

not do this, but that at least two rains, properly timed, are necessary to enable the plant to produce seeds. In the season of 1935 the rainfall in the bottom of Death Valley was unusually heavy. The autumn and winter rains up to January 5, 1935, had totaled 0.89 inch. On January 5 there was a rainfall of 0.27 inch, on February 4, 0.72 inch, and on March 2, 0.09 inch. Mr. Gilman believes that a few seeds of *Gilmania* germinated after the rain of February 4 and that the rain in March carried these plants through to maturity. Some of the plants reached a diameter of more than 10 inches and produced an abundance of seeds. Most of the plants found by Mr. Gilman in 1935, however, were tiny, consisting of only a small basal rosette of leaves, and they died without producing either branches or flowers. These small plants, Mr. Gilman believes, grew from seeds that germinated after the rain of March 2 and dried up in the rainless period that followed.

From these observations we have a fairly clear view of the reason for the rarity with which flowering specimens of *Gilmania* appear, because good rains, suitably timed, are not common in Death Valley. For example, up to February 6, 1936, there had been only 0.21 inch of rain in the bottom of Death Valley since March 2, 1935. This total of less than a quarter of an inch in nearly a year was made up of 0.10 inch in May, and 0.11 inch in December.

Apparently *Gilmania* is a plant in process of extinction through the extreme dryness of Death Valley. Its seeds, like those of many desert annuals, evidently are able to lie dormant in the ground for several years. Some of them germinate after a good rain if the temperature conditions are suitable for germination, but these germinated seeds do not produce fruiting plants, apparently, unless the seedlings are boosted to a suitable size and vigor by a second rain, adequate in amount and properly timed. In most years any little *Gilmania* plants that have been able to start will die before they produce seeds, from lack of a second rain. The continued existence of this species apparently depends on the dormancy of a sufficient number of seeds to carry it over unfavorable years to years of adequate and properly timed double rains. If Death Valley becomes drier and drier, and years with suitable double rains become more and more infrequent, the vitality of the old *Gilmania* seeds in the soil will ultimately be insufficient to span these longer periods of years when no new seeds are produced, and extinction, which is now a menace, will become a fact.

BOTANY.—*Notes on the Myristicaceae of Amazonian Brazil, with descriptions of new species.*¹ I. ADOLPHO DUCKE, Jardim Botânico, Rio de Janeiro. (Communicated by E. P. KILLIP.)

During my botanical trips in Amazonia I assembled a good number of plants of that interesting but not sufficiently studied family,

¹ Received February 15, 1936.

Myristicaceae, which must be considered one of the most important elements of the hylaea-flora, principally in the western half of this immense plain. The types of the new species are preserved in the herbarium of the Jardim Botânico of Rio de Janeiro; cotypes have been distributed among the principal institutions of Europe and America. Of these last, special mention may be made of the U. S. National Herbarium in Washington. The material sent to that herbarium was compared with the Myristicaceae in the herbarium of the New York Botanical Garden by Dr. A. C. Smith, for which I thank him very kindly. Wood samples accompanied by herbarium material of several species have been deposited at the Yale School of Forestry.

A part of the material examined was gathered by me when I was in the service of the late Dr. J. Huber, the eminent botanist, Director of the Pará Museum (Museu Goeldi); duplicates of that material are deposited in the Jardim Botânico, Rio de Janeiro.

COMPSONEURA

COMPSONEURA DEBILIS (A. DC.) Warb. "Catinga" of Camanáos, Upper Rio Negro, State of Amazonas (*Ducke*, Herb. Jard. Bot. Rio 24445, distributed as a new species. This very small tree with pure white flowers is more like certain species of *Casearia* (Flacourtiaceae) than a Myristicaceae. Adult leaves thick-coriaceous; ripe fruits orange-red; arilloid entire, purplish; seeds spotted, as in *C. sprucei* and *C. ulei*.

COMPSONEURA RACEMOSA Ducke. São Paulo de Olivença (Rio Solimões); observed once (male tree).

COMPSONEURA CAPITELLATA (A. DC.) Warb. To this species, described from Eastern Peru, probably should be referred a small tree of the upland forest of São Paulo de Olivença, a Brazilian village near the Peruvian frontier (Herb. Jard. Bot. Rio 19803 and 23693, male trees, and 19576, female tree with flowers and fruits). The fruits, ellipsoid or less frequently nearly globose are up to 5 cm long and 3 cm thick, though not yet mature. They are green, glabrous, with a longitudinal keel at one side; their hard, ligneous pericarp is 3 mm thick when dry; the seed is not yet developed. These fruits are surely glabrous, with a longitudinal keel at one side; their hard, ligneous pericarp is 3 mm thick when dry; the seed is not yet developed. These fruits are surely very different from those of all other known Myristicaceae.

COMPSONEURA ULEI Warb. This species must be placed, by its androeium, in the section *Coniostele* Warb.; its fruit resembles externally and internally that of *C. debilis* but is a little larger and of a pale yellow color, and its arilloid is white, instead of red as in all other Myristicaceae of which I have seen fruits. This very small tree, with long branches and yellowish

green flowers, is not very rare in the undergrowth of the upland forests of the Middle Amazon (western part of the State of Pará: Santarem, Lower and Middle Tapajoz, Obidos, Lower Trombetas; eastern half of the State of Amazonas: Maués, Manáos, Porto Velho; northwest of Matto Grosso: Santa Cruz of the Rio Jamary).

OSTEOPHLOEUM

OSTEOPHLOEUM PLATYSPERMUM (A. DC.) Warb. One of the most frequent and widely distributed Myristicaceae of the upland rain forest of Amazonian Brazil, from the mouths of the Amazon and the neighborhood of the capital of Pará to São Paulo de Olivença, not far from the Peruvian frontiers. It furnishes here, for this family, the largest trees, these sometimes more than 40 meters high, but only in the thickest stems do we find a very thin red heartwood.

IRYANTHERA Warb.

The species of this very natural genus are more difficult to classify than those of *Virola*, being nearly as numerous but much more uniform in their characters. Indument is always scarce, the leaves and the adult fruits being glabrous; the structure of the androecium is less variable than in *Virola*. Probably the fruits furnish the best characters to establish a natural arrangement of the species, but unfortunately most of these are only known in the male form. This genus is apparently restricted to the Amazonian hylaea (including the Guianas and the northwestern part of the State of Maranhão), where it is represented by a rather considerable number of species, though much less abundant in individuals than is *Virola*; it is one of the most characteristic elements of the hylaea-flora. All the species grow in upland virgin forest, where they prefer the neighborhood of small streamlets. All are known by the vernacular name "ucuhúba-rana" (false ucuhúba), those which furnish wood of good quality also as "punán."

Iryanthera dialyandra Ducke n. sp. Speciei *I. ulei* Warb. primo aspectu valde similis, at foliorum basi anguste rotundata vel subcordata, inflorescentiis, saepius e ramulorum parte inferiore ad folia delapsa, elongatis, usque 70 mm longis; ab ipsa omnibusque aliis speciebus hucusque notis differt antheris 3 ad columnae apicem sessilibus e basi liberis divergentibus. Planta feminea ignota. Arbor parva, partibus vegetativis glabra; foliorum petiolus brevis vel ad 18 mm longus, lamina vulgo ad 22 cm rarius 27 cm longa et ad 7-9 rarius 11.5 cm lata, saepius subobovato-elliptica colore et nervatione ut in specie citata; inflorescentiae tenuiter ferrugineo-puberulae vix ramosae, rhachi robusta; flores virescentes, e nodulis (vel ramulis minimis) fasciculati, pedicellis 3-6 mm longis, perigonio basi bracteolato 1.5-3 mm longo in alabastro plus minus obovato, anthesi tripartito, androecei columna gracili quam antherae multo longiore.

