

iodide. This study of lithium iodide thus seems to be another example of the difficulties that arise from the use of the unaided powder diffraction technique in the determination of the structures of even simple crystals. Additional experimental data obtained by the present writers in a previous determination of lithium iodide are included. It is also pointed out that the intensities of the powder lines from rubidium fluoride and the distances between fluorine and rubidium atoms are not in agreement with those to be expected from the structure which has been given to this crystal.

TABLE III.—INTENSITY DATA UPON RUBIDIUM FLUORIDE

INDICES	INTENSITY	
	Observed	Calculated
100(1)	10	10
110(1)	8	27.5
111(1)	2	3.7
100(2)	1	6.2
110(2)	0.75	5.4
111(2)	Absent	2.2
120(1)	3	6.1
112(1)	1.5	15.5

Note: Only intensity calculations upon the more important reflections are reproduced in Tables II and III.

**BOTANY.**—*Pseudophoenix insignis*, a new palm from Haiti, and two other new species from the West Indies. O. F. COOK, Bureau of Plant Industry.

The generic type is *Pseudophoenix sargentii* Drude, a native of the Florida Keys. The genus has been considered as monotypic and is without any close relatives, so that it has been placed in a separate family, Pseudophoenicaceae. Even in the wider sense of family relationships, the Pseudophoenicaceae apparently are not allied to any North American palms, but may have remote affinities with the ivory palms and wax palms of South America. Hence the finding in Haiti of a new species of *Pseudophoenix*, of much greater size than the Florida species and with other distinctive characters, seemed worthy of note.

The Haitian *Pseudophoenix* is a large palm that grows abundantly in dry open forests of limestone mountains in the district of Gonaives, in the northwestern part of Haiti. It is much larger and more attractive in appearance than the Florida species, having a massive, vase-formed trunk attaining a height of 10 meters or more, leaves and

inflorescences more than 3 meters long, and fruits more than 2 centimeters in diameter. The definite enlargement or bulging of the trunk is analogous to that of several other West Indian palms belong to different genera, *Colpothrinax*, *Roystonea*, *Acrocomia*, and *Aeria*, thus adding another member to this series of parallel evolutions.

Considering that these genera are not related, but belong to distinct families, and that other representatives of these families in the continental areas do not have bulging trunks, the question of a special cause or factor of selection that would favor the development of thickened trunks in the West Indies is naturally suggested. Prevalence of hurricanes in the West Indian region is the most obvious answer, and the greater water-storage capacity of the thickened trunks might be an important advantage in prolonged dry seasons, like that of the present year in Haiti. Two other characters of the new *Pseudophoenix* may be considered as adaptations against drought. The trunk has a very hard outer shell, almost vitreous in texture, and the leaves, inflorescences, and fruits have a heavy coating of wax.

#### CONFUSION OF THE WINE PALM WITH PSEUDOPHOENIX

The trunk of *Pseudophoenix insignis*, though contracted above the bulge, is not drawn out into a long, slender neck, "in collum longissimum elegantissimum protenditur," as Martius says of *Euterpe vinifera*, the wine-palm of the buccaneers, which Beccari would place under *Pseudophoenix*. The wine-palm seems instead to have been a close relative of the Porto Rican *Ilume* palm, *Aeria attenuata*, but apparently with the trunk thicker and more bulging, and the fruits larger, as in the related Central American genera *Synechanthus* and *Opsiandra*.

Though the Haitian *Pseudophoenix* is like *Aeria* in having a thickened trunk, the habits of the two palms are quite distinct. In *Aeria* there is a swelling of the basal portion of a tall, slender trunk, while in *Pseudophoenix* the greatest diameter is above the middle of a robust vase-shaped trunk. In *Aeria* the greatest diameter of the trunk is at 3 or 4 meters above the base, in *Pseudophoenix* at 6 or 7 meters. The long, tapering "neck" of *Aeria* may attain a length of 20 meters or more, while the short, cylindrical "neck" of the *Pseudophoenix* is only 1 or 2 meters long, the internodes being very compact. The *Pseudophoenix* is a large palm rather than a tall palm. *Aeria* grows two or three times as high, and justifies the emphatic "alta palma" of Plumier's description.

The alliance of the wine-palm with *Aeria* is indicated not only by the slender prolongation of the trunk, but by the very large, finger-thick roots, the four-foot inflorescence with shining red fruits, the soft, succulent pith from which the juice could be squeezed with the hand, and the spathes that were used as vessels for drawing the palm-wine, according to Plumier's account, as transcribed by Martius. All of the Synechanthaceae have shining red fruits, while the fruits of *Pseudophoenix* do not shine, because they are coated with wax. Also the Synechanthaceae are notable for having the trunk supported by a solid mass of very coarse superficial roots, those of *Aeria attenuata* being about 3 cm. in diameter, or about four times as thick as the roots of *Pseudophoenix insignis*.

It is quite possible, of course, that two or more of the bulging palms were confused in Plumier's notes, but the data that Martius gives in relation to *Euterpe vinifera* are clearly inapplicable to *Pseudophoenix insignis*. Beccari states that there are drawings of *Pseudophoenix* among Plumier's unpublished materials, but the statement of characters shown by the drawings would apply as well or better to *Aeria*, except that the fruits of *Aeria* are not pedicellate, though they have a narrow base that might be represented as a stalk. In any event, the data that Martius extracted from the Plumier collection would determine the application of the name *vinifera*, and these data seem quite definitely to exclude *Pseudophoenix*.

Wendland referred the wine-palm to *Gaussia*, a Cuban genus rather closely related to *Aeria* but having a stout columnar trunk, apparently neither bulged below nor attenuate above. Only one spathe is described for *Gaussia princeps*, and this long and narrow, while *Aeria attenuata* has 7 short, cuplike spathes. As a name for the historical wine-palm the new combination ***Aeria vinifera*** (Martius) may be used, pending a rediscovery of the palm. This name would replace *Aeria attenuata* if the species should prove to be the same as in Porto Rico, though a somewhat thicker trunk and larger spherical fruits are indicated in the account of *Euterpe vinifera* that Martius gives.<sup>1</sup> With *Gaussia* in Cuba and *Aeria* in Porto Rico it seems reasonable to suppose that the family Synechanthaceae was once represented in Haiti, though the species may be extinct, as Beccari suggests.<sup>2</sup> A palm that yielded a popular beverage might easily be exterminated. Indeed, the abundance of *Pseudophoenix* is evidence that it was not the wine palm. It would not seem reasonable to suppose that such a

<sup>1</sup> *Historia Naturalis Palmarum* 1:LXXXV.

<sup>2</sup> *The Pomona College Journal of Economic Botany*, 1912.

use of the palm would have been forgotten among the Haitians, but no knowledge or tradition of wine-making was detected after numerous inquiries.

#### HABITS OF PSEUDOPHOENIX INSIGNIS

Instead of being confused with *Aeria* or *Gaussia*, the habit and appearance of the Haitian *Pseudophoenix* would cause it to be mistaken for a corozo palm (*Acrocomia*) or a royal palm (*Roystonea*), and this may account for its being so long overlooked. *Roystonea* is the most common palm in adjacent cultivated districts. *Acrocomia* is found in small numbers in the valley between Ennery and St. Michel, but neither of these palms was seen on the dry wind-swept slopes where the *Pseudophoenix* thrives. Hardiness is suggested by the adaptations against drought, already mentioned, and by a notable persistence of the flowers and spathes, which not only remain in place, but are still alive when the fruit ripens. Thus the Haitian palm may prove adapted to cultivation in Florida beyond the range of the royal palm, and possibly also in California, where the royal palm is not known. Seeds have been planted so that a test of the behavior of the new species in the United States is in prospect. It is remarkable that so large a palm growing abundantly in sight of the most commonly traveled roads should have been overlooked by botanical visitors to Haiti, and also that there should be no planted specimens of the palm in Port-au-Prince or in other towns, though several imported palms are grown ornamentally.

#### *Pseudophoenix insignis* Cook, sp. nov.

Trunk attaining a height of 10 meters or more, solitary, erect, distinctly bulging or bottle-shaped, narrowed above the base and then gradually thicker, but narrowed again and much more abruptly at a height of 7 or 8 meters; diameter at the roots about 50 cm., at 1 meter above 22 cm., at 7 meters 45 cm., at 8 meters 28 cm., at 8.5 to 10 meters 17 to 18 cm. Internodes of trunk attaining 14 cm. in length near the base, in the bulging portion 5 to 8 cm. and near the top reduced to 1 cm. or less, the lower leaf-scars 1.5 to 2 cm. long, the upper reduced to 0.5 cm., distinctly pitted; the internodes with smooth surfaces at first, then becoming longitudinally rimose, with a very hard brittle outer shell 3 mm. thick, gray on the surface, black inside. Roots 0.7 cm. in diameter, forming a solid black mass at the surface of the ground, breaking away the outer shell of the trunk as in the coconut and other large palms.

