

- Davis, T. A. 1961. High root pressure in palms. *Nature* 192: 277-278.
- Huber, B. 1935. Die physiologische Bedeutung der Ring- und Zerstreuporigkeit. *Ber. deutsch. bot. Ges.* 53: 711-719.
- Miller, R. H. 1964. The versatile sugar palm. *Principes* 8: 115-147.
- Scholander, P. F., Hemmingsen, E. and Garey, W. 1961. Cohesive lift of sap in the rattan vine. *Science* 134: 1835-1838.
- Tammes, P. M. L. 1933. Observations on the bleeding of palm trees. *Rec. Trav. bot. neerl.* 30: 514-536.
- 1952. On the rate of translocation of bleeding-sap in the fruitstalk of *Arenga*. *Proc. Kon. Nederl. Akad. Wetenschappen, Series C*, 55, No. 2.
- 1958. Micro- and macronutrients in sieve-tube sap of palms. *Acta Bot. Neerl.* 7: 233-234.
- Tomlinson, P. B. 1961a. *Palmae*. Vol. II of *Anatomy of the Monocotyledons*. C. R. Metcalfe, ed. Clarendon Press, Oxford.
- 1961b. Essays on the morphology of palms VI. The palm stem. *Principes* 5: 117-124.
- Weatherly, P. E., Peel, A. J., & Hill, G. P. 1959. The physiology of the sieve tube, preliminary experiments using aphid mouth parts. *J. Exptl. Bot.* 10: 1-16.
- Zimmermann, M. H. 1963. How sap moves in trees. *Scientific American* 208 (3): 133-142.
- 1964. Sap movements in trees. *Biorheology* 2: 15-27.
- and Tomlinson, P. B. 1965a. Anatomy of the palm *Rhapis excelsa* I. Mature vegetative axis. *Jour. Arn. Arb.* 46: 160-180.
- and 1965b. Unravelling the palm stem. *Principes* 9: 88-93.

Palm Hunting Around the World

HAROLD E. MOORE, JR. *

VI. New Caledonia and Fiji

On Sunday, April 5th, after a morning of collecting and photographing *Metroxylon Warburgii* on the island of Efate, I finally boarded the plane for Noumea where M. Lucien Lavoix, a dedicated member of The Palm Society, met me. As we drove from the airport, M. Lavoix pointed out some of the vegetation types that were later to become familiar, and I noted that a *Veitchia* similar to that just collected on Efate was planted occasionally by houses along the road, as it is also in Noumea. After dinner and an introduction to M. Lavoix's wife and children, I unpacked my bags in the quarters of the South Pacific Commission near the herbarium of the Institut Francais d'Océanie where most of the plant drying was to be done. Thus began a whirlwind palm tour of New Caledonia.

April 6th was occupied partly with the inevitable processing of accumulated materials, partly with an afternoon trip to Mount Koghi where M. Lavoix has a home and garden set in the rain forest.

Here we looked at two kinds of *Basselinia*, a most perplexing genus which cannot, I think, be understood without considerable field work on the island. The one which we collected is one of the handsomest with solitary (though perhaps not always so) stems up to approximately 12 feet high, the trunk dark green or nearly black on new growth. The leaf sheath is also nearly black outside but when removed is glossy orange-yellow inside. Pinkish bracts of the inflorescence turn red-brown at anthesis splitting to expose the dark red-brown inflorescence crowded with tiny dark flowers. We were to see this palm and others very similar to it elsewhere. Other palms grow about M. Lavoix's home but these we left for another day in order to prepare for a journey to the north and east of the island.

Next morning a party consisting of M. Lavoix, M. Luc Chevalier of the Musée Calédonien, M. Robert Baret of the Forestry Department, myself, and Jacob Boulango as driver, set off in a well-loaded truck for the town of Koumac as the night's destination. At lunch-

*From field work supported by National Science Foundation Grant GB-1354.