Habitat circa Manáos silva non inundabili ad ripas paludosas rivulorum, locis Estrada da Raiz inter Cachoeirinha et rivum Mindú (Herb. Jard. Bot. Rio 19578) et Estrada do Aleixo (Herb. Jard. Bot. Rio 24446), mensibus julio et augusto florifera, leg. A. Ducke.

The free anthers give to this species an isolated position within the genus. Many species are similar in leaves and sometimes also in the form of the inflorescences, but their anthers are entirely connate with the column of the androecium.

IRYANTHERA ULEI Warb. (*I. macrophylla* Warb., male, not female.) *I. macrophylla* Warb. (1897) is a mixture of *Myristica macrophylla* Spruce ex Benth. (a plant which, according to the descriptions, would be remarkable by its very large leaves but which is known only in female herbarium material with anomalous fruits) and of Schwacke 595 (= 3532), a male plant of which I examined herbarium specimens in the Museu Nacional of Rio de Janeiro. A cotype of *I. ulei* (Rio Juruá-Miry, Acre Territory, Ule 5724) corresponds exactly with Schwacke's plant, collected at Manáos. I found, near this city, a third individual evidently conspecific with both the last mentioned plants. It was a small upland forest tree, growing at the swampy margins of a streamlet near the Estrada do Aleixo (Herb. Jard. Bot. Rio 24456).

The leaves of *I. ulei* reach rarely 25 cm in length, their average size being only 20 cm; they are thick but very fragile. The inflorescences are remarkably short; the column of the androecium, though variable in length, always exceeds the length of the anthers.

This species may be mistaken for many others, as for instance *I. dialyanthera*, but the elongate inflorescences and the form of the androecium of the latter are distinctive.

Iryanthera polyneura Ducke, n. sp. Speciebus *I. ulei*, *dialyanthera*, *longiflora*, *paraensis* et *lancifolia* affinis, ab omnibus differt foliorum costis secundariis utrinque 28–32, inflorescentiis masculis (solis notis) 15–25 mm longis, simplicibus, pedunculo (brevissimo vel ad 6 mm longo) et rhachi crassis, florum fasciculis multifloris in inflorescentia dense agglomeratis, dense rufo-velutinis. Arbor mediocris ramulis superne tenuiter cano-tomentellis, foliis adultis glabris petiolo 15–20 mm longo, lamina 20–29 cm longa et 6–11 cm lata, basi obtusa vel anguste rotundata, apice vulgo abrupte acute acuminata, basi et apice saepe complicata, crasse coriacea fragili, utrinque granulosa, costis secundariis supra impressis subtus prominentibus, ante marginem arcuato-conjunctis, venulis non conspicuis. Flores viridiferruginei, ante anthesin subglobosi vix ultra 1 mm diametro, anthesi profunde trilobi intus glabri, androecei columna brevi quam antherae (6, perfecte adnatae, breves) vix longiore.

Habitat silva non inundabili circa Fontebôa (Rio Solimões, civ. Amazonas), 4–9–1929 leg. A. Ducke (Herb. Jard. Bot. Rio 24454).

Very similar, at the first glance, to many other species with thick but very fragile leaves; it differs, however, from all others by the more numerous lateral ribs of the leaves. The very short and dense inflorescences may be anomalous; in *I. lancifolia* we find similar inflorescences beyond the more numerous inflorescences of elongate form which evidently represent the normal type. *I. ulei* Warb. has very short and dense male inflorescences, but its leaves have only 14 to 18 lateral ribs.

Iryanthera longiflora Ducke, n. sp. Speciei *I. ulei* partibus vegetativis simillima, solum ramulorum tomento diutius persistente. Inflorescentiae masculae (solae notae) in ramulorum parte inferiore infra folia numerosae, binae, 6–12 cm longae, sat flexuosae, super basin pauciramosae vel (praeter nodulos floriferos interdum longe pedunculatos) simplices, partibus omnibus tenuiter rufo-ferrugineo-puberulis, nodulis vel ramulis floriferis modice distantibus multifloris; flores brunnescenti-virides, pedicello 5–8 mm longo tenui, bracteola parva pilosa, perianthio ante anthesin obovato-oblongo ad 3 mm longo vix 2 mm lato, anthesi oblongo-ureolato vix ad $\frac{1}{3}$ ab apice trilobo, intus glabro, androecei columna cylindrica tenui quam antherae perfecte adnatae multo longiore. Arbor mediocris ramulis crassis superne cano-tomentellis, foliorum glabrorum petiolo 1–2 cm longo, lamina 20–30 cm longa et 5.5–9.5 cm lata, oblongo-elliptica vel lanceolato-oblonga, basi obtusa vel acutiuscula, apice acuta vel brevissime acuminata, crasse coriacea fragili, siccitate supre fusca subtus rufo-ferruginea, supra parum subtus vix nitida, utrinque (subtus fortius) granulosa, costis secundariis utrinque 15–20, longe ante marginem arcuato-conjunctis, supra impressis subtus fortiter prominentibus, venulis non conspicuis.

Habitat silva terris altis secus flumen Purús inter Boca do Acre et Monte-verde, civitate Amazonas, 10–3–1933 leg. A. Ducke (Herb. Jard Bot. Rio 24457).

The leaves are like those of *I. ulei*, but the inflorescences and their insertion, as well as the flowers, are very different. In comparison with the other species with large and thick but very fragile leaves, *I. polyneura* has the nervures of the leaves much more numerous and the inflorescences very short and dense; *I. dialyandra* has the anthers not connate, divergent; *I. paraensis* has very elongate and thin inflorescences and very small flowers; *I. lancifolia* has the nervures of the leaves very faint; and all these species have smaller and more or less globose flowers. Finally, in *I. densiflora* the flowers have a somewhat elongate form, but they are shorter than in the others and the inflorescences are simple and dense; the leaves of this species are, however, very different.

Iryanthera lancifolia Ducke, n. sp. Affinis speciebus aliis foliis magnis crassis coriaceis fragilibus fultis; differt ab *I. dialyandra* antheris 6 perfecte adnatis; ab *I. paraensis* inflorescentiis multum minus elongatis, robustioribus; ab *I. longiflora* inflorescentiis minus elongatis, non ramosis, floribus parvis; ab *I. ulei* inflorescentiis sat longis et floribus minoribus; ab *I. polyneura* costis secundariis foliorum multum minus numerosis et inflorescentiis sat longis; a speciebus citatis omnibus foliis magis lanceolatis costis secundariis in utraque pagina tenuissimis. Arbor 20–25 m alta, praeter innovationes glabra; foliorum petiolus 10–18 mm longus robustus canaliculatus, lamina 16–24 cm longa et 4–7 cm lata, saepissime oblongo-lanceolata vel lanceolata, basi obtusa vel subacuta, apice acuta vel breviter acuminata, crasse coriacea fragilis utrinque granulosa, supra fuscescens nitida, subtus ferruginescens subopaca, costa primaria valida subtus prominente, costis secundariis utrinque 14–18 supra tenuissime immersis subtus tenuissime prominulis. Inflorescentiae masculae fere omnes infra folia e ramuli parte vetustiore, binae, vulgo 3–7 cm longae rarius breves (abnormes?), simplices, nodulis floriferis vulgo sat approximatis, rhachi crassiuscula tenuiter puber-

ula; flores viridi-ferruginei, in nodulo plures fasciculati, cum pedicello (brevi vel usque 5 mm longo, tenui) et bracteola (parva) dense rufo-velutini, perianthio ante anthesin subgloboso vix ultra 1 mm in diametro, anthesi profunde trilobo intus glabro, androecei columna brevi quam antherae 6 parvae perfecte adnatae parum longiore. Arbor feminea ignota.