Leaf-sheaths 45 cm. long by 15 to 20 cm., the greater diameter of the trunk attained by secondary thickening; surface whitish or grayish green, with a thick coating of wax; petiole 25 cm. long, about 12 cm. wide at base, 6 cm. wide at apex, flat above, distinctly convex below in the middle, slightly concave toward the margins.

Leaf blade 291 to 311 cm. long, rachis 260 to 277 cm., at base 6 cm. wide, at 50 cm. above the base 3 cm. wide, with a shallow median channel 1 cm. wide; the lateral margins of rachis expanded as thin horizontal wings 0.7 to 0.8 cm. wide, forming a deep lateral recess for the insertion of the pinnae; inferior angles of rachis also somewhat prominent, the inferior diameter 2.6 cm., and the lower side convex in the middle; rachis at 1 meter from base 1.5 cm. wide on the upper side and 1 cm. wide below, the upper surface concave with narrow salient margins; rachis at 2 meters narrowed on the upper side to a thin sharp flange 0.8 cm. high and less than 1 mm. thick, the rachis proper 0.7 cm. high and 0.9 cm. wide underneath; rachis beyond 2 meters with the median flange gradually lower and finally disappearing, so that the terminal portion of the rachis is triangular, with the under side becoming distinctly grooved; end of rachis percurrent as a stiff bristle 31 cm. long and about 1 mm. in diameter, slightly exceeding the terminal pinnae.

Pinnae 168 on one side of the rachis; lower pinnae in groups of 3 to 6, the groups 2 to 4 cm. apart with the pinnae 1 cm. or less apart in the groups; groups becoming more widely separated toward the middle of the leaf, and gradually reduced to 2 or 3 pinnae; last 8 or 10 pinnae not grouped, nearly opposite, and lying in the same plane, while the grouped pinnae are inserted at somewhat different angles, though not widely divergent, the upright position being precluded by the horizontal flanges of the rachis; bases of pinnae strongly complicate, the upper and lower margins nearly in contact, with a distinct pulvinus at the upper side, to control divergence from the rachis; lower pinnae reduced to an unusual extent and only gradually attaining full size above the middle of the leaf; lowest pinna 14 cm. by 0.3 cm., second pinna 11 cm. by 0.3 cm., fifth pinna 21 cm. by 0.5 cm., tenth pinna 29 cm. by 0.8 cm., 20th 36 cm. by 1.1 cm., 40th 59 cm. by 1.7 cm., 60th 66 cm. by 2.5 cm., 80th 75 cm. by 2.8 cm., 100th 83 cm. by 2.5 cm., 120th 70 cm. by 2.9 cm., 140th 70 cm. by 2.3 cm., 160th 48 cm. by 1.1 cm., fifth pinna from the end 42 cm. by 0.8 cm., subterminal pinna 34 cm. by 0.5 cm., last pinna 31.5 cm. 0.4 cm.

Inflorescence 315 to 337 cm., the fruiting axis 2 meters from lowest branch to tip, with 65 primary branches; peduncle tough and flexible, strongly fibrous in texture, with 8 joints, the basal joint 30 cm. long, 6.5 cm. wide at base, widened above to 10.5 cm., second joint 16 to 26 cm. long; third joint 35 cm.; fourth joint 12 cm.; fifth to eighth joints 3 to 5 cm. long, together 18 cm.; only the first and second joints with spathes, the others with broad bracts like those subtending the lower branches, the lowest bracts 4 cm. wide, the upper 2 cm.; outer spathe tough, leathery and persistent, remaining alive to the ripening of the fruit or longer, 139 cm. long, 10 cm. wide, strongly compressed, with sharp, thin-margined carinae on each side, the surface with a thick coating of wax, not splitting in the middle but at one side, near the lateral carina, the apex thin and flexible, strongly compressed, gradually narrowed to a blunt tip; second spathe 41 to 47 cm. long, completely included and exceeded by the outer spathe, to the extent of 77 cm., the texture also much thinner and more membranous, the margins narrowly carinate and the surface beset along the margins with large tufted brown scales.

