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60° FAMILY

LORANTHACÉE [1]

(LORANTHACEAE)

By

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Green, perennial, shrubby or herbaceous plants (never trees in Africa), hemiparasites on the branches of native or cultivated trees or shrubs (never on the roots in Africa), generally presenting the appearance of ± spherical clumps, rarely lianiformes; glabrous or bearing papillae or hair, plain or multi-cellular, simple, branched or articulated, but never glandular. Plants frequently darken when drying. No primary *roots*: base of the main stem generally fixed on the host by a single haustorium, ± branched inside the tissues of the host which it destroys variously according to the nature of the species and the hosts; in lianiform species, are born., little above the base of the main branch, axes (*runners*) which, at the point of contact with the branches of the host, form bulges and implant secondary haustoria; the primary haustoria generally cause local swelling of the host branch, from which emerges the main branch of the parasite; in many Loranthoids, the host branch generally shows after a certain time, an anneliform enlargement of the surrounding bark, with a distinct fold ± the swollen base of the main branch of the parasite ("wood roses" when the group reaches a certain age). Main branch always short, subcylindrical or frustoconical branching abundantly in all directions little above its base; entirely subcylindrical ramifications or, more often, ± flattened on part or even over their entire length (some Viscoids); articulated at nodes or not; internodes with 2-12 ribs (which can be winged); in some species, the branches sometimes become long hanging under the influence of certain hosts. *Leaves* most often opposite or subopposite, sometimes alternate, rarely whorled by 3 (4); usually petiolate; always simple and without stipules, sometimes reduced to scales, never cylindrical in Africa; blade entire, often thick and leathery; margin narrow and of a cartilaginous appearance, often ± wavy; veins pinnate, irregular or subparallel. Buds with one or more pairs of *prophylls,* usually reduced to rounded or triangular scales, ca. 1 mm long, ± rapidly caducous, sometimes fleshy, often ciliated, sometimes enlarged and leafy (some Loranthoids); generally free, or very rarely fused in pairs in the form of small floral cups (some *Viscum* from Madagascar).

Mono- or dioecious plants, with generally axillary *inflorescences*, sometimes terminal (at the end of short leafy branches in Loranthoids), often abundant on old nodes; in simple racemes or umbels (never compound in Africa), plural or uniflorous, or derivatives (flower heads, cymule fascicles) or isolated flowers; peduncles (and pedicels, in Loranthoids) articulated at each of their ends. Bracts of the peduncle generally absent, exceptionally represented by small deciduous scales in Loranthoids, 2 in number and opposite-connate at the top of the peduncle where they constitute a naviculiform cup in *Viscum,* never enlarged or concrescent in involucre in Africa. Hermaphrodite (Loranthoideae) (2) or unisexual (Viscoideae), actinomorphic or slightly zygomorphic flowers, 2-3 merous, pedicelled or sessile. *Bract* of the pedicel always unique in Africa, recaulescent (3) in Loranthoideae, transformed into a tuft of hairs in *Korthalsella,* absent in *Arceuthobium* and *Viscum.* Self-fertilization seems to be frequent (has been done experimentally). *Receptacle* always cup-shaped, filled by the inferior ovary (which can

sometimes exceed it a little: semi-inferior ovaries) in female or hermaphrodite flowers: its external surface is hairless or glabrous, generally smooth, rarely ± warty; at its summit a nectariferous ring ± individualized and sometimes 4-5-lobed (disc) surrounds the base of the style (in *Viscum* and the African Loranthoideae). *Perianth* composed of 2 differentiated cycles in Loranthoideae, undifferentiated in Viscoideae (4): African Loranthoideae with short gamosepalous calyx, with entire margin or ± regularly toothed, generally persisting on the fruit (1 exception in Madagascar), devoid of vascular bundles (5); corolla always deciduous, much longer than the calyx, generally brightly colored, glabrous, hairy or rarely papilliferous externally, exceptionally bearing hairs on part of the internal face, of ± fleshy consistency, with 4-5 valvate petals (never dimorphic in Africa), free or fused below, sometimes irregularly over a variable length, in a tube which can, in certain genera, split unilaterally at the anthesis; free part of the petals, remaining erect, curving or curling at anthesis, often ± deeply differentiated morphologically at its tip (thickening, wings, appendages); tube sometimes having, internally near its base, rows of oblique folds or small oppositipetalous or alternipetalous appendages or externally near its top, alternipetalous gibbosities. African viscoids with short perianth, ± fleshy and sometimes white-yellowish, composed of 2-4 tepals, free (*Viscum*) or fused at the base (*Arceuthobium* and *Korthalsella*), ovate-triangular, with obtuse or truncated apex, slightly unequal in pairs when there are 4 (*Viscum*), most often obsolete. *Stamens* in the same number as the parts of the perianth and opposite to them, never dimorphic in Africa; free filament or ± long fused to the perianth, rarely zero (*Viscum* and *Arceuthobium*), always glabrous in Africa, remaining erect, bending or spirally curling at anthesis, sometimes presenting an apical tooth, internally facing the anther or very rarely, 2 small lateral teeth (Loranthoideae), sometimes composed of 2 morphologically distinct parts, the lower thin and remaining erect, the upper thickened and curling (and often disarticulating also) at anthesis, hence the projection of pollen (= heteromorphic anthers of certain African Loranthoids); introrse anther, basifixed and with longitudinal slits in the Loranthoideae, remaining bilaterally coherent with its neighbors to form a subcylindrical synandral in *Korthalsella,* sessile and with transverse slit in *Arceuthobium;* sessile and fused dorsally to the perianth with numerous small locules arranged without center on the internal face of *Viscum* (never appendiculate in Africa); connective extending the filament without articulation, sometimes exceeding the theca a little in some Loranthoids; there are generally 2 thecae in Africa (exceptionally 1), sometimes subdivided into rows of locules by local degeneration of groups of pollen mother cells (anthers septate in certain Loranthoideae). *Pollen* of the African Loranthaceae globular, 3 (5) - colporate in Viscoideae, tricolpate breviaxial with granular zones in Loranthoideae. Protandry seems general; often the theceae are already open in the buds. 1-5 *carpels* in African Loranthaceae, alternipetalous in Loranthoideae, oppositi-tepalous in *Arceuthobium* and *Viscum,* morphologically indistinct, fully fused together as well as to the receptacle; no ovarian cavity or individual ovules; reduced and ephemeral placentas only in Viscoideae; 1 or more embryo sacs developing within the receptacular tissues, above the collenchymal cup in the Loranthoideae, where their tops rise more or less high in the stylar canal. *Style* always single, shorter, ca. the same length or a little longer than the parts of the perianth, