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NOTES ON NEOTROPICAL MALPIGHIACEAE–III

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Like the preceding papers in this series, this one is a miscellany of new species, plus one variety raised to the status of species. The accelerating efforts of collectors throughout Latin America continue to yield novelties in this family, faster than I can find time to study and describe them.

Acmanthera fernandesii W. R. Anderson, sp. nov. Fig. 1.

Arbor parva, ramis vegetativis appresso-tomentosis. Folia subsessilia, petiolo ca 1 mm longo; foliorum majorum lamina 11.3 cm longa, 6.8 cm lata, ovata, basi cordata, apice obtusa, utrinque brunneo-tomentosa pilis tortuosis; stipulae 2.8 cm longae, tomentosae, vagina stipulacea complanata, in sectione transversali angustissime elliptica. Bracteae 0.7–1.2 (–2) mm longae lataeque, triangulares, planae, glabrae, membranaceae; bracteolae minutae. Sepala abaxialiter appresso-tomentosa. Petala alba, limbo 5–5.5 mm longo, 5.5–6 mm lato. Antherae loculis 1.3–1.6 mm longis, alis 1.4–1.8 mm longis, 0.4–0.5 mm latis, appendicula apicali 0.4 mm longa, plana, membranacea, eglandulosa. Styli ca 5.5 mm longi.

Small tree; vegetative stems densely and persistently appressed-tomentose, the initially ferrugineous hairs fading to gray, eventually abraded; stems glaucous under vesture, the glaucescence eventually abraded. Leaves fairly densely tomentose on both sides, the hairs mostly strongly twisted and kinky, brown fading to white, deciduous above, persistent or eventually patchily deciduous below; lamina of larger leaves 11.3 cm long, 6.8 cm wide, ovate, cordate at base, obtuse to almost rounded at apex, with a brownish or reddish marginal band ca 1.5 mm wide and ca 13 lateral veins, the white veins and reticulum more visible above than below; petiole ca 1 mm long, persistently tomentose; stipules 2.8 cm long, densely and persistently tomentose, the 4 at a node completely connate to form a single strongly flattened sheath linear-elliptical in cross section. Inflorescence 12–13 cm long, densely and persistently sericeous or appressed-tomentose; internode below inflorescence 4.5–6 cm long, appressed-tomentose, bearing at its apex a pair of leaves 6.5 cm long, 3.5 cm wide; flowers borne singly on the pseudoraceme, i.e., 1 per bract; bracts 0.7–1.2 (–2) mm long and wide, triangular, nearly flat, glabrous, membranous, persistent or deciduous; bracteoles like bracts but much smaller, up to 0.5 mm long; pedicel 9–11 mm long, densely and persistently appressed-tomentose. Sepals already separated in young bud, leaving petals exposed during enlargement of bud; sepals 2–2.5 mm long beyond glands, 3–3.2 mm wide, broadly orbicular, broadly rounded at apex, abaxially densely appressed-tomentose or subsericeous except for a glabrous area within ca 0.5 mm of apex, membranous at margin, adaxially glabrous, revolute in anthesis; glands 1.7–2.2 mm long, not revolute at apex. Petals white, sparsely appressed-tomentose abaxially in center of limb; claw 2 mm long; limb 5–5.5 mm long, 5.5–6 mm wide, shallowly concave, roughly orbicular, denticulate, eglandular; 4 lateral petals spreading to reflexed, posterior erect; poste-