Habitat prope Manáos silva non inundabili inter Estrada da Raiz et Igarapé Mindú, 13-7-1932 leg. A. Ducke (Herb. Jard. Bot. Rio 24553).

IRYANTHERA PARAENSIS Huber (*I. elongata* Huber). Nos. 429 and 542, male and female, of Dr. Sandwith's British Guiana collection are not at all different from the plants of Brazilian Amazonia. This species is distributed in the hylaea from the vicinity of the Atlantic as far as the Upper Amazon (Fontebôa and Tonantins). Kuhlmann found it in northwestern Matto Grosso between Pimenta Bueno and Riozinho (Herb. Comm. Rondon 1974). It is distinguished from *I. hostmannii* by the frequently larger leaves, the very elongate thin and flexuous male inflorescences, the very small flowers, and a very short androecium column.

IRYANTHERA HOSTMANNII (Benth.) Warb. This species from the Guianas and the Upper Rio Negro of Venezuela has not been found in Brazil. I have seen a fruiting specimen in the Museu Nacional (Maroni, French Guiana, *Melinon* 1861, without number); its leaves correspond exactly with the drawing in Warburg's monograph, plate 4; one of its two fruits resembles the fruit of the same plate, but the other has an almost triquetrous form, reminding one of the fruit of *I. tricornis*.

IRYANTHERA DENSIFLORA Huber. Readily recognized by its simple and dense inflorescences with relatively large flowers. A tree of the very moist upland forest from the Amazon estuary (islands of Breves and Gurupá), the region of the railway between Belem do Pará and Bragança (Peixeboi), and the Middle Tapajoz (S. Luiz, at the foot of the lowest rapids).

Iryanthera coriacea Ducke, n. sp. Arbor parva, praeter innovationes tenuiter rufo-tomentellas glabra. Foliorum distichorum petiolus 12-17 mm longus robustus profunde canaliculatus; lamina 13-20 cm longa 4.5-7 cm lata, obovato-lanceolato-oblonga vel -elliptica, basi anguste rotundato-obtusa complicata, apice sensim vel subabrupte modice longe acuminata, crasse et firme coriacea, utrinque nitida, subtus aliquanto pallidior et granuloso-rugulosa, costa mediana utrinque prominente subtus basi crassa, costis lateralibus utrinque 15-18 ante marginem arcuato-anastomosantibus supra fortiter impressis subtus tenuiter prominulis vel subimpressiusculis, venulis reticulatis impressis supra bene conspicuis. Inflorescentiae masculae super petiolorum insertiones vulgo binae, usque ad 8 cm longae, simplices, substrictae vel arcuatae rarius subflexuosae, cum floribus tenuiter rufo-sericeae; flores e nodulis vel ramulis brevissimis fasciculati, in fasciculo vulgo plurimi, pedicellis 2-4 mm longis tenuibus, perianthio basi bracteola squamiformi munito, ante anthesin subtriquetro-ovato vel subgloboso diametro ad 1.5 mm, anthesi aperto 3 mm lato usque ad medium obtuse trilobo, intus glabro, androecei columna robusta superne dilatata, antheris 6 perfecte adnatis plus minus aequilonga. Planta feminea ignota.

Habitat circa Manáos loco Estrada do Aleixo silva humosa humida non inundabili, 16-5-1933 leg. A. Ducke (Herb. Jard. Bot. Rio 24451).

Remarkable by its thick and hard but resistant leaves (not fragile as those of *I. ulei*, *dialyandra*, *paraensis* etc.), with the lateral ribs deeply immersed on the upper side and weakly prominent beneath. The inflorescences are rather elongate, simple, with very small flowers.

