

Chamaerops



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Cover: *Butia yatay* and *Butia capitata* within the pindo palm group at the entrance. See article page 17.

Chamaerops is the quarterly journal of The European Palm Society. The European Palm Society (EPS) is affiliated to the International Palm Society and was founded in 1991. The EPS is a nonprofit organization dedicated to sharing information about palms and other exotic plants across the continent of Europe. The main goal of the EPS is to communicate with other enthusiasts through *Chamaerops*, the EPS website, or personally at Society meetings, in order to share ideas and knowledge of the successful cultivation of exotic plants. Above all, the EPS and *Chamaerops* are run by members, for members.

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Editorial

You might have begun to wonder if *Chamaerops* had vanished since you have not received a new issue for such a long time; but, we are not gone . . . yet. I am very thankful to the vast majority of our members, who have been so patient while the EPS steers through difficult waters. We apologize for the delay, and would like to fill you in on the current status of *Chamaerops*, and, indeed, the entire European Palm Society.

For most of its more than ten year history, the EPS was run by Martin Gibbons, who acted as editor of *Chamaerops*, putting together issues four times a year almost single-handedly, and by Tony King, who served in the much under-appreciated position of membership organizer and treasurer. While *Chamaerops* always had a tendency to be a little late (good things need time), over the last few years more and more time has lapsed between issues. As you can imagine after such a long stint, Martin was running out of steam, and was just too busy with his own business. I jumped in temporarily to act as the editor-in-chief to help get the magazine back to a more punctual schedule. After issue 41 was out and issue 42 was halfway done, Martin felt he would be able to resume his old position. Within a few weeks, however, some drastic changes made it necessary for Martin to devote more time to his business than ever before. Due to the many delays with production and printing, issue 42 did not come out until this spring. Luckily, at this time, member David Poole was taken aboard as the new editor, and was sent all the material that had been gathered for issue 43. When several months had elapsed and no issue was produced, we discovered that David had become seriously ill and could no longer do any work for the EPS. Now totally without an editor, and with Martin freshly married and increasingly busy with his own business, all the materials were sent back to me. After sorting, editing, and arranging all the articles that had accumulated by this time, we were able to bring out two complete issues with lots of great articles. To catch up a little

we decided to combine them into this large double issue #43/44. How the EPS will continue after this issue, though, I do not know.

While we have professionals to do the editing, layout and production, and of course the printing and mailing, we really need volunteers to help with the unthankful administrative work, and, most of all, an editor with enough enthusiasm, ideas, spare time, knowledge of palms, and a computer, to bring it all together and get *Chamaerops* back on track. In addition, we need articles. We need lots of articles, from all of our members, on palms, cycads, bananas, or whatever exotic plants are your favourite at the moment. I hope our members remember that *Chamaerops* is not a commercial but a plant society magazine, and thus lives only through the participation of its members. While we're proud to have grown so large, the number of contributors has not increased with the increase in membership. If we cannot find enough members willing to spend some of their spare time involved in the EPS, it will not be able to continue in its current form.

There are other options. We could consider going commercial, with a paid editor organizing the production and sales of *Chamaerops* and fees paid to authors for professional articles, but this would certainly raise membership fees dramatically. Another option is to join forces with the Pacific Northwest Palm & Exotic Plant Society in the US and Canada, who have a very similar climate to western Europe and publish lots of articles on the same topics, and who have already expressed interest in joining our membership to theirs. This, of course, would change the face of the EPS, making it more international. The last resort is to wind it all up, which, we can all agree, would be a great shame.

In the past, decisions in the EPS were made by only a few. In the future, we will need more input from all of you. I hope to receive lots of comments, suggestions, and help, in order to give back to the EPS the vitality it used to have. *Tobias W. Spanner*



The Tropic of Hales Owen

by Peter Bridgens

I have been an obsessive gardener for the past 20 years, and thought some of it was rubbing off on my wife when, upon moving into our house 12 years ago, she requested a south-facing garden. This, come to find out, was so that she could iron in the garden in the sun! I, however, had different desires for our garden. Initially, I had an ordinary suburban garden using plants which enjoyed a sunny aspect: a few shrubs and herbaceous perennials. All looked well in the summer, but for much of the year there was little to see. In winter the view from our sitting room was like the plains of Siberia. I wanted more. I'd always admired palms and quite fancied a home in the tropics. If you can't move to the tropics, however, the tropics have to come to you.

I started falteringly nine years ago with *Trachycarpus fortunei*, a large specimen at a bargain price. That settled in as *Trachys* do. Alongside was another bargain, an enormous *Yucca Gloriosa* for £9.00. Then came a *Chamaerops humilis* and several bamboos. Of course all these are small beer in climatic terms. We knew that with a southerly aspect and the close proximity of surrounding houses the garden was likely to be fairly protected. Then our next door neighbour built a conservatory, and what a difference that made. It gives out lots of heat. This together with heat from our large patio door has ensured that the part of the garden near to the house is virtually frost-free.

Top 4 pictures: Every square inch in this garden is used for exotic plants. Phormium, Phoenix, Trachycarpus and Yucca are just a few of the many varieties that are doing well here in the ground and in pots.

Article on page 7:

*Bottom left and right: The elusive *Juania australis*, growing happily in Ireland*

Next came a small *Butia capitata*. That's survived without winter protection for a number of years. It's planted in a sunny spot in light soil with a high level of added grit. It grows without pause in winter, putting on new fronds even in January and February. Further *Chamaerops* were purchased and planted, one in an east-facing location. All survive without protection even in the coldest of temperatures. (Recently a friend locally recorded -14°C . I don't record the temperature in my garden - I'm a worrier!). My only significant failure to date was a large *Brahea armata*, which was planted in a south-facing position. Unfortunately it succumbed to "death by drowning". Whilst the winter was mild it had been too wet and rot set into the crown of the plant. This was in spite of it having been planted in what seemed like optimum conditions. As an optimist I'm trying again with a larger *Brahea*.

Undaunted, I have added several very large *Phoenix canariensis* to the garden. Sadly, one failed to cope with the cold and a less than ideal position. The remaining plants have gone from strength to strength. One plant that lives in a very large pot remains outside in its container throughout winter, on the terrace. Even in the coldest weather its only aid is a single layer of fleece that I place over it. This plant has now developed a trunk of approximately 60 cm. I have to admit to being surprised at my success with the *Phoenix* since friends locally have failed with these. Another *Phoenix*, *P. roebelenii*, stands in a pot on the terrace for the summer months, though I would not risk it outside during colder seasons. Also out for the summer are various *Aloes* and *Agaves*. My garden is only 40 ft. square and whilst its small size helps in terms of the climate, it prevents the addition of further palms at present due to lack of space. If I can persuade some less interesting plants to die, then I have designs on a *Jubaea chilensis* and *Chamaedorea radicalis*.

The garden also supports a variety of other choice and tender subjects. *Lapagaria rosea* grows and flowers without protection. There are several varieties of *Aspidistra* which are growing well. Climbers/wall shrubs include *Berberidopsis corallina*, *Trachelospermum*, *Crinodendron hookerianum*, and *Muelenbeckia complexa*. Also featured are various Aroids, *Hedychium*, and *Canna*. Some of the *Canna* remain in the ground over winter without protection. I have been amazed at the hardiness of all these as well as *Watsonia* and some *Gladioli*. Other southern hemisphere plants of surprising hardiness are *Crinum powelli* and *Crinum moorei*, *Amaryllis belladonna*, and another hardy favourite of exotic appearance, *Dierama*.

While I've probably spent a small fortune on my garden over the past few years, it's still less expensive than emigrating to Singapore or Western Australia. And besides, my wife's iron wouldn't work on their power supply!

Post Script

In the West Midlands, this winter was a cold and wet one, resulting in some losses in the garden. These have been surprising. *Ceanothus arboreus* "Trewithen Blue" was crisped, *Cistus* succumbed, and most *Phormium* looked as though they had been landing pads for elephants. I'm a little disenchanted by *Phormium*, but *Astelia nervosa* makes a worthwhile if slightly smaller replacement. Perhaps surprisingly, *Acacia dealbata* was cut back but has survived. I'm loathed to mention *Cordyline* (someone once wrote in this journal "Palms are too expensive so plant another *Cordyline*"), but they have survived; even when the crown has been pulled out as rotten, a new one has developed. *Dasylyrions*, two varieties, though I know not which, have shrugged off winter without so much as a shiver, unprotected in their pots with a high proportion of grit in their compost. Unfortunately the *Butia capitata* is no more - crown rot saw it off. In its stead I have added a *Sabal minor*, which I'm hoping will settle

down in the Tropic of Hales Owen, and a *Yucca aloifolia* has been planted as well.



Juania australis at 53° N latitude

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temperatures had no apparent adverse effect on the young plant.

Because of the proximity of the sea, summer temperatures are moderate, seldom exceeding 25° C. The absolute maximum recorded since 1969 is 27.5° C in August 1995. Average annual rainfall is a moderate 650 mm spread fairly evenly throughout the year and periods of drought are rare.

The soil is derived from Cambrian shale and quartzite and contains approximately 25% clay and 4.5% organic matter in the top 8 cm. It is mostly acid to neutral (pH 5.0 - 6.5), in contrast to the alkalinity of most of County Dublin.

At present, *Juania australis* is growing more vigorously than any other member of the family *Palmae* in my garden. The Chusan Palm (*Trachycarpus fortunei*) is normally accepted as the most hardy palm growing in Ireland, but its speed of growth is less than that of *Juania*. I also grow the Mediterranean Fan Palm (*Chamaerops humilis*) and the Chilean Wine Palm (*Jubaea chilensis*), but these and other genera, such as *Brahea* and *Butia*, are slow growing.



Juania australis at 53° N latitude

*by David Robinson, Baron's Brae, Ceanchor Road,
Baily, Co. Dublin, Ireland*

'Take this palm, *Juania australis*. It won't survive with you; it doesn't even grow at Tresco in the Isles of Scilly, but try it anyway.' These were the parting words and friendly challenge from Chris Bayliss, Curator of the Royal Horticultural Society's Gardens at Rosemoor, Devon, England, as I left following a brief visit to the Gardens in September 1995. The young plant had been raised from seed collected in Chile by Lady Anne Berry, who had donated her three hectare renowned garden at Rosemoor to the Royal Horticultural Society.

Back in Ireland I tried to find out something about my new acquisition, a small, pinnate-leaved plant 40 cm high in a 20 cm pot. Information was nonexistent in my normal reference books, such as the New Royal Horticultural Society Dictionary of Gardening and W.J. Bean's *Trees and shrubs hardy in the British Isles*, and information was sparse in several books on palms. I did learn, however, that *Juania australis* is native of the Juan Fernandez (Robinson Crusoe's) island, but is now practically extinct there.

I planted the small palm in a sheltered location about 1 m from a 1.5 m high wall. The plant gets some morning and evening sun but is partly protected from midday sun by a 5 m high *Dodonea viscosa* 'Purpurea' to the south and from north winds by a 10 m high self seeded *Eucalyptus cordata*. Planted in September 1995, the *Juania* has grown well and has shown no signs of cold or wind damage throughout this period. It is now about 2.5 m tall with leaves up to 2.2 m in length.

