

Greek portraits of a queen

By JULIE ANN MILLER

[The peony] prevents the mocking delusions that the Fauns bring on us in our sleep. They recommend us to uproot it at night-time, because the woodpecker of Mars, should he see the act, will attack the eyes in its defense.

—Pliny the Elder, *Natural History*, first century A.D.

The largest, showiest wild flower on Greek hills and mountains each spring is the peony. Now primarily the interest of horticulturalists, peonies were for centuries considered invaluable medicinal plants. A Greek botanical illustrator, museum founder and political figure has taken it upon herself to stimulate both scientific and cultural interest in the native Greek plant. Niki Goulandris has done a series of watercolors to accompany a recent scholarly survey of Greek peony history and taxonomy, which includes newly discovered species. The museum Goulandris and her husband founded has produced an exhibition, on display at the American Museum of Natural History in New York until August 12, tracing peonies from the herb lore of ancient Greece to modern botany.

"I'm always intrigued by the long use of plants. Peonies were in medicinal use over thousands of years," Goulandris told *SCIENCE NEWS* in a recent interview in New York. She says she chose herbaceous peonies as her focus because of their spectacular beauty, their importance in legend and their Greek origin. It has taken her and her co-workers 14 years to collect and paint all the Greek wild peonies, and she hopes still more wild varieties will be found. "I am very glad I'm going to help repatriate the plant," says Goulandris, who previously published 132 of her botanical illustrations in a book, *Wild Flowers of Greece*.

The earliest known mention of peonies describes medicinal qualities, which haven't been explored by modern science. In fact, the name comes from Paeon, a follower of Aesculapius, the god of medicine. According to myth, Paeon used a powerful healing extract from the plant's root to cure Pluto after he was injured in the Trojan War. Aesculapius, jealous of Paeon's success, plotted to poison his follower, but Pluto saved Paeon by turning him into a peony plant.

Early medicinal works describing the peony include a first-century encyclopedia on medicinal plants and a popular prescription book compiled between A.D. 200 and 400, which became in 1481 the first printed herbal. Among the uses of the bitter bulbous root were the treatment of abdominal pains, jaundice, and kidney and bladder troubles, as well as promotion of menstruation and care of women after childbirth. The seeds, when drunk in mead or wine, were thought to be effective against pains of the womb, nightmares and hysteria. The peony was also considered a remedy for lunacy and epilepsy.

Superstitions arose that the healing power of the peony was so great that to collect it one risked disfigurement or death. Pliny the Elder wrote in the first century that Mars, the god of war, had charged the woodpecker with the task of protecting the peony, so any who gathered it in daylight risked getting their eyes pecked out. A third-century writer warned that anyone who killed the peony might die as a consequence and recommended using a dog to uproot the plant, so that the dog, not the collector, would suffer the consequences.

Goulandris speculates that these powerful superstitions served as a measure of conservation to protect plants considered valuable. However, she also says the superstitions might have been promoted by the herb gatherers to protect their trade.

Physicians stopped recommending peony therapies in the seventeenth and eighteenth centuries. Goulandris says that in small villages in Greece today, wild peonies might still be used medicinally. She encourages modern chemists to consider the peony, in ancient Greece called "queen of all herbs," as a source of potential therapeutic agents.

Lithography by T. Katsoulidis, after watercolor by N. A. Goulandris



The herbaceous peony from Macedonia (above) is one of a dozen lithographs done by hand in 15 colors by Takis Katsoulidis of the Graphic Art School in Athens. The lithographs are based on paintings by Niki Goulandris of the Goulandris National History Museum in Kifissia, Greece.





Hybridization experiments have added the yellow tint to the palette of the tree peony. The striking new possibilities include Gauguin (below, left), a first-generation hybrid having as father the cultivated Moutan and as mother the wild yellow Lutea. LEDA (below, right), the most recent hybrid, is $\frac{3}{4}$ Moutan and $\frac{1}{4}$ Lutea.



Photos: Daphnis

Heirs fit for a king

Peonies seem to attract images of royalty. While the Greek herbaceous peony was called "queen of all herbs," the other major peony group, originating in the Far East, was called "king of all flowers" by the Chinese. In fact, Chinese rulers decreed that this type of peony, called a tree peony, could only be planted in the gardens of the imperial palaces.

The large and early blossoms of the tree peony are responsible for its kingly status. Rarely grown in the United States, it is viewed by at least one plant breeder as a plateau of excellence to which all other flowers must still strive. Its blossoms, as large as 12 inches across, have inspired purple prose. A horticulturalist described the flower: "Sculptured delicacy and wavy elegance of its great translucent petals, crimped and glistening like a huge parrot tulip fashioned out of Oriental silk."

But this most regal of flowering shrubs, which has been grown in gardens for more than 1,400 years, will have no heirs if left to itself. Like many cultivated plants, its progeny are sterile. Horticulturalists propagate it by placing tree peony grafts atop the roots of herbaceous peonies. Imperial as the tree peony is, horticulturalists still itch to make a few improvements. The cultivated plant, for example, ranges from white to a dark red, but has no yellow tints. Adding new traits is difficult in a plant that will not breed.

Discovery in the 1880s of a wild yellow tree peony, called *Paeonia lutea*, increased the desire to breed the plants. French horticulturalists attempted to cross *P. lutea* with the woody stemmed cultivated form, called Moutan, and got disappointing hybrids. The flowers faced downward and were hidden beneath the foliage because the stems were too weak to support the large blooms.

A. P. Saunders, a peony grower in the late 1920s, succeeded in producing hybrids with more appeal. He got about 70 hybrids, ranging in color from silvery cream to the color of ripe grain and from dusty pink to an almost black maroon. Some of these are still sold by nurseries today.

The work went slowly; it takes a decade for a tree peony to grow from seed to blossoming plant. And the hybrids seemed to be sterile, so subsequent generations could not be attained.

In what has been called one of the most ambitious projects in gardening history, two New York horticulturalists in the 1940s took up the task of creating additional hybrid peonies. The goal was to achieve a greater genetic contribution of the sturdy Moutan and less of the *P. lutea*. William Gratwick of Pavilion, New York, and Nassos Daphnis, an artist in New York City, started with two of Saunders's hybrids and "by chance," according to Daphnis, managed to overcome their total sterility. Some of the pollen from those plants was fertile and succeeded in back crosses, finally producing some third-generation plants.

The hybrids were considered to be spectacular. Some had pure yellow flowers; some were patterned in yellow and red; others bloomed pink with a blue cast. More than 30 of the "Daphnis hybrids" have been remarkable enough to warrant distinct variety names, and some are currently sold by nurseries.

The most recent success is the first hybrid made up of 75 percent Moutan genes and 25 percent *P. lutea*. Daphnis says, "It's quite good, with a good stem and big flowers."

Just this year Daphnis began what will be at least 10 years of work to obtain a plant seven-eighths Moutan and one-eighth *P. lutea*. Because hybrid fertility remains low, he plays against big odds. In the spring he made 500 crosses, and he expects to obtain only five to 10 seeds. Then it will take two years for the seeds to germinate and another eight years for the plants to mature to bloom. "But that's the ultimate combination [of Moutan and *P. lutea* genes]," he says. "I'm absolutely sure it will be even better than the hybrids we now have." □