Iryanthera elliptica Ducke, n. sp. Arbor 30-metralis trunco robusto cylindrico, praeter innovationes rufo-sericeas glabra. Foliorum petiolus 8-14 mm longus robustus canaliculatus; lamina 7.5-12.5 cm longa et 4-5.5 cm lata, plus minus elliptica rarius oblongo- vel obovato-elliptica, basi rotundata vel obtusa complicata, apice abrupte breviter vel modice longe acuminata, sat crasse et dure coriacea, utrinque nitidula, subtus granulosa et pallidior vel ferruginescens, costa mediana subtus mediocriter crassa, costis secundariis in utroque latere tenuissime impressis plus minus obsoletis, venulis inconspicuis. Inflorescentiae masculae praesertim in ramulorum parte vetustiore supra axillas foliorum jam delapsorum binae, usque ad 8 cm longae, vulgo parum vel modice flexuosae, sat dense rufo-sericeo-puberulae, simplices vel supra basin ramosae; flores flavido-virides e nodulis vel ramulis brevibus modice distantibus fasciculati, sat numerosi in fasciculo, pedicellis ad 3 mm longis tenuibus, bracteola dense rufo-pilosula, perianthio ante anthesin subtriquetro-obovato vix ad 1.5 mm longo demum profunde trilobo extus parce puberulo intus glabro, androecei columna cylindrica quam antherae 6 perfecte adnatae multo longiore. Planta feminea ignota.

Habitat prope Manáos in silvis terris altis ultra Flores, 1-7-1932, leg. A. Ducke (Herb. Jard. Bot. Rio 24450).

This species resembles at the first glance *I. sagotiana* but may be recognized by its coriaceous leaves, which are nearly as thick and as hard as those of *I. coriacea* (through a little more fragile) and are of elliptic form and very much smaller. It is distinguished from both by the much longer androecium column.

IRYANTHERA JURUENSIS Warb. I have in hand a great number of herbarium specimens, among them a cotype (*Ule* 5460). From these I cannot distinguish no. 7103 of the Herb. Amaz. Mus. Pará, which is the type of *I. grandiflora* Huber for the staminate flowers. Huber's species would seem to differ from *I. juruensis* chiefly by its longer flowers, but the same twig has numerous smaller (normal) flowers, which do not exceed the dimensions of true *I. juruensis*. The column of the androecium in this species is at least as long as the anthers; in this particular Huber's diagnosis of *I. grandiflora* is incorrect. The fruit is cylindric with rounded extremities, transversal in relation to the peduncle, and is slightly larger than that of *I. paraensis*. The species *I. juruensis* is spread through the upland forests of the Middle and Upper Amazon, from Santarem, Obidos, and the middle courses of Tapajoz and Trombetas to the Lower Japurá and the Upper Juruá (Acre Territory). Krukoff collected it at the headwaters of the Rio Machado (northwestern Matto Grosso). To this species belong nos. 8553 and 8749 of the Herb. Amaz. Mus. Pará (Faro and Serra de Parintins) and no. 23682 of the Herb.

Jard. Bot. Rio (Lower Madeira), all distributed under the name *I. sagotiana* by Huber and by myself.

