

Remaining pages give detailed anatomical accounts of leaf, stem, and root for 128 genera arranged, except for a few genera of uncertain position, in major groups largely corresponding with recognized subfamilies or homogeneous tribes. The bactroid palms are separated from the main body of Cocoidae as are the chamaedoroid and iriar-toid palms and *Ceroxylon*, *Leopoldinia*, *Orania*, *Pelagodoxa*, *Pseudophoenix* and *Sclerosperma* from the arecoid palms. Here anatomy points to several already recognized problems in disposition of genera within the present Arecoideae and suggests a critical evaluation of the relationship between the bactroid palms and the Coccoideae.

An appendix (pp. 325-338) listing the distribution of the more important diagnostic characters in palm genera and a key to major groups based chiefly on leaf anatomy (pp. 71-73) should be especially useful in the identification or verification of sterile material to group or genus. Figures and plates are bound together at the back rather than with the various chapters.

If criticism can be levelled, it is that, of necessity, only about one-tenth the species and fewer than half the genera have been examined and that anatomy of

the inflorescence, flower, and fruit has been omitted. The author, however, clearly states that "... it has ... been my object to indicate some of the major deficiencies in our knowledge of the construction of palms rather than to produce an encyclopedia of assured facts." Further, that if the volume "will provide the stimulus for more intensive and accurate studies, then its production will have been worthwhile." It is already an invaluable reference book for students of palms. It is to be hoped that it will indeed stimulate further studies in anatomy as it surely will in the systematics of palms.

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Dahlgren, B. E. & S. F. Glassman. A Revision of the Genus *Copernicia*. 1, South American Species. *Gentes Herbarum* 9: 1-40. 1961.

The first part of a long-awaited study of *Copernicia* has appeared and manuscript for a concluding part is complete. The portion published deals with the South American species *C. alba* (*C. australis*, *C. rubra*), *C. cerifera*, and *C. tectorum* (*C. sanctae-martae*). The authors conclude that only one species, for which the correct name is *C. alba*, is present in Argentina, Bolivia and Paraguay.

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Some Palms Of Northwestern Mexico

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Around the California and Arizona deserts many a story tells of interesting but unlikely happenings to the wandering prospectors who have been addled by the searing summer temperatures. One such scorched prospector, rounding a turn in a steep narrow canyon, beheld to his astonishment a cool oasis with sparkling running water and hundreds

of sheltering palms. This in itself is not surprising to one acquainted with the distribution of *Washingtonia filifera*; but, this prospector's disbelief stemmed from his unlikely encounter with hundreds of palms that were not green, — they were snowy white! Not only were the palms white, but all the other vegetation shimmered in unwordly whiteness.

No one knows who that prospector was or where his white canyon exists, but the story persists. Is it fact or fantasy?

Shreve's "Vegetation of the Sonoran Desert" (1951) gives references to wild palms growing in the Mexican state of Sonora, just south of Arizona, and known there as *palma blanca*, or "white palm." Immediately it might be concluded that here is the basis for fact in the old prospector's story.

Palma blanca is listed in Dr. Bailey's *Gentes Herbarum* article on *Sabal* (1944) as *Sabal uresana*, the Sonoran palmetto. Its type localities are near Hermosillo and Ures and at San Carlos Bay, San Pedro Bay, and Nacapule Canyon, all northwest of Guaymas. Shreve lists them as occurring in the watered river valleys and at altitudes up to 4000 ft. on the pine and oak clad hills of Sonora to the east of Alamos and Ciudad Obregon.

In December 1960 an attempt was made by the writer to visit the region to the east of Alamos, but this attempt was frustrated because of the primitive roads. San Carlos Bay about fifteen miles northwest of Guaymas was easily accessible and three groves of palms were found in this area. On approaching San Carlos Bay the first group of perhaps a dozen mature *Sabal uresana* is found on flat land within a few yards of the road and about fifty yards from San Francisco Beach on the Gulf of California. At San Carlos Bay there is a secluded rocky and brushy side canyon containing half a dozen palms, most of which are sabals.