Fruiting axis distinctly flattened at base, 3.5 cm. wide, 2.5 cm. thick; base of branches flattened, 2 cm. wide; lower primary branches 80 to 90 cm. long, with 21 to 27 secondary branches, many of these attaining a length of 20 to 24 cm. and branched again, the 2 to 6 tertiary divisions 12 to 15 cm. long, the lowest primary branch distinctly reduced, 54 cm. long, with 20 secondaries, all simple; second branch 72 cm. long, with 24 secondaries, 5 of these branched; some of the

primary branches with 12 to 15 branched secondaries, but usually the lowest secondary is simple and none of the secondaries are branched above the 12th primary branch; the upper primaries gradually reduced to the simple form, 13 cm. long, the subterminal primaries 7 to 8 cm. long; ultimate divisions of branches subtended by broad, needle-tipped bracts, the first fruit or flower-scar about 1 cm. from the base, the lower scars 3 to 5 mm. apart, the upper closer together; each scar subtended by a minute bract and surrounded by a ring of prominent corneous tissue.

Fruits at maturity rounded above, tapering at the base, 2 to 2.5 cm. in diameter when fresh; double fruits common, 4.3 cm. wide; triple fruits occasional. Pedicels of fruits about 5 mm. long, 3 mm. wide at base, 2 mm. wide in the middle, and 6 mm. wide above, including the broadly angled lobes of the calyx; petals probably increasing in size with the development of the fruits, becoming very tough and horny in texture, remaining alive till the fruit ripens, then changing from a light green to deep brownish color, at maturity nearly 1 cm. long, 0.7 cm. wide; filaments also persistent, about 4 mm. long, 3 opposite the petals and adnate with the petals at base, the 3 alternate filaments free from the petals. Stigmas of single fruit subbasal, persistent, short, divergent, 0.8 to 1 cm. from the insertion of the subtending petal; abortive carpels distinctly prominent, especially on double fruits where the abortive carpel usually has more development than on single fruits, and the stigma may be 1.3 cm. above the petal; triplet fruits with the stigmas central, often persistent in a dry and blackened condition.

Pericarp fleshy, the surface pruinose with a layer of wax, not shining, finely wrinkled when dry, the color changing from green through pale greenish yellow to pink and then to pinkish red, the skin and pulpy layer 2 to 3 mm. thick, with 3 zones easily distinguished before the stage of complete softening is reached, an outer firm layer that becomes red, under this a softer layer at first a transparent greenish color, becoming reddish yellow, and a somewhat firmer inner layer, at first lemon yellow and then orange, closely adherent to the bony endocarp, but easily removed, all the material becoming pulpy, with none of the firm fibers that are a feature in so many palms.

Endocarp nearly spherical, slightly depressed, 1.4 to 1.8 cm. in diameter, smooth, very hard and resilient, of a rather light coffee-brown color, with a firm shell less than half a millimeter in thickness, of very fine-grained, light-colored, horny, columnar tissue, and a membranous lining of nearly the same color as the outer surface, sometimes partly adherent to the seed; hilum nearly 4 mm. wide, appearing as a circular aperture of the bony endocarp, closed with a hard woody material that forms a broadly conic or rounded external prominence pitted at the apex, similar to the hilum of the ivory palms; upper margin of hilum scarcely elevated, forming no distinct tubercle or ad-hilum.

Seed subspherical, slightly depressed, 1.3 to 1.6 cm. in diameter, with a transversely elliptical central cavity 3 to 5 mm. across; surface of seed coated with a furfuraceous but closely adherent thin layer of light brown or tan-colored material overlaying a very smooth thin testa; raphe with two simple flexuous branches on each side, forming shallow grooves of pinkish fibrous material in the tan-colored layer, passing over and around the seed and approaching the embryo, which is indicated on the surface by a slight mammillate prominence to which the light-brown surface coating does not adhere; embryo subbasal, about 5 mm. from the hilum, 4 mm. long, reaching nearly to the central cavity; endosperm hard, with a very fine, uniform, radial structure.

Type in the U. S. National Herbarium, nos. 1,145,487-1,145,492, collected about 3 miles from the locality known as Passe Reine, about 21 kilometers east of Gonaives and 10 kilometers west of Ennery, Haiti, July 28, 1923, by O. F. Cook (no. 28). These specimens are from a single large individual which grew on a slope well covered with the palms. A few of the seeds were planted at Port-au-Prince, August 2, 1923, in the garden of H. P. Davis, and the remainder brought to Washington. The palms appeared most abundant in the district of Gonaives, several miles back from the coast, between Gonaives and Ennery. Others were seen on higher mountains a few miles out of Gonaives toward Dessalines at Savnane Lacroix, and a small number about 20 kilometers north of Port-au-Prince, near the sulphur springs. These are all dry districts, with a rainfall that probably does not average more than 20 inches.