Iryanthera grandis Ducke, n. sp. Arbor ultra 30 m alta, trunco cylindrico robusto, ligno interiore amplo rufo-brunneo bono, glabra, innovationibus rufo-tomentellis. Foliorum petiolus usque 2 cm longus supra canaliculatus, lamina 13–25 cm longa, 5–7.5 cm lata, obovato-vel rarius sublanceolato-oblonga, basi anguste rotundata vel breviter obtusa saepe complicata, rarius subcordata, apice brevissime et vulgo obtuse acuminata, adulta subcoriacea fragilis, supra nitidula, subtus subopaca et parum pallidior quam supra, costa mediana subtus crassa, costis lateralibus utrinque 16–20 ante marginem plus minus evanescentibus, subtus tenuiter prominulis, venulis nullis vel in utraque pagina tenuissime immersis. Inflorescentiae masculae super petiolorum insertiones saepius binae, vulgo 5–12 cm longae, rhachi apicem versus attenuata in vivis molli et flexuosa, tenuiter rufo-ferrugineo-puberula; flores circa apices nodulorum vel ramulorum brevium modice distantum fasciculati, cum pedicello (ad 2 mm longo, tenui) et bracteola (parva, sub ipso flore inserta) densius rufo-ferrugineo-sericei, perianthio intus glabro, in alabastro subtriangulari-globoso, anthesi aperto vix ultra 1 mm diametro late campanulato profunde tripartito, androecei columna brevissima infra angustata, antheris vulgo 6 albidis adnatis subaequali vel parum brevioribus. Inflorescentiae femineae fructiferae solae visae, e trunci nodis vix ultra 3 cm longae; fructus maturus breviter crasse stipitatus, circa 4 cm altus et crassus, circa 5 cm latus, demum in valvas duas semiglobosas dehiscens, pericarpio lignoso durissimo circa 1 cm crasso, glabro, arillodio purpureo integro, semine 3.5–4 cm lato et fere 2 cm alto et crasso, testa laxo sulcato-reticulata, albumine non ruminato.

Habitat circa lacum José-Assú prope Parintins (civ. Amazonas), silva non inundabili, arbor mascula, 15–9–1932 leg. A. Ducke cum ligno no. 151, (Herb. Jard. Bot. Rio 24447); in silvis collinis prope cataractas Mangabal medii fluminis Tapajoz (civ. Pará), arbor feminea fructifera, 10–12–1919 leg. Ducke (Herb. Jard. Bot. Rio 2896). “Ucuhúba-rana” vel “punán” appellatur.

This species is allied to *I. tricornis* Ducke, which furnishes also a very valuable wood. The leaves, however, are much larger, glabrous, with more numerous lateral ribs; the male inflorescences are shorter and stouter, with less distant floriferous nodes; the fruit has a very different form, being remarkable for its size and its ligneous, exceedingly thick pericarp.

IRYANTHERA TRICORNIS Ducke, Tropical Woods No. 31, 11. 1932; Archiv. Jard. Bot. Rio 6: 9. 1933. This species, the “punán” of the Solimões river (Fontebôa, S. Paulo de Olivença) is a tree 18 to 30 meters high, with cylindric stem which furnishes a highly esteemed reddish brown, afterwards dark brown heartwood. It grows in the humid upland forest. It can be recognized by the medium-sized obovate leaves, the thin and flexuous male inflorescences, and the three-horned fruits, the form of which is more exaggerated than that of the fruits of *I. hostmanni*.

IRYANTHERA SAGOTIANA (Benth.) Warb. A small or scarcely medium-sized tree, frequent in the upland forests from the environs of Belem do

Pará to Santa Izabel at the Bragança railway, but not yet observed elsewhere in Amazonia. Nos. 8553 and 8749 of the Herb. Amaz. Mus. Pará (from Faro and Serra de Parintins), as well as Herb. Jard. Bot. Rio 23682 (of the Lower Madeira), are evidently *I. juruensis* Warb. The present species seems to be limited to that part of the hylaea near the Atlantic.

IRYANTHERA LAEVIS Mgf. A tree of medium size, collected by myself in the upland forests in the State of Amazonas near Manáos (Herb. Jard. Bot. Rio 24459), Fontebôa (Herb. Jard. Bot. Rio 24458), and Parintins (Lake Uaicurapá, Herb. Jard. Bot. Rio 24455). This species was previously collected in Amazonian Peru by Tessmann (type) and by Killip and Smith. Our herbarium specimens were distributed as a new species, but Dr. Smith has established their identity with *I. laevis*, an insufficiently described species of which he has seen a typical specimen.

