

CYCADEÆ.

914. *Zamia Chigua*, Seem. (TAB. XLIII.); caudice subcylindrico, frondium stipite rhachique spinosis tomentosis, demum glabris, foliis alternis ovato-lanceolatis falcatis cuspidato-acuminatis obsolete denticulatis glabris, cono masculo pedunculato cylindrico, foemineo multo majore oblongo-cylindrico obtuso.—*Z. Lindleyi*, Warsz. Alb. Dietr. in Otto et Dietr. Allg. Gartenz. vol. xix. p. 146, cum icon.?—Nomen vernacul. "Chigua." Islands at the mouth of the river San Juan in Darien; and, if Warszewicz's plant is identical with mine, also in Western Veraguas.

M. von Warszewicz has described his *Zamia Lindleyi* from a drawing and a note which he made when travelling in Veraguas, both of which were so imperfect that Dr. Albert Dietrich could not publish such a description as would enable other botanists to recognize the plant; and as I do not possess original specimens of Warszewicz's species to guide me, I have been compelled, *volens volens*, to give a new name to a plant that has probably already an old one. To guard against all future misconceptions of *Zamia Chigua*, I have given a figure of it from one of the plants in the Royal Botanic Gardens at Kew; and James Yates, Esq.,—who, at Lauderdale House, Highgate, cultivates the most extensive collection of *Cycadææ* ever brought together in any garden, whether private or public, and who, with Brongniart, Miquel, and Lehmann, shares the supreme knowledge of this Order,—has favoured me with the following accurate description of it:—

"In 1847 Dr. Seemann sent three plants of *Zamia Chigua*, discovered by him in Darien, to the Royal Botanic Gardens at Kew. One died; another is, at the time I am taking these notes, in the great Palm-house; and the third, of which the following is a description, is in the Conservatory, No. 12, of that Institution, and is in a very healthy state:—*Stem* cylindrical, 20 centimetres high, viz. from the ground to the origin of the leaves, 40 c. in circumference, covered with the remains of old scales and bases of leaves. *Leaves* ten; length of the longest leaf, including the stalk, 1 metre, 20 c., the stalk being 20 c.; length of the shorter leaves, including the stalk, about 80 or 90 c. *Rachis*, including the stalk, round, enlarges into a callous pad at the base; above this pad it tapers continually till it becomes quite small, and terminates in a point extending beyond the leaflets; has two lateral channels, on which the leaflets are set, but not obliquely; covered, when first produced, with a short brown tomentum; muricate from the base of the stalk to within a short distance from the summit, with prickles numerous and thickly set near the base, diminishing in number as we approach the apex, and ceasing altogether in the upper part. Near the base these prickles are from 1 to 5 millimetres long, and are strong and sharp, and manifestly serve as a guard placed round the organs of fructification; towards the apex of the leaf the prickles are much shorter and blunter, as well as more rarely scattered. *Leaflets* neither alternate nor opposite, but in this respect irregularly disposed; in the longest leaf, sixty-six leaflets on each side, and no terminal leaflet; set nearly at right angles to the rachis; of a vivid green; nearly of the same length and size throughout the whole leaf, but rather shorter and smaller near the base; lanceolate and falcate; so close, that at their widest part, which is at a little distance from the base, they overlap; joined to the rachis by a distinct articulation, near which the leaflet is much contracted, so as to be semicircular; sixteen nervures at the widest part of the leaf, much less numerous at the base, but they bifurcate at different distances from the base, so as to amount to the number here stated; they are in general parallel and equidistant, nearly in straight lines, but conforming in some measure to the curvature of the upper and lower margin of the leaflet, yet only two of them continued quite to the apex of the leaflet; the rest terminating along its margin, and forming there a few teeth or notches so small as to be almost imperceptible, yet sufficient to establish a conformity in this respect between this species and the other species of the genus; but for these very slight notches, perceptible rather by the touch than the sight, the leaflet would be like that of *Ceratozamia*. *Male cone* nearly cylindrical, but converging suddenly into a conical form near the top,

and in like manner suddenly contracted near the bottom; the conical portion near the top not solid, but consisting of small abortive scales, irregularly shaped, and set closely together; beneath this part the scales are placed in columns, one scale exactly under another; their peltate terminations distinctly hexagonal; covered with a short brown tomentum. The plant now bears three male cones on strong thick peduncles. Largest cone with stalk 19 c. long, viz. stalk 6 c., cone 13, scales in twenty-one columns, each of thirty-two scales; circumference of cone at the thickest part $7\frac{1}{2}$ c. Second cone 16 c. long, viz. stalk 5 c.; cone 11; scales in twenty columns, each of twenty-eight to thirty perfect scales, and about seven small and imperfect, forming the conical summit. Third cone 13 c. long, viz. stalk 4 c.; cone 9; eighteen columns, each of twenty-seven or twenty-eight perfect scales. Two of these cones are now preserved in fluid in the Museum at Kew. Instead of being on the under surface of the scale, the anthers are placed as shown in the plate, viz., two rows of anthers on each side of the scale, and generally four anthers in each row.

