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## Goethe's Palm

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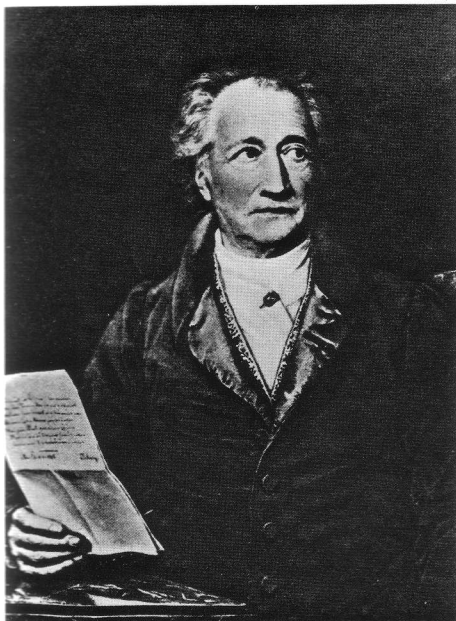
Palms and Goethe—best known for his epic, *Faust*—would seem to be an unlikely association. How could that famed 18th century poet-philosopher have known any palms first-hand? Born in Frankfurt in 1749, his adult life was mainly spent in Germany at the court of the Duke of Saxe-Weimar, far from palm habitats, and at a time when the tropical world of palms was still but sketchily known. However at the Duke's court Goethe developed interest in many fields of human endeavor including botany. And as we shall see, a palm had a part to play in the development of one of his concepts in natural philosophy.

As a boy Johann Wolfgang von Goethe showed a keen interest in plants, especially in the varying forms of their flowers. His lifetime overlapped that of the pioneer systematist, Linnaeus, whose writings, the poet admitted, had influenced him as much as had those of his favorite philosophers, Rousseau and Spinoza. But whereas Linnaeus' primary concern was with plant classification, Goethe (Fig. 1) was more intrigued with the form and structure of plant parts, the area of botany now called plant morphology. Indeed, Goethe first used the term "morphology" and because of that he is considered by some the founder of that discipline. His classic essay in morphology (*Die Metamorphose der Pflanzen*, 1790) dealt with metamorphosis, or change in plants. For example, it was his belief that all the distinct parts of a flower (sepals, petals, stamens, and carpels) are actually leaves which have been transformed or metamorphosed into the

several different floral structures. Goethe's thesis is still generally accepted today.

Although Goethe had been looking inquiringly at flowers ever since boyhood, his essay on metamorphosis appears to have been stimulated by a trip to Italy, his sole visit to that warm Mediterranean land. There at age 37 he apparently first encountered a living palm, one whose close study helped him in the development of his ideas about plant metamorphosis. The year was 1787, the place was the Orto Botanico (Botanic Garden) at Padua, and the palm was a garden specimen of *Chamaerops humilis*. This is the dwarf fan palm of the Mediterranean area, and the only palm whose natural range includes some of the milder parts of southern Europe. Exotic sub-tropical palms—like *Butia*, *Jubaea*, *Phoenix*, *Trachycarpus*, and *Washingtonia*—now so commonly planted in the area, were yet to be introduced.

The same palm clump that Goethe studied nearly 200 years ago still thrives at the same site. Ever since his visit it has been known as "Goethe's Palm." This seems appropriate for at the time of his visit to Padua, Goethe was already a well known and widely acclaimed scholar. In 1787 the palm was growing without shelter within the old walled garden. The association with Goethe eventually assured the palm of special care. Nearly a century ago a tall glass house was built to protect the Garden's most famous plant, and in it the palm flourishes today (Fig. 2). It remains seen mainly by students, for as with most



1. Johann Wolfgang von Goethe in 1828. Founder of the Romantic School of natural history and philosophy. J. K. Stieler



2. The shelter for "Goethe's palm," in the Orto Botanico, Padua.

Italian botanic gardens, this one is not open to the general public.

