

- Butia Bonnetii*  
*capitata*  
*Nehrlingiana*  
*Caryota Cumingii*  
*mitis*  
*urens*  
*Chamaedorea concolor*  
*erumpens*  
*Tepejilote*  
*Chrysalidocarpus lucubensis*  
*lutescens*  
*madagascariensis*  
*Coccothrinax alta*  
*argentata*  
*crinita*  
*Dussiana*  
*Copernicia glabrescens*  
*hospita*  
*Torreana*  
*Corozo oleifera*  
*Dictyosperma album*  
*album var. rubrum*  
*aureum*  
*Elaeis guineensis*  
*Gaussia attenuata*  
*Heterospathe elata*  
*Hexopetion mexicanum*  
*Latania borbonica*  
*Loddigesii* (probably a hybrid  
 rather than the species itself)  
*Livistona chinensis*  
*decipiens*  
*Mascarena lagenicaulis*  
*Verschaffeltii*  
*Opsiandra Maya*  
*Orbignya Cohune*  
*speciosa*
- Paurotis Wrightii*  
*Phoenix canariensis*  
*dactylifera*  
*farinifera*  
*reclinata*  
*Roebelenii*  
*Polyandrococus caudescens*  
*Pritchardia pacifica*  
*Thurstonii*  
*Pseudophoenix Sargentii*  
*saonae*  
*vinifera*  
*Ptychosperma elegans*  
*Macarthuri*  
*Roystonea elata*  
*regia*  
*Sabal causiarum*  
*exul*  
*minor*  
*Palmetto*  
*parviflora*  
*umbraculifera*  
*Scheelea Lauromuelleriana*  
*Serenoa repens*  
*Syagrus coronata*  
*flexuosa*  
*Treubiana*  
*Thrinax microcarpa*  
*Morrisii*  
*parviflora*  
*Trithrinax acanthocoma*  
*brasiliensis*  
*Washingtonia filifera*  
*robusta*  
*Zombia antillarum*

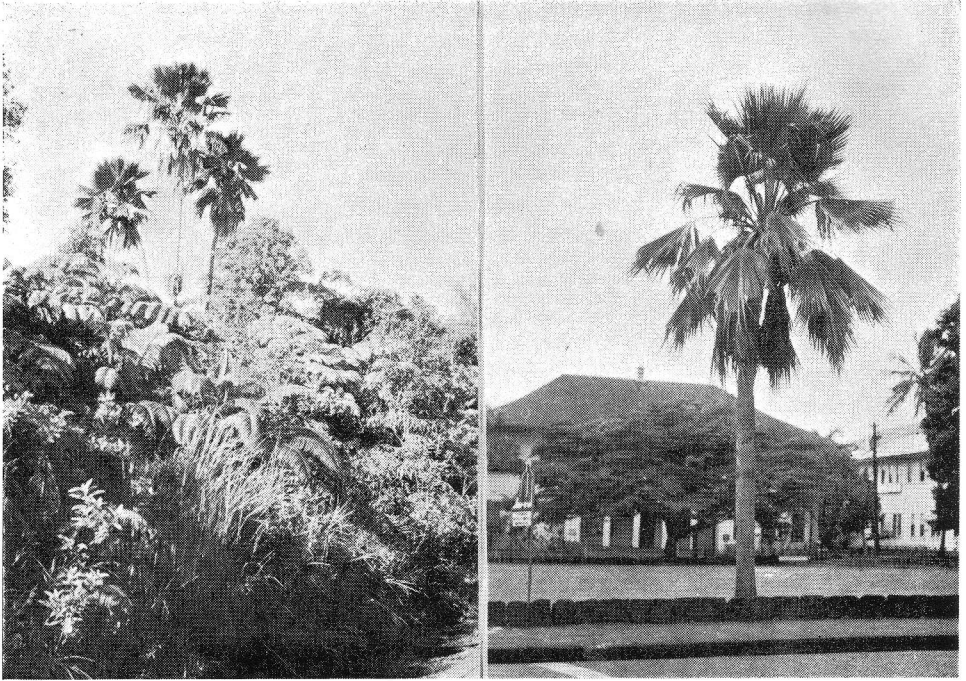
## The Genus *Pritchardia*—Loulu Palms

L. W. BRYAN

The interesting genus *Pritchardia* contains thirty-seven species plus six varieties, most of which are endemic to the Hawaiian Islands. In 1921, Beccari and Rock published *A Monographic Study of the Genus Pritchardia* (Memoirs of the Bernice Pauahi Bishop Museum 8 (1)—Honolulu). At that time, they described thirty-three species and five varieties, including *Colpothrinax*

*Wrightii* (*Pritchardia Wrightii*) of Cuba which is now generally considered distinct. Of this number, all of the varieties and twenty-one of the species were discovered by Rock. *Pritchardia* is the only genus of palms which occurs naturally in Hawaii except, of course, for the common coconut which has been distributed all over the tropical world.