Although I had been warned that the *Juania* was rare and difficult to grow, I gave it only the standard treatment afforded to all other trees and shrubs in my garden. The roots at the bottom of the pot were carefully disentangled and spread out in the planting hole, but no fertilizer was applied, either at planting or at any time afterwards. The small plant was kept free from competing weeds, mainly by careful spot treatment with the herbicide glyphosate, and the ground was not disturbed to avoid any root injury. No supplementary watering in summer or frost protection in winter was given.

I do not use insecticides or fungicides on any ornamental plants as these are generally unnecessary under our cool, temperate climatic conditions. In any case, the *Juania* showed no signs of pests or diseases and was completely trouble free.

As can be seen from my web site www.earlscliffe.com, my garden is situated on a peninsula just north of Dublin, Ireland. The Hill of Howth rises to a height of 180 m to the north and provides important shelter from cold northerly winds. On the south side the land extends down to high watermark. This fortunate situation along with the influence of the warm North Atlantic drift is responsible for the favourable microclimate. Air frosts occur regularly, generally between early December and mid April. The lowest winter minimum is usually about -4° C but, in December 1995, three months after planting, the temperature fell to -7.5° C, the lowest temperature recorded here since records began in 1969. The recent 2000/01 winter was also exceptionally severe when the temperature fell to -7° C in December and did not rise above -3° C for three days. These low

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Khéjur-gur

by Ganesh Mani Pradhan, Kalimpong, West Bengal, India

In late January of this year my wife Sangita and I decided to take a holiday from the cold winter of Kalimpong and spend a week or so in warmer climes. We did not want to travel long distances and decided to proceed to Shantiniketan in South Bengal. This would entail driving 3 hours to our nearest railway station of New Jalpaiguri and catching an overnight train to Calcutta. The railway station of Bolpur, which serves the Shantiniketan area, is about 4 hours short of Calcutta. We found ourselves woken up by a fellow traveler in the sleeper compartment at 4:30 a.m. informing us that we were about to reach Bolpur station. The train stops here just for around 5 minutes. Early in the morning Bolpur station is deserted. Dawn light filtering through the horizon of this flat land presented a different picture from that of the hills. There is a definite winter chill early in the morning in these plains that must be hardly a few hundred feet above sea level. We caught a rickshaw and proceeded toward the Tourist Lodge where we had made bookings.

Shantiniketan, “abode of peace”, is a university town, home of Vishwa Bharati University, founded in 1924 by Rabindranath Tagore, a literary stalwart and Nobel Prize winner for Literature in the year 1913. He was knighted by King George in 1915 but renounced his knighthood in 1919 following the Jallianwala Bagh massacre. The University is well known for its excellence in the departments of Fine Arts, Performing Arts, Music, and Languages, among other departments. Our idea of this holiday was to be away from the daily grind and also to study and photograph the process of manufacturing khéjur-gur, a coarse sugar made from the sweet sap harvested from trees of *Phoenix sylvestris*. There are vast groves of *Phoenix sylvestris* in the hot flatlands of Southern Bengal, and

manufacturing gur from the sap of these trees is a major seasonal commercial activity. We had learned from various sources that villagers in the area around Shantiniketan made good khéjur-gur in winter. Khéjur is the general Indian term for dates (fruit of *Phoenix dactylifera*) and gur is the term for molasses, whether a by-product of the sugar industry or that made from the sap of palm trees. *Phoenix sylvestris*, the plant, is known in Bengal as khéjur-gach. The term gach means a tree.

After a late breakfast we left the Tourist Lodge and found our rickshaw man waiting for us outside the gates. During our ride into the lodge in the morning we had talked to him about our interest in going out into a village to see the process of making khéjur-gur. He proved to be knowledgeable about the area and was to be our guide for the rest of our stay in Shantiniketan. We were taken to a village about 5 miles outside of Shantiniketan and the scenery changed as we got out of the hustle and bustle of a university town. A pastoral ambience pervaded as far as the eye could see. There were *Phoenix sylvestris* and *Borassus flabellifer* trees everywhere: by the roadside, by village ponds, in the middle of rice fields, and seedlings all over by the hundreds. On reaching the outskirts of the village we made enquires as to the possibility of buying some fresh khéjur-gur. We were directed to the house of a farmer in the locality. We made our way through the edge of a pond lined on all sides with massive *Borassus flabellifer* trees and the tall but daintier looking *Phoenix sylvestris*. A surreal reflection of these trees on the pond surface made us stop and enjoy the scene. The man, Anand, expert khéjur-gur maker, was having his morning meal with his family in the small courtyard of his home. After introductions we were welcomed into his home. No, he would not mind if we photographed him as he went about his activities, but the khéjur-gur production for day had finished, early in the

morning, and he was now going into the fields to plough the land. He did, however, agree to answer some questions.

Anand lives on land owned by a family. He cultivates the land and the main crop is rice. He gives the landowner a certain share of the harvest. All the *Phoenix sylvestris* and *Borassus flabellifer* trees in the land are the property of the landowner and the harvest derived from these trees, whether fresh sap, fermented alcoholic drink or *khéjur-gur*, is shared with the landowner. Is he happy? Can't complain, it is my destiny, he tells us. But I make the best *khejur-gur* in the area!

In the evening, as the sun sets, Anand climbs up the *Phoenix sylvestris* trees and sets his earthenware pots to collect the sap. Then, in the early morning before sunrise, he climbs up again, to bring down the pots filled with sap. The slightest rise in temperature starts the fermentation process of the sap. If one wants an alcoholic drink, then this is not a problem. If one wants to make *gur*, however, then the sap has to be processed immediately after harvest. If one wants to drink the sap fresh from harvest, it is a sweet, wholesome and nourishing drink devoid of any alcohol content.

During the summer, night temperatures are high and sap harvested ferments by morning, rendering the product fit only as an alcoholic drink. The sap during summer is also not as sweet. Therefore, the sap from *Phoenix sylvestris* trees is tapped only during winter, from around November until late February. The sap during this cold season is sweetest and does not ferment quickly due to the mild climate.

There is no organized *Phoenix sylvestris* farm or plantation. The seeds that the plants bear drop down and germinate, where goats like to nibble them. Some seeds settle in the thickets that surround the base of mature trees, where the goats cannot reach them, and thus can continue to grow. These become future providers of sap. Anand said he just gets a "feel" when a tree is mature enough for first harvest. We saw trees with a clear stem of

about 6 ft. that had two or three notches on the trunk indicating they had been harvested over the last couple of years. The whole process of harvesting sap from *Phoenix sylvestris* is told in eloquent detail in the book *The Palms of British India and Ceylon* by E. B. Blatter, published in 1926 (?). The book is a compilation of papers published in the *Journal of the Bombay Natural History Society* by the author during the period 1910 to 1918. I would like to quote a portion from the book:

"When the tree is ripe the process of tapping begins, and it is continued each year thereafter. There are in the Date-palm two series or stories as it were, of leaves; the crown leaves, which rise straight out from the top of the trunk; being so to speak, a continuation of it; and lateral leaves, which spring out of the side of the top part of the trunk. When the rainy season has completely passed, and there is no further fear of rain, the cultivator cuts off the lateral leaves for one half of the circumference, and thus leaves bare a surface measuring about 10 or 12 inches each way. This surface is at first a brilliant white, but becomes by exposure quite brown, and puts on the appearance of coarse matting. The surface thus laid bare is not the woody fiber of the tree, but is a bark formed of many thin layers, and it is these layers which thus change their colour and texture.

*After the tree has remained for a few days thus exposed, the tapping is performed by making a cut into this exposed surface, in the shape of a very broad V, about three inches across and a quarter or half inch deep. Then the surface inside the angle of the V is cut down, so that a triangular surface is cut into the tree. From this surface exudation of the sap takes place, and caught by the side of the V, it runs down to the angle where a bamboo of the size of a lead pencil is inserted in the tree to catch the dropping sap and carry it out as by a spout. The tapping is arranged, throughout the season, by periods of six days each. On the first evening a cut is made as just described, and the juice is allowed to run during the night. The juice so flowing is the strongest and best, and is called *jirran juice*. In the morning the juice collected in a pot hanging beneath the bamboo spout is removed, and the heat of the sun causes the exuding juice to*

ferment over and shut up the pores in the tree. So in the evening a new cut is made, not nearly so deep as the last, but rather a mere paring, and for the second night the juice is allowed to run....”

I had carried this book with me and read out relevant portions and translated it for Anand. He was not very impressed. He did not follow a fixed pattern in letting the trees rest during the harvest season. He said he just had a “feel” of a particular tree’s productivity and would skip harvesting from it and would resume again after a few days. I gathered that this “feel” would come to Anand when he climbed the trees to hang up the pots and studied the flow of sap as he scraped and pared the cut on the tree and also from the quantity of sap the tree produced.

* * *

Anand and family having their morning meal when we went to meet him. Anand left to work in his field. His wife offered us fresh *Phoenix sylvestris* juice from the harvest brought down by Anand in the morning. The sap in the narrow mouthed earthenware pots had started to ferment as was apparent from the froth on the surface. It was a pleasant tasting drink, but fresh in the early morning it would have tasted fabulous. Now, around 10 a.m., it tasted like a sweet but light beer.

We were asked to come over the next morning at 7a.m., when Anand would start making khejurgur from the morning harvest of sap. In order to photograph him putting up the earthenware pots for the night harvest we arranged to come in the evening around 4 p.m. whilst I would still have sufficient light to take the photographs. Usually, he would do this job late in the evening, almost at dusk

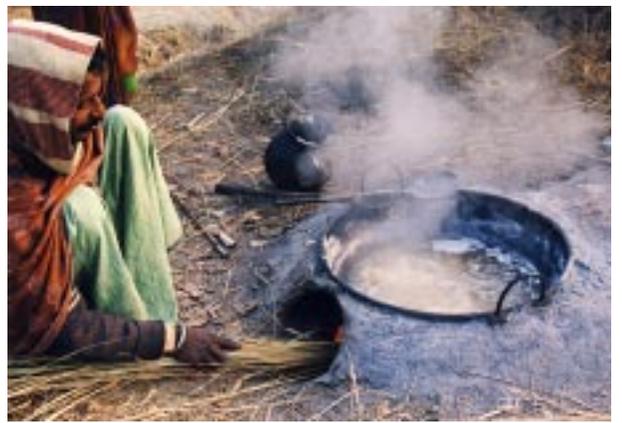
When we reached the village in the evening, Anand’s wife had cleaned the earthenware pots in the pond and was tying them together with coconut fiber rope. The ropes were of an exact length that fitted around the neck of the pot in a loose loop.

Anand was examining his instruments necessary for the job. These consisted of two sickles, which he honed on a log over which he sprinkled sand from the ground, and a flat wicker basket, which he tied around his waist with the basket resting on his lower back and buttocks. The outside portion of the basket had a small iron hook attached with thin coconut rope. He also carried a piece of stout split bamboo with a coconut fiber rope tied in the middle with a loose end about 3 ft. in length, which was attached to the hook on the basket, and a length of strong jute fiber rope which he tied loosely around his waist.

This rope loop on the earthenware pots served the purpose of hanging the pots on either end of a bamboo staff, which Anand carried on his shoulder. It was also used to hook the pot on to the wicker basket when Anand climbed the tree. Six pots each on either end of the staff was a heavy load and the pliant bamboo staff on Anand’s shoulder worked like a leaf spring keeping time with his gait as he walked toward the *Phoenix sylvestris* trees.