But even had Goethe never visited Padua in 1787, the clump of *Chamaerops humilis* would still merit special interest. For probably no other individual living palm plant has been maintained by man in cultivation for so many years. Its history is to be found in the publications of Padua's Orto Botanico, which, established in 1545, is the world's oldest botanic garden still functioning at the site of its founding. Actually a botanic garden at Pisa began two years earlier, but its site was subsequently moved. Like early botany itself, these first European botanic gardens arose out of man's primary concern with the culture and study of medicinal plants, the so-called "simples." Reflecting this original interest, the garden's earliest name was "L'Horto de i Semplici di Padoua" (Fig. 3), or "Garden of Simples of Padua" (1591).

## L' H O R T O DE I S E M P L I C I di Padoua,

Que si vede primieramente la forma di tutta  
la Pianta con le sue multure: & indi i  
suoi Partimenti distinti per Num-  
meri in ciascuna  
Aurella,

Intagliato in Rame.

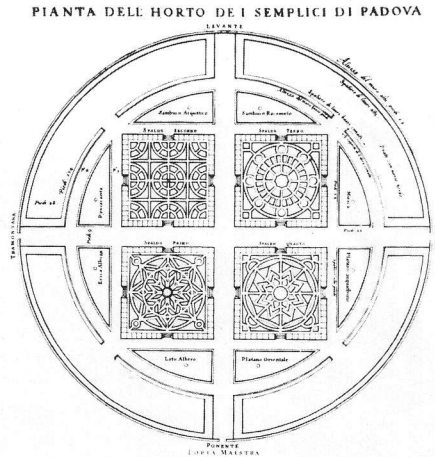
Opera, che serve mirabilmente alla memoria  
de' Studioli.

CON PRIVILEGIO.



IN VENETIA,  
Appresso Girolamo Porro. 1591.

3. Title page of the 1591 account of the Padua garden.



4. The design of the Padua garden from the 1591 account.

The 16th century design of Padua's old botanic garden is unique. The main circular garden plot is divided into four quadrants of patterned stone-edged beds, while the whole area is surrounded and protected by a high masonry wall (Fig. 4). Atop the wall is a balustrade decorated here and there with busts of early garden officials. Massive iron gates, sited at the cardinal compass points in the wall, serve as entrances. Protection was of much interest, for a number of new potentially valuable plants, obtained from distant lands, found their way first to gardens like this. Among such exotics introduced to Italy via Padua were the white potato (in 1590), sesame (in 1590), and the lilac (in 1665).

As in the past, the majority of species grown today are herbaceous, and as is still the custom in European botanic gardens they are planted in phylogenetic sequence, that is, with related plants together. Woody taxa occupy peripheral positions in beds at the base of the wall. In such a protected site, in the second quadrant near the Tramontana or "north-wind" gate, *Chamaerops* was originally planted. The year was 1585. Thus when Goethe visited Padua



5. *Chamaerops humilis* in the palm shelter has several stems.

the palm was already two centuries old, and doubtless a splendid horticultural specimen. In 1985 Goethe's palm will be a venerable 400 years old. In the garden it is surpassed in age only by an obviously frail Chastetree (*Vitex agnus-castus*), planted in 1550.

A characteristic of *Chamaerops humilis* is its suckering habit (Fig. 5). This produces a plant with attractive clumps of stems. As the stems age and die, new ones grow to replace them. This type of growth insures a sort of immortality to suckering species, especially when they grow in favorable sites. It is unlikely that single-stemmed palms can grow to such a ripe old age. The suckering habit helps explain why Goethe's palm has thrived for so many years. Of course it is not uncommon for woody trees to grow for centuries or even for millenia with positive evidence of their age given by a simple count of the annual

rings of wood. As monocots, palms lack such rings. So although we have historical proof that Goethe's palm has been growing since 1585, it is unlikely that any of the individual trunks originally produced still stand today, or were even existent at the time of the poet's visit. Only a continuing program of systematic marking and recording of all trunks as formed could give an idea of how long they tend to live.