"March 8th, 1852.—The plant has two new cones, the larger 21 c. long without the stalk."

PLATE XLIII. Fig. 1, male cone, natural size; 2, 3, and 4, scales; 5 and 6, anthers, magnified.

915. *ZAMIA pseudo-parasitica* (Yates, MSS.); caudice cylindrico, foliolis falcatis integerrimis glabris basi acutis apice cuspidatis, cono . . . Chagres, Province of Panama, growing epiphytically on trees (Warszewicz).

Mr. Yates has supplied the following note:—" *Zamia pseudo-parasitica*, Yates, MSS., so called because it grows on the trunks of trees, was sent from Chagres, by Mr. Warszewicz. The lower part of the stem was decayed, the upper alive, cylindrical, short, with remains of seven leaves; it was accompanied by six leaflets, which have no teeth at the extremity; on that account, I think it a little doubtful whether this is not a *Ceratozamia*. The leaflets are falcate, with a double curvature, so as to approach the form of the letter S. Length 35 c.; greatest width 4 c.; nervures broad and strong, twice bifurcate, terminating in the margin and apex."

916. *ZAMIA Skinneri*, Warsz. in Otto and Dietr. Gartenz. vol. xix. p. 146, cum icon. Cape Corrientes, Darien; Veraguas (Warszewicz).

"When I was at Berlin," says Mr. J. Yates, "in the autumn of 1850, I was informed that M. von Warszewicz, a Polish botanical traveller, had discovered two very remarkable species in the mountainous regions of the Isthmus of Panama, which he called *Zamia Lindleyi*, after Professor Lindley, and *Zamia Skinneri*, after Mr. G. Skinner, of Chipperfield House, King's Langley, Herts. When he was afterwards in London, I commissioned him to procure for me these species, or any others, which were new or remarkable. He sent me a stem of each of these, *Z. Lindleyi* and *Skinneri*, with the stem of another (*Z. pseudo-parasitica*). Each stem was accompanied with leaflets. They were put on board the steamer at the port of Chagres. When they arrived in London, consigned to Mr. Skinner, he found the *Z. Lindleyi* completely perished, 'a mere squash,' so that he could not lift it. The stem of the *Z. pseudo-parasitica* was also in great part rotten. The stem of the *Z. Skinneri* appears healthy. It is 80 c. long, 24 c. in circumference; twelve leaves have been cut away. I received with it five leaflets, much shattered, and the drawing which Warszewicz made of the plant on his former journey. This shows that there were twelve leaflets on a leaf. The following is the description of a leaflet taken from the largest:—Leaflet 33 c. long, 13 c. broad, ovato-lanceolate. A slender delicate nervure runs up each margin of the leaflet; between these two arise nine strong nervures united at the base, bifurcating a short way above the base, then bifurcating a second time, and some of them even a third time; after each bifurcation nearly parallel, and terminating in spines upon the upper and lower margins of the leaflet about two-thirds of the way down; the upper surface of the dried leaflet glistens and resembles cuticle. In those leaflets, which are

rotted and lacerated, this upper glittering surface may be cleared of the striae, chlorophyll, and cells attached to it, and it then appears to be distinctly cuticle, like that of other leaves.

PALMÆ.

917. *OREODOXA regia*, Humb. et Kth., Nov. Gen. vol. i. p. 304.—Nomen vernacul. "Maquenqui." Common in the Province of Panama, about Cruces, Gorgona, and San Juan, forming entire woods.

The leaves of this fine Palm are eaten by cattle; and the fruit, after having been boiled, is used as an article of food by the natives.

918. *IRIARTEA exorrhiza*, Mart., Kunth, Enum. vol. iii. p. 194.—Nomen vernacul. "Zanora." In woods of the Province of Panama, and the Territory of Darien.

The aerial roots of this Palm have much the appearance of the cylinders in musical boxes. They are used by the inhabitants as graters; and in a country where, from the humidity of the atmosphere, tin ones soon get rusty, those supplied by nature are by no means to be despised. I have often seen the people living on the river Chagres employing them when grating cocoa-nuts,—which, mixed and boiled with rice, is one of their favourite dishes. Sir E. Belcher, in his 'Narrative of the Voyage of H.M.S. Sulphur,' was the first who mentioned the preparation of this dish. "The stem of a spiny plant," to which he alludes there, are the aerial roots of this Palm.