On reaching the grove, Anand unloaded the bamboo staff from his shoulder and gently lowered the pots to the ground. He went about his job with swift precision. First he removed a pot and hooked it on to the back of the wicker basket tied around his waist. He then untied the jute fiber rope from his waist, slipped it around the trunk, and tied the two ends in a knot. Leaning against the rope and adjusting the length a couple of times, he proceeded to climb the tree with agility, despite all the paraphernalia dangling from his back. He slid the rope up the tree trunk and hoisted himself in an incredibly fast gait. He stopped about 5 ft. below the crown of the tree and tied the stout bamboo stick horizontally to the tree trunk with two equal halves jutting out on either side. Stepping on the bamboo, first with one foot and then the other, he stood up, eyes flush with the tapping point just below the crown of leaves, leaning at an angle from the trunk on the rope that went around the tree trunk and his waist.

Reaching out for his honed sickle he proceeded



to scrape the surface of the cleft cut into the trunk. The V shaped groove was also cleaned and the pot was placed on the tree with the rope, the bamboo spout just above the mouth of the pot. Anand reached for a leaf on the tree and curled the tip of the frond around the neck of the pot. The leaflets formed an ideal mesh cover over the open mouth of the earthenware pot. This done, Anand backed down the tree trunk, again using the rope around the tree trunk and waist. Anand put up pots on 16 trees that evening and the light intensity had mellowed into dusk by the time he finished and we took our leave, promising to be with him early next morning.

During the couple of days we spent talking to him, in between climbing trees and fixing pots and general conversation, we were able to find out the general procedure of preparing a *Phoenix sylvestris* tree for harvest of sap.

On average, Anand harvests about 20 litres of sap each day, out of which about 5 litres is left to ferment for consumption as an alcoholic liquor, while the rest is processed into gur. We couldn't quite make it at 7.a.m. the next day, and so by the time we got to the spot near the pond, Anand was already on the job. Over a simple hearth dug on the ground a fire of dried reeds had been lighted. About three feet away, through a tunnel connecting the fireplace was the outlet for smoke. A large, black iron vessel sat snug on the mouth of the hearth blocking out all escape of flames and smoke. *Phoenix sylvestris* sap was boiling in the vessel and Anand was skimming out the white froth that formed on the surface. The ladle he used was ingenious, made out of a half of a hard coconut shell and a piece of bamboo pushed through two holes carved out at either end. For removing the froth from the boiling surface a common flat ladle with holes was used. The hearth seemed extremely efficient and small amounts of dried reeds kept the fire burning and the liquid boiling. After about 10 minutes of boiling, the frothing decreases and the liquid starts to take on a dark colour and begins

to thicken. The boiling sap is stirred continuously and when the liquid had thickened considerably, the vessel was removed. Anand removed a couple of ladles of this liquid into a receptacle. As this liquid cooled it turned into a dark burgundy colour. *Phoenix sylvestris* sap treacle had just been made! It tasted very sweet and wholesome and generously poured on to fluffy pancakes it would have been a treat! This treacle is known as *jholér-gur*. *Jhole* (pronounced as in "mole") is a term used for thin gravy. *Jholér-gur* is eaten with rice and village-made rice crispies, or with unleavened bread (*chappati* for those familiar with Indian food). The children, of course, love it as it is, fingers dripping with the sticky stuff.

The iron dish with darkening treacle went back into the fireplace and soon it started to boil. Further boiling reduced the contents and the treacle started turning yellowish and thickening considerably. The stirring was taken over by Anand's wife while he moved a little distance away and started to make an oblong mound of the sandy soil. On this mound, suitably leveled with his hands, he proceeded to make depressions with the bottom of a steel tumbler, in neat little rows.

Anand's wife and a cousin spread a colourful cotton cloth over this mound while Anand removed the dish from the fire. The treacle had now turned a golden yellow on the surface. Anand started to turn the coagulated treacle slowly with the ladle. The swirling motion of the ladle increased and the viscous liquid started to become thicker. Periodically, Anand scooped out a ladle full of the thickening treacle and poured it back, testing its viscosity.

Finally, when Anand sensed that he had the right viscosity, he started to ladle portions of it on to the cloth covering the depressions on the sand mound. Within about five minutes of pouring into these simple moulds, little round *khéjur-gur* cakes had formed. We tasted some and it was of a crumbly texture, very sweet. It would not be out of place to say that they simply melted in the mouth. The *khéjur-gur* cakes that had set were tenderly lifted and placed on a basket lined with

Bottom, right: Coco-de-Mer "seedling" in the crocodile house. See "The Sixth Meeting" on page 15.

straw and covered with cloth. When the whole process had finished, Anand's wife scraped the iron dish to pick up the khéjur-gur crumbs which she passed on to the children, We bought the khéjur-gur production of the morning, which weighed a little less than two and a half kilograms. At Rs.65.00 per kilogram it was about £2.50 or US \$3.70 for the lot. What about the landlord's share? Anand had already taken a few pots of the sweet sap to the landlord's house early in the morning and the khéjur-gur that we bought was his share of the produce.

Anand went off to plough his fields and we said our goodbyes to the family. Looking back at Anand's khéjur-gur production center we saw the iron pot resting on a stone, mounds of dry reeds, an open hearth, and a goat kid foraging for scraps of sweet khéjur-gur.

Some answers:

From around March when the weather in the plains of Bengal starts to become hot, the harvesting of *Phoenix sylvestris* sap for khéjur-gur production is terminated. Thus khéjur-gur is a winter delicacy not available during other seasons.

Old trees that have grown very tall and are a hassle to climb are left alone. Very old trees would start losing their crown. These are felled and the trunks used for fuel or posts for huts.

In some *Phoenix sylvestris* trees we noticed two things. (1) Plastic water bottles in place of earthenware pots on the trees during the daytime and particularly on young, short trees. Local drunks raid these trees during the daytime and put out their own plastic bottles after scraping the "V" cuts. The warm daytime temperatures give them warm fermented hooch. This does not seem to be much of a problem as there are plenty of trees around. (2) Some trees seem to overflow with sap and during the daytime and we saw white patches along the tree trunk starting from the harvesting point on top of the tree trunk. Yes, some strong trees are over productive and the sap keeps on

flowing after the pots are removed in the morning. This sap ferments on the trunk and starts frothing, but the sap stops flowing soon. Anand also taps *Borassus flabellifer* trees for sap. As opposed to drawing sap from the trunk of *Phoenix sylvestris*, the sap of *Borassus flabellifer* is harvested from the peduncle of young inflorescences. In the Shantiniketan region, sap harvest of *Borassus* starts from May and Anand asked us to be with him in June. May/June is also one of the hottest periods in that area and researching *Borassus Palm gur* at around 40 - 43°C is not a very exciting prospect. Maybe next year?



The Sixth Meeting

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at some of the other, non-public greenhouses designed for the cultivation of smaller plants. There we found lots of plants, not only palms, but also other very beautiful exotic plants like *Acca sellowiana*. The gardener answered all our questions with lots of patience, and, in turn, some of the members helped the gardener identify some of the palms. Everyone was happy.

The other group visited the public greenhouses, where we were able to see many of the plants that Mrs. Dr. Lo-Kockel talked about in the morning. It was here that we saw the *Lodoicea maldivica* – a dream with its bright green leaves! In the late afternoon, the EPS members again had the opportunity to share their experiences, as well as trade, buy, or sell seeds, palms, or palm books.

In conclusion, I would like to say thank you to the Wilhelma, and especially to Mrs. Dr. Lo-Kockel, for their help and good organization, and also to Tobias Spanner for his excellent film. I hope that perhaps we can meet in Jena in May next year!



The Sixth Meeting

by Angela Müller, Körnergasse 44, D-98617 Helmershausen, Germany

In 1996 the German speaking members of the EPS began what has become a tradition of yearly meetings. (Of course, all other members are welcome, too!) We decided that we wanted to learn about the most important and most famous German botanical gardens, and so began organizing meetings in the late spring or early summer at different places.

Our first three meetings took place at the Palmengarten in Frankfurt. The fourth meeting, in 1999, was at the Botanical Garden in Munich. Last year's meeting was at the Botanical Garden in Leipzig, and was especially interesting. Though the greenhouses were much smaller than in Frankfurt or Munich, we were able to hear very interesting reports about the activities of the University of Leipzig in the rainforests of Southern America and the research reports on palm chromosomes by Dr. Röser. In the late afternoon we were able to visit other greenhouses on the outskirts of Leipzig, which are not opened to the public.

This year's meeting was our sixth, and we chose the Wilhelma in Stuttgart, Stuttgart - Bad Cannstadt to be precise. About 30 members from all over Germany attended the May 12th meeting, which was perfectly organized by Mrs. Dr. Lo-Kockel. It was a very nice day with bright sunshine and a blue, cloudless sky--the perfect weather to visit our darlings, the palms, and of course, to take excellent photos.

At 10 o'clock all palm enthusiasts (with children and even a baby) met at the main entrance of the Wilhelma where Mrs. Dr. Lo-Kockel welcomed us. We got a first impression of the Wilhelma on the way to our room: besides a botanical garden, there is also a very, very nice zoo and some beautiful old buildings from the last century, too--absolutely recommendable! (One day

is not enough! If anyone is interested, I know some addresses of hotels or campsites near the Wilhelma, which I would be happy to share via fax or e-mail.)

A very interesting report on the history of the Wilhelma was given by Mrs. Dr. Lo-Kockel. The Wilhelma has a very long tradition, and we were able to experience some of it through a lot of wonderful slides of the grounds and its plants in years gone by. The most interesting information was on the germination of *Lodoicea maldivica* (Coco-de-Mer). The germination in a big black waste container was a small sensation. On the front of the container was a small door for viewing the germination progress, and we could see all the steps on slides. Now you can visit the *Lodoicea maldivica* seedling in the greenhouse next to the crocodiles. These "dangerous" animals guard this very rare (especially in Europe) palm seedling. The first seed held by the Wilhelma was stolen, but luckily they got a new chance. The new seed, also luckily, even germinated (it is not always easy!) and you can see the seedling in the photo.

The next highlight was a film about Tobias Spanner and Martin Gibbons' rediscovery of *Medemia Argun* in the Nubian Desert in Sudan near the frontier to Egypt. This film was very exciting, as such an expedition is not only dangerous and strenuous, but also risky, as nobody knows if the palm will be found and whether the expedition will be a lost effort. Fortunately, they found a nice specimen of this palm given up for lost. Our thanks to Tobias, not only for the excellent film, but also for his interesting explanations.

Mrs. Dr. Lo-Kockel booked some tables for the EPS members in restaurant at the Wilhelma for lunch, so that we could all sit together and share our experiences. It was very amusing. After the lunch break, we divided into two groups that then changed. One group took a look behind the scenes

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Not just another one...

by José M. Zerolo and Patricia Morales, Urb. Las Cañas 39, La Laguna, 38208, S.C. de Tenerife, Canary Islands.
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Palmetum of Santa Cruz de Tenerife

The goal of this article is to share with readers some of the best news we could have at the beginning of the present millennium.

About one month ago I was driving through one of the main entrances to the capital city Santa Cruz de Tenerife. The road runs along the coast and through the outer, industrial part of the city. This zone has been devoted for many decades to industry, a refinery, and a waste disposal area, thus becoming the least pleasant area of Santa Cruz. As time passed it became obvious that the city growth had to invade such an area and that all previous industrial character had to be changed in a radical way. Those plans included creating a coastal resort with a number of pools and green areas, an auditorium and other services. As a great part of the area was in close relation to the landfill, which was shutdown several years ago, it was necessary to give the area a face lift.