The leaves are used for thatching the roofs of houses. The trunks are split and the sections of the hard outer shell are trimmed down to serve as boards for siding. The fruits are eaten by pigs, and are sometimes gathered for that purpose. The interior of the trunk is of a rather loose pithy texture and sometimes is chewed by the wood cutters to allay thirst, but no other uses of the palm could be learned from the natives. The pith was found to be moist, but coarsely fibrous and tasteless, not sweet and succulent like that of the wine palm described by Plumier. The name *palmiste a vin*, noted by Plumier for the wine palm, was not heard, nor were there any indications that wine was made from the juice of the *Pseudophoenix*. Many of the natives have no name for the palm, or call it *palmiste mal*, to distinguish it from *Roystonea*. The name *caychá*, was learned at Passe Reine, while another informant, from Ennery, said *chacha*.

The name *cacheo* is given by Martius on the authority of Heneken as relating to a palm that grew on dry hills in Santo Domingo, at a place called Guayacanes, a half-day's journey from San Jacobo. This palm is said to have an abrupt spherical enlargement of the trunk at a height of 18 or 20 feet from the ground, the swelling about three times as thick as the trunk. The pith is described as fleshy, soft and sweet, like a melon.

The use of the *Pseudophoenix* for building purposes no doubt would explain why the palms have not survived along the roads or in readily accessible places, but thousands can be seen on rough and craggy slopes, or in sparsely populated districts. The locality near Port-au-Prince is in a district that is distinctly drier than the region behind Gonaives, as indicated by the more stunted vegetation consisting largely of cacti and other spiny plants growing in the crevices of a very rough and jagged limestone formation. As might be expected under such conditions, the trunks of the *Pseudophoenix* appeared to be somewhat shorter, and with shorter internodes and inflorescences, but measurements of leaves showed only slight differences. The foliage is a somewhat darker shade of green than in the royal palm or the corozo, and sometimes with a slightly bluish tone, which may come from the lower surfaces of the pinnae, which are grayish or silvery.

The leaf sheaths are not fibrous, and the upper margins slope backward gradually upward to form the petiole. On old leaves that have shrunk in

drying the petiole and lower part of the rachis are deeply channeled instead of nearly flat as in the living condition. The fallen sheaths are pinkish or salmon-brown inside, while the outside becomes nearly white, on account of the heavy coat of wax. The margins of the sheaths are thin and even, or somewhat torn, but scarcely fibrous, and the texture so firm that the outer leaves remain in place after the sheath has split nearly to the base. In other words, the sheaths are normally more open than in the royal palm, where the leaves would fall if the sheaths were split so far down.

The outer shell of the trunk is extremely hard, almost vitreous in texture, and though longitudinally chinked or rimose on the surface appears very solid as though it were renewed from underneath, like the bark of a dicotyledon. A process of secondary thickening must go on especially in the bulging portion of the trunk, whose diameter is much greater than is ever attained by the terminal bud. To keep the outer shell continuous, while the trunk is enlarging, a continued growth of the shell would be required, and this may be the function of a thin layer of rather soft tissue immediately under the shell.

The waxy coating of the leaf-sheaths, spathes, and other parts may be noted with other indications of relationship of *Pseudophoenix* with the Ceroxylaceae, or wax palms of South America. The structure of the fruit, with a bony endocarp of columnar tissue, and a specialized hilum plugged with woody material, presents analogies with the vegetable ivory palms, which also are natives of South America.

#### NOTES ON PSEUDOPHOENIX SARGENTII

Measurements given by Sargent<sup>3</sup> show that the Florida *Pseudophoenix* is a much smaller palm. The trunk is 12 to 15 feet tall and 10 to 12 inches in diameter, the leaves 5 to 6 feet long, the largest pinnae 18 inches long and 1 inch wide, the terminal pinnae 6 to 8 inches long and  $\frac{1}{3}$  to  $\frac{1}{2}$  inches wide, the petiole 6 to 8 inches long, the rachis 1 inch wide, the spadix 3 feet long, the fruits  $\frac{1}{2}$  to  $\frac{3}{4}$  inch in diameter and the seed  $\frac{1}{4}$  inch in diameter. The number of pinnae is not stated but the drawing would indicate about 53 each side of the midrib. The drawing of a "branch of a fruiting panicle" shows a greater degree of subdivision than in the Haitian species, since the lower tertiary branches are again divided, with 2 to 6 arms, and the ultimate divisions gradually reduced from 3 cm. to 1 cm. or less, while in *P. insignis* the ultimate divisions are seldom less than 10 cm. and usually are 12 to 15 cm. long.