The leaves of *I. laevis* resemble in color and nearly also in texture those of *I. sagotiana*, but in many other characters this species is more like *I. juruensis*, from which it differs, however, by the very insignificant nervures of the leaves and by the ample male inflorescences. The flowers though variable in size, are among the largest in this genus. A very good character is the abundance of the pale lenticels, which are never completely absent on the young branchlets and sometimes are present even on the rachis of the inflorescences; I never observed them in any other species of this genus.

Iryanthera obovata Ducke, n. sp. Arbor mediocris, partibus vegetativis praeter innovationes tenuiter puberulas omnino glabris. Foliorum petiolus 1–1.5 cm longus validus supra canaliculatus; lamina 8–11 cm longa et 3.5–6 cm lata, obovata vel oblongo-obovata, basi obtusa vel subacuta, apice vulgo late obtusa rarius rotundata vel brevissime obtuse acuminata, subelastice coriacea, margine subtus lineiformi saepe revoluta, concolor et vix nitidula (adulta subglauca), praesertim subtus dense granulosa, costa mediana utrinque prominente subtus basi crassa, costis lateralibus nullis vel supra tenuissime et obsolete impressis, venulis nullis. Inflorescentiae masculae (solae notae) super axillas foliorum (interdum delapsorum) binae vel solitariae, breves vel saepius usque ad 8 cm longae, simplices vel super basin pauciramosae, graciles, tenuiter ferrugineo-puberulae, florum fasciculis e ramulo brevissimo vel nodulo; flores in fasciculo bini vel pauci, virescentes, pedicellis 5–9 mm longis tenuissimis, perianthio basi bractea squamiformi breviter et longius pilosula, in alabastro subgloboso-ellipsoideo, anthesi circa 2.5 mm diametro, ad medium obtuse trilobo, extus appresse puberulo intus glabro, columna androecei e basi dilatata anguste cylindrica, antheris 6 omnino adnatis longiore.

Habitat in silvis "catanga" in regione Rio Negro superioris (civit. Amazonas) prope Camanáos (Herb. Jard. Bot. Rio 24452) et circa affluentem Curicuriary (Herb. Jard. Bot. Rio 24462), Octobre florens, leg. A. Ducke.

The present species can be recognized by its obovate and coriaceous leaves, nearly destitute of nervures, and by its rather elongate but few dense inflorescences with long and very thin pedicels. It resembles, at first glance, *Osteophloeum platyspermum*, but the leaves are shorter, more coriaceous, and

without nerves, and the inflorescences are different; these, in our new species, resemble a little the inflorescences of *Compsonneura ulei*.

IRYANTHERA PARADOXA (Schwacke) Warb. This species seems to have been found only once (*Schwacke* 3736=575, Museu Nacional Rio de Janeiro). It must be rare, because I have never observed it near Manáos, the type locality, where I collected no less than six of its congeners. It should be easily recognized from the diagnosis and illustrations in Warburg's monograph.

Obituary

ANDREW NELSON CAUDELL, entomologist of the Bureau of Entomology and Plant Quarantine and custodian of Orthoptera at the U. S. National Museum, died at his home, 605 Keefer Place, Washington, D.C., March 1, 1936. He was born August 18, 1872, at Indianapolis, Indiana. After receiving the Bachelor of Science degree at Oklahoma Agricultural and Mechanical College in 1897, and a year's study at Massachusetts Agricultural College, he joined the Bureau of Entomology of the U. S. Department of Agriculture in 1898.

Mr. Caudell's scientific work was concerned chiefly with the natural history and classification of the Orthoptera about which he wrote numerous papers, one of the last (unpublished) being in joint authorship on the Orthoptera of the District of Columbia and vicinity. His hobby was philately to which he also contributed important papers.

Mr. Caudell was a member of the American Association for the Advancement of Science, Association of Economic Entomologists, Entomological Society of Washington, Washington Academy of Sciences, and the American Philatelic Society.



Ducke, A. 1936. "Notes on the Myristicaceae of Amazonian Brazil, with descriptions of new species." *Journal of the Washington Academy of Sciences* 26(5), 213–222.

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