1. *Burretiokentia Vieillardii* grows with tree ferns on the property of M. Lavoix on Mt. Koghi

time we were in Bourail where a palm by a house opposite the restaurant caught our eye. Eventually a leaf and inflorescence were obtained with permission of the owners who told us the plant had grown from a seed removed

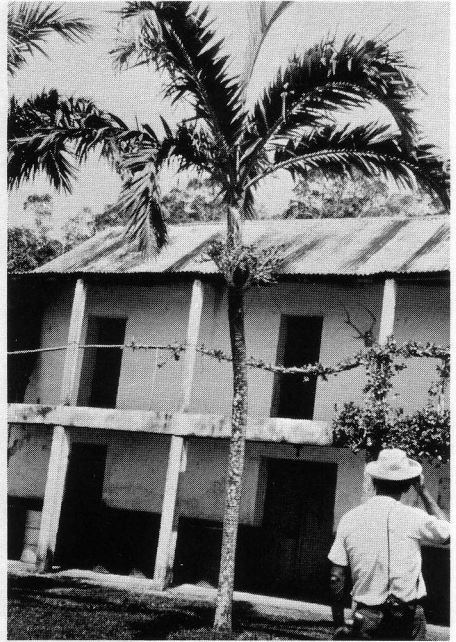
from the crop of a pigeon 35-40 years ago. Today it is a healthy example of *Chambeyronia*. The inflorescences are borne below the dark green thick crownshaft and stiff green leaves, and in bud are white with yellowish-green male



2. Inflorescences with flowers and fruit of *Burretio kentia Vieillardii*.

buds. Because no fruit was available, the species is as yet uncertain. After this interruption the party continued on to Koumac for the night.

New Caledonia, like Madagascar has a most interesting flora with a very high percentage of plants known only from the island. Most of its palms belong to genera not known elsewhere, *Veitchia* excepted, and even here the species *V. arecina* is restricted to New Caledonia. Thus on the 8th, as we climbed over the central mountains through the Col d'Amos, the spying of wild palms in gallery forest beside a stream in the *Melaleuca* savannah caused real excitement. Along the banks of the stream were several individuals and with the aid of Max Shick's climbing rope and the fortune of finding a fallen live tree, we were able to gather a complete collection of *Cyphophoenix elegans*. This species reaches a height of about 20 feet, a diameter of about four inches. The solitary green trunk terminates in a somewhat inflated olive-green crownshaft covered with grey hairs and slight-



3. *Veitchia arecina* at Balade.



4. Male flowers of *Veitchia arecina* have a deep green interior, but otherwise resemble those of other species.

ly arcuate pinnate leaves. The inflorescence bracts are red-purple in bud, covering a stiffly-branched green inflorescence set with red-brown buds and flowers. Though the fruits collected were not completely ripe, they did contain developed seeds to help in identification.

Our next stop of the day was at the Mission in Balade where we stopped to admire *Veitchia arecina* in cultivation before taking a trail into the hills, the Route de Parari, where in other gallery forests we came across two intriguing palms. One is a handsome very large *Basselinia* related to *B. tomentosa* with dark green trunks to 30 feet high, 7 inches in diameter. Most interesting were the brown densely woolly inflorescence branches with buds sunken in the wool. Although we found only defective fruits on old inflorescences, these clearly seemed compatible with *Basselinia* despite their larger size. But the second palm can only be guessed at for it was in very young bud and with immature fruit. Again, a solitary tree twenty feet high, this one could be distinguished by the grey-brown strongly-ringed trunk, the mass of exposed roots, and the stiffly branched inflorescence. Thus far the specimens remain marked ? *Campecarpus* sp., though one day it may be possible to obtain the requisite material for complete identification.

We stayed that night and the two next at the home of M. Emile Limousin at Oubatche where preparation of specimens by lamplight each evening kept Jacob and myself more than busy, for the truck filled daily at an alarming rate.

