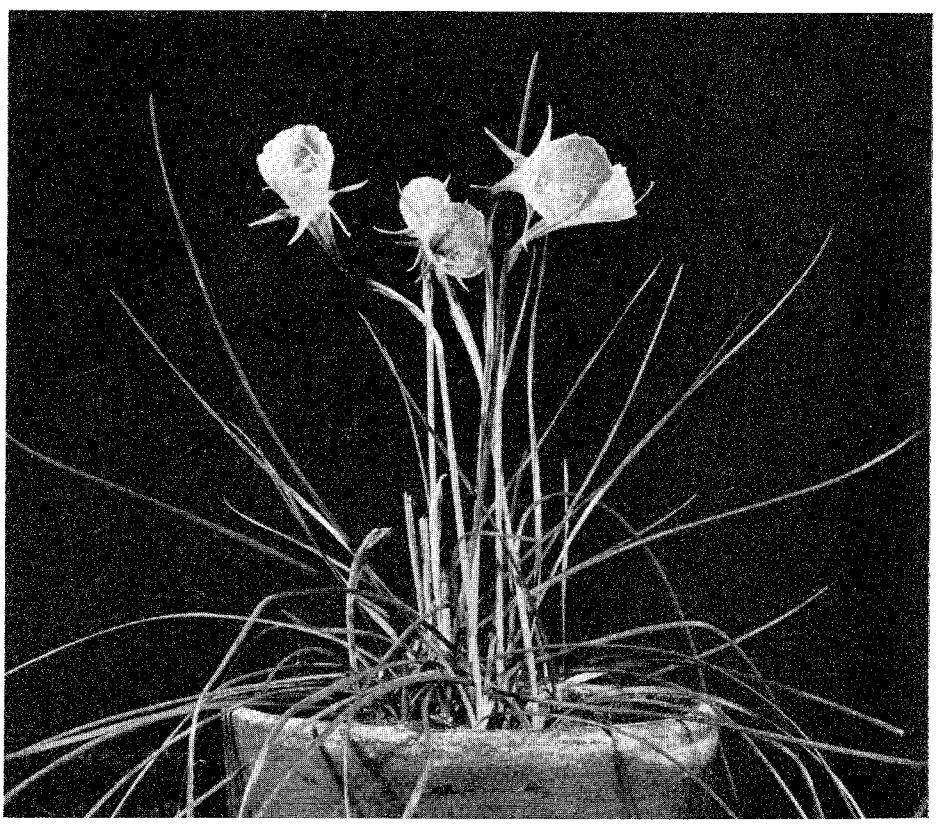
F. G. MEYER

Narcissus triandrus var. cernuus shown in its natural habitat in pine woods of Province Orense, northwestern Spain.

Narcissus bulbocodium var. citrinum has lemon-yellow flowers an inch and a half across, larger than in the typical hoop-petticoat daffodil. Natural habitat: grassy slopes above the sea near San Sebastian, northwestern Spain. →

F. G. MEYER

Narcissus poeticus var. majalis. The Poet's Narcissus' natural habitat is near St. Cannat, Aix-en-Provence in southern France.



F. G. MEYER

Narcissus jonquilla

The jonquil is restricted to Portugal and Spain where it occurs along river banks in stony-sandy soil. Often the bulbs are buried more than one foot by river sand, and to dig them is a laborious task. *N. jonquilla* as a wild plant exhibits variability mainly in leaf width, size of flowers and time of flowering. Origin of introductions:

(1) Rocky sandy banks of the Douro River at Barca d'Alva, Portugal. Abundant; in flower March 25. P.I. 238702.

(2) Banks of the Rio Guardiana near Serpa, road N. 260, Portugal. In flower April 10. P.I. 239063.

Narcissus poeticus var. *majalis*

The pheasant's eye or poet's narcissus occurs in southern and middle Europe in a narrow belt from northern Spain, across southern France to the Swiss alps, and the Balkan mountains south to Greece. The variety *majalis* is a large robust phase often 15 in. tall at flowering time with large flowers often 2 in. across. This is the common phase of the species in southern France where it is abundant in meadows, which at flowering time are often quite moist. Introductions originate from two localities:

(1) Moist meadows near St. Cannat, Aix-en-Provence, France. In flower April 22. P.I. 239333.

(2) Moist grassy meadows at Levans, Alpes-Maritime, France. In flower April 28. P.I. 239358.

Narcissus poeticus var. *verbanensis*

The variety *verbanensis* occurs in a restricted area of northern Italy above Lake Maggiore. The flowers are 1 to 1½ in. across, smaller than in var. *majalis*, and the plants are shorter with narrower leaves usually not more than one foot long at flowering time. Introduction from rocky meadows and open woods on mountain slopes above Lake Maggiore, near Pallanza, Italy. Abundant; in flower May 6. P.I. 239682.

Narcissus pseudonarcissus

The natural distribution of *P. pseudonarcissus* is France, Portugal, and Spain. Trumpet daffodils in the wild may be divided into two principal types: (1) those with uniformly yellow, small flowers produced on a small plant with small bulbs, as typified by the lent-lily of northern France and England. In Great Britain this plant is thought of not as a wild species, although it has naturalized in meadows and in old English churchyards. In northern France bouquets of lent-lily are sold in early March along roadways near the forest of Fontainebleau, (2) those with bicolored flowers (trumpets deep yellow and perianth segments pale yellow), produced on a larger, more robust plant with larger bulbs and broader leaves, as typified by *N. pseudonarcissus* subsp. *nobilis* of Spain. On the Iberian peninsula the trumpet daffodil is nowhere common, although in parts of the Pyrenees it is said to occur in greater abundance. Introductions originate from:

(1) Serra d'Arga, Prov. Minho, Portugal. P.I. 238738.