The narrow flat canyon floor behind San Carlos Bay is watered by an intermittent stream and contains hundreds of *Sabal uresana* in all stages of development. This large grove fits the popular

idea of a desert oasis as the surrounding area contains barren ragged mountains which are in turn flanked by sandy plains supporting only saguaro, pitahaya, and other kinds of cactus and xerophytic desert growth. The region has two seasons: winter which is warm and frostless and summer which is long and extremely hot.

Sabal uresana, as it appears at San Carlos Bay, reaches a height of about twenty feet. The tall mature specimens have a clean trunk with a diameter not greater than that of *Washingtonia robusta*. Smaller trees maintain their leaf bases giving a massive effect to the trunk. The cross-hatch design of the petioles is pronounced. As in all sabals the costapalmate form is present and this curving tendency in the fan of *S. uresana* is very marked. In December the trees drop fresh dark brown seeds. The large leathery textured leaves are colored dark green, not white, but there is a definite blue-white cast to both sides of the leaves that lends a strong suggestion of white. When the wind rustles the leaves into action this blue-white is strikingly apparent.

Gentry (1942) has recorded *S. uresana*'s Indian name as *tachu'* and describes the tree as follows: "Tachu' is a frequent and picturesque palm throughout the foothill country, at times with a very small crown of leaves spread on a tall (15 m.) slender column. Old plants are usually well spaced and scattered; the young often grow in thick colonies, especially along streams. The Guajary region is said to have nurtured a great population of these plants in earlier years. The natives attribute the present comparative paucity to a diminution of rainfall during the past twenty years (1920-1940).



1. *Sabal uresana*, San Carlos Bay, Sonora, from Kodachrome by R. Schnabel.

"Both Mexicans and Indians use the leaves in thatching roofs. The Warihios collect the terminal leaf buds and strip out the tender young leaves for basket-making. The soft, white vascular tissue of the heart is eaten raw or roasted in coal. The species is losing ground rapidly owing to onslaughts of human kind and rigors of drought cycle. A species of beetle is a persistent pest, destroying the seeds."

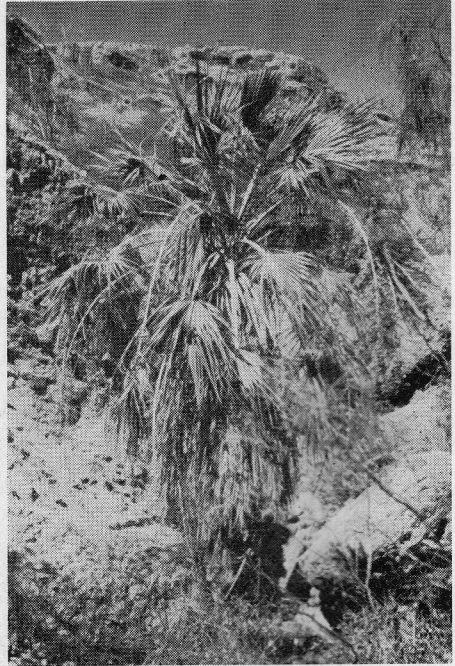
On the high ridges surrounding this San Carlos oasis are several specimens of *Erythea clara*. These were clinging to cracks in the rocky surfaces one tree separated from another by fifty yards to one-half mile. Two *E. clara* were growing with *Sabal uresana* in the side canyon mentioned above and standing

on the edge of a *tanque*—a pothole, or hollowed out small rock basin filled with stagnant water.

Three specimens of *E. clara* were growing together on a ridge perhaps five hundred feet above San Carlos Bay in a crack about six feet long and one foot wide. Even the cactus were stunted on these inhospitable ridges, but *E. clara* seemed to be thriving as all the trees were loaded with hundreds of pounds of juicy unripe fruit. These *E. clara* varied from six to twelve feet in height, the trunks all self-cleaning about a foot and a half in diameter. The fans are a brilliant light green with a slight glaucous blue on the under side. The fruit hangs from great arching stems almost to the ground.

In his first *Gentes Herbarum* article on *Erythea* and *Brahea*, Bailey (1937) describes *E. Roezlii* (corrected to *E. clara* in 1943) and its differences from *E. armata*. The most obvious difference is in color, as *E. armata* is ashen grey on both surfaces while *E. clara* is unmistakably green. There appears to be no popular name for *E. clara*, but in Guaymas where one garden specimen reaches thirty feet, it is called *palma verde*, "green palm." So in the same locality we have a "green palm" and a "white palm" and since both are basically green, the local name is probably the popular means of distinguishing one from the other rather than a description of true basic color. If this supposition is true, the old prospector's white canyon does not exist in Sonora!