The 9th saw us off for the slopes of Mt. Ignambi, attended by two guides — Chanel Daop and Etienne Yandaré from the village of Tchambouenne. In the mossy low forest beside a stream at about 2,100 feet elevation, we found a species of *Burretiokentia* (once known as *Rhynchocharpa*) which even today remains puzzling despite good material. The solitary trees have bright green trunks and red-hairy, somewhat inflated leaf sheaths below which hang the stiffish inflorescences. It was here that I first began to notice a feature charac-



5. The lower bract on the inflorescence of *Burretiokentia* does not completely enclose the upper.

teristic of some genera of the Tribe Clinostigmatae, the tribe to which most of the New Caledonian palms belong — to wit the unusual lower bract which does not completely encircle the base of the inflorescence. Not far below the *Burretiokentia* we found a *Basselinia* very much like that of Mount Koghi but



6. *Basselinia Pancheri* with M. Baretts for scale.

here with stems clustered, and still lower in drier woods a *Basselinia* with very slender clustered stems, small leaves, and green inflorescences.

Our third day in this region started with collecting *Veitchia arecina* in coconut plantations at Tchambouenne where a few individual trees had been left. Aided again by the climbing rope, I managed to obtain a good fruit cluster and leaf and later, some miles away, we obtained an inflorescence covered with male flowers, these green outside with the petals very dark green inside. The fruits when ripe are bright crimson and nearly two inches long. After this conquest we drove down the coast, hoping to get part way up Mount Col-



7. Leaves of *Basselinia Pancheri* are sometimes divided into a few broad pinnae.

nett but finding no one to guide us were content to climb lower slopes and to collect near the river another *Basselinia* and a small solitary palm with red leaf sheaths and very immature flowers which later proved to be the genus *Cyphosperma*. On the way to Colnett we picknicked by a beautiful stream in view of a waterfall with young *Chambeyronia* plants in the foreground and swam briefly in the clear pools just about the outlet to the sea. A similar stream further on had to be forded — without difficulty in the afternoon, when the tide was low, but with some excitement when we returned at dusk. In the interim, the tide had risen and backed water up so that we suddenly found ourselves in midstream with a stalled motor. With all our efforts we were unable to get the truck back to dry ground, so we had occasion again to swim and to watch the moon rise clear, bright and full, while the tide in



8. Plants of *Actinokentia divaricata* in the forest at Riviere Bleue.

its own time ebbed enough to let us dry out the motor which eventually coughed us through to dry ground and the road home. On the 11th we bid our host and family goodbye and returned to Noumea.

April 12th was a festive day with the Lavoix family at their home on Mount Koghi where, despite wet weather, we had time to really see the fine stands

of *Basselinia*, *Burretiokentia*, and *Chambeyronia* that add so much to the property. The *Chambeyronia* is especially handsome because the new leaves are a beautiful red when they first emerge. In the forest, *Chambeyronia macrocarpa* reaches a height of 40 feet above an expanded base and a mass of exposed roots. The mature fruit is dark crimson in a red-brown cup of floral parts,



9. *Campecarpus fulcitus* with several inflorescences and its prominently ringed trunk.

borne on stiff zigzag branches of the inflorescence. Altogether this is a most ornamental palm which, fortunately, is now being grown here and there in the United States.

Without letup, we continued our palm travels on the 13th with a trip to the Foret les Electricques on the Plaine de Lacs southeast of Noumea, stopping en-route at a sawmill to collect *Basselinia*

Pancheri with its odd irregular fruits. Threatening weather and finally heavy rain failed to dampen our spirits as we found palm after palm. The forest is at about 800 feet altitude in an area of streams and lakes where moisture is abundant. *Campecarpus fulcitus*, with its thick exposed roots, green trunk with very prominent nodes, and stiff inflorescences was an exciting discovery for me and close by it grew *Basselinia Pancheri* more robust than that seen at the sawmill and sometimes with the leaves scarcely divided into pinnae.