(2) Phase with bicolored flowers, originally from northern Portugal. P.I. 238739.

Narcissus pseudonarcissus subsp. *nobilis*

The subspecies *nobilis* is a very robust, large-flowered geographical variant of the species growing to 15 in. tall with bicolored flowers and trumpets about 2 in. long. This is a rare phase of the species collected in very wet meadows near Riaño, alt. 3000 ft. in the Picos de Europa, Prov. Asturias, northwestern Spain. Should be tried as a parent in breeding new trumpet daffodils. In flower April 1. P.I. 238525.

Narcissus pseudonarcissus subsp. *tortuosus*

A phase of the trumpet daffodil with leaves often spirally twisted and flowers drooping with sulfur- to creamy-yellow trumpets. This rare subspecies is known in the wild only from one locality in northwestern Spain, where it occurs on north-facing steep-sloping meadows, near Unquera, Prov. Santander. In flower March 16. P.I. 238526.

Narcissus rupicola

A low-growing species related to *N. juncifolius* with grass-like leaves, 5 to

F. G. MEYER

Narcissus cyclamineus—the wild phase from northern Portugal.

6 inches long and bright yellow fragrant flowers about 1 in. across. The plants inhabit rocky declivities, especially on decomposed granite of northern Portugal and the mountains of adjacent western Spain. This beautiful little daffodil thrives best in cultivation when provided with sharp drainage in raised beds. It may also be grown in pots. Two introductions originate from:

(1) Amedo, Prov. Tráz-os-Montes, Portugal. P.I. 238507.

(2) Among large granitic boulders, alt. 1800 ft. between Lagoaça and Freixo de Espada à Cinta near the Rio Douro, Portugal. Nearly past flower March 24. P.I. 238704.

Narcissus scaberulus

Dwarf-growing species 5 to 6 in. tall, restricted to Portugal, with bicolored flowers ½ to ¾ in. across, perhaps the smallest of the genus. The corona is nearly orange in contrast with a deep yellow perianth. In cultivation it

should be grown like *N. rupicola.* A single introduction originates from crevices of decomposed granite boulders in pine woodland, near Coimbra, Portugal. Past flowering March 26. P.I. 238705.

Narcissus serotinus

An attractive autumn-flowering species with white flowers, native of the coastal areas on both sides of the Mediterranean from North Africa, southern Portugal to Lebanon and Israel. Irregularities in chromosome pairing in crosses with other species have heretofore prevented successful hybridization using *N. serotinus* as a parent. Hybrids of *N. serotinus,* if they could be produced, would bring to gardens a new race of narcissi. Bulbs originate from the hills near Palermo, Sicily. In flower during October. P.I. 243837.

Narcissus tazetta

This well-known species occurs from the Atlantic side of Portugal, thence around the Mediterranean on both European and African shores to China and Japan. Flowering occurs from late December to March. The Chinese sacred-lily is *N. tazetta* var. *orientalis.* The paper-white narcissus (*N. tazetta* var. *papyraceus*) is the best known phase grown in the United States, although other varieties from time to time have been grown, especially in Europe. The wild phase in Portugal produces pure white flowers on scapes about 15" tall. A single introduction comes from Santarem, a locality not far from Lisbon, Portugal. P.I. 238740.

Narcissus triandrus

The Angel's Tears occurs widely over the Iberian peninsula, except in the southwestern part of Portugal and Spain. It is a common species of the hills of northern Portugal in acid soils where decomposed granite is the native rock. In driving east in a route above the Douro River near Oporto in March, it is often possible to see this plant in some abundance at various points along the roadside. It will be noted that populations exhibit considerable variability as to height of the plant, flower size, and in color of the perianth, often cream-colored with a yellowish corona. A relic station for this plant exists on one of the French islands of Glenan, off the southern coast of Brittany. Introductions originate from the following localities:

(1) Flowers creamy-white throughout. On well-drained pine-clad slopes in acid soil, dry in summer, Serra de Marão, Portugal. In flower March 22. P.I. 238706.

(2) Among large granitic boulders between Lagoaça and Freixo de Espada à Cinta near the Rio Douro, Portugal. In flower March 24. P.I. 238707. Hybrid plants of *N. triandrus* and *N. bulbocodium* were found in this locality.

(3) North-facing grassy slopes, alt. 1500 ft., near Covilhã on road toward Manteigas, foothills of Serra da Estrella, Portugal. In flower March 25. P.I. 238708.

Narcissus triandrus var. *cernuus*

Flowers bicolored, with the corona deeper yellow than the perianth segments. Occurs mostly in Portugal and northwestern Spain. Two introductions are:

(1) Plants 6 to 8 in. tall, in moist, sheltered, pine-covered slopes in decomposed granitic soil, along road N. 120, border of Prov. Orense and Prov. Pontevedra, Spain. Abundant; in flower March 18. P.I. 238527.

(2) Plants very short, 4 to 6 in. tall on north-facing slopes in decomposed granitic soil, near El Escorial and near the village of Robeldal, Prov. Madrid, Spain. In flower April 18. P.I. 239082.

Narcissus triandrus var. *concolor*

The yellow-flowered Angel's Tears, with the corona and perianth segments uniformly lemon-yellow. It occurs sporadically in parts of Spain and Portugal. A single gathering of seeds and bulbs originates from steep rocky slopes under olive trees, between Mizarela and Caneiro, about 6 mi. east of Coimbra on the Coimbra-Penacova road, Portugal. In fruit on April 3, in flower a month earlier. P.I. 238879 (seeds), 238880 (bulbs).