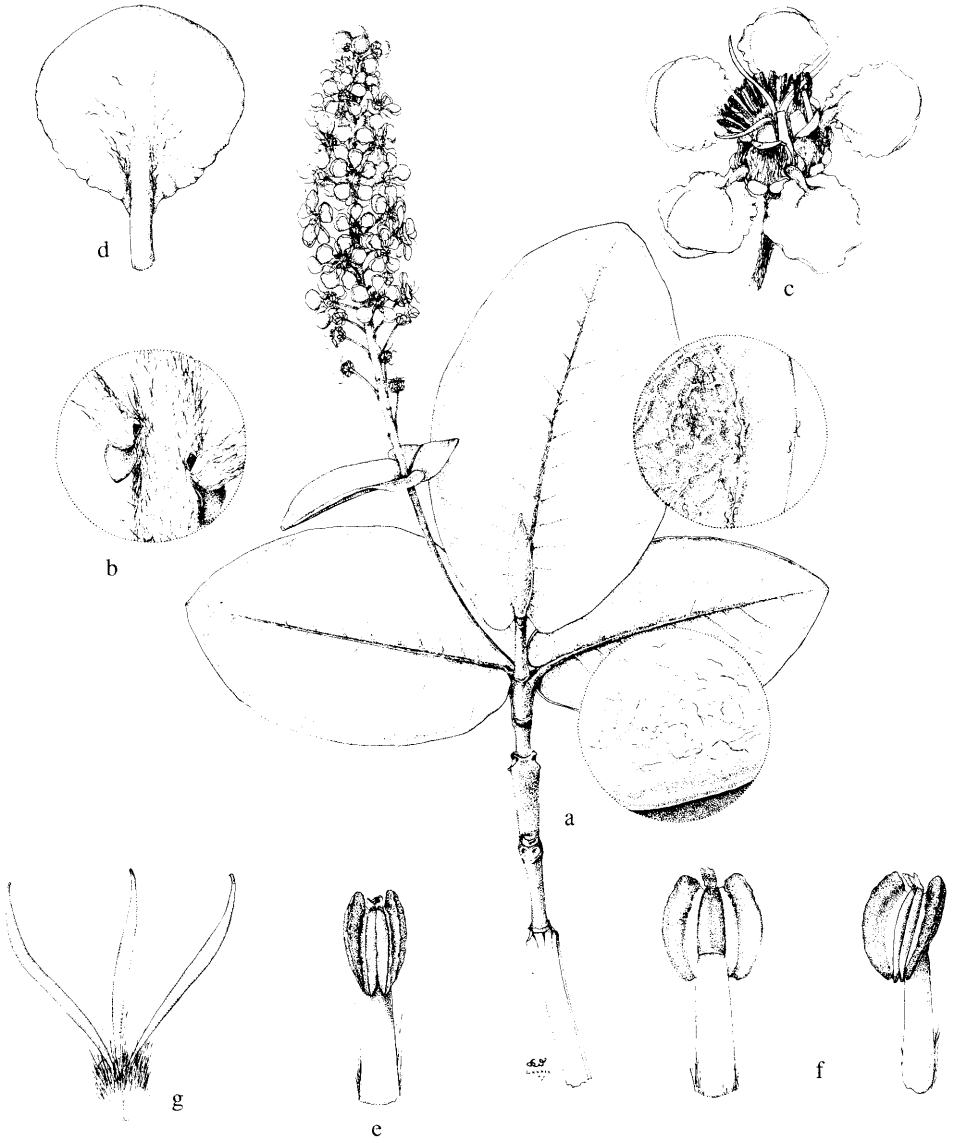

FIG. 1. *Acmanthera fernandesii.* a) flowering branch, ×0.5, with enlargements of adaxial and abaxial laminar surfaces, ×5; b) axis of inflorescence to show small bracts and minute bracteoles, ×5; c) flower, posterior petal uppermost, ×2.5; d) petal, abaxial view, ×5; e) stamen, natural shape, adaxial view, ×7.5; f) stamens flattened to show wings and apical appendage, abaxial view left, adaxial view right, ×7.5; g) gynoecium, ×5. Drawn by Karin Douthit from the type.

rior petal not strongly differentiated from lateral 4, but with a thicker claw and the limb more corrugated proximally. Filaments 2.2–3 mm long, longer opposite petals than sepals, ca 0.5 mm wide; anthers subequal, larger opposite sepals than petals, the locules 1.3–1.6 mm long, the wings 1.4–1.8 mm long, 0.4–0.5 mm wide, the apical appendage of the connective 0.4 mm long, 0.25 mm wide, rectangular, flat, membranous, erose and eglandular at apex, inflexed. Ovary densely hirsute, 1 mm high excluding straight basifixed hairs 1–1.5 mm long; styles ca 5.5 mm long, glabrous, initially erect and then spreading, gently sigmoid with the apical stigmas pointing toward center of flower. Fruit unknown.

TYPE: BRAZIL. Piauí: Santa Filomena [9°S, ca 46°W], cerrado, 25 Jul 1983 fl, *A. Fernandes s.n.* [EAC 12.154] (MICH!, holotype).

Acmanthera is a distinctive genus, notable for its elongated deciduous stipules, the four at each node pressed or fused together to form a sheath enclosing the shoot apex. Its winged anthers are also characteristic, as is the fruit that breaks apart into dry cocci. I revised the five species then known in 1975, and described a sixth in 1981 (Anderson 1981a). With the 1981 key *Acmanthera fernandesii* could only be identified as *A. parviflora* W. R. Anderson. The two species are easily distinguished on the basis of their leaves and flowers. Some of the differences between them are summarized in the following couplet:

1. Leaves subsessile, the petiole ca 1 mm long; lamina cordate at base, obtuse at apex; leaf hairs brownish, mostly strongly twisted and kinky; sepals 3–3.2 mm wide in flower; petal limbs 5–6 mm in diameter; anther wings 1.4–1.8 mm long; styles ca 5.5 mm long. *A. fernandesii.*
1. Leaves clearly petiolate, the petiole 8–18 mm long; lamina attenuate or cuneate at base, acute or abruptly acuminate at apex; leaf hairs reddish, straight or sinuous; sepals 1.2–2 mm wide in flower; petal limbs 2–3 mm in diameter; anther wings 0.7–1 mm long; styles ca 2.5 mm long. *A. parviflora.*

The generic description in my 1975 revision fits this new species in most of the characters represented in the holotype. However, the youngest flowers on the type are not circinate, so either that "generic" character does not hold for this species or it is expressed only in younger material.

Acmanthera fernandesii is the first species collected from Piauí, and the first found in cerrado. The others seem to be species of forests, except for *A. minima* W. R. Anderson, known from a single collection from a white-sand campina in southern Amazônas. The epithet of the new species honors Afrânio Fernandes, whose collections from Ceará and Piauí are shedding needed light on a poorly known component of the flora of Brazil.

Bunchosia volcanica W. R. Anderson, sp. nov.

Frutex 1.5 m altus. Foliorum majorum lamina 11–15.2 cm longa, 3–4.2 cm lata, anguste elliptica, tenuis, margine undulata, apice acuminata, abaxialiter sparsim sericea et ca 20 glandulis instructa. Petala luteola, parva, posticum margine glanduloso. Filamenta 2–2.5 mm longa, ½ connata; antherarum connectivum flavidum vel pallide brunneum. Gynoecium 2-carpellatum, glabrum vel sparsim sericeum; stylus 1 (ex 2 stylis omnino connatis), 1.8 mm longus, stigmatibus liberis.

Slender shrub 1.5 m tall; stems glabrous or very early glabrate. Lamina of larger leaves 11–15.2 cm long, 3–4.2 cm wide, narrowly elliptical, thin-textured, cuneate at base, undulate at margin, gradually tapered or long-acuminate at apex, glabrous or very soon glabrate above, glabrescent below but with scattered hairs persisting even at maturity, especially proximally, the hairs with a short but definite

stalk and a ± straight crosspiece 0.9–1.4 mm long, bearing below on each side of midrib 1–2 glands beside base of midrib and 8–10 smaller glands distally in an irregular row between midrib and margin, the fine reticulum prominent on both sides; petiole 7–10 mm long, loosely sericeous to glabrate; stipules 0.8–1.5 mm long. Inflorescences 6.5–7 cm long, axillary, without leaves and unbranched, sparsely subsericeous, the axis nearly glabrate at anthesis, the flowers 16; bracts 0.7–1 mm long; peduncle 0.7–1.5 mm long; bracteoles 0.4–0.5 mm long, 1 of each pair bearing a small eccentric gland; pedicel 3–4 mm long, sparsely sericeous to glabrate. Sepals hidden by glands or extending up to 1 mm beyond them, abaxially sericeous proximally and glabrous distally, ciliate on margin, glabrous adaxially; glands 8, 2.3–2.8 mm long, elliptical or obovate, compressed, glabrous, detached at apex, not or hardly decurrent. Petals pale yellow, glabrous; outermost petal with the claw 1 mm long, the limb ca 4.5 mm long and wide, deeply concave, the margin coarsely dentate or erose, eglandular; other 3 lateral petals with the claw 1.5 mm long, the limb 2.5–3 mm long and wide, shallowly concave to flat, the margin subentire or erose and glandular-thickened, at least proximally; posterior petal with the claw 2.7 mm long, the limb ca 2.7 mm long and wide, nearly flat, glandular-dentate all around margin. Filaments 2–2.5 mm long, longer opposite sepals than petals, ca ½ connate; anthers 0.7–0.9 mm long, glabrous, the connectives yellow or light brown. Gynoecium 2-carpellate; ovary 1.2 mm high, 2-locular, glabrous (?) or very sparsely sericeous near base; style 1 (formed from 2 completely connate), 1.8 mm long, glabrous, the 2 stigmas distinct. Fruit unknown.

TYPE: COSTA RICA. Guanacaste: Lower forested slopes of Volcán Orosí at Hacienda Los Inocentes ca 15 km SE of La Cruz, 200–630 m, 26 Mar 1968 fl, *Wilbur & Stone 10209* (DUKE!, holotype).

This species is noteworthy for its bicarpellate gynoecium that is nearly but not quite glabrous. Other distinguishing characteristics are the rather long, narrow, thin leaves with an undulate margin, the numerous leaf glands, the few, slightly stalked, nearly straight leaf hairs, the small, pale yellow petals, the glandular-dentate margin of the posterior petal, and the short filaments and style.

Bunchosia volcanica is to be expected in similar habitats on other volcanic slopes in Costa Rica and adjacent Nicaragua. Unfortunately, those forests have been heavily cut, and this species would not be likely to persist after such disturbance, so it may be quite rare now. At present it is known only from the holotype.

Byrsonima dubia W. R. Anderson, sp. nov.

Arbor 4 m alta. Foliorum majorum lamina 6–8 cm longa, 3.2–4 cm lata, obovata vel fere elliptica, subtus pertinaciter sparsim sericea minimum in costa et minute rugulosa, nervis lateralibus et reticulo vix visibilibus. Bracteae bracteolaeque 1–1.6 mm longae, persistentes. Pedicellus decurvatus vel tortus in fructu. Sepala apice reflexa vel revoluta, abaxialiter sericea, adaxialiter sparsim sericea. Antherae 2.1–2.4 mm longae, parte fertili loculorum ca 1.3 mm longa, extensione apicali sterili ca 0.5 mm longa. Ovarium glabrum.

Tree 4 m tall; stems persistently sericeous, eventually glabrescent. Lamina of larger leaves 6–8 cm long, 3.2–4 cm wide, obovate to nearly elliptical, cuneate and decurrent at base, somewhat revolute at margin, obtuse to rounded and apiculate at apex, thinly sericeous to glabrate on both sides with the short, tightly appressed hairs dark red fading to white, some hairs persistent below at least on midrib; lateral veins 4–5 on each side, hardly prominulous and barely visible below in dried leaves, the reticulum invisible; abaxial surface of lamina minutely rugulose; petiole

15–18 mm long, sericeous to eventually glabrate; stipules 2–3 mm long, ¾–⅚ connate, bidentate at apex with the 2 lobes obtuse to rounded, the pair abaxially persistently sericeous, adaxially glabrous. Inflorescence 9–9.5 cm long, thinly sericeous with the hairs dark red fading to white; bracts and bracteoles 1–1.6 mm long, triangular or rounded, the bract often shorter than the bracteoles, all persistent; peduncle 0–1 mm long, 1-flowered; pedicel 8–9 mm long, appressed-tomentose with the hairs dark red fading to white, decurved and/or twisted in fruit. Sepals all biglandular, ca 2 mm long beyond glands, ca 2 mm wide, triangular, rounded and reflexed to revolute at apex in anthesis, abaxially sericeous, adaxially sparsely sericeous, accrescent in fruit; glands 2–2.3 mm long. Petals glabrous (only 1 seen). Anthers 2.1–2.4 mm long, densely appressed-hirsute for their whole length except on extension of connective; locules with fertile part ca 1.3 mm long, drawn out at apex into slender sterile extensions ca 0.5 mm long and ± hidden by hairs; connective extended beyond fertile part of locules 0.8–1 mm, the extension tapering distally and usually recurved. Ovary ca 1.5 mm high, ovoid, glabrous, only 2 of the locules fertile; intact styles not seen. Mature fruit unknown.

TYPE: VENEZUELA. Bolívar: Municipio Gran Sabana, matorral, 6 km al NW del cerro El Sol, 1450 m, 5°2′N, 60°38′W, 3 May 1987 imm fr, *Lionel Hernández 510* (MICH!, holotype).

The epithet proposed for this species reflects my ambivalence toward describing it. On the one hand, I hesitate to do so because the only specimen available is past flower, and because the plant is so clearly close to *Byrsonima laevigata* (Poiret) DC. (=*B. obversa* Miq.) and *B. gymnocalycina* Adr. Juss. (=*B. ceranthera* Bentham). On the other hand, forcing *Hernández 510* into either of those species would seem to me to expand their limits unacceptably. After much reflection I have decided to describe the plant as a distinct species and hope that when additional collections are made they will support this decision.

Byrsonima laevigata is known from Suriname, French Guiana, and northeastern Brazil (Amapá, Pará, Maranhão, and Bahia). All the specimens I have seen came from low elevations, ca 100 m. One was said to come from a tree only 9 m tall; the others were all from larger trees, 12–30 m tall. The abaxial surface of the lamina is smooth, not rugulose; its hairs, which are golden, are soon lost, so that the mature leaf is glabrate or retains a few hairs on the petiole and midrib; and the lateral veins and reticulum are clearly visible below in dried specimens. The bracts and bracteoles are very short, 0.4–0.8 (–1) mm long. The anthers have a total length of 2.3–3 mm, and the locules are drawn out at the apex into clearly visible extensions 0.7–1 mm long, often equalling or even exceeding the enlarged connective. In all these respects *B. laevigata* differs from *B. dubia*.

Byrsonima gymnocalycina is endemic to Guyana, although its eventual collection in eastern Bolívar would come as no surprise. Larger leaves have the lamina 11–16 (–20) cm long, 4–6.5 (–7.5) cm wide, elliptical, with the lateral veins prominent below. The anthers are 3.5–4.6 mm long, the locules with the fertile part 2.6–3.5 mm long and the sterile extensions 0.7–1.3 mm long. The ovary is densely sericeous, especially distally.

Byrsonima karstenii W. R. Anderson, sp. nov.

Byrsonima reticulata Klotzsch & Karsten ex Grisebach, Linnaea 22: 6. 1849, non *B. reticulata* (Poiret) DC., Prodr. 1: 581. 1824.

Arbor 6–15 m alta. Foliorum majorum lamina 5–11 cm longa, 3–7.5 cm lata, apice obtusa vel rotundata, reticulo utrinque prominenti; petiolus 7–15 mm longus;

Byrsonima karstenii is very closely related to *B. trinitensis* Adr. Juss., which, in spite of its name, does not occur in Trinidad but is actually endemic to the Lesser Antilles (W. Anderson, 1988, p. 607). Aside from their disjunct distribution, the species differ in several morphological characters. The lamina is more prominently reticulate below in *B. karstenii,* and its bracts and bracteoles are longer and more consistently persistent. The anthers in *B. karstenii* have the locules usually shorter than the extension of the connective, whereas they are usually longer in *B. trinitensis,* and the tips of the anthers are truncate or barely mucronate in the Venezuelan plant, longer-muconate in the Antillean species.

Heteropterys magnifica W. R. Anderson, sp. nov. Fig. 2.

Liana lignosa. Foliorum lamina 12–19 cm longa, 6–11.2 cm lata, late ovata vel elliptica, basi rotundata, apice breviacuminata, subtus pertinaciter metallosericea. Sepala eglandulosa, revoluta. Samara 60–65 mm longa; ala dorsalis 45–55 mm longa, 24 mm lata; nux 12–14 mm diametro, pluribus cristis parallelis 1–1.5 mm altis ex areola ventrali radiantibus ornata.

Woody liana in canopy; stems with many tiny punctiform raised lenticels. Lamina of leaves 12–19 cm long, 6–11.2 cm wide, broadly ovate or elliptical, rounded at base, abruptly short-acuminate at apex, bearing an irregular row of many small impressed glands below 2–7 mm from margin, glabrous above (only mature leaves seen), densely and persistently metallic-sericeous below with the hairs ca 0.15 mm long, fusiform, flat, very tightly appressed, fading from brown to straw-colored, the pincipal lateral veins 6–7 on each side; petiole ca 10 mm long, sericeous to glabrescent, eglandular; stipules not seen. Infructescence borne on leafless stems of previous year, sericeous, a panicle up to 7 cm long, with the flowers borne in short pesudoracemes of 6–12; bracts and bracteoles (in fruit) ca 1 mm long, spreading; peduncle (in fruit) 2–3 mm long; pedicel (in fruit) 5–6 mm long. Sepals eglandular, abaxially sericeous, adaxially glabrous, revolute. Samara 60–65 mm long, sericeous; dorsal wing 45–55 mm long, 25 mm wide, the abaxial edge straight for most of its length; nut globose, 12–14 mm in diameter, densely ornamented over its whole surface with many parallel dissected crests 1–1.5 mm high, all radiating from the circular ventral areole 4–6 mm in diameter.

TYPE: PERU. Loreto: Yanamono, Explorama Tourist Camp, Río Amazonas,

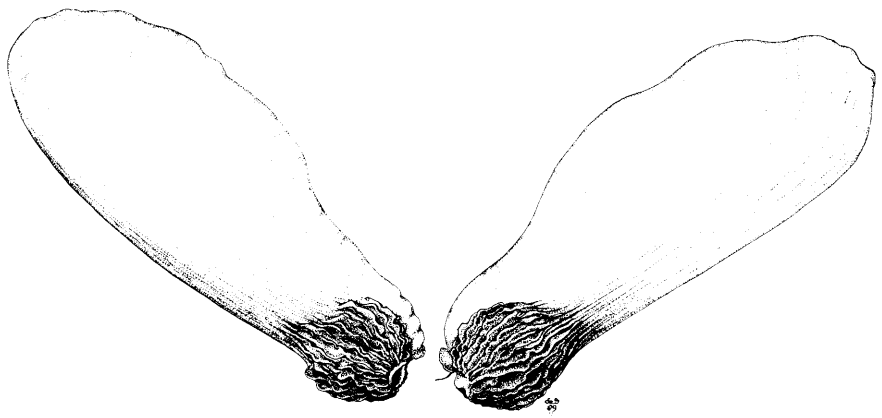

FIG. 2. *Heteropterys magnifica.* Samaras, ×1. Drawn by Karin Douthit from the type.

halfway between Indiana and mouth of Río Napo, 03°28′S, 72°50′W, 130 m, non-inundated upland forest on clay soil, 23 Jan 1988 fr, *Gentry et al. 60928* (MICH!, holotype).

In spite of the incompleteness of the only known collection this spectacular plant commands recognition as a new species. Its revolute sepals mark it as a member of subgenus *Parabanisteria*. Within that group, it is one of only a few species with persistently sericeous leaves, and in none of the others are the hairs so very short or tightly appressed as in this plant. However, its most striking characteristic is the large samaras with many parallel crests on the nut, radiating from the ventral areole. Such crests are extremely rare in this genus, and in this subgenus no other species has any sort of lateral crests or winglets on the nut of the samara.

Lophopterys inpana W. R. Anderson, sp. nov. Fig. 3.

Liana lignosa vel frutex. Foliorum majorum lamina 10.5–18.5 cm longa, 4–7.5 cm lata, anguste ovata vel elliptica; petiolus 12–18 mm longus, eglandulosus vel 2 glandulis parvis munitus. Inflorescentia paniculata, pseudoracemis 3–12 cm longis; bracteae 2.5–5 mm longae, 1–1.5 mm latae, anguste triangulares, patulae; pedunculus 2.5–4.5 mm longus; bracteolae 1.5–3 mm longae, 1–2 mm latae, ovatae vel ellipticae vel rotundae, patulae; pedicellus 3.5–7 mm longus. Petala lateralia ungue 3–4 mm longo, limbo 9–11 mm longo, 10–12 mm lato, dentato vel brevifimbriato; petalum posticum ungue 3–4 mm longo, limbo 6–7 mm longo, 6.5–7.5 mm lato, lacerato. Filamenta 2.5–3 mm longa; antherae 1.2–1.5 mm longae, glabrae. Styli 2.4–3 mm longi, divergentes. Samara immatura nuce ca 3.5 mm diametro, alis lateralibus 17 mm longis et 4.5 mm latis, ala dorsali trapezoidea, 6 mm alta, 7 mm longa.

Woody vine or large shrub 3 m tall; vegetative stems densely and persistently sericeous, the hairs initially reddish brown but soon fading to gray. Lamina of larger leaves 10.5–18.5 cm long, 4–7.5 cm wide, narrowly ovate or elliptical, cuneate or rounded at base, plane or slightly revolute at margin, sometimes short-acuminate but mostly acute or obtuse to rounded and often apiculate at apex, initially sericeous but very soon glabrate above, densely and persistently sericeous below with the vesture giving the dried leaf a bronze or golden metallic sheen, eglandular; petiole 12–18 mm long, persistently sericeous, eglandular or bearing 2 small glands at middle or at various distances above or below middle; stipules not found. Inflorescence sericeous, paniculate, the flowers ultimately borne in pseudoracemes 3–12 cm long and containing 4–28 mostly decussate flowers; bracts and bracteoles abaxially sericeous, adaxially thinly sericeous or glabrous, spreading, often bearing 2 tiny glandular spots at base (especially bracts), the bracts 2.5–5 mm long, 1–1.5 mm wide, narrowly triangular, the bracteoles 1.5–3 mm long, 1–2 mm wide, mostly ovate or elliptical to rotund, borne at apex of peduncle; peduncle 2.5–4.5 mm long; pedicel 3.5–7 mm long, slightly inflated distally. Sepals ca 3 mm long (ca 2 mm beyond glands), 1.6–2 mm wide, membranous at margin, broadly rounded at apex, abaxially sericeous, adaxially glabrous; anterior sepal eglandular; 4 lateral sepals each bearing 1 very large gland 1.6–2.4 mm high and 2–3.4 mm wide, circular or more often transversely elliptical and sometimes emarginate at apex or at apex and base. Petals yellow, glabrous; lateral petals reflexed, the claw 3–4 mm long, winged, the limb 9–11 mm long, 10–12 mm wide, dentate to short-fimbriate; posterior petal erect, the claw 3–4 mm long, unwinged, the limb 6–7 mm long, 6.5–7.5 mm wide, lacerate. Stamens glabrous; filaments 2.5–3 mm long, slightly longer opposite sepals than petals, basally connate, erect, nearly straight; anthers 1.2–1.5

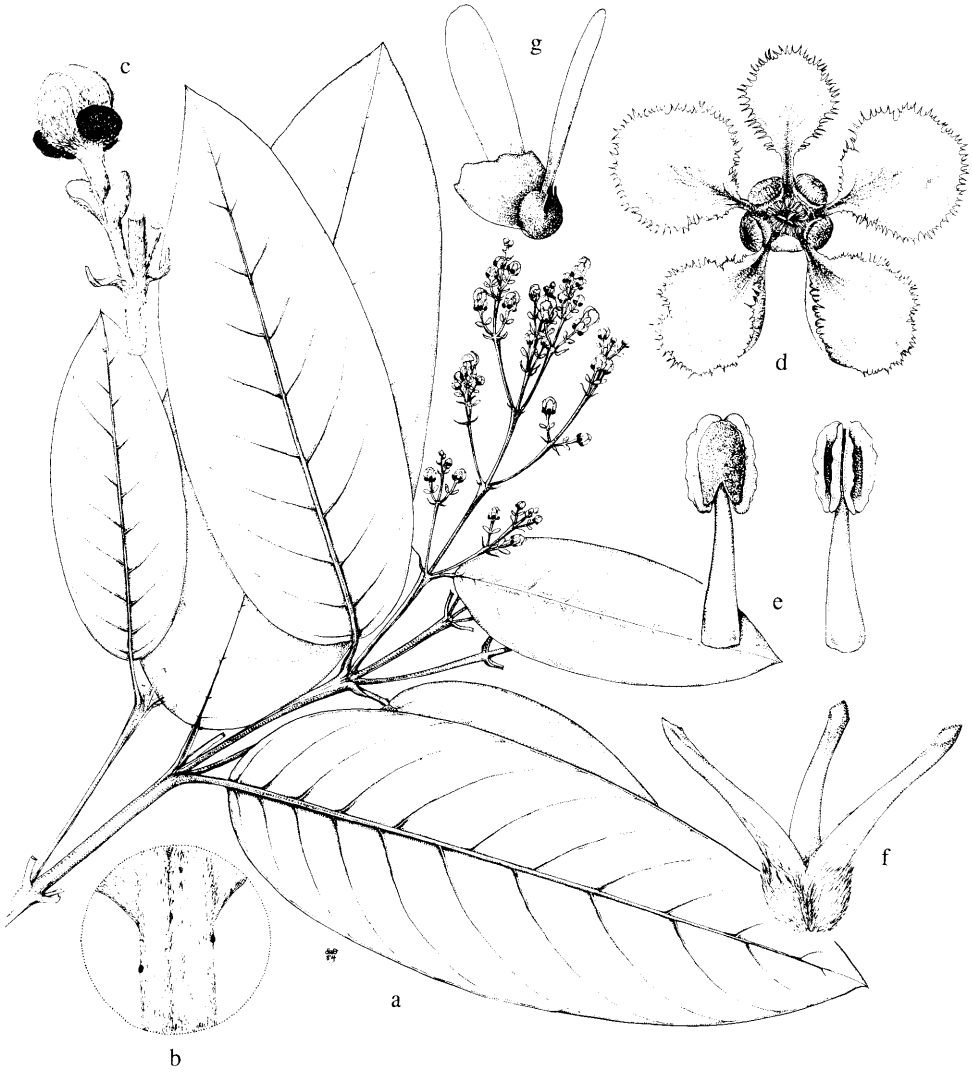

FIG. 3. *Lophopterys inpana*. a) flowering branch, ×0.5; b) distal portion of petiole enlarged to show glands, ×5; c) unit of the inflorescence enlarged to show spreading bracts and bracteoles, ×2; d) flower, with posterior petal uppermost, ×2; e) stamens, abaxial view (left) and adaxial view (right), ×10; f) gynoecium, ×10; g) immature fruit, ×1.5. Drawn by Karin Douthit, a–c from *Prance 6675*, d–g from *Killeen 2750*.

mm long, alike. Ovary 1 mm high, densely sericeous; styles 2.4–3 mm long, sericeous at base, divergent, with large internal stigmas and dorsally rounded at apex. Immature (but full-sized?) samara with the nut spheroidal, ca 3.5 mm in diameter, sericeous; lateral wings 17 mm long, 4.5 mm wide, linear with the margins strongly parallel, sericeous to glabrate; dorsal wing trapezoidal with an irregularly sinuous upper margin, half-encircling the nut, 6 mm high, 7 mm long, sericeous.

TYPE: BRAZIL. Rondônia: Summit of Serra dos Pacaás-Novos, 12 km NNE of Guajará-Mirim, 400 m, 2 Aug 1968 fl, *Prance et al. 6675* (INPA!, holotype; MG!, MICH!, NY!, isotypes).

PARATYPES: VENEZUELA. T. F. Amazonas: Dpto. Atabapo, 15 km SE de San Fernando de Atabapo, 3°55′N, 67°40′W, 110 m, very wet forests on terra firma "en el Sector 'El Pozo' en zona experimental de la CVG-Proyecto Caucho," Jan fl, *Stergios et al. 11604* (MICH).—BOLIVIA. Santa Cruz: Parque Nac. Noel Kempf (14°40′S, 60°40′W), 750–800 m, open savanna with sandstone outcrops on top of meseta, Oct fl/imm fr, *Killeen 2750* (F, MICH, NY).

The name of this species honors INPA, the Instituto Nacional de Pesquisas da Amazônia, under whose auspices the type was collected. It differs from the previously described species of the genus in its well-developed peduncles and small fruits. It is also the first species to be described from western Amazonia; its congeners are all native to northeastern South America from Bolívar and Delta Amacuro, Venezuela, to French Guiana. *Lophopterys inpana* is also notable for its glabrous anthers, its long, narrowly triangular, spreading bracts, and its large, rounded, spreading bracteoles.

A fourth collection that may be assignable to this species is the following: BRAZIL. Amazônas: Município de Humaitá, estrada Humaitá–Jacareacanga, Km 64–70, 7°45′S, 62°32′W, roadside thicket, Jun fl, *Teixeira et al. 1124* (MICH). In characters of the leaves and inflorescence this plant is reasonably like the others, but its flowers differ in several ways. The sepals are completely eglandular (heretofore unknown in this genus but not a rare anomaly in other genera) and obtuse to almost acute at the apex. The lateral petals have smaller limbs (6–7 mm in diameter) and are only erose at the margin. The filaments are slightly shorter and the anthers only 1 mm long. I cannot assess the significance of these differences with the material in hand. As additional collections accumulate they should enable us to decide whether or not *Teixeira et al. 1124* deserves recognition.

Mascagnia leticiana W. R. Anderson, sp. nov. Fig. 4.

Arbor parva 6 m alta. Foliorum majorum lamina 4–6.5 cm longa, 2.2–4.5 cm lata, elliptica vel ovata, apice acuta vel obtusa, supra glabra vel permox glabrata, subtus sparsim sericea aliquot pilis persistentibus, 1.5–2.5 mm longis, crassis, luteis. Umbella 2–4 (–6)-flora, axillaris. Petala violacea, glabra. Filamenta heteromorpha, illa petalis postico-lateralibus opposita crassiora, valde arcuata, 3.5 mm longa. Gynoecium glabrum; styli postici crassi, 3.5 mm longi, valde arcuati. Samara immatura 11–13 mm alta lataque, alis lateralibus 5–6 mm latis, irregularibus, ala dorsali 3.5–5 mm lata, semicirculari.

Tree 6 m tall; young stems red or purplish, soon lenticellate but without peglike hair-bases, sericeous to glabrate, the hairs fine, white, sessile, straight or somewhat sinuous, appressed. Lamina of larger leaves 4–6.5 cm long, 2.2–4.5 cm wide, elliptical or somewhat ovate, cuneate at base, acute or obtuse at apex, bearing 1–3 small

FIG. 4. *Mascagnia leticiana*. a) habit, ×0.5; b) node and abaxial surface of leaf, ×2.5, with one needle-like hair enlarged, ×5; c) flower, side view, with posterior petal uppermost, ×2.5; d) posterior petal, ×4; e) androecium and gynoecium, with posterior style in center and anthers removed from three anterior stamens, ×6; f) apex of style, ×20; g) three views of immature samaras, one adaxial (in center) and two abaxial, ×1.5. Drawn by Karin Douthit from the type.

impressed glands below between margin and midrib in proximal 12 mm; adaxial surface glabrous (?) or soon quite glabrate; abaxial surface initially thinly sericeous with fine whitish hairs 0.5–0.8 mm long, some of those hairs elongating, thickening, and stiffening, becoming golden, needle-like, 1.5–2.5 mm long, strongly parallel to midrib and persistent or eventually deciduous; petiole 3–5 mm long, eglandular, sericeous to glabrate; stipules ca 0.5 mm long, distinct, borne on stem between petioles, sericeous to glabrescent. Inflorescences axillary to current leaves, sericeous; umbel or corymb raised on a stalk 5–12 mm long, containing 2–4 (–6) flowers; bracts ca 1 mm long, eglandular; peduncle 2.5–5 mm long; bracteoles 0.5–0.7 mm long, eglandular, borne at or just below apex of peduncle; pedicel 2–7 mm long, sericeous to glabrescent, somewhat thickened in fruit. Flowers ca 1.5 cm in diameter. Sepals 2.5–3.5 mm long, triangular or ovate, bent inwards in anthesis, abaxially sparsely sericeous, adaxially glabrous, all biglandular, the posterior 6 glands 2.4–2.8 mm long, the anterior 4 glands 0.6–1.8 mm long, smallest on the anterior sepal. Petals bluish purple ("morado"), abaxially very slightly carinate with the keel ca 0.5 mm wide on anterior petals, glabrous; lateral petals with the claw 2.5–3.5 mm long, the limb 3.5–4 mm long, 4–6 mm wide, often asymmetrical, entire or erose; posterior petal with the claw 4 mm long, the limb 3–4 mm long, 6–7 mm wide, transversely elliptical and conduplicate, irregularly shallowly lacerate. Stamens glabrous; filaments heteromorphic, those opposite posterior-lateral petals much thicker than others and strongly bowed, ca 3.5 mm long, the other 8 slenderer and straight or somewhat curved or bowed, shortest opposite posterior petal (1.5–1.9 mm long), longest opposite anterior sepal (3–3.3 mm long), the others 2–2.7 mm long, all connate for ca 0.7 mm at base; anthers 1–1.3 mm long, largest on the 2 thicker filaments. Gynoecium glabrous; ovary ca 1 mm high, each carpel with 3 longitudinal crests; styles with internal stigmas and dorsally truncate at apex or with a very short hook (ca 0.5 mm); anterior style ca 3 mm long, notably slenderer than posterior 2, nearly straight but curved slightly toward posterior petal; 2 posterior styles ca 3.5 mm long, strongly bowed outward at base and then inward distally and slightly twisted toward posterior petal. Samara (immature, but probably full-sized) glabrous, 11–13 mm high and wide, roughly and irregularly orbicular, the lateral wings 5–6 mm wide, continuous to deeply notched at base, broadly and shallowly notched at apex, irregularly sinuate or lobed, revolute toward margin; central dorsal wing 3.5–5 mm wide, semicircular, entire or sinuate; 1–several small intermediate winglets sometimes present between dorsal and lateral wings, oriented at right angles to dorsal wing; ventral areole narrowly ovate, 4.5–5.5 mm long, 1.7–2 mm wide; samaras separating from a very short pyramidal torus ca 1.5 mm high.