Somewhat further on, at Riviere Bleue, we found still another *Basselinia* like that of Mount Koghi, more *Campecarpus* and three other genera, all of more than usual interest to me. The first was *Actinokentia divaricata*, an odd small palm with usually four leaves borne in as many directions. The relationship of this palm is still in doubt so it was most rewarding to find all stages of flower and fruit which will help in our technical studies. The second find was *Cyphokentia macrostachys* in bud only but fairly abundant. The male buds are dull rose on purplish branches, somewhat reminiscent of *Archontophoenix Cunninghamiana*, and these, combined with the solitary habit, moderate height and attractive foliage, should make the species a good one for trial in cultivation. Perhaps the most exciting palm, however, was *Brongniartikentia vaginata*, not one to excite the horticulturist but botanically of special interest because of the odd flowers and the long inflorescences borne among the leaves. *Brongniartikentia* parallels in several respects an allied palm, *Taveunia*, which I later saw in Fiji.

Our last collecting had been done in drenching rain and since we seemed to have exhausted the available palm genera we returned to Noumea, the truck



10. The crown and an unopened inflorescence of *Campecarpus*.

bulging with specimens which required all the next day to prepare and leave drying for shipment later to Ithaca. Unhappily, time had run out, as it seems always to do before everything is done, and the last leg of the palm journey from Noumea to Nadi in Fiji was scheduled for the 15th.

Fiji

Dominiko Koroiveibau, my assistant for three weeks (courtesy of Mr. John Parham, botanist in the Department of Agriculture in Suva), greeted me as my plane landed on Viti Levu late in the afternoon of April 16th. There being no rest for the botanist, this was the beginning of still another period of uninterrupted palm activity. After purchase of minor items and hurried packing and shipping of accumulated materials, Dominiko and I boarded the little plane that flies from Suva to Savu Savu on Vanua Levu late the next morning.



11. M. Luc Chevalier holds the top of *Brongniartikentia vaginata* in the rain.

After lunch at the small and very pleasant hotel in Savu Savu, we climbed aboard a landrover with our guide Suwani Ulaiasi and his nephew of the

same name, for a drive to the head of Natewa Bay. There we transferred gear to a boat to cross to the other side where, after an hour's walk, we arrived

at the village of Bucalevu as the sun was setting. A house had been vacated for our use where, after bathing in a nearby stream and paying our respects to the aged Chief, we sat down to the evening meal. I, as guest of the house, sat on a chair at a wooden table while the family, Dominiko, and the two Suwanis sat about a mat on the floor. How often the proprieties of life make one miss the real pleasures of sharing life in another land, for I should have enjoyed testing my ability to sit through a meal cross-legged!

However, it was not long before I had my chance. There remains in Fiji more formality than I had encountered elsewhere. On arrival we had paid our respects to the Chief and presented him with a gift of kava, the root of *Piper methysticum*, which is the base for the beverage about which formalities center. Now it was the turn of the village men to welcome us and in they came to sit in a circle while kava, fresh from the garden, was blessed, crushed, and strained through a linen cloth in a quantity of water, to make the whitish, slightly tart drink nearly filling a large wooden kava bowl. Dominiko cued me so that when the first bowl, served in half a polished coconut shell, was presented I was not too awkward in the drinking of a response. David Fairchild had once described the older and less pleasant method of kava preparation (The World Was My Garden 96, 97) and his distaste for it, but I found the drink increasingly palatable as time went on in Fiji.

After appropriate exchanges of remarks, I pleaded real fatigue and stretched out to doze (between the feasts of mosquitoes) only to find myself shaken awake about 11:00 by Dominiko. Then I saw that the further end of the house was filled with seated

women from Bucalevu and two nearby villages dressed in their best and decked with flowers, many of them the intensely fragrant *Hedychium* blossoms. They turned as one, when I took my place on the floor facing them, and began to sing and dance, each village in turn with its chorus and usually four dancers who remained seated, using only their upper body. For over two hours this enchanting group filled the house with sound that still haunts me, until at last, just before 2:00 the exhaustion of seven months in the field overcame my ability to stay conscious and we bade each other good night. I drifted off to sleep to the strains of Isalei, the beautiful farewell song which can never be forgotten.