Top, left: Nice group of Wodyetia bifurcata.

Top, right: Ravenea rivularis 'sprout' up from the Malgasy lake.

Middle, left: Author with Cuban royal palms, Roystonea regia, at Caribbean area. A hedge of Cocos nucifera at the background.

Middle, right: Nothing better after a hard working day than a bit of mystic relaxation. Mrs. Morales (co-author) and Dypsis decaryi.

Bottom, left: Shade house. Bentickia nicobarica on the right. Two species of Licuala.

Bottom, right: A panoramic view of the Palmetum location.

Between the Auditorium and Congress Hall, the access road can be seen. On the hill on the right side, protruding into the Atlantic ocean, is the landfill converted into palmetum.

On page 29: Bismarkia nobilis. The Author did not resist the temptation to picture himself in the company of such a beauty and beast.

At that time, I only knew that this rubbish mountain was covered with earth and that some palmtrees could be seen growing on the side of the hill facing the road. From my moving car I could rapidly identify a number of Cocos nucifera, Dypsis decaryi, Wodyetia bifurcata, Roystonea regia, other Dypsis and Latania, plus others which seemed to be Veitchias. In the distance there were also quite a large number of palmtrees planted among buildings. I had no idea what was happening on top of this bad-smelling landfill until I stopped at a notice on which a description was printed. It read: "PALMETUM DE SANTA CRUZ." Well, that was good news for me! As I had known nothing about this Palmetum I was really anxious to visit it. Despite its being closed and under construction, I was lucky enough to receive permission from the Ayuntamiento (town hall / municipality) for a tour.

The idea for this Palmetum was Manuel Caballero's, head of the department of ornamental plants in the Instituto Canario de Investigaciones Agrarias (ICIA). Caballero concluded that no other area in Europe could grow such a variety of palms due to our climate. When finished, it should therefore be a must-see for palm enthusiasts, or even for interested locals and tourists in general. It is a kind of luxury, especially for European palm enthusiasts, to have such a tropical garden in Europe at a mere two to three hours flight.

Work on the landfill started in March, 1996 with funds mainly from the European Union. Since then quite a lot of work has been done. Mr. Carlo Morici, artist and designer of the Palmetum, proposed about 500 species be included. Approximately 400 species have already been planted and are growing quite well. Six of these species are unique to this Palmetum, another highlight for palm enthusiasts. The total number of palmtrees planted is 6000. The location is a hill,

42m in height and with about 120000 sq. m of surface, mostly sloped, but with 55000 sq. m of flat area. It also includes a shade house of about 2300 sq. m.

On the day of the tour, and at the very Palmetum door, I was introduced to the person in charge of public gardens in Santa Cruz. Mr. Morici showed us the Palmetum in a truly palm-loving way. Many readers may know him from various palm papers published in recent years. This young man is a mixture of knowledge, kindness, and ěpalm-loveí. We were lucky indeed to meet him.

As we entered the access road we were received by Royals, various Dypsis, and Latans, to name only a few. On the left there was a collection of different Butias, and opposite a very nice collection of Trachys. Just behind us there was a building which is going to be a museum of "palm objects," already containing more than 400 pieces. In front of us there was a pond surrounded by different palms, of which the multiple *Gaussia princeps* were the most striking. There we were introduced to the distribution of this breathtaking place. It is organised into nine geographical areas, including Indomalayan, Pacific, Australian, Central American, South American, Madagascar, Mascarenes, Caribbean, and African regions. In addition, there are special gardens for Hawaii and New Caledonia.

While an extensive description of the Palmetum is not possible here, I will try to give an overall impression. There are collections that have to be mentioned for their size, such as the Caribbean one, which already includes 1000 plants of *Thrinax* and *Coccothrinax*, making it the world's largest collection. I found the Pacific and Australia zones particularly eye-catching, with *Veitchias* full of colourful fruits and dense *Wodyetia* plantings. As a Madagascar and Mascarenes palm lover, I was not disappointed at all with the areas dedicated to a large variety of *Dypsis*, *Bismarkias*, *Latantias*, and *Hyophorbes*. Finally, the Cuban zone has its own coconut-tree beach, and the project includes a relaxing area in which you may have a drink beside a magnificent

waterfall.

The shade house looks, from the outside, like a huge, circular, white tent, not very high in appearance. Upon entering, however, you find there are actually two levels, one at ground level and the other at a much lower level. It is crowded with a large number of specimens, some of them still in pots, but most of them already growing in the ground. As you enter, there are some adult *Areca catechu* bearing fruit, and some *Caryota no's*--a most eye-catching species due to size and perfection. We also found a very nice *Camaedorea* collection, *Pelagodoxa*, *Licuala*, *Marojejya*, and *Verschaffeltia*, among others. There is also a central column where some climbing palms will be exhibited. Finally, as we make our way through one of the sides of this dream garden, the water from a waterfall flows just under our feet between the stones.

We consider ourselves lucky to have been among the few allowed to visit the Palmetum before it is opened to the public. There is still quite extensive work to be done, including all the lanes, ground work (grass, volcanic stones, etc.), and all the details that are compulsory for that kind of monographic botanical park, but for palm enthusiasts like us, the outstanding collection and atmosphere makes all the remaining work and equipment unnecessary. Due to the nature of the place, its inherent instability, the decomposing process of the underground wastes, and the sometimes windy conditions, it is clear that efforts to overcome such problems have been both complicated and expensive, but the results are really promising so far.

If you plan to visit this Palmetum in the future, and you surely should, you may need something like four hours to walk through the place without really stopping, as based on our two visits. If you are the type of person who likes to browse, take notes or pictures, or just likes to have a relaxed walk through the palms, then you may need two to three days to see all you should.

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Walking in the B.G.'s of Rome

by *Anonymus*

Hidden in the Jewish quarter of Trastevere, on the foothills of Gianicolo, lie the Botanical Gardens of Rome - a true treasure for all palm lovers of the warm-temperate world. Officially begun in 1883, it was actually built on the former historical garden of Palazzo Corsini dating from 1741, but the garden is even older. Its ancestry dates back to the Roman Age, making this a unique mix of the history of mankind and the story of plants.

So, let me be your guide as I take you along the paths of this urban oasis.

Getting close to the main gate, it can hardly be imagined what will be found inside, as very little is visible from the exterior. As soon as you enter, visible to the left, is a wonderful bed of *Dasyliirion* (*acrotrichum*, *glaucophyllum*, *longissimum*, and *serratifolium*). They are very old plants, and with their prostrate trunks and typical flower stalks, they give the effect of a true natural stand.

As you follow the path leading to the Palmetum, a border of large clumps of *Chamaerops humilis* can be seen on both sides. Many forms of this highly variable species, like *argentea*, *bilaminata*, *microcarpa*, *macrocarpa*, and *arborea*, are found here, but strangely not any *cerifera*. The path ends with two huge *Phoenix dactylifera* clumps and then the heart of the garden is visible. The view from this point is remarkable, with the 'Fontana del Tritone', specimens of *Butia capitata*, *Livistona chinensis* and a young *Jubaea* in the foreground, and an amazing background of tall *Washingtonia robusta* and *Phoenix canariensis* in a spectacular clump--not a common way of growing this species, but the effect works very well. Outstanding in all this crowded scenery are two trunked *Sabal palmetto*, which seem to create an imaginary gate, showing the way to walk. You then

reach the 'Sancta Sanctorum' of the whole garden, and as soon as you pass through that, the 'Dinosaur' appears. . .

Don't be scared, no Jurassic reptile wanders in the garden; it's only the nickname of the *Nannorrhops ritchiana*! This famous specimen is unique in the world for its shape and is a true masterpiece. Said to reach 6 m in habitat, this particular plant has one snaking trunk reaching almost 12 m, and the whole clump has a 20 m spread. It would probably make the Guinness Book of Records. You have to have a good look around to find out where the plant starts and where it ends. As *Nannorrhops* belongs to the *Corypheeae* tribe, the spent inflorescences look just like those of the *Corypha* species, only smaller. It is also monocarpic: the inflorescence rises right out of the centre of the plant's crown of leaves and this crown dies after it has set fruit. But, by an interesting quirk of nature, the whole plant doesn't die because it forks before the flowering head and only one head will flower at a time. The others will continue to grow and fork again, thus repeating the process. So, as time goes on, many flower stalk scars are visible along the main trunks. This plant produces a vivid orange fruit with very sweet pulp (I've tried it!), which is much appreciated in its native country.

Just behind, partially hidden by *Nannorrhops* foliage, there is a large *Rhapidophyllum* clump. It looks beautiful because it grows in partial shade and thus the leaves are a very attractive deep green. The first plants I ever saw of this species grew in full sun and did not look good, with a washed out green color and short petioles. I thought I would never bother growing this palm, but seeing this one changed my mind.

It's now time to meet another VIP (Very Important Palm!) of the garden. Like an old king



surrounded by his guards, the lonely *Trachycarpus takil* raises its crown several meters over the many *T. fortunei* around it. This is the only known specimen in cultivation and was apparently brought here by Professor Beccari at the end of the 1800's. It is left with all its dead leaves on, in a very natural fashion, as the staff of the B.G. want it this way. Sadly, the King is on the decline, so last year I donated a young plant to replace it one day.

Nearby are also *Trachycarpus martianus* and *wagnerianus*, *Trithrinax acanthocoma*, *Sabal uresana*, and *Sabal princeps*. The last is a highly ornamental species and its wide and strongly costapalmate leaves are remarkable. Still close to this crowded area is a small, natural cave with a seasonal spring of water. A pleasant planting of ferns has been created in a corner here, including two *Cyathea*, making the best of the natural moisture present.

There are still other jewels that will catch your attention. There are two *Brahea dulcis*, visible in both the green and blue clumping forms. Since my first visit, the blue one has fascinated me and I can't go there without examining this plant for a while. Frustratingly, this plant flowers every year but has never set viable seeds. *Brahea edulis* is also grown, with some old specimens present, as well as some young *Syagrus romanzoffiana*, *Livistona saribus* and *L. australis* currently on trial. A young Phoenix "atlantica" is also present, but taxonomists have yet to agree on the validity of this species.

Going towards the back, which is a higher area, you will see another giant: a *Brahea armata*, growing in a bed with short perennials, looking like an Egyptian obelisk. It is claimed to be the tallest in Europe, maybe 15 m or more, and its long horsetail-shaped seeds wave in the slightest breeze.

It's only from this point that you finally see the huge, fat *Jubaea chilensis*, partially hidden by other plants. It has a curious bent trunk for about 2 m, then it straightens. Maybe when young it was shaded by other plants, but like a slow turtle, step by step, the *Jubaea* has reached towards the sky.

Nannorrhops in Rome B. G. with serpentine Trunk.

The B.G.'s of Rome are not solely palms, of course. Many other remarkable specimens of several families are present, including large clumps of *Cycas revoluta* with a forked male plant; three *Nolina longifolia* with their corky trunks; an unusually huge *Yucca carnerosana*; rare conifers like *Agathis*, *Podocarpus*, *Torreya*, *Araucaria* and many other old trees; groves of bamboo such as *Phyllostachis*, *Arundinaria*, *Bambusa* and *Pleioblastus*; as well as a succulent bed, a small pond, and arid and tropical greenhouses. There's enough variety for all tastes.