TYPE: MEXICO. Oaxaca: Selva baja caducifolia, subida al Cerro Guiengola por la ladera S, donde está la fábrica de cal, 16°21–30′N, 95°19–24′W, Distr. Tehuantepec, 25 Oct 1986 fl/imm fr, *Ma. Leticia Torres C. 629* (MICH!, holotype; MEXU 470357! & 470358!, isotypes).

This most intriguing plant is known only from the type collection. I name it in honor of its collector, who has discovered several interesting novelties in her study of Cerro Guiengola.

Mascagnia leticiana resembles species of *Malpighia* in its woody habit, stipules, leaf shape and glands, inflorescence, androecium, and styles. Some leaf hairs eventually become thickened and needle-like, which I have otherwise seen only in *Malpighia* spp. However, the fruits are winged samaras, not fleshy drupes. Although they are immature, there can be little doubt that those samaras, while small, are wind-dispersed, so this plant falls onto the *Mascagnia* side of the line. It is

probably most closely related to *Mascagnia parviflora* (Adr. Juss.) Nied. [=*Mascagnia seleriana* Loes.], which has the leaves densely and persistently tomentose on both sides. It is also allied to *Mascagnia cana* Small [=*Mascagnia sericea* (Engelm.) Nied., based on *Hiraea sericea* Engelm. non *H. sericea* Adr. Juss.]. That species has the leaves densely and persistently sericeous. All three of these species are shrubs or small trees, and all are endemic to dry calcareous areas in Mexico. They are probably connected to the rest of *Mascagnia* by another Mexican species, *Mascagnia lilacina* (Watson) Nied., a woody vine whose inflorescence is a pseudoraceme of 4–10 flowers or a panicle of pseudoracemes. In all four species the petals are usually described as some shade of lilac or bluish or reddish purple; except for *Mascagnia* spp. and a few species of *Malpighia,* almost no Malpighiaceae have petals that are any shade of blue.

I have suggested repeatedly in earlier papers that *Malpighia* was derived from some element in *Mascagnia;* for the most recent discussion, see the protologue of *Malpighia verruculosa* (Anderson 1987, p. 100). This species narrows the gap between *Malpighia* and *Mascagnia* still further, and makes it increasingly difficult to maintain the separation. At this point, the only synapomorphy defining *Malpighia* is the fact that the fruits are fleshy, with the samara wings rudimentary and concealed by a fleshy exocarp. Most species further differ from *Mascagnia* in that the three pyrenes remain united by the common exocarp and are dispersed as a single unit, but that is not true of *Malpighia albiflora* (Cuatr.) Cuatr. and *Malpighia verruculosa* W. R. Anderson. The ancestor of *Malpighia* must have been something very like *Mascagnia leticiana,* with small leathery samaras that became fleshy, thereby shifting from wind to birds as the agent of dispersal.

Mascagnia leticiana might serve as an outgroup for a cladistic analysis of *Malpighia,* and thereby shed considerable light on the evolutionary history of that genus. For example, it suggests that the straight styles with nearly terminal stigmas fround in *Malpighia glabra* and its relatives are derived in the genus, not ancestral. Also, the fact that *Mascagnia leticiana* and its closest allies are all natives of dry calcareous habitats in Mexico suggests that *Malpighia* originated in the same areas.

On the other hand, while the evolutionary history of *Malpighia* is becoming clearer its generic limits are becoming blurred. *Mascagnia* has always been an excessively diverse, certainly paraphyletic and possibly polyphyletic assemblage. Plants currently called *Mascagnia* share little except plesiomorphic character-states, and plants like them may well have given rise to several well-marked terminal genera, including *Hiraea, Malpighia, Jubelina, Mezia,* and possibly *Tetrapterys.* A cladist would argue that *Mascagnia* should be disassembled, with the pieces reattached to the taxa derived from them. That, however, will create serious problems for practical taxonomy and should not be undertaken lightly. I am increasingly convinced that *Mascagnia* will eventually be dismembered, and that *Malpighia* will probably have to expand to include things like *Mascagnia leticiana,* but until a thorough study has shown just how that can best be done I prefer to take the conservative approach of restricting *Malpighia* to species with fleshy fruits and assigning species with samaras to an admittedly artificial *Mascagnia.*

Mascagnia liesneri W. R. Anderson, sp. nov.

Liana lignosa, ramis vegetativis aureosericeis demum glabratis. Foliorum majorum lamina supra primo sericea permox glabrata, subtus sparsim sericea pilis rectis, sessilibus, et valde appressis, demum glabrata; petiolus pertinaciter aureosericeus; stipulae minutae epipetiolares. Inflorescentia axe principali aureosericeo,

cetera albidosericea vel albidotomentososericea, pedunculo 4–5 mm longo, bracteolis apice pedunculi portatis, utrinque dense albidotomentosis, pedicello 4–5 mm longo. Sepala in alabastro petala omnino includentia, ca 2.5 mm longa, omnia 5 biglandulifera, glandulis 1.8–2.3 mm longis. Petala lutea demum rubescentia, 3–3.8 mm longis. Filamenta 1.3–1.5 mm longa, abaxialiter sericea; antherae 0.7–1 mm longae. Styli ca 1.5 mm longi, stigmatibus terminalibus.