The original palms found in Hawaii,



PRITCHARDIA BECCARIANA. Left, trees growing naturally in rain forest, Waiakea Forest Reserve, Island of Hawaii, elevation 1,000 feet; right, a tree forty years old growing in Kalakaua Park, Hilo, Hawaii, near sea level.

and now classified as *Pritchardia*, were at first considered as belonging to the genus *Livistona* (*L. Martii* and *L. Gaudichaudii* being the first two species found). The name *Pritchardia* was established afterwards (1860) for a palm found growing in Fiji (*P. pacifica*, Seem. & H. Wendl.) where *P. Thurstonii*, F. Muell. & Drude was also found. Later, *Livistona Martii* H. Wendl. and *L. Gaudichaudii* H. Wendl. were placed in this genus. Other members of *Pritchardia* are found in the Dangerous Archipelago (*P. Vuylstekeana* H. Wendl. and *P. pericularum* H. Wendl.).

How did the genus reach Hawaii? And after this genus arrived in Hawaii, how was it spread? The seed of most species is too large to be carried by any native Hawaiian bird. Many species occur naturally on isolated inaccessible knifelike ridges. The seed being large

and heavy, it is understandable that it would roll down and germinate below the parent tree. But how did the original plant secure a foot-hold near the summit? I wish that I could answer these questions. They pose an interesting problem.

*Pritchardia Beccariana* (named by Dr. J. F. Rock in honor of the late Dr. Odoardo Beccari of Florence, Italy, a well-known authority on the tribe *Corypheae*) pictured here is one of the many species endemic to Hawaii. This species occurs in the heavy rain forest (150 inches to 300 inches of rain per annum) at elevations of from 1,000 to 5,000 feet. At its maximum upper elevation it withstands several degrees of frost. It is slow-growing, living for many years, and may be planted at lower elevations where it makes an attractive street tree. The tree pictured has been

growing in the City of Hilo for about forty years.

Although most species seed freely, fertile seeds are not always easy to obtain. Tree rats are very fond of them and climb the trees in order to eat them.

Seed which happens to reach the ground is usually eaten by wild pigs, and the seed of some species is attacked by an insect. However, seed is occasionally available and can be supplied to anyone interested in limited quantities.

## Notes on *Pritchardia*

HAROLD ST. JOHN

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### *Nectar Secretion*

The palm trees of the genus *Pritchardia* are known from 38 species: 1 from Cuba and the Isle of Pines in the West Indies, 30 (and 6 varieties) from Hawaii, 2 from Fiji, 2 from the Tuamotus, and 3 from rather indefinite locations in Polynesia.

The genus has recently been given a monographic study by Beccari and Rock in which Professor Beccari states that he has no evidence that the flowers of these palms secrete any nectar.

On collecting trips to the upper ridges of the Koolau Mountains of Oahu I have become acquainted with several of the species. On January 19, 1930, the type locality of *Pritchardia martioides* Rock and Caum was visited. Here on the divide between Kahana and Wahiawa, where they are a conspicuous feature of the vegetation, the trees attain a height of 30 feet in the woods below the crest, whereas at the nearly bare, wind-swept divide the dwarfed trees fruit at a height of 5 feet. Specimens were collected on the Wahiawa side (St. John no. 10180). One of the panicles contained numerous unopened buds. During two days in the laboratory many of its flowers opened. After the dehiscence of the cap of petals, the large anthers radiate out at an angle of 45 degrees. The free tip of each filament is subulate and 2-2.5 mm. long. The anthers are borne by a staminal cup, 6 mm. long, which often protrudes 2 mm. above the calyx. The ovary is seated in the base

of this cup, and the stigma barely equals its rim. Fully formed buds are dry within, but those just mature are found to be nearly filled with liquid. After anthesis, the staminal cup is brimming full of a viscous, yellowish liquid that is perceptibly sweet to the taste. Professor R. S. Bean kindly aided in testing this liquid. With a capillary pipette two large drops were collected from some ten flowers. With Fehling's solution a strong test for sugar was obtained.

Careful dissection did not reveal any localized nectar glands. However, the whole staminal cup is of yellow tissue, 0.5 mm. thick. Its inner surface glistens and seems to be glandular and to secrete the nectar generally over its entire area.

On February 14, 1932, several groves of *P. Rockiana* Beccari were discovered at altitudes of from 1500 to 1800 feet on Laie-Malaekahana Ridge in the Koolau Range, Oahu. The weather was rainy, and the specimens collected (St. John no. 11559) showed no nectar. The next morning fresh flowers opened in the laboratory. All these had their staminal cups filled with sweet nectar.

It can now be stated that, at least in *P. martioides* and *P. Rockiana*, nectar is secreted in abundance.

### *Validity of the Hawaiian Species of Pritchardia*

In 1888 Hillebrand recognized two species and a suggested but unnamed variety of *Pritchardia*. Subsequent local collectors gradually added to the knowl-