Surely it is worth spending half a day there if you ever go to Rome. You will not be disappointed.



Not just another one...

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Currently the project is halted, awaiting further funds for its conclusion. This park should be economically self-sufficient on opening and, furthermore, will create a permanent research unit servicing both the park and local ornamental plant growers. If everything goes according to plan, this jewel should be open to the public in about three years, but I'm sure you will read a lot more about this *Palmetum* before then.

We must thank all the individuals whose hard work has turned this *Palmetum* into reality, including politicians, artists, and staff. For this paper we would especially like to mention Mr. Carlo Morici, and to thank him for his continued help and collaboration.

Half the world is online these days. So is the European Palm Society. For two years now we have been offering a constantly growing and improving website to the public and to our members. For the benefit of members who have recently gained access to the Internet, we would like to provide an introduction to our website.

The website is split into two areas:

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** Since maintaining our website requires a lot of work, we must charge a small additional fee. Thanks for your understanding.



The Book List introduces eight different categories of interesting books essential to the palm enthusiast. Some books are also available to order online through Amazon.com. Or, you can suggest your own favorite piece of palm literature.



The entrance to the member's area, with all the nice features we have set up for you. >

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Our more than 500 pictures can be viewed separately in the Picture Gallery.

The Chamaerops' Archive is the "heart" of our website. Issues 17 to 44 are online now, and issues 1 to 16 will be online by the end of the year. That's far more than 300 (!) articles on palms and other cold hardy exotics, all fully searchable by keywords. Newer issues can be downloaded as pdf-files in the original layout for offline viewing and printing. The latest Chamaerops issue is always published online as soon as typesetting is done, usually 3-5 weeks before the printed issue is delivered by post.



Get in touch with other members in our Discussion Forum: Discuss the "Topic of the Week" or start your own thread. Post your questions to the biggest knowledge base on the web: our members. Or maybe you can help other members with their "palm problems"



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Trachy Through the Roof

by Ganesh Mani Pradhan, Kalimpong, West Bengal, India

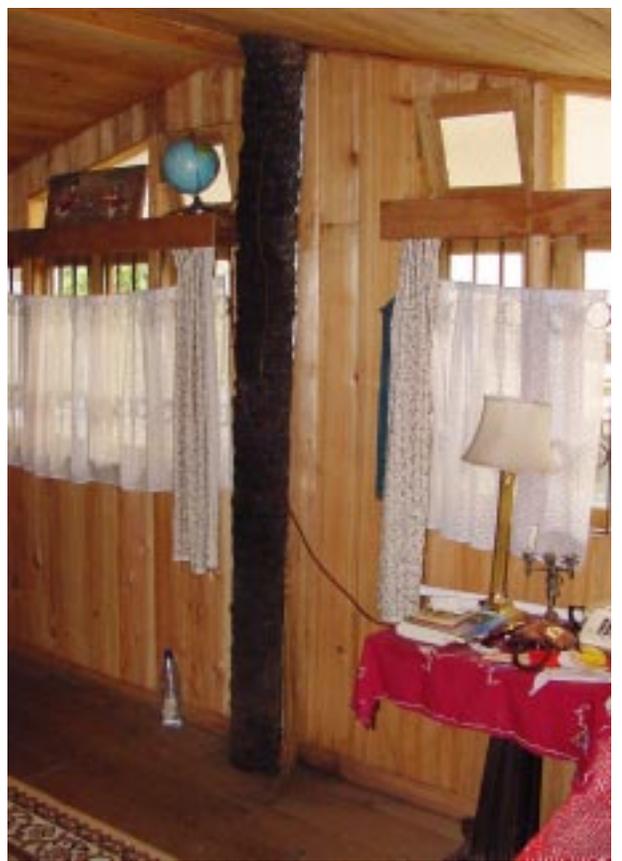
On a recent visit to Darjeeling I was walking into the main town through N.C. Goenka Road. This is a one-way street. At the entrance of the street, on the left hand side, I saw a huge clump of *Musa sikkimensis* growing out of a corner of a building. With its massive leaves and straight trunks it made an impressive sight. It was flowering with its typical almost horizontal (to the main trunk) inflorescence, and small fruit had formed. After a few zoom shots I walked on, keeping to the left on the walkway. Traffic in this street is always heavy and one forgets it is a one-way street, especially when vehicles of all sizes zip past and the exhaust blast can be felt as your trousers flutter like a flag. Walking slowly and taking in the general scene I chanced to look down through a gap between two massive buildings and stopped in my tracks.

What I saw was the amazing sight of an old *Trachycarpus fortunei* tree growing straight out of the roof of a small house. It took a long time for the sight to soak in, and when I was convinced that it was not a hallucination or mirage of some sort, I was able to take in the bigger scene of the surroundings. The house was a small, two floor affair with a shiny, new corrugated tin roof. Surrounding the house were other tin roof houses and on the outer periphery were large multistory buildings, some of which came up to the street level. Obviously some of the people living in these buildings disposed their plastics and other stuff through their windows and on to the tin roofs below. There were telephone cables and cables from cable-TV providers criss-crossing the scenery. Directly in front of the house with the *Trachy* through the roof was another old tin roof house, and from behind this old house one could see bright green leaves of a clump of *Musa* poking up.

Obviously *Musa sikkimensis* is the one species that will survive and grow happily in this cold climate. I had other urgent business to attend to and made plans to seek out the owner of the house the next morning. Needless to say a few well-aimed shots on the digital camera were made. >From my vantage point on the road I also did a quick survey of various windows, verandahs, and balconies of neighbouring buildings from where I could photograph the plant, with due permission of the flat owners, of course. During the course of the day I showed the pictures on the camera LCD screen to quite a few friends and acquaintances in Darjeeling and no one knew about this *Trachy* through the roof!

Next morning around 8 a.m. my wife and I plotted our way to the house using visual markers which we had marked the day before. Through a narrow lane we finally emerged in front of the house. After a long and admiring look at the plant we knocked on the door, which was opened by a gentleman. I explained as best I could my nature of business with him and he did seem a bit surprised. We were invited into the home and were told that the extension of the house with the *Trachy* belonged to his brother who was out at the moment but would be back anytime and would we please sit down and would we like a cup of tea in the meantime? He was in a hurry of sorts to get off to the school where he worked as an accountant. After about a half an hour wait and a nice cuppa and biscuits the brother arrived, and the story unfolds.

Mr. Sharda Prasad Bhattacharjee came to Darjeeling in 1880 and was employed in the administrative office of the Maharaja of Burdwan. The Maharaja had built his summer palace in Darjeeling and this magnificent building with a blue dome stands today. This period was around the time when tea gardens were being planted out



in the verdant hills, which eventually paved the way for the now famous Darjeeling Tea. Sir Joseph Dalton Hooker had completed his historic journey through the Darjeeling and Sikkim Himalayas 33 years previously, resulting in the publication of Himalayan Journals (Notes of a Naturalist). Gosh, the hills must have been full of palms at that time!

Mr. Sharda Prasad Bhattacharjee decided to make Darjeeling his home. His son, Mr. Surapati Bhattacharjee, after finishing his schooling, joined the Darjeeling Municipality and worked in this institution till retirement. As an employee he was entitled housing provided by Darjeeling Municipality. His two sons, Snigdendu Bhattacharjee, the accountant, and Chandrashekhar Bhattacharjee, the owner of the extension, who works in the Food Craft Institute, Darjeeling (an institute run by the Department of Tourism, Government of West Bengal, offering a study course in various disciplines of Hotel Management), still live in this old house.

I enjoyed talking to Chandrashekhar, and after a few pleasantries I found that I had met him previously. I am a member of Rotary Club of Kalimpong and a few years ago we had organized a Career Counseling Seminar in one of the schools in Kalimpong. I had gone over to the Food Craft Institute, Darjeeling, to invite some of the teaching faculty to speak to the students on Hotel Management as a career option. Chandrashekhar said that he and his brother grew up in the old house. The compound and neighborhood hold memories. He remembers the *Trachycarpus fortunei* tree since as far back as his memory can take him. When the yard was spacious and before all the houses came up in the vicinity, the *Trachy* stem served as a single wicket for neighbourhood cricket matches. The trunk base must have taken many a hit with the ball amidst joyous shouts of 'howzzaaaat"! The trunk has old nails hammered into it, from when it served as one end of a clothesline for hanging out the washing. The one thing that surprises him is that the tree has looked this big ever since he can remember!

In 1997/98, Chandrashekhar decided to add a

bedroom to the house. There was no space on three sides of the existing house, so he decided to build around the *Trachy*. None of the family members could even think of doing away with the *Trachy*, totem pole of childhood memories. I was then taken for a guided tour of the bedroom, which partially stands on cantilevered wooden beams projecting from an existing wall on the ground floor. A flight of narrow wooden steps leads up to the bedroom. The floor is made of hardwood and walls and ceiling paneled with pinewood. While laying the floor planks the carpenters cut out a circular portion to fit the *Trachy* trunk. The ceiling was a repetition of the floor with a hole through which the trunk passed. The corrugated tin roofing was a bit more difficult. Two of the roofing sheets had to have their edges cut out in a circular pattern so that they joined around the trunk in a proper fit with enough overlapping of the corrugation. Once the corrugated roofing sheets around the trunk were in place then the other sheets were placed outwards on each side. The rafters supporting the tin roofing are closer near the trunk. The small gap around the trunk where it emerges through the corrugated tin sheets has been tightly packed with polythene sheeting. This does not make a watertight seal and during the monsoons and other rainy days water seeps in. A small price to pay for having a *Trachycarpus fortunei* growing through your bedroom! Downstairs, the *Trachy* trunk enjoys a clear 9 ft. headroom before entering the bedroom floor. About 2 ft. after emerging from the roof there is a rather large tangled mass of humus obviously collected by the root mass of a *Cymbidium* plant that has made its home among the trunk fibres. Various small ferns also grow along with the *Cymbidium*. From this point upwards, the mat of fibres so typical of a *Trachycarpus fortunei* trunk is intact. The crown of the tree and a portion just below seems to be home to a colony of entire leaved ferns.

After bidding goodbye to Chandrashekhar I asked permission from the owner of a nearby building to go up to the balcony to take some photographs. Permission granted, I was able to make some photographs from a different

...continued on page 28

Palms at the Vogtland

by Frieder Höfer, Ebersbacher Str. 14, 08606 Unterhermsgrün, Germany

My love of palms started in 1984 with a seedling of *Washingtonia filifera*, which, even as a pot plant, shows amazing growth. In the winter 1999/2000, it had reached a crown diameter of 2 m and a large base. It was too heavy to bring it inside to a warmer environment, and got frost twice when the temperatures dropped to -6°C, and was not able to recover that spring.

Unfortunately, our climate is not exactly suitable for growing palms in general, but this is what makes it so interesting. It is already cold, and often snows, in November; temperatures in winter can drop to below -18°C; and we get our last frosts in April. All of this makes growing Mediterranean plants very difficult. In 1991 I bought two *Trachycarpus fortunei* in a hardware store, and I was disappointed by the poor growth. So, I planted these palms close to the west side of my house near a dry wall. In the first winter I saved them from the cold by constructing a rack over them, covered with plastic, which was weighed down with gravel at the ground. I heated the enclosure with a 150 Watt heat light and ventilated it with an opening in the roof.