Deep among the sabals at San Carlos were found, however, three small white palms! These three palms were about five feet tall bearing a sparse crown of small armed silver-white fans twelve to eighteen inches across. The trunks were stout, about one foot in diameter and they retained to the ground level the shag of the old leaves. There were no seeds, fruit, or seedlings of this palm, nor were there old seed stems present. Bailey lists *E. armata* as native to both Sonora and Baja California and while these may have been small *E. armata* they probably were *Erythea elegans*, a small palm (Francheschi palm) Bailey lists as reputedly native to Sonora but whose type locality is unknown. *E. armata*, across the Gulf in Baja California and growing under circumstances similar to those at San Carlos Bay, was observed in late 1959 and found loaded with fruit, and as a much larger tree than supposed *E. elegans*. The small trees of *E. armata* have a definite darker blue color while the *E. elegans* of equiva-



2. *Erythea clara* at San Carlos Bay from Kodachrome by R. Schnabel.

lent size are silver white, and the fans of the Sonoran palm are much smaller than those of the Baja California palm. It would be most interesting for someone with the correct botanical background to positively identify these small erytheas at San Carlos as either *E. elegans* or *E. armata*.

To one unfamiliar with palms, *Erythea armata* could pass easily for a "white" *Washingtonia filifera*. In the canyons of Baja California *E. armata* does not attain the stature of *W. filifera*, and its glaucous coloring is more blue than white. However, in Indio, California, there are two splendid specimens of *E. armata*, much larger than their wild brothers, growing under ideal conditions on the edge of a well cared for commercial acreage of *Phoenix dactylifera*. Under such ideal conditions the fans of *E. armata* have become almost pure white.

Since there are desert shrubs that show this same white-grey-blue quality (*Encelia*, desert holly) it is quite possible that somewhere in Baja California there is a well-watered ideally located canyon filled with *E. armata* and other "white" shrubs. When this canyon is located, the old prospector's white palm canyon will be known.

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The Botanic Garden at Bogor

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The Bogor Botanic Garden (*Kebun Raya Indonesia*—"Great Garden of Indonesia") is located at Bogor, formerly Buitenzorg, West Java, forty miles from Djakarta, the Indonesian capital. It was founded in 1817 as a scientific institution. Almost a century and a half have since elapsed and during this time the institution has grown into an organization of international importance. An illustrated article on the Garden in its present form appeared in *The National Horticultural Magazine* in July 1958.

The Bogor Garden, now covering two hundred and fifty acres, is predominantly an arboretum, although herbaceous plants also are cultivated on a large scale. [The arboretum is also devoted to native Indonesian plants.] Palms have received a great deal of attention; in fact, the palms are one group of plants in which the Bogor Garden takes particular pride.

Beautiful avenues and well arranged groups of palms mark the entrance of the garden. The ornamental qualities of these plants were the leading principle for the lay-out of the palm sections. *Roy-*

stonea and various species of *Livistona* are used for rows along the border lines. The American *Orbignya*, *Scheelea*, and *Attalea*, the African *Raphia* and *Lodoicea*, the high Malaysian *Pholidocarpus*, and the very decorative rows of *Phoenix Roebelenii*, are the most conspicuous palms near the entrance of the Garden. The *Lodoicea* palm is a female plant. According to Mr. Douglas, former Superintendent of the Garden, who had this plant under continuous observation, every year it forms abortive fruits without fertilization; these fall before they become ripe. Attempts to get male plants have not been successful nor has it been possible to obtain pollen for artificial pollination. Along the forest garden the climbing rattan palms form a kind of tropical jungle. A huge group of the spiny Indonesian *nibung* palm, *Oncosperma horridum*, is located near the Director's office. In front of the garden office we find among various American palms a highly attractive group of terminal flowering *Eugeissona* sp. from Borneo. Here, also is a non-stooling species of *Oncosperma* from Northern Sumatra which is still undescribed.