

flexuous, flowers in triads in lower half or third, paired staminate ones above: staminate flowers 3-3.5 mm. long, ovoid, asymmetric, bluntly acute, sepals 1.5 mm. high, petals 2.7-3 mm. high, 1.2-1.5 mm. wide; pistillate flowers ovoid, sepals 2.5-3 mm. high, outer 5 mm. wide flattened out, about the same in fruit but indurate, petals 3 mm. high, 3-5 mm. in fruit, pistil 2.5 mm. high: fruit broadly oblong, rounded at ends, 15 mm. long, 11 mm. wide, 9 mm. thick, smooth, obscurely granulose when dry, base enclosed in perianth-cup, stylar tubercle and stigma lateral, borne below middle, 5-7 mm. above base, tending to point upward, exocarp separable from mesocarp, mesocarp about 1 mm. thick, thicker on side bearing stylar tubercle, endocarp very thin, hard, brittle, shiny within; seed oblong, rounded at ends, 11-12 mm. long, 6-7 mm. wide, terete, attachment just below stylar tubercle in fruit, just above base of seed, vascular strands in seed-coat 8-10 on a side, arching upward and backward from very short raphe, descending on back of seed and very slightly anastomosing and entering a darker disk surrounding micropyle which is basal.

Caroline Islands. Truk: Fefan, upper altitudes on Mt. Ibal, *T. Hosokawa 3371* (FU, A, TI); Tol, at upper altitudes, *Hosokawa 8284* (FU); Natu-sima August 1933, *Truk District Office (Kanehira's) 3724* (FU, TI); Moen, ridge east of Moen Village, 110 m., November 22, 1949, *D. Anderson 794* (seedlings only) (BH, BISH, US). [Type *Kraemer* in 1910, from Truk, not seen, *Ledermann* in 1914, on which much of *Beccari's* description was based not seen]. Native name "Kiniau," "Gilian," or "Tiniau" (acc. *Kraemer*), "Kiriyaui" acc. *Kanehira*.

Endemic to Truk, found in the few remnants of primary forest on Truk, and persisting even on open slopes and ridges at rather low altitudes, always on volcanic soil. Available material of this species is very inadequate, consisting only of several detached panicle-branches with flowers and fruit, a segment of a leaf, and some very young seedlings.

† *Clinostigma ponapensis*, (Becc.) comb. nov. Fig. 136A.

*Bentinckiopsis ponapensis*, Becc. in *Webbia*, v, 113 (1921), in *Nuov. Giorn. Bot. Ital. n.s. xlii*, 32 (1934), ex *Martelli*, in *Atti Soc. Tosc. Sci. Nat. Pisa Mem. xliv*, 165-167 (1934); *Martelli*, in *Nuov. Giorn. Bot. Ital. n.s. xli*, 714 (1934); *Kanehira*, in *Bot. Mag. Tokyo*, xlv, 274 (1931) partim, *Fl. Micr.* 72, pl. 12, f. g. 1 (1933); *Kanehira & Hatusima*, in *Bot. Mag. Tokyo*, liii, 189 (1939); *Burret*, in *Notizbl. Bot. Gart. Berlin*, xii, 594 (1935), xv, 88 (1940); *Hosokawa*, in *Trans. Nat. Hist. Soc. Taiwan*, xxxiii, 118 (1943).

*Exorrhiza ponapensis*, (Becc.) *Burret*, in *Fedde Repert.* xxiv, 296 (1928); *Kanehira*, in *Bot. Mag. Tokyo*, xlvi, 732 (1934), in *Journ. Dept. Agr. Kyushu Imp. Univ.* iv, 284 (1935), in *Journ.*

Jap. Bot. xii, 635 (1936); Hosokawa, in Kudoa, iii, 162-166 (1935); Glassman, in Bull. Bernice P. Bishop Mus. 209, 110 (1952).

Tree up to 20 m. tall, 3 dm. thick near base, covered by a white wax-impregnated very finely cellular pellicle or epidermis tending to separate when dry with scattered elliptical stomata, leaf-scars 1-23 mm. apart irregularly spaced, seemingly in groups of closely spaced ones separated by a wider space: leaves 3-5 m. long, somewhat arching, pinnae slightly arching and spreading, equidistant, about 5 cm. apart, subopposite to alternate, linear, apex long-attenuate, splitting in two when frayed, up to 80 cm. long, 4.5 cm. wide, apical 51 cm. long, 2.8 cm. wide; petiole short, about 15 cm. long; sheath 120 cm. high, deeply concave above, strongly and closely ribbed when dry, sinus 10 cm. deep, roughly V-shaped: inflorescence large, twice branched, up to 70 cm. long in fruit, peduncle whitish, rachilla up to 40 (or 50 acc. Beccari) cm. long, slender, up to 4 mm. thick, thickening somewhat in fruit to 6 mm., tips in flowering state almost filiform, flexuous, flowers in triads in lower half, paired staminate ones above: staminate flowers in bud ovoid-triangular, acutish, sepals 1.5 mm. long, irregular, slightly gibbous, and obliquely carinate well above base, portion included in rachilla plane, petals ovate, acutish, longitudinally striate, 3 mm. long, 1.5-2 mm. wide, stamen-filaments when dry 2.5 mm. long, anthers when dry 1-1.5 mm. long, pistillode ovoid barely 0.6-0.8 mm. long, conspicuously trifid at apex; pistillate flowers globose-ovoid, 4-5 mm. long, sepals and petals strongly imbricate, outer sepal somewhat gibbous, sepals and petals rather similar, indurate but not enlarging much in fruit, forming a cup enclosing base of fruit, staminodia 6, pistil ovoid: fruit broadly oblong, compressed, 18-22 mm. long, 13-15 mm. in greatest width, 9-10 mm. thick, rounded at base and apex, externally rugulose when dry, longitudinally ribbed, bicarinate ventrally below stylar tubercle, which is at or near middle of ventral side, strongly and obtusely carinate above this, mesocarp with a layer of spherical sclerosomes, heavy fibers prominently thickened and slightly anastomosing near top; seed oblong, 13 mm. long, 8 mm. wide, 7.5 mm. thick, attachment small, subbasal.