When Goethe's palm was first planted it probably bore the simple garden label of "Palma humile" meaning dwarf palm. We can assume this because this name appears in the garden's first printed guide published in nearby Venice in 1591 (Cortuso). Besides giving a detailed description of the botanical garden, the guide lists alphabetically in a curious assortment of names the 1,168 kinds of plants grown in the garden at the time. The first entry under the letter "P" is "Palma humile," the only palm (Fig. 6), and one of relatively few names given in binomial form. This is of course a pre-Linnean epithet, for a formal system of binomial nomenclature had not yet been established.

The name "Palma humilis" apparently originated with Caspar Bauhin (1550-1624), a Swiss botanist-physician and author of one of the first natural classifications of plants. Bauhin used genus-names in much the same way that botanists do today, and he also practiced a kind of binomial nomenclature. According to Gola (1947) Bauhin studied at the Orto Botanico, and thus may have become acquainted with this Mediterranean species at the time, resulting ultimately in his giving the palm its first scientific name. In any event, when Linnaeus established the generic name *Chamaerops* in 1753, he listed several of Bauhin's earlier binomial names as synonyms, and borrowed one of his predecessor's earlier specific epithets to complete the name *Chamaerops humilis* that we use today.

One may wonder why the Mediterranean dwarf palm was originally introduced

## DE I SIMPLICI.

Origano saluatico  
Oriola  
Ornithogaiio  
Orno  
Orobanche  
Orobi, & loro specie  
Ortica  
Oriza  
Orzo Murario  
Orzo senza scorza  
Oliride  
Osmonda  
Oxiacantha  
Oximirfinc  
Oxis

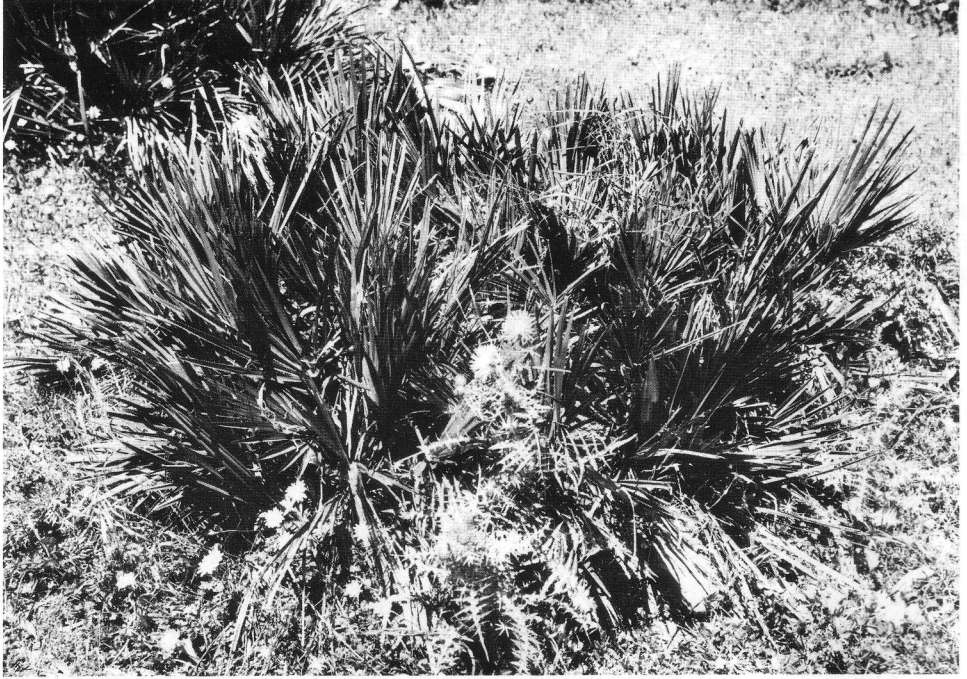
## P

P Alma humile  
Paliuri, & loro specie  
Panporcino  
Panace Afclep.  
Panace chironio  
Panace Hcrocleotico  
Pancratio  
Panico  
Papaueri, & loro specie  
Parietaria