Our start the next morning, needless to say, was not an early one, but eventually we made our way up the steep trail leading to the summit of Mount Mariko where I hoped to collect full series of palms taken earlier by Dr. A. C. Smith, and only a year before my visit by my colleague, Dr. David Bierhorst. One of these had puzzled me for years, owing to the lack of mature seeds. The immature fruit and inflorescence suggested the genus *Heterospathe* which had not been reported from Fiji and now I hoped for an answer to my question. The answer was not long in coming, though it was a week before I realized it. Our first collection was from a small palm lacking stilt roots, but with long-stalked inflorescences, some with flowers, some with green fruits, yet with seeds formed, seeds of a most irregular shape and certainly not those of *Heterospathe*. Beyond, we found excellent material of another small palm with stilt roots, which I hoped would prove to be *Goniosperma*, and on the high ridges a large stilt-rooted palm with crowns



12. The crowns of *Clinostigma exorrhiza* reach above the low forest canopy on ridges.

above the forest canopy. Adding to the excitement of finding these was the heavy rain which began to fall just as we had felled an example of the largest palm. We managed to gather all of the material and slipped down the slope without serious mishap, and as we prepared specimens, I tried to put each in its place without real success. It was only on the next island of Taveuni that all the species sorted themselves out in my mind. Meanwhile we returned to Savu Savu, spent a day collecting *Veitchia sessilifolia*, one of the smaller species of the genus, and tried to get a series of *Veitchia Joannis* without complete success, since those we had cut seemed to lodge each time in the sur-

rounding forest. Trying to collect these more-than-70-foot-high monsters can sometimes be exceptionally frustrating and we ended this day in disaster as one of our helpers from the Agriculture Department gashed his leg very badly when he slipped against a sharp rock while tugging to pull down a trunk. Thus we ended palm hunting on Vanua Levu at the local hospital.

From Savu Savu we flew to Taveuni where, lodged in the comfortable Government Guest House, we had a good base for exploration. On Taveuni, my principal goal was to find the genus *Taveunia* which Dr. Burret had described from incomplete material. On the 22nd of April we went by landrover to slopes



13. The effects of drenching rain fail to obscure all the details of *Taveunia trichospadix* with its regularly pinnate leaves.

along a creek in lowland forest in the Salialevu Estate where a lone *Veitchia* rewarded our efforts. At first I assumed this to be *V. simulans* which I had described from Dr. A. C. Smith's collection on Taveuni, but since our material was in flower, his in fruit, the identity was only one of assumption. Returning, we did succeed in getting specimens of *Veitchia Joannis* at last,

these growing on the sides of a steep but low hill at Kubelu, Vuna on the south end of the island. On the tree selected for felling, we counted eight inflorescences in all stages from bud to mature dark red fruit more than two inches long. Truly, *V. Joannis* deserves to be much more common than it currently is in cultivation.

The most rewarding day on Taveuni



14. A grove of vuleito, *Neoveitchia Storckii*, in the Rewa Valley.

was spent in the climb to the lake in the crater of an old volcano at the center of the island, starting from the village of Somo Somo. It was here, over a century ago, that Berthold Seemann collected the palm described by Hermann Wendland as *Kentia exorrhiza*, today known as *Clinostigma exorrhiza*. As we climbed, we saw the slender stems and dark, blunt-tipped leaves of *Balaka Seemannii*, two adult trees of *Veitchia simulans* in young fruit and rather clearly distinct from the *Veitchia* referred to earlier (which is probably an undescribed species), and finally the same three palms we had seen on Mount Mariko. Collecting these in various stages of flower and fruit made it possible to correlate our earlier collections

and published descriptions. The *Heterospathe*-like palm could be identified as *Taveunia trichospadix*, the smaller stilt palm as *Goniosperma Thurstonii*, named after a former Governor of Fiji, and the largest clearly as *Clinostigma exorrhiza*. Once understood, these palms were easily distinguished, the *Taveunia* by its lack of stilt roots even when the long inflorescence was not developed, the other two by size, type of inflorescence and above all by their fruit, red and scarcely the size of a pea in *Clinostigma*, purplish-black and large as a hickory-nut in *Goniosperma*, which, on detailed study, proves to be the same as the genus *Physokentia* described by Beccari from the New Hebrides. We also saw a sterile and probably new *Calamus*, not the same as *Calamus vitiensis*, the only species reported for Fiji, which we collected later at Liku-vausomo on the Ura Estate by the road to the southern end of the island.