Woody vines; branches tightly sericeous with straight, sessile, appressed, golden and (below them) whitish hairs, eventually glabrescent. Lamina of larger leaves 7–11.5 cm long, 3.8–5.8 cm wide, elliptical or somewhat ovate, cuneate to almost rounded at base, slightly revolute at margin, acuminate at apex, initially sericeous but soon quite glabrate above, persistently thinly sericeous to eventually glabrate below with the hairs straight, sessile, and strongly appressed, eglandular or bearing several tiny glands in a row set well in from the margin, the reticulum prominent above, obscure or prominulous below; petiole 10–20 mm long, persistently golden-sericeous, eglandular or bearing 2 small impressed glands, these usually in the distal half; stipules minute, borne on petiole near base or up to 4 mm above base. Inflorescence terminal, paniculate-dichasial with the lateral branches more strongly cymose than the whole, the main axis golden- to whitish-sericeous, the lateral axes, peduncles, and pedicels persistently densely sericeous or tomentose-sericeous with mostly white hairs, containing much-reduced, persistently white-tomentose-sericeous, orbicular leaves bearing a row of abaxial glands inside the margin, the flowers ultimately borne in pairs with usually 2–3 pairs congested to form corymbs or umbels; floriferous bracts 2.5–3.5 mm long, 1.5–2.7 mm wide, obovate, eglandular, densely and persistently white-tomentose on both sides, spreading to reflexed; peduncle 4–5 mm long; bracteoles borne at apex of peduncle, like bracts but flatter and slightly smaller; pedicel 4–5 mm long. Sepals completely concealing petals until anthesis, ca 2.5 mm long, triangular, revolute in anthesis, abaxially densely white-appressed-tomentose, adaxially glabrous except puberulent near margin, all 5 biglandular, the glands 1.8–2.3 mm long. Petals yellow, turning red in age, glabrous; lateral 4 petals 3–3.5 mm long, 1–1.5 mm wide, spatulate without clear differentiation into claw and limb, entire or erose; posterior petal with the claw 1.8 mm long, the limb 2 mm long, 2.2 mm wide, flat, erose or bluntly dentate. Filaments 1.3–1.5 mm long, those opposite sepals slightly longer than those opposite petals, sericeous abaxially on proximal half, ± straight, ca ½ connate; anthers 0.7–1 mm long, glabrous. Ovary sericeous; styles ca 1.5 mm long, stout, straight, erect, truncate at apex, the stigmas terminal. Fruit unknown.

TYPE: VENEZUELA. T. F. Amazonas: Seasonally flooded forest 0–1 km S of San Carlos de Río Negro, 1°51′N, 67°03′W, 120 m, 4 Feb 1980 fl, *Liesner 9063* (MO!, holotype; MICH!, VEN!, isotypes).

PARATYPE: VENEZUELA. T. F. Amazonas: Disturbed forest, ca 20 km S of confluence of Río Negro and Brazo Casiquiare, 1°56′N, 67°03′W, 120 m, May fl, *Liesner 7460* (MO, VEN).

This species belongs to a group of very similar plants marked by flowers with 10 calyx glands, long sepals that completely conceal the petals in bud, and small petals that are yellow turning red in age. The other three species of the complex were all described in my treatment for the Guayana Highland (Anderson, 1981b); they are *M. guianensis* W. R. Anderson, *M. leucanthele* Grisebach, and *M. bracteosa* Grisebach (which I called *M. heterocarpa* W. R. Anderson in 1981; see discussion

under *Jubelina grisebachiana* in "The taxonomy of *Jubelina* (Malpighiaceae)" in this volume). *Mascagnia liesneri* differs from *M. guianensis* and *M. leucanthele* in the following combination of character-states: Stems persistently golden-sericeous, leaf hairs quite straight and sessile, stipules epipetiolar, flowers smaller in all their parts, and filaments sericeous. *Mascagnia bracteosa* has leaf hairs like those of *M. liesneri,* but it lacks the densely whitish aspect of the whole inflorescence that is so striking in the other three species, because its straight appressed inflorescence hairs are mostly golden. In *M. bracteosa* the lamina is thicker and more revolute at the margin, and the leaf hairs are more persistent. The inflorescence is more paniculate than dichasial. The bracts and bracteoles are much hairier on the abaxial side than on the adaxial side, and the bracteoles are mostly borne below the apex of the peduncle. When samaras are collected for *M. liesneri,* their wings will probably prove to be membranous and well developed as in *M. guianensis* and *M. leucanthele,* not coriaceous and rudimentary as in *M. bracteosa.*

Mascagnia liesneri is named in honor of Ronald L. Liesner, indefatigable collector for the Missouri Botanical Garden, who has collected the only known specimens.

Mascagnia surinamensis (Kostermans) W. R. Anderson, comb. nov.

Mascagnia multiglandulosa var. *surinamensis* Kostermans, Meded. Bot. Mus. Herb. Rijks Univ. Utrecht 25:5. 1936.—TYPE: SURINAME. Brownsberg, Sep fl, *v. Emden s.n.* (U!, holotype).

This Amazonian taxon is undoubtedly very closely related to *Mascagnia multiglandulosa* Niedenzu, a species of southern Brazil and Paraguay. However, the Amazonian plants are consistently much less hairy in all their parts, such that the two taxa are easy to distinguish. That fact and their disjunct distribution lead me to propose species status for Kostermans' variety. The following couplet summarizes the more notable differences between the two.

1. Peduncle and pedicel very deeply woolly, 1–1.5 mm or more in diameter including vesture; hairs so dense on abaxial leaf surface as to make it difficult to distinguish the trabeculae of any given hair; bracteoles abaxially very densely spreading-woolly, adaxially tomentose, at least on the distal half; sepals abaxially deeply spreading-woolly; petals abaxially densely woolly; Paraguay and southern Brazil (Mato Grosso, Goiás, São Paulo). *Mascagnia multiglandulosa.*
1. Peduncle and pedicel densely tomentose or velutinous but only 0.4–0.7 mm in diameter including vesture; leaf hairs much less dense, the trabeculae of individual hairs easily distinguished; bracteoles abaxially appressed-tomentose, adaxially glabrous or tomentose only at very apex; sepals abaxially appressed-tomentose or subsericeous; petals abaxially moderately appressed-tomentose; Amazonia (Amazonas, Venezuela; Guyana; Suriname; Amapá/Pará and Rondônia, Brazil). *Mascagnia surinamensis.*

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