## C Paris

- 6. The listing of "palma humile."

into Padua's Garden of Simples. The palm is not an herb nor probably a "simple." Perhaps at the time its fruits were believed to have medicinal properties, though I know of no references to such. However, as is the case with certain other palms, *Chamaerops* produces tough leaf fibers that have local use for making simple brushes and rope (Polunin and Huxley, 1970). Thus the palm may have been considered an economic plant and appropriate to join similar utilitarian species that soon were being cultivated, along with the "simples," in the beds of the developing garden. However, my own guess is that the palm was added to the plant collection because at the time it was the only representative available of a unique and then little-known family of plants. Finally it must also have appealed because of its obvious potential as a fine garden ornamental.



7. *Chamaerops humilis* growing in the wild, in "maqui" vegetation near Algeciras, Spain.

Actually, in the environs of Padua, *Chamaerops* was probably not too well known. In nature the species thrives farther south, especially in warmer parts of the western Mediterranean basin—in southern Spain and Italy and in adjacent parts of North Africa. Perhaps because the better soils have been claimed for agriculture, one finds it today typically growing in dry sandy or rocky sites (Fig. 7). In such places it is more often than not a low scraggly plant, truly a "palma humile." However, the species is polymorphic, and the variations in nature include among others considerable contrasts in size. Goethe's palm is typical of a tall variation called "arborescens." When grown under the favorable conditions of a garden, *Chamaerops* may be transformed into an ornamental of outstanding beauty, a beauty so well described by Dolby (1981). Certainly that is what

has happened at Padua's Orto Botanico. In Goethe's day the palm clump must already have developed into an outstanding and beautiful specimen. It is no less so today, spurred perhaps into even more exuberant growth by the fact that it is now growing in a protective glass-house. Some of the individual stems appear to approach twenty-five feet in height. The palm currently bears two simple labels. One reads: "*Chamaerops humilis* L. v. *arborescens*. a. 1585. Palmae"; while the other states (in translation): "Goethe's palm. Studied by Goethe in 1787 during his trip to Italy." Nearby on the conservatory wall is a plaque commemorating more formally the fact that this living palm was the one studied by the great-naturalist, and which resulted in publication of his *Metamorphosis of Plants*. But these labels leave much unsaid, for the *vita* of this palm is truly amazing. Its life spans the centuries



during which most of our knowledge about palms has been gathered, from before the earliest published accounts of the Dutch on the palms of Malabar and Amboina to those published in the most recent issues of *Principes*. Perhaps Bauhin, certainly Goethe, and who knows how many other plantsmen have enjoyed this historical plant. It is without doubt a Methuselah among living palms.

## PALM RESEARCH

Francis E. Putz and Noel M. Holbrook, Department of Botany, University of Florida, Gainesville 32611, have initiated a multidisciplinary study of the taxonomy, ecology, and economic history of the phytelephantoid palms. This major group, composed of three highly evolved genera, forms a distinct subgroup within the Palmae. These palms are so distinct, in fact, that up until the turn of the century, their inclusion in the Palmae was debated, being alternately placed in the Cyclanthaceae or the Pandanaceae. The taxonomy within the phytelephantoid group remains much confused at present. The ivory-like endosperm from these palms was once well known in commerce as vegetable ivory, "tagua," or "marfil vegetal." Millions of dollars worth of seeds were exported every year from Ecuador, Colombia, and Pan-

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ama to factories in Europe and the United States where they were carved into buttons and small ornaments. This thriving industry virtually disappeared with the advent of cheap plastics.

Along with trying to unravel the taxonomy of the phytelephantoid palms, the ecology of these unusual plants will be examined. These studies will be supplemented by a historical account of the vegetable ivory industry, tracing its growth and decline. Present uses of vegetable ivory and the potential for development of a cottage industry will be pursued. Such an industry would stimulate local economies, help preserve the tropical forests where the palms abound, and make vegetable ivory once again available to world markets. The investigators will appreciate information and suggestions concerning the biology and economics of vegetable ivory palms.

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