919. *GEONOMA simplicifrons*, Willd., Kunth, Enum. vol. iii. p. 231. In woods, Southern Darien.

920. *MANICARIA saccifera*, Gærtn., Kunth, Enum. vol. iii. p. 234. Sea-shores of Southern Darien.

921. *THRINAX argentea*, Lodd., Kunth, Enum. vol. iii. p. 253.—Nomen vernacul. "Palma de escoba." In forests, growing as underwood.

This is the only Fan-Palm of the Isthmus hitherto discovered. From its leaves brooms are made, hence its vernacular name of "Broom-Palm."

922. *DESMONCUS oxyacanthos*, Mart., Kunth, Enum. vol. iii. p. 260.—Nomen vernacul. "Matamba." On the outskirts of woods, climbing over shrubs and trees.

This Palm is occasionally used on festive occasions for making garlands.

923. *BACTRIS minor*, Jacq., Kunth, Enum. vol. iii. p. 267.—Nomina vernacul. "Corozo" et "Caña brava." In open places, seldom in woods.

BACTRIS sp.—Nomen vernacul. "Uavito." Common on the sea-coast, and covering the greater part of the Iguana Island, in the Bay of Panama.

924. *ACROCOMIA sclerocarpa*, Mart., Kunth, Enum. vol. iii. p. 271.—Nomen vernacul. "Chunga." In open places; never in dark forests; in the Province of Panama.

The fruit is acid, and eaten by the inhabitants.

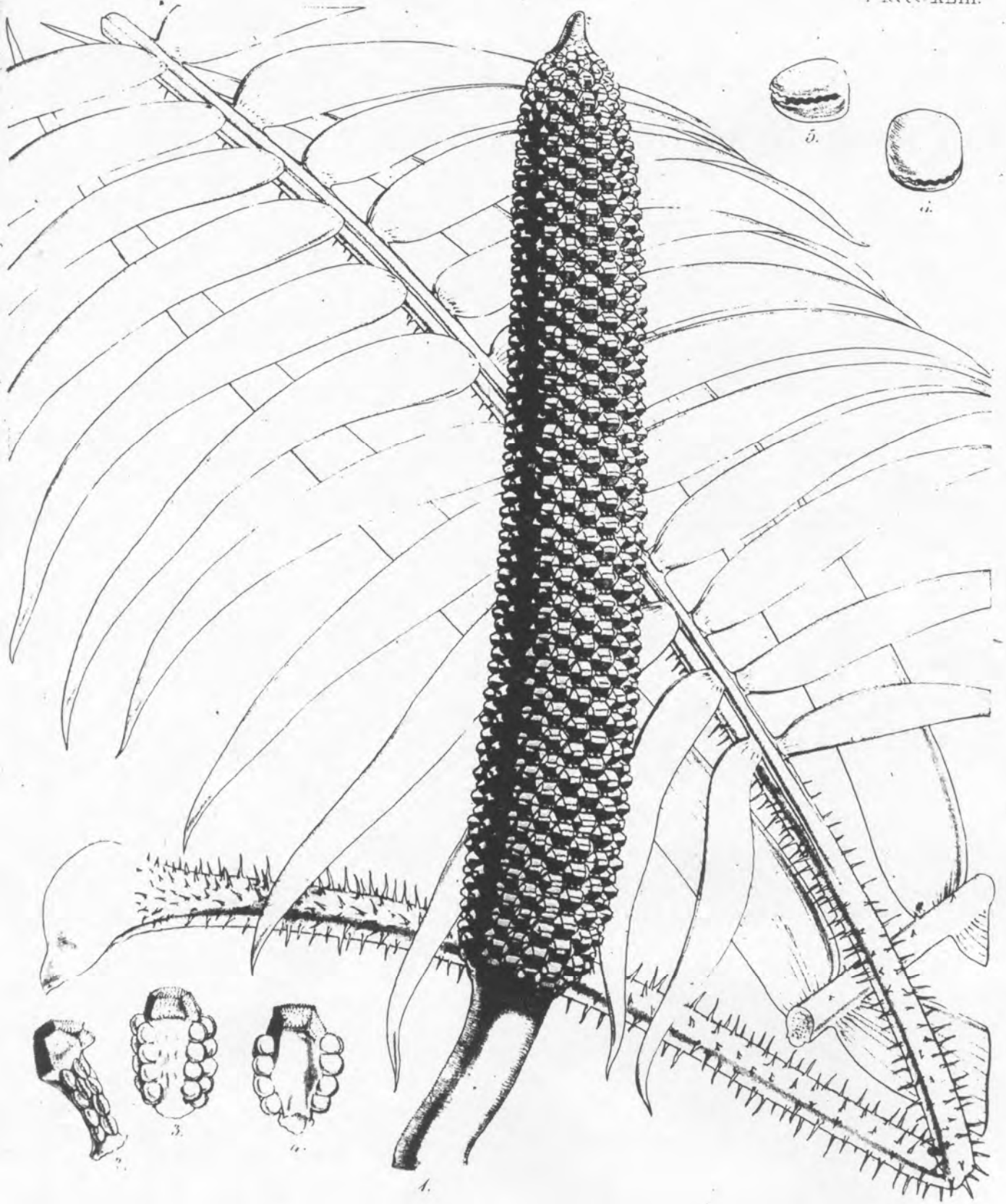
925. *ASTROCARYUM* sp.?—Nomen vernacul. "Pacuai." In dark forests, Province of Panama. Trunk from 24 to 30 feet high; leaves pinnatisect, from 8-10 feet long; fruit edible.