Caroline Islands. Ponape: Tolun Nanket, mountain above Nanipil, drainage of Tawenjokola River, Not Distr., 500 m., August 13, 1946, *Fosberg 26444* (BH, BISH, US); Mt. Ninioanii, August 12, 1933, *Hosokawa 5621* (A); Nipit-One, August 16, 1933, *Hosokawa 5828* (A); Mt. Nanaraut, July 15, 1936, *Hosokawa 8225* (A, US); s.l., 100-200 m., July and August 1931, *Kanehira 1675* (US, FU); Sankakuyama, above 500 ft., August 1929, *Kanehira 770* (FU, 2 sheets, TI).

This species was based on *Ledermann 13201* and *13623*, which are unavailable, probably destroyed at Berlin, and secondarily also on a specimen collected by Schnee in 1909, likewise unavailable.

This palm is endemic to Ponape and is a dominant plant in wet forests at from 120 to 700 m. altitude. Its seedlings, with bifid leaves, thrive very well in the shade and it reproduces itself when cut out. It grows naturally only on volcanic soil.

The Ponapean name is "Kotop" according to Glassman. During the war the Japanese made extensive use of the cabbages of this palm for food, felling considerable acreages above Nanipil.

The plant differs from both *C. carolinensis* and *C. Savoryana* in its much larger strongly compressed fruits.

† *Clinostigma Savoryana*, (Rehd. & Wils.) comb. nov. Fig. 136B.

*Cyphokentia Savoryana*, Rehd. & Wils. in Journ. Arnold Arb. i, 115, t. II, fig. 1 (1919).

*Bentinckiopsis Savoryana*, (Rehd. & Wils.) Becc. in Webbia, v, 113 (1921) (sphalm *Bentnickiopsis*), in Atti Soc. Tosc. Sci. Nat. Pisa Mem. xlv, 171-172 (1934), in Nuov. Giorn. Bot. Ital. n.s. xlii, 32 (1935); Martelli, in Nuov. Giorn. Bot. Ital. n.s. xli, 712 (1934); Burret, in Notizbl. Bot. Gart. Berlin, xii, 593 (1935).

*Exorrhiza Savoryana*, (Rehd. & Wils.) Burret, in Fedde Repert. xxiv, 296 (1928).

*Cyphokentia boninensis*, Warb. ex Burret, in Fedde Repert. xxiv, 296 (1928), in syn.

Tree up to 16 m. tall, trunk annulate, smooth, about 15 cm. diameter: leaves about 12, 1-3 m. long, erect to spreading and slightly arching, with 50-60 pendulous pinnæ on each side, sheath up to at least 70 cm. long, lepidote with reddish caducous scales, petiole concave above, convex below, 45-60 cm. long, lepidote, pinnæ linear-lanceolate, 35-55 cm. long, 2.5-3 cm. wide, 1-3 cm. apart: inflorescence with outer bract attached 2.8 cm. or more above base, 33.5 (to 70) cm. long, 6 (to 20) cm. wide, with prominent light brown scales closely disposed along the edge of the marginal wing, inner bract attached 5 mm. or more above attachment of outer, whole panicle at least 35-45 cm. long in flower elongating to as much as 45-100 cm., rachillæ about 30-33 cm. long, elongating in fruit, flowers disposed in triads in the lower two-thirds to four-fifths of the rachilla, pairs of staminate distally, tips attenuate or filiform, very flexuous, triads and pairs irregularly spirally arranged, 2-5 mm. apart: staminate flowers unequal in length, ovoid, quite asymmetric, sharply pointed, 4-4.5 mm. long, sepals triangular-ovate, unequal, obtusish to bluntly acute, carinate, 2-2.6 mm. long, petals valvate, ovate to narrowly oblong-ovate, acutish, 3.2-4 (or 5) mm. long, 1.2-1.6 mm. wide, striate when dry, lineate when boiled up, filaments 1.2-1.4 mm. long, anthers oblong 1.2-1.4 (-2) mm. long, pistillode 1.2 mm. high, ovoid-conic; pistillate flowers ovoid, about 4 mm. long, sepals 2.8-3 mm. long, orbicular-ovate, obtusely apiculate, petals orbicular-ovate, obtusely apiculate, 3-3.4 (-4) mm. long, pistil 3 mm. long: fruit elongate-globose, scarcely compressed, black and with a slight bloom (when fresh?), 12 mm. long, 9.5 mm. wide, 8 mm. thick, rounded at apex, somewhat pointed at base, externally rugulose and dorsally slightly ribbed when dry, stylar tubercle well above middle, a low ridge both below and above it, fibers in mesocarp flexuous and branched above, principal ones straight below; seed globose-ovoid, very slightly