Taveunia, *Physokentia* (*Goniosperma*), and *Clinostigma* having been found, it remained to search for the genus *Goniocladus* on Viti Levu where it grows in the forest of the interior. After flying back to Suva, shipping materials, and arranging for drying of specimens, we spent a day with Mr. Parham seeing *Veitchia vitiensis* var. *Parhamiorum* and *Balaka microcarpa*, both elegant relatives of *Ptychosperma*, in woods about the water catchment area on Savura creek at Tamavua, near Suva. On April 30th, with departure for the U. S. imminent, Dominiko and I with a driver, set out for the forestry area at Nadarivatu where a palm thought to be *Goniocladus* had been collected and where Dr. Otto Degener had collected an unknown palm in 1941.

Enroute we went along the Rewa River Valley, searching for *Neoveitchia Storckii*, a most unusual palm thus far known only from that area. Mr. Par-



15. Crowns of two *Neoveitchia Storckii*.

ham had been kind enough to provide me with study materials some years ago, but there is a satisfaction in seeing so rare a palm for one's self. A handsome grove of *vuleito*, as the *Neoveitchia* is called locally, was found in a

forested area near Naqali Village where, by good fortune, we found flowering and fruiting trees near the road. *Vuleito* is a solitary palm, rather stoutish in trunk, with a crown of large arching and twisted leaves which make for a



16. A young inflorescence of *Neoveitchia* shows the exerted horn-like upper bract.

handsome effect when trees are seen in mass. The bracts of this palm are rather unusual as is the development of the inflorescence which appears in bud in the leaf axils but does not expand until the subtending leaf has fallen.

Leaving the Rewa Valley with a load of foliage and inflorescences, we drove on to arrive at Nadarivatu in the mountains in time to prepare dinner in the Forestry Rest House and to view one



17. In fruit, *Neoveitchia* much resembles true *Veitchia Joannis*.

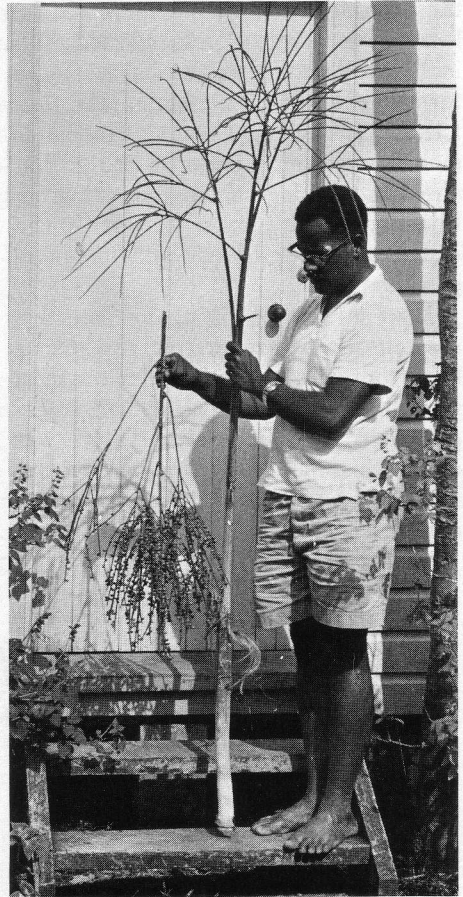
of our goals, the mountain Lomalangi, rising above us. Lomalangi being accessible at short notice, we chose rather to spend our first day in a search for Degener's odd palm, beginning at the village of Dromodromo and climbing the slopes and ridges of Vuni Marasa where we found still another small *Veitchia* and *Balaka leprosa* but nothing else. On our return, therefore, we made further inquiry for the palm called *taqa* (pronounced tanga) and having located a possible guide made plans to return after a trip up Lomalangi. Success in part met our struggle up the mountain for although we did not find the *Goniocladus*, we did find the palm thought to be of this genus but which proves to be a new species of *Physokentia*, *P. rosea* (Principes 10:90. 1966) growing in the mossy cloud forests generally on east ridges beyond the second peak. This *Physokentia*, with its stilt roots, has rose-red male buds and red male flowers but such seed as we obtained was apparently not ripe enough



18. Dominiko Koroiveibau stands beside the leaf of *Taveunia Tanga*.

to germinate nor is it likely that the species could be successfully cultivated in the United States.