A series of specimens from Miami, Florida, in the U. S. National Herbarium includes an apparently complete leaf with the blade 150 cm. long, the rachis 130 cm. and the rachis-bristle 18 cm. The upper portion of the rachis has a median flange that remains distinct to the end. The pinnae are about 85 on a side, the lower mostly in groups of two with an occasional single pinna, the lower groups with the pinnae narrow and very close together, the largest

<sup>3</sup> *Silva* 10:33.



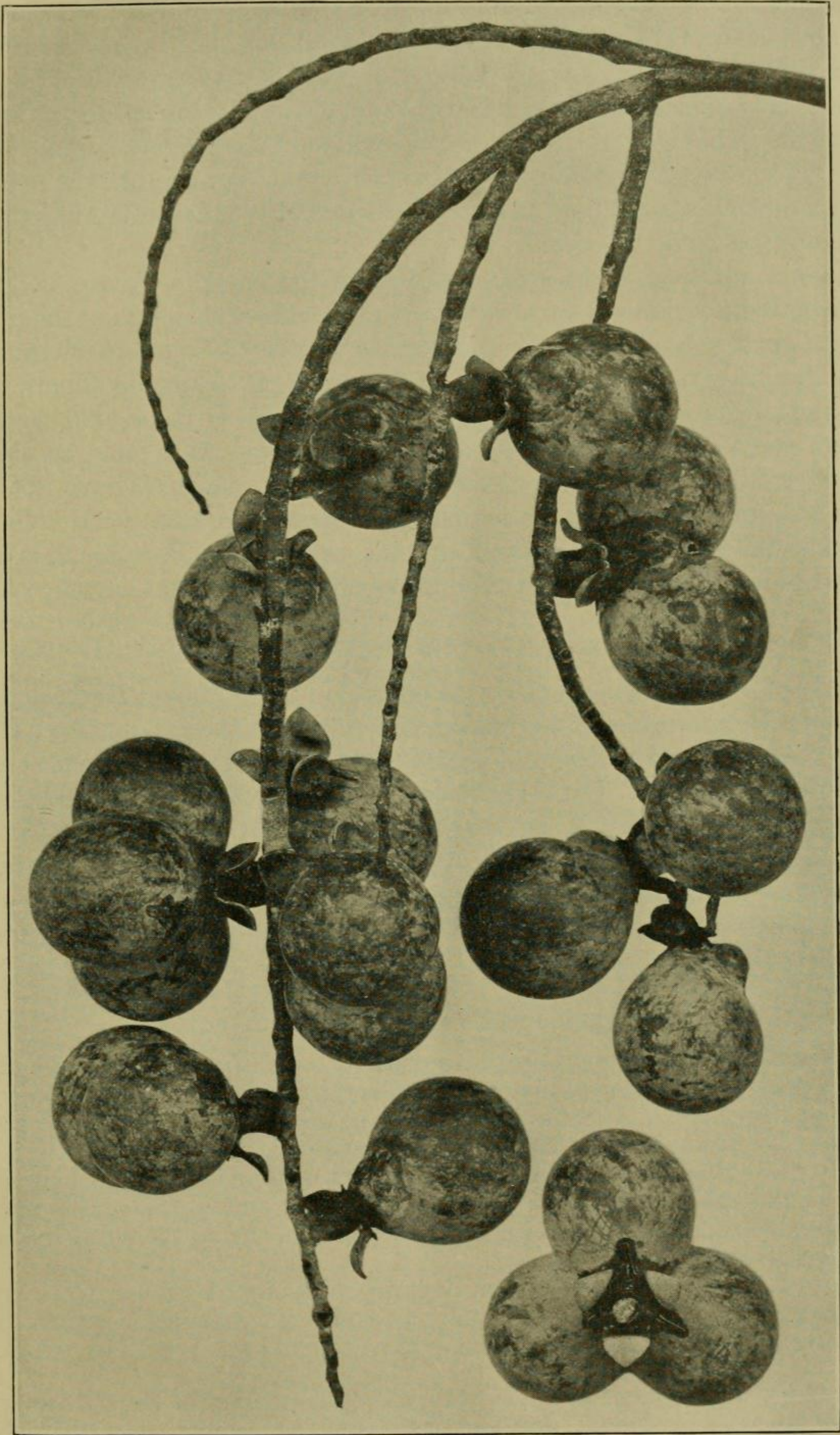


FIG. 1. End of a primary branch of *Pseudophoenix insignis* with mature fruits. Natural size.

pinnae 51 cm. by 2.3 cm. Inflorescence with 33 to 41 primary branches, the peduncle apparently of only 4 joints, the second joint bearing the short inner spathe, which is 10 cm. long by 3 cm. wide, of delicate thin texture, the third joint ending sometimes with a broad bract or in a rudimentary collar-like spathe encircling the peduncle, the fourth joint bearing the first fruiting branch. Outer spathe 3.5 to 4 cm. wide at 20 cm. below the tip, the marginal carinae much narrower than in *P. insignis*, and with brown scales like those of the inner spathe of *P. insignis*.