At this time I was not a member of the EPS, and so I didn't have the opportunity to learn from the experiences of other palm growers. If I had, I probably would not have planted the *Trachycarpus* right in the cold clay. Astonishingly, this palm is now more than 2.5 m high. The new winter protection is made from hard plastic panels 200x20x2 cm with which are put together to form four walls. Every wall has a wooden frame and they are easy to transport separately, because they are light. In the south side there is a door, and the roof is made from the same material as the walls. All the materials are from a hardware store and cost

only around Euro 225.00. This "palmhouse" is excellent because the cost of heating with a fan heater is very low, it is easy to open during warmer weather, and it is easy to assemble and dismantle.

This winter, my *Butia capitata* and *Butia yatay* are also in this house. The space will soon be too small, and I will have to think about a new form of protection.

My other palms range from the seedling of *Jubaea chilensis* (the seed was collected on the Isola Madré at the summer meeting last year), to a 2.5 m *Phoenix canariensis*. I have around 24 species in different sizes. The *Jubaea* germinated after just four weeks, using a mix of sand and pine bark at 25°C. For the speed of growth, I've found the size of the pot is very important. The seedlings in the 20 cm pots have one leaf more than the plants in the 10 cm pots under the same conditions, the potting mix was made from loamy garden soil and sharp sand. I keep them in full sun and haven't lost any so far.

Growing the *Hyophorbe verschaffeltii* that I bought as a young plant in a garden center has been an interesting experience. Frequent problems with pests and the need for frequent watering prompted me to pot this plant in hydroponics a while ago. Since then it has grown very quickly, it is 1.3 m high now and free of pests.

Can anyone tell me something about *Howea*? My specimens are very different. One of them has grass green leaves, the leaves of the other one look more dark green to red brown. The new and freshly opened leaves are completely red brown coloured. Can this palm go outside in the summer?

I've found that *Parajubaea cocoides* grow very well in a deep pot; unfortunately this palm has still only undivided leaves to this time. Full sun is

good for this palm, as it is for *Brahea armata*, which is growing very slowly. I find the slower growth of my *Butias* to be good because their big pots are very heavy already and I couldn't move a pot that was any bigger. Fortunately, they are very tolerant of cold and wet conditions, and so I do not often move them. They have survived frost and -5°C during the night in March twice without damage.

To close I would like to make a suggestion: With the combined knowledge of EPS members, I think it would be possible to make a map of Europe with places of interest for palm enthusiasts, which could then be published on the internet.



Hardy Yuccas

...continued from page 35

Mitich, L. W. Uses of the genus *Yucca*. *Excelsa* No 7 Dec 1977.

Molon, G. (1914) *Le Yucche*.

Trelease, W. (1902) *The Yuccaeae*. Report of the Missouri Botanical Garden No 13, pp27 - 133.

Trelease, W. (1907) Additions to the genus *Yucca*. Report of the Missouri Botanical Garden No. 18 pp 225 - 230.

In addition the pollination process by *Yucca* moths is detailed in:

Riley, C. V. (1892) *The Yucca moth and Yucca pollination*. Report of the Missouri Botanical Garden No. 3 pp 99 - 158 + plates.

Collections

In Britain, there are two National Collections of *Yuccas* available for viewing.

My own which is held at Renishaw Hall,

Eckington, nr. Sheffield, by permission of Sir Reresby and Lady Sitwell is open to the public with the garden on Friday, Saturday & Sunday from Easter to September (10 am - 4:30 pm). Viewing by appointment can be arranged by writing to:

Trevor Key, 15 Newbold Avenue, Newbold, Chesterfield, S41 7AR, U.K.

The second collection is held by:

Colin Smith, "Spring View", 10, Spring Close, Burwell, Cambridge, CB8 0HF, U.K., Telephone: (01638) 742993 (Open by appointment)

Editor's note: For further details consult the NCCPG National Plant Collections Directory 2000 or visit their website - www.nccpg.org.uk



Trachy Through the Roof

...continued from page 26

perspective. This surely must be the luckiest and happiest *Trachycarpus fortunei* in the world!

Note: Any technically oriented reader of *Chamaerops* who could offer technical advice on making a watertight seal on the roof where the trunk emerges from the corrugated tin roof could write to the Editor for passing on the information to the author and then on to Mr. Bhattacharjee.



Bismarkia nobilis. The Author did not resist the temptation to picture himself in the company of such a beauty and beast. See article on page 17.



Hardy Yuccas

by Trevor Key

Since I became interested in Yuccas I have been surprised by the number of people who say " I have never noticed them before" even from some keen and established gardeners. Yet they have been in Britain since the middle of the sixteenth century and some are extremely well established in Europe, particularly around the Mediterranean, so much so that many people believe them to be endemic to that area.

My own interest started in 1990 when I acquired a specimen of *Yucca filamentosa* in flower and was impressed by a flower spike some five feet tall with hundreds of flowers which although lasting individually for only 48 hours or so the panicle lasted for three to four weeks. I tried to obtain other specimens of the genus, information and seeds, which proved difficult and so as I gathered more data on these plants I became hooked as a 'Yuccaphile'. My own collection of plants and information has grown but it is still difficult for any major detail about these plants to be obtained by the average gardener.

There are in excess of 50 species of *Yucca* ranging from ground hugging rosettes to tall 40 foot trees. Most are endemic to the western half of southern USA down to California and Mexico and are extremely well adapted to life in the deserts and foothills of the Rockies. Examples of the western Yuccas are not normally found in gardens but appear as specimens in botanical collections since generally they are slow growing and take a number of years to mature and flower. *Yucca glauca* is one that is occasionally offered for sale and will produce a rosette similar to *Y. filamentosa* but having tougher and thinner leaves which can have spiked ends (Names and data to follow).

The examples most commonly seen and offered

for sale belong to a group which I term the eastern Yuccas. They are the ones which were discovered first and have become the popular plants which we frequently see in our gardens and scattered around the Mediterranean: *Yucca aloifolia*, *Y. filamentosa*, *Y. flaccida*, *Y. gloriosa* and *Y. recurvifolia*. Their native habitat extends across the Florida peninsula, the Carolinas, Georgia, Alabama, Tennessee and to the eastern edge of Mississippi. All the above including a number of garden cultivars and hybrids were first put into a good semblance of order by William Trelease in 1902 and the following detail is mainly based on his criteria.

Yucca aloifolia (Spanish Bayonet)

A tree form which in its habitat can achieve a height of 7 m. In my experience I find that specimens can grow to 1.5 m within 5 years in a cold greenhouse. Not entirely frost hardy in northern Europe and requires some protection. Ideal for a conservatory and placing outside in summer. Occasionally available from nurseries and is easily grown from seed. The leaves are finely toothed along their edges and tipped with very sharp spines. Not recommended where it can be a danger to children or animals. It is very common on the east coast of Florida and Georgia and has become established on most of the Caribbean islands due to human intervention. A number of variegated garden forms exist but these are more difficult to obtain.

Yucca filamentosa

One of the most popular, very hardy, easy to grow and readily available. It forms a rosette at

ground level and flowers well after 3-4 years and if planted in numbers or allowed to form a reasonably sized clump will produce one or more flowers each year. In habitat it is widely dispersed throughout Florida, Georgia, North and South Carolina. Leaves 3 - 5 cm wide, 60 - 75 cm in length. Flower stalk up to 1.5 m tall can be simple or branched.

Yucca flaccida

This species is as popular and as easily obtained as *Y. filamentosa* and although classed as a separate species is thought by some to be a more northern form of *Y. filamentosa*, widely dispersed throughout northern Alabama and Eastern Tennessee. Trelease noted a number of variations between the two above species. It is now very difficult to find any *Y. flaccida* or *Y. filamentosa* with proven provenance. Trelease (1902) admitted that these two, due to their long use as garden plants even in 1902 had led to the possibility of numerous hybrids but that the two were separable. In *Y. flaccida* the leaves are broader and recurve more strongly. The flower spike is downy when in its early stages. The most common form seen is "Ivory" having cream flowers much paler than any other and standing out at right angles instead of hanging down.

Yucca gloriosa

Occurs as a mainly coastal plant in habitat from the southern edge of South Carolina through Georgia to the north west tip of Florida. The plant has been in cultivation since 1896 and several garden forms have been described in which the leaves vary in length, thickness, colour and also the flowers vary in the shape of the raceme, being simple or complex. *Y. gloriosa* will form a small 'tree' having a stem up to 2 m high with numerous rosettes.

(A recently published book, not available at the time this article was written, "Agaves, Yuccas, and Related Plants" by Mary and Gary Irish, claims that

Y. gloriosa is a plant with multiple trunks up to 4.6m tall, thin and pliable leaves 30 to 50cm long with very minute serrations on the edges and an acute but spineless tip. It is said to be hardy to about -6°C. This description corresponds with plants commonly grown as indoor plants all over Europe and invariably labelled Y. elephantipes. The true Y. elephantipes, according to the Irish' book should be a similar but much larger plant with leaves around 1m in length and is very sensitive to frost. Such plants can be commonly found in cultivation for instance in southern Spain, southern Italy and California among others. If this is true, the hardy plants commonly cultivated as and treated in this article under the name Y. gloriosa would then have to be regarded as forms of Y. recurvifolia or possibly as hybrids between this and another species. Hopefully, a book currently under preparation by renowned Yucca expert Fritz Hochstätter will clarify this problem once it is ready for publication. In the meantime, please refer to "Agaves, Yuccas and Related Plants" by Mary and Gary Irish, which can be obtained through the EPS bookstore at www.palmsociety.org. ed.)

Yucca recurvifolia

This species is similar to *Y. gloriosa* except that the leaves are longer, softer and smoother. They recurve naturally forming a nicely rounded plant with the outer leaves drooping. Again there are a number of garden forms which have been developed and named over the years. The habitat area is more limited than that of *Y. gloriosa*, to the coast of central Georgia. I have found from my own experience that a number of cultivars of *gloriosa* and *recurvifolia* are often misnamed.

Cultivation and garden value

The Yuccas as earlier stated have been available as garden plants for a considerable time. They were extremely popular towards the end of the 19th century and on into the early 20th century. At this time they were put into some botanical order by

Trelease at the Missouri Botanical Garden. Later work has been carried out by other botanists and though considerable it is not easy to locate. Much work was done at the turn of the century on hybridisation. However after a hundred years or so, most hybrids have been lost in cultivation.

Most of the large gardens have examples of Yuccas as specimen plants, the rarer ones being found in botanical gardens and I have found it ironic that where a considerable number of plants are named these are just known as a "Yucca".

Y. gloriosa and *Y. recurvifolia* are particularly impressive as specimen plants especially in flower. *Y. filamentosa* and *Y. flaccida* need to be seen flowering in numbers especially on a good moonlit night!

Soil and position are not demanding provided the area is well-drained and plenty of sunlight is available. Specimens can be grown for foliage value by deliberately keeping them in the shade.

Seed is not always readily available and has to be obtained from specialised sources. Propagation from non-rooted cuttings is very easy. Remove a suitable cutting, treat with rooting compound and place in a mixture of compost and mainly sand until roots are established, then re-pot or place in the garden. If grown in pots for the patio it must be stressed that they need a large amount of root space otherwise plants will be "bonsaied." Plants are available from most plant centres. A relatively large plant can be expensive but then it may be 15 to 20 years old.