A severe *Staphylococcus* infection of the legs served to put me out of commission in the next two days so Sunday I prepared specimens and wrote while Dominiko made definite arrangements for a guide to the locality where *taqa* grew for our last day, May 4th. Here



19. The inflorescence of *Taveunia Tanga* is taller than a man.

again I only saw the pair off and greeted them on return, when they proudly appeared sheltered by the great leaves of this palm. Inflorescences, flowers and immature fruits had been obtained from which it was clear that we had in hand a new species in *Taveunia* since described as *Taveunia Tanga* (Candollea 20: 98, 1965), thus adding a new genus and an undescribed species to the flora of Viti Levu.

By now only *Goniocladus* had eluded us. It was clear that with passage for the U. S. booked that evening from Nadi, this genus would have to await a return trip when time would permit

the several days required to reach the locality where it had been collected originally. It's always well to have a focus for a return to exciting palm areas, thus I left Nadi that night ready to rest after more than seven months on the go but already thinking about returning to Fiji, to New Caledonia, to New Guinea and its neighbor islands and to Madagascar.

It would not be fitting to close this account without reiterating my thanks to all those who made it by far the most rewarding experience since I first began field work in 1940. Travel was made possible by National Science Foundation Grant GB-1354 as part of a broader program of palm study and

though I should like to single out everyone who aided me, I shall have to be content with those already noted who made so many arrangements in Madagascar, and Mr. Don Jayaweera in Ceylon, Mr. Humphrey Burkhill in Malaya, Mr. B. Smythies, Dr. J. A. R. Anderson, Dr. Peter Ashton, Dr. W. Meijer in Borneo, Mr. John Hauser, Mr. Reginald Spence, Mr. Selwyn Everist in Australia, Mr. John Womersley and Mrs. Andrée Millar in New Guinea, Dr. T. Whitmore, Mr. G. Dennis and Mr. K. Treneman in the Solomon Islands, M. Lavoix in New Caledonia and Mr. John Parham in Fiji. To them I shall ever be grateful.

Salt Tolerance in Young Palms

A Personal Experience With the Effects of a Hurricane Tide on Several Hundred Small Palms in a Nursery

JACK KOEBERNIK

There is little to be found in the literature about the effect of ocean water on seedling palms — at least it has been difficult for me to find much published on this subject. Therefore, I thought that it might be of some interest to members of The Palm Society to know what happened to several hundred young palms after being submerged in salt water of varying depths and for varying lengths of time.

On September 7th, 1965, hurricane "Betsy," the second hurricane of the

1965 season (the U. S. weather bureau names the storms alphabetically), bore down on Key West, Florida, with winds to 90 miles an hour and very high tides. My small nursery is situated on Stock Island, on rather low ground, and the hurricane tide inundated it quite thoroughly. In the subsequent weeks I have noted carefully what effects the salt water had on a number of genera and species, and have compiled the following chart showing the results. Some of them surprised me not a little.

Palm	Size, How Planted	Approx. Depth Water and Time Submerged	Effect
<i>Acoelorrhaphe Wrightii</i> (<i>Paurotis Wrightii</i>)	3 ft., container grown	6 in., 3 hrs.	Unaffected
<i>Aiphanes acanthophylla</i>	Seedling in flats	6 in., 3 hrs.	Slight burn
<i>Arecastrum Romanzoffianum</i>	Gal. cans, 18 in. tall	6 in., 3 hrs.	Unaffected
<i>Arenga Engleri</i>	Large plants, 5 ft. tall	12 in., 6 hrs.	Unaffected
<i>A. pinnata</i>	Gallon cans	6 in., 3 hrs.	Unaffected