Thus in addition to the greater size of all the parts in *P. insignis*, there are several other differences, notably the more numerous joints of the peduncle, the greater development of the spathes, the lack of quaternary divisions of the branches of the inflorescence, and three of the filaments adnate below with the inner surfaces of the petals. The reduction of the second spathe to a mere rudiment in *P. sargentii* may be considered as a more specialized character. The basal joints of the peduncle of *P. sargentii* have not been described, and apparently no complete inflorescences have been collected. The unusual development of the first joint, as shown in *P. insignis*, is likely to be a group character, rather than a specific difference.<sup>4</sup>

#### OTHER SPECIES OF PSEUDOPHOENIX

Study of other specimens of *Pseudophoenix* in the National Herbarium has led to the recognition of two additional West Indian species, one from Cuba, and the other from the island of Saona, at the southeastern extremity of the Dominican Republic. The occurrence of *Pseudophoenix* in these localities has been mentioned by Small, but the plants were not distinguished from *P. sargentii*. Though complete descriptions are not possible, very definite differences are shown by the available material. More attention may be given to the study of this group of palms if characters for distinguishing the species are pointed out.

#### *Pseudophoenix saonae*, Cook, sp. nov.

Terminal portion of rachis with no distinct median ridge, the bases of the pinnae decurrent; upper pinnae rather close, irregularly spaced; fifth pinna from the end of the leaf 28 cm. long by 9 mm. wide; subterminal pinna 23 cm. by 7 mm.; terminal pinna 22 cm. by 6 to 9 mm.; terminal bristle 21.5 cm., slightly exceeding 1 mm. in thickness; surfaces of pinnae in the dry specimen uneven, marked with distinct longitudinal ridges and grooves, the veinlets irregular in size, with 2 to 4 veinlets on each side of the midvein much coarser than the others.

Fruits 1.2 cm. in diameter when dry, probably about 1.5 cm. when fresh; filaments robust, broadened gradually to the base, forming a rather thick, distinctly projecting ring; endocarp obovate-globose, 1 cm. in diameter;

<sup>4</sup> A very complete account of the history and distribution of *Pseudophoenix* has been published by Dr. John K. Small under the title *The buccaneer-palm* (Journ. N. Y. Bot. Gard. 23: 33-43. 1922.)

hilum rounded and prominent, broadly oboval, wider above than below, 4 mm. long, 3 mm. broad, with an abruptly prominent conic-spiniform adhilum about 1 mm. high, distinctly truncate at apex, directed obliquely upward to meet a hardened, sharply triangular columella that projects into the fruit cavity, under the stigma; shell of endocarp somewhat thinner than in *P. insignis* but distinctly thicker than in *P. linearis* or in *P. sargentii*; seed subglobose, nearly 9 mm. in diameter, with a very thin coating of flocculent material, or partially naked, exposing the light chestnut brown testa; impressions of the raphe and its two evenly curved branches very shallow, lined with delicate whitish strands.

Type in the U. S. National Herbarium, no. 758,263, from the banks of a salt lake on Saona Island, Province of Seibo, Santo Domingo, collected December 9, 1909, by N. Taylor (no. 513).

From the proportions and texture of the terminal and subterminal pinnae, as well as from the fruit and seed characters, it is evident that this species is very different from *Pseudophoenix insignis*.

#### ***Pseudophoenix linearis* Cook, sp. nov.**

Petiole at apex probably 1.5 to 2 cm. wide, the rachis narrowed at the lowest group of pinnae; lateral wings of rachis very narrow, only 1 or 2 mm. wide; terminal portion of rachis very slender, less than 2 mm. thick, with a very fine, low median ridge, the upper pinnae rather remote, from 2 to 5 cm. apart.