Catalogue of names

Yucca aloifolia

Can easily be grown from seed or cutting. The following garden forms are listed for interest and although sometimes found in botanical gardens, I have not yet obtained any specimens.

purpurea purplish leaved

marginata edges tinged with yellow or white
tricolor median yellow or white band bordered green
conspicua clustered trunks, leaves broader
tenuifolia leaves falcate and purplish

Yucca filamentosa

Variegated forms. A number of variegated forms are available and more seem to be coming on to the market. They vary from being merely striated to having edges or median lines of yellow or white. Various names are used e.g. Bright Edge, Golden Sword. I have a number of these which have been planted out for a few years. Although attractive none have reached the stature of normal plants. They all appear to be somewhat less vigorous in size, number of leaves and size of flower. Leaves up to 45 cm long and flowers not more than 1 metre.

bracteata very large form
concava larger plicate leaves

Yucca flaccida

f. orchiodes simple flowered form
glaucescens more glaucous and large complex flower
 "Ivory" a more recent, pale flowered form

Other names do exist but I have not been able to locate examples.

Yucca gloriosa and Yucca recurvifolia

I have grouped these two together since I have found that due to misnamed specimens and earlier hybridising attempts there is considerable overlapping of the two. I have collected a number of *Y. gloriosa* and *Y. recurvifolia* specimens from various gardens which show the variations possible.

Above: Yucca gloriosa grows only short trunks. Old plants can form large clumps.

Below, right: Yucca recurvifolia flowers profusely.

Center, left: Musella in February (See letter on page 42)

Below, left: Musella in July (See letter on page 42)



The leaves of *Y. gloriosa* are much shorter than *Y. recurvifolia* and are very plicate. *Y. recurvifolia* leaves are at least twice as long and have a smooth surface often serrulate (finely toothed edges). I cannot give data as to differences in flower as I have not seen enough in flower. Trelease has suggested that *Y. recurvifolia* may be a long established hybrid of *Y. gloriosa* and *Y. flaccida*.

Additionally several hybrids between the preceding named species were apparently produced between 1874 and 1910 by Willy Müller, Andre Deleuil and Karl Sprenger. It is possible that some of these remain in cultivation somewhere. Although many of their original names and provenance have been lost, a few have retained their identity and include:

Yucca gloriosa nobilis Leaves very similar to *filamentosa* but with spiny tips.

Yucca X floribunda data indicates this to be a *Y. gloriosa* X *Y. filamentosa* hybrid.

Yucca Emmanuel II Vittorio this is apparently a popular and well distributed hybrid from 1907 by Sprenger and would appear to be a hybrid of *Y. gloriosa* and *Y. aloifolia*.

Uses of Yucca

In Europe, *Yuccas* generally have been used for ornamental qualities in the garden. None of the *Yuccas* have any poisonous or toxic properties. In fact, most parts of the plants can be used for making household items or are edible. The *Yucca* was most important to the native Americans but their use has declined since colonisation from Europe. More recently *Yucca* juice has been used a treatment for arthritis in horses. *Yucca* leaves have also been tried on pig farms to reduce the ammonia content of their urine. Attempts to grow *Yucca* on a large scale as a source of fibre have not been very successful.

Propagation and seed availability

Propagation is quite simple involving removal of a suitable offshoot or semi-rooted cutting. Treatment with hormone rooting compound helps and a compost comprising at least 50% sand is suitable. Shoots can be obtained after flowering. The flowers appear from the centre of each rosette and after flowering that rosette will not produce further flowers until a shoot from beneath has grown to a suitable size. Removal of rosettes which have flowered is possible provided that this will not spoil the appearance of the plant. This will improve the growth of subsequent rosettes and the removed stem can have all its leaves reduced to approximately 2" and be potted up. Any shoots from these can then be removed when they reach a suitable size to produce more plants.

All the *Yuccas* can be grown easily from seed when available. Growth in the first few weeks is rapid and small plants will first produce a mass of roots compared to their size above soil level. Most of the *Yuccas* mentioned here will produce flowers within five years. In the case of the western *Yuccas* (see list below), growth is slower and some plants may not flower for a considerable number of years. I have found that seed is available from the following source:

Mesa Garden, P.O.Box 72, Belen, New Mexico 87002, USA.

Pollination

I mention and describe pollination since it is a specialised procedure carried out by moths which have a symbiotic relationship with the plants. The female moths collect a quantity of pollen and place it on the stigma of individual flowers and then pierce the ovary and lay one or two eggs. The larvae develop with the seed pod and utilise a small percentage of the eggs. They then drop off and pupate in the ground until the following year when fresh flowers and moths appear.

That the plants can be pollinated by hand is evident from the results of earlier enthusiasts. I

myself have produced seed of *Y. filamentosa* in two years to date 1993 and 1995 and these have produced two batches of plants in the garden. One of these batches has produced a number of flowers in 1998 and the second should flower in 2000.

Brief description & names of the western yuccas

angustifolia stemless, alternative for *Y. glauca*
angustissima stemless. Similar to *Y. glauca*
arizonica stemless
arkansana stemless
baccata eventually short stemmed. Leaves straight
baccata var. vespertina short stemmed, leaves falcate
brevifolia large desert tree
brevifolia var. jaegeriana tree, smaller than above
carnerosana tree
coahuilensis stemless, recent discovery
constricta short stem
elata small tree
elephantipes the supermarket yucca (enough said!)
faxoniana tree
filifera tree
glauca short stem
garneyi short stem, similar to *Y. glauca*
harrimanae small stemless variety"
intermedia short stem similar to *Y. glauca*
kanabensis small tree similar to *Y. elata*
louisianensis stemless similar to *Y. filamentosa*
mohavensis short stemmed similar to *Y. baccata*
pallida stemless
radiosa short stem
queretaroensis new discovery
reverschoni short stem
rigida short stem
rostrata short stem
rupicola stemless
schipigera stemless
schotti short stem
thompsoniana stemless
torcellii short stem, similar to *Y. baccata*
torreyi short stem similar to *torcellii*
treculeana short stem
valida short stem

whipplei stemless, has 5 subspecies varying in size
whipplei ssp. parshii the smallest up to 30 cm high
whipplei ssp. percursa up to 18"
whipplei ssp. intermedia up to 2"
whipplei ssp. caespitosa forms a number of offsets
whipplei ssp. whipplei up to 3"

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Bussell, J. (1971) Yuccas in Britain. Journal of the RHS pp 491- 495.

White, A. (1992) Yuccas not Yukkies. Chamaerops - Journal of the European Palm Society, July 1992 pp 17 - 20.

Anyone wishing to pursue research further could refer to the following references through the libraries system - these are the major works available to my knowledge.

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McKelvey, S. D. Yuccas of the southwestern United States Part 1 (1938), Part 2 (1947).

...continued on page 28

A Turkish Date Palm

by Marc Scholtes, Landgraaf, The Netherlands

About 17 years ago I visited the Canary Islands and brought some seeds back to Holland. They were *Washingtonia filifera*, *Phoenix canariensis*, and *Dracaena draco*, the dragon tree. Those little seeds grew into little plants, and that's how I got interested in palm trees. I tried to get more palms, but at that time the only palms you could get in Holland were the Canary Island Date Palm, *Chamaerops humilis*, and some *Chamaedora*.

In 1995 I saw Martin Gibbons on "Gardeners World" talking about palm trees that were maybe hardy enough for an English garden. I wrote a letter to BBC, and they gave me the address of Catalyst Television, which, in turn, gave me the address of Martin's nursery. Now I could buy my first *Trachycarpus fortunei*, and in the coming years my collection increased to about 27 different palms.

But that is not why I am writing this article. Last year we went on holiday in Turkey. It was a long ride from the airfield at Dalaman to Marmaris on the west coast where our hotel was. During the ride from the airport I saw a lot of plants you can only grow in pots at home, such as bougainvillea and Oleander and others. There were several fields with mostly *Washingtonia filifera* and some fields where *Phoenix* palms grew. Most of the hotels used the Canary Island Date Palm in their gardens, though in some places I saw *Phoenix dactylifera*, and I think I saw some *Phoenix theophrastii* as well, although those probably were there before the hotels were built.

We visited the town Içmeler and in front of a café called Anne an unusual palm was growing at the beginning of the sidewalk. This one, I think, was a *Phoenix dactylifera*. It had no trunk coming out of the base but had branches about 2 m high.

One was developed quite well and two others had just started to sprout. The owner of the café, a German who had lived in Içmeler for 30 years, told me that the fruit from this palm would be ripe in a few weeks and that it tasted very good. He told me that 30 years ago when he visited Içmeler for the first time there were only two hotels and a lot of palms growing on the beach. Every time a new hotel was built some palms disappeared, which were later replaced by other palms. He said that it was a pity that only a few of the big palms were left on the beach. In the old town, however, you could find some old palms that were there when he came to Içmeler the first time. I took some pictures of this, for me, unusual palm so I could send them to the EPS. The last day of our holiday we went back to Içmeler to drink some of the good coffee they served at café Anne, and to ask if I could take two seeds back with me so I could try to germinate them.

We went home with the seeds that unfortunately did not germinate because they were not ripe. Still interested, I looked in *Palms of the World* and learned that *Phoenix dactylifera* could have branches, so I had not seen something unusual. I searched in books and articles on the Internet for a picture of a *dactylifera* with branches but could not find one, and that's why I decided to write this article, so others could see this still seemingly strange palm.



Above: *The Turkish Date palm*

Below: *Phoenix canariensis* "Timaru", the original in New Zealand. (See letter on page 42)



Cold Hardy Highland Palms

by Ian Barclay, Olympia, Washington, USA

While many palm species popular in California are rapidly becoming better known in the Pacific Northwest, one important group of potentially hardy palms remains largely forgotten. This group is the highland palms. A few are discussed in old books and articles, but they have been very slow to make their way into cultivation and remain shrouded in mystery. I would like to consider the geography and climate of their natural habitat, look at a few of the species that are starting to become better known, and examine their potential for cultivation in the Pacific Northwest.

'Highland palms' are a rather loosely defined group of palm species that inhabit high mountainous areas. They grow exclusively in mountain ranges in the world's tropical or subtropical regions. Since these mountainous areas are significantly cooler than the steamy tropics beneath them, palms from these regions will grow well under cool moist conditions.

The species that grow closest to the equator, however, are not accustomed to seasonal change and must be somewhat adaptable to thrive in cultivation. Mountain ranges farther from the equator have more seasonal variation in rainfall and temperature and are therefore more likely to contain species that will perform well in lowland temperate climates such as ours. In the Pacific Northwest they are likely to be best suited to cool coastal areas with less seasonal variation in temperature and cloud cover.

Highland palms remain largely unknown in cultivation for at least two reasons. Probably the main reason is their inaccessibility, as many are found in some of the world's most remote and difficult-to-reach places. Many dwell on steep cliffs or in areas where roads are poorly developed or

nonexistent, necessitating multiple day trips or special equipment for seed collecting. Special permission from host countries' governments may also be a challenge. Few people will bother to trek up into the mountains in some far-off country to search for an isolated grove of palms, or to bring back seeds should they be fortunate enough to find some. A second reason highland palms remain rare in cultivation is that there are few places in the world where a large population exists in combination with a climate where they will thrive. The San Francisco Bay area is one exception: the climate there is comparable to tropical and subtropical mountain ranges, and some highland palms are being tried in this area.