of the leaflets. Leaflets ovato-lanceolate, remote from one another. Section of the base of the leaflet and of its articulation elliptical. About 26 nervures at the widest part of the leaflet, united into two bundles at the base, but bifurcating at different distances until they reach the middle, or widest part, of the leaflet; after which they all terminate in sharp, strong, marginal spines, which still maintain the same direction towards the apex. The central nervures converge towards the apex, the others being in general parallel. Largest leaflet 29 centimetres long, 8 c. wide. Interval between two nervures about 3 millimetres, the nervures being prominent on the under surface of the leaflet, with a corresponding depression on the upper surface, which causes the parenchyma between the nervures to assume the form of an arch. This gives *Z. Skinneri* an extraordinary appearance, by which, and by the small number and great size of its leaflets, it is distinguished in a very marked manner from every other species. Colour of the leaves bright green and glistening. *Vernation*.—The young leaf rises quite erect. The stalk increases rapidly, so that, when two months old, it is covered with a short, soft, whitish down, mucicate, the nascent spines being white, soft, and blunt, irregularly dispersed. During this period the four pairs of leaflets grow much more slowly; they are orbicular, and folded over one another with an imbricate vernation; the nervures downy, doubly dichotomous, so thick as to occupy the whole under surface of the leaflet, though distinguished by depression between them. When the young leaf has attained to about half its ultimate length, by the rapid elongation of the stalk, the blade takes its turn. The leaflets proceed in their growth, increasing much more rapidly in length than in breadth: their increase in breadth is affected by the evolution of parenchyma with cuticle between the nervures, and their elongation by additions to the length of the nervures; thus the form of the leaflet is changed from orbicular to elliptical and lanceolate. The leaf is fully developed in about four months. This year (1854) my plant has put up no more leaves, but it has produced four cones, proving it to be a male. These, like the leaves, have risen in succession, not simultaneously; they are of different sizes; they resemble very much the cones of *Z. Chigua*, but are less exactly cylindrical, tapering towards the top and bottom. The cones are much smaller than those of *Z. Chigua*, already described; but the cause of this, in my opinion, is that my plant is, comparatively speaking, a young one; I have no doubt that a full-sized male plant of *Z. Skinneri* would have cones as large as those of *Z. Chigua*. These cones agree with those of *Z. Chigua* in the position of the anthers on the two sides of the scale. In concluding this account I would observe that my plant is admired by every one, not only on account of its rarity and its very marked distinctive characters, but for its handsome and striking appearance."

915. *ZAMIA pseudo-parasitica*, Yates, supra, p. 202.

"In May 1853, I received from Dr. Joseph D. Hooker a leaflet of a plant from the eastern side of the Andes of Peru, which appears to be a *Zamia*, intermediate between *Z. Chigua* and *Z. Skinneri*. I mention it here because it is the only Cycad, except *Z. Skinneri*, in which I have seen the peculiar appearance produced by the prominence of the nervures on the under surface of the leaflet. The form of the leaflet is lanceolate and falcate; length 52 c., breadth 3 c.; 18 strong nervures in the wide part of the leaflet, another nervure forming each margin. No appearance of teeth or spines in the margin."—*James Yates*.

It was first thought by Mr. Yates that the leaflets mentioned did not belong to *Z. pseudo-parasitica*, but I have since ascertained that they do. Warszewicz has given two stations for this plant, Chagres, and the eastern side of the Andes. I have never seen this species in the Isthmus, and as it is stated only that the specimens were sent from Chagres, whilst in the Hookerian Herbarium they are marked "eastern side of the Andes," *Z. pseudo-parasitica* must be regarded as a doubtful member of the Flora of the Isthmus of Panama, until additional evidence has been adduced.—*B. Seemann*.



C. Hook. and Fitch, del et lit.

Zamia Chigua *Worm.*

F. Revere, sculp.