Lowest pinnae very slender, in a close group of 4 to 6, the bases only 2 to 4 mm. apart, very strongly complicate, with margins thickened and in contact, the margins and the midribs underneath with scattered dark-purplish fibrous scales; first pinna 33 cm. long by 2 mm. wide; second pinna 44 cm. by 5 mm., the apex very slender, remaining adherent 12 cm. from the apex of the third pinna; fifth pinna 72 cm. by 7 mm.; third pinna from end 42 cm. by 6 mm.; subterminal pinna 35 cm. by 4 mm., the terminal subequal or slightly shorter, the rachis-bristle also subequal in length, 1 mm. or less in diameter; pinnae probably glaucous, the margins strongly thickened and the veinlets very close, usually with 2 veinlets on each side distinctly coarser than the others.

Inflorescence with axis attaining about 2 cm. in width near the base, probably distinctly flattened, in the pressed specimen about 7 mm. thick, the branches subtended by persistent and triangular-acuminate bracts, carinate in the middle and distinctly veined; primary branch 35 cm. long, with 18 secondary branches, the base naked for 8 cm.; nine secondary branches with tertiaries, the lowest secondaries largest, attaining 12 cm. with 3 to 4 tertiaries 3 to 5 cm. long; no quaternary branches; the larger simple branches and simple ends of compound branches usually attaining 5 to 6 cm.

Fruits about 1 cm. in diameter; double fruits 1.8 cm.; pedicel slender, 4 mm. long, with an expanded hollow base not attained by the everted petals; calyx rounded triangular, the angles rounded or minutely apiculate; filaments slender, scarcely broadened at the base, inserted on a thin, narrow ring; endocarp obovate, subglobose, 9 mm. in diameter, the wall about half as thick as in *P. insignis*, the hilum oval, the narrow end upward, less than 2 mm. long; margin of the shell above the hilum abruptly prominent, forming a low rounded tubercle (adhilum); seed subglobose, slightly pyriform, 8 mm. in diameter, with the flocculent material of the other species mostly replaced by a delicate membrane covering a somewhat thicker and rougher testa, the raphe impressions rather narrow and blackish, the lower branches of the raphe very short.

Type in the U. S. National Herbarium, no. 655,222, collected at Lomo de Loro, Cayo Romano, Camaguey, Cuba, October 21, 1909, by J. A. Shafer (no. 2644). Another Cuban specimen, *Shafer* 2815, collected at Cayo Guajaba, probably represents the same species, and shows a close group of three pinnae that may have come from near the middle of the leaf, these pinnae 64 cm. long by nearly 2 cm. wide. The same sheet has the end of a leaf with subterminal pinnae 34 cm. by 5 mm., and terminal pinnae 28 cm. by 2 mm., with margins closely infolded, and the midvein thickened and prominent beneath; rachis-bristle 28 cm. long, less than 1 mm. wide.

The very narrow pinnae, simple tertiary branches, small fruits, thin endocarp, and small oval hilum may be considered as the diagnostic features of this species. The slender pedicel of the fruits, projecting below the everted petals, is also peculiar. The petals exceed the pedicel in *P. sargentii* and in *P. insignis*, and are about equal in *P. saonae*.

ENTOMOLOGY.—*On the identity of a European chalcidoid parasite of the alfalfa leaf-weevil.* A. B. GAHAN, Bureau of Entomology, U. S. Department of Agriculture. (Communicated by S. A. ROHWER.)

The following note is published at this time for the reason that the European Chalcidoid dealt with is one of those parasites which the United States Department of Agriculture Bureau of Entomology is about to attempt to establish in the state of Utah for the purpose of aiding in the natural control of the destructive alfalfa leaf-weevil *Phytonomus posticus* Gyllenhal.

#### FAMILY PTEROMALIDAE.

#### GENUS PERIDESMIA FOERSTER

*Type of the genus*—*Isocyrtus (Trichomalus) aquisgranensis* Mayr, by present designation.

The genus *Peridesmia* was described<sup>1</sup> by Foerster, in a table of genera, without included species. The description was apparently based upon the male sex only. Foerster's original specimens afterward came into the possession of G. Mayr and were described<sup>2</sup> by him under the name of *Isocyrtus (Trichomalus) aquisgranensis*. Mayr considered *Trichomalus* Thomson a subgenus of *Isocyrtus* Walker and *Peridesmia* a synonym of *Trichomalus*. His description of *T. aquisgranensis* included both sexes.

Although, strictly speaking, Mayr did not include *aquisgranensis* in *Peridesmia* it is apparent that this species should be considered the genotype of that genus and it is herewith so designated. In order that the type of *Peridesmia* may be definitely fixed the male of Mayr's description is desig-

<sup>1</sup> Hym. Stud. 2 : 65. 1856.

<sup>2</sup> Verh. zool.-bot. Ges. Wein. 1903 : 394.