I will begin with the Himalayas, a subtropical mountain range containing the world's highest peaks. The climate in this region is characterized by a consistent seasonal pattern. It is rather dryish and cool in winter and extremely wet in late summer. Although this is the opposite of the Pacific Northwest's precipitation pattern, many species from this part of the world still adapt well here. The constant summer cloudiness in Southeast Asia and the Himalayas keeps the summer temperatures lower than one would expect for such a latitude, enabling many of these plants to tolerate our cool summers.

One truly spectacular palm from the Himalayas is the cold hardy *Caryota* (Fishtail Palm), recently introduced as *C. 'Himalaya'* by European palm experts Martin Gibbons and Tobias Spanner. It is actually a montane form of *C. maxima*. Some years ago it was erroneously introduced into cultivation in California under the name *C. urens* 'mountain form'. It is single trunked, and, like other fishtails, it has beautiful, bipinnate leaves with sharply serrated edges. It grows in the Himalayan foothills near Darjeeling, India, to an elevation of 8,000 ft., and is also cultivated in Katmandu, Nepal.

Martin Gibbons estimates it will be hardy to about -7°C (19°F) as a mature tree. This estimate might be slightly optimistic, however, for all but the best provenances of this species—it will probably not be hardy enough to survive our Northwest arctic blasts, but it would be a fun challenge to try with some protection in the most sheltered microclimates.

More recently, Gibbons and Spanner have discovered a promising unknown *Caryota* species they are calling *Caryota* sp. 'Mystery'. It originates from Bhutan northward into the lowest parts of Tibet. It has the habit of suckering to form a clump of short trunks, like the tropical *C. mitis*. Because of this characteristic, it might be able to reach a large size in the Pacific Northwest between severe winters, and recover if it freezes to the ground periodically, in the same manner as *C. mitis* in Florida.

Although *Caryota* is a predominantly tropical genus, it is likely that hardier *Caryota* spp. may be found in Southeast Asia or the Himalayas in the future. *C. basconensis* and the Chinese *C. ochlandra* are somewhat frost tolerant, but probably not enough to be worth attempting in our region. Anyone attempting to grow *Caryota* in the Pacific Northwest should wait until the palm reaches a fairly large size before putting it in the ground, and water and feed it heavily so that it reaches a large size quickly.

Another promising palm recently discovered by Gibbons and Spanner in Bhutan and southern Tibet is *Arenga micrantha*. It is not huge but very impressive, characteristically forming multiple trunks. It would probably be at least as hardy as *Caryota* sp. 'Mystery', and should certainly be a good bit hardier than *A. engleri*.

Now we shall go to the Andes Mountains of South America, home to many fascinating genera including *Parajubaea* and *Ceroxylon*. The climate there is one of perpetual coolness, and, in the north, wetness. Most of the palms in this region are able to tolerate light frosts down to -3°C (27°F), but some of the species that grow at extreme

elevations, or south of the tropics towards Bolivia, are likely to be hardier. It will take quite a bit of adaptability if they are to tolerate our arctic blasts and seasonal variations in temperature and cloud cover, though it seems certain they will grow well in cool, wet weather—something we Northwesterners get more than our fair share of. Hot, dry weather is not to their liking, but I doubt this would be a problem in the Pacific Northwest with proper siting and watering.

Ceroxylon is a genus of about a dozen or more large, pinnate-leaved palms. They are known for their white waxy trunks, which in some species can grow to 60 m (200 ft.) tall—the tallest of the world's palms! This spectacular height makes them quite an eerie sight to behold in their native habitat. What's more, *Ceroxylon* grows at a higher altitude than any other palm. *C. utile* (now considered synonymous with *C. parvifrons*, a much smaller species) was once reported to grow at the incredible elevation of 13,450 ft. above sea level in Ecuador. (For comparison, the top of Mount Rainier, near Seattle, is 14,411 ft. high.) Unfortunately, recent attempts to find this elusive high-elevation palm grove were not successful. This report is now believed to be erroneous, but it does not rule out the possible existence of other high elevation stands that have yet to be discovered.

Many *Ceroxylon* species grow near the equator, and are best adapted to perpetual coolness with no seasonal variation whatsoever. This will probably not be a palm for more extreme inland areas such as the Willamette Valley of Oregon. Some species also grow at lower elevations in warmer rainforests. The most southerly ranging species, and probably the best ones to try in our region, are *C. parvifrons*, *C. vogelianum* (syn. *hexandrum*), and *C. parvum*. These can be found growing above 9,000 ft. in northern Bolivia. *C. quindense* seems at least as hardy as *C. parvifrons* in my experience, and may also be worth trying. *C. alpinum* (syns. *C. ferrugineum*, *C. andicola*) is not as hardy as some literature suggests, and is actually one of the more heat-tolerant species.

Attempts to grow *Ceroxylon* in California have

been rather unsuccessful overall, but there are some exceptions, especially in the San Francisco area and at the Huntington Botanic Gardens. Evidently they seem to have trouble withstanding the hot, dry summers in most of California, and overall they remain very rare. They are reported to develop dreadfully slowly from seed, remaining trunkless for 20 to 35 years—this is a palm to plant for your grandchildren! Trunk development is very rapid, however, when it finally begins.

Mike Lee of Colvos Creek Nursery on Vashon Island, Washington was one of the first to attempt *Ceroxylon* in the Pacific Northwest. He reported losing many of his seedlings to heat and drought, and observed that they would only grow while it was cool and rainy. Possibly nothing remains to show for his efforts. However, evidence in California suggests that older, established specimens of *Ceroxylon* spp. have formidable bud-hardiness, and may be able to recover well from severe frost damage as long as it does not occur too frequently. In addition, one of Mike Lee's *C. quindiense* survived the December 1990 freeze in the ground on Vashon Island! (This palm was eventually dug up and moved to Mexico.) Others have tried to grow *Ceroxylon* in the Pacific Northwest and failed, losing them to winter cold soon after planting. But until we grow one to trunk-forming size, I do not think we can get an accurate feel for their hardiness. It has been suggested that bringing the daytime highs above freezing would help them endure our worst winter cold.

Parajubaea is very striking in appearance, and has been described by some as looking like a coconut palm. Although related to the slow growing *Jubaea chilensis* (Chilean Wine Palm), they fortunately seem much faster growing than both *Jubaea* and *Ceroxylon*. Repeated efforts to introduce *Parajubaea cocoides* to the San Francisco Bay area from Quito, Ecuador, where it is common, have been hindered by problems obtaining stock. This species is found at 7,300 to 9,700 ft. above sea level in Ecuador. A few Pacific Northwest gardeners have tried it, and found it hardy to about -4 to -5°C (the mid-20s F) as a

young plant, though older specimens in California have recovered from temperatures as low as -9°C (16°F) in 1990.

Another species, *P. torallyi*, grows at the amazing altitude of 8,700 to 11,100 ft. in Bolivia. It is more cold hardy than *P. cocoides*, but unfortunately it is extremely scarce. This species has two distinct varieties, var. *torallyi* and var. *microcarpa*, of which var. *torallyi* is the larger and more vigorous. It has been introduced to Australia and southern Europe, but so far only two small plants are to be found in California. Because Bolivia is far enough south to have a more seasonal climate than the deep tropics, *P. torallyi* may prove very well adapted to the Pacific Northwest if it is hardy enough. Small seedlings have withstood -7°C (19°F) with only light to moderate damage in Italy. Despite growing in very dry areas of Bolivia, it has proven very tolerant of moisture in California. A third species, *P. sunkha*, is found at lower elevations in Bolivia, and is fairly similar to *P. torallyi* var. *microcarpa*. Seed of all four forms has recently been introduced into cultivation, so there should be more plants available to try in the future.

All *Parajubaea* spp. have a very vigorous, deep taproot system, and are probably not suited to long-term pot culture. If you are fortunate enough to obtain seeds, planting them in too shallow a pot is likely to stunt the growth of the plant. Like the other palms mentioned here, *Parajubaea* should be given careful winter protection for their first few years. They are likely to be more tolerant of our dryish summers than *Ceroxylon*. They may also hybridize with *Jubaea* in cultivation, which could make for some interesting future hardy palm possibilities.

So, when will we see these palms towering over

Above, left: Caryota maxima "Himalaya" in its mountaineous habitat in northeastern India.

Above, right: Arenga micantha in the remote foothills of the eastern Himalayas.

Below, left: Parajubaea torallyi var. torallyi is a popular ornamental in Bolivia.

Below, right: Ceroxylon parvifrons high up in the Andes in Ecuador.



our gardens and cities? These palms are only now being tested by pioneering palm growers and hobbyists, so no conclusive data will be available for many years. Some will not be fully hardy and will probably never be suited to widespread cultivation in the Pacific Northwest. The south coast of Oregon may give many highland species the protection from Arctic blasts they need for long-term survival. Others may find their microclimate of choice on islands in Puget Sound or the Strait of Georgia. Some may be completely hardy and adaptable throughout western Washington, Oregon, and southwest British Columbia. Some may fail completely. Perhaps one will someday replace *Trachycarpus fortunei* as our most popular hardy palm.

In any case, the presence of these and other remarkable palms ensures many years of excitement ahead in the realm of cold hardy palm cultivation. Future years promise the continuing discovery of 'new' highland palm species, and continued introduction of species that have not been cultivated in our region before! We have only scratched the surface with the species we have been able to obtain so far.

Reprint from the Hardy Palm International.



Letters

Pictures

I just wanted to share some pictures (see at bottom of page 33). My *Musella* plant goes through the winter as a bulblike, above ground structure. The two pictures were taken on the same plant. My *Musella* started to rest by mid January and woke up by mid June. These two pictures were taken in February (resting) and in July (growing). The minimum temperature this year was 10° C. Thus, the winter is quite warm (typically it is 12° C at night and 23° C during the day), but the *Musella* still detects the need to rest, maybe as a result of drought, wind, or day length.

Carlo Morici, Tenerife

Is it really *Phoenix canariensis*?

I thought you might be interested in this short tale of the Timaru *Phoenix canariensis* growing in my friend's back garden in Leigh on sea, Essex. It grows not down by the sea, but up on top of the cliffs where there is less influence from the sea, compared to where I live in neighbouring Westcliff on sea. This is one of the plants produced from the very first batch of seeds my father sent over from New Zealand in 1996. My friend kept it in its original pot for a little while as it was so small, but then thought what the heck and just stuck it out in the back garden in a east-facing border. It has had absolutely no protection whatsoever except the shrubbery around it, and it has grown to over three feet already. When it was planted it had only a couple of broad juvenile fronds. The only Timaru P.C. that I kept was from this original germination, and I only planted it out fully in the open last summer (2000). Obviously, having spent so long

in a pot has limited its growth, as mine is only about one and a half feet tall. Nevertheless, mine was given no protection this last winter, and had some very cold weather and snow with hard frost to put up with. This weather had no effect on it at all, nor on my friend's plant. I must admit that it is very nice to get feedback from people about their plants, especially when the feedback reinforces my belief that these *P. canariensis* palms are the hardiest of their kind to be found anywhere. It also appears that they are a variety that does not require lots of heat to put on good growth. It is interesting to think that these particular *P. canariensis* may be the purest line possible of this type as there are no other types of Phoenix grown in this part of New Zealand, making cross-pollination with another variety impossible. It is interesting also to wonder whether those early settlers in the 1850's actually collected the original *P. canariensis* seeds on route to their new homeland, when they called at Las Palmas for water and rations before the long, dangerous journey down the Atlantic, and then on to the new colony of New Zealand. (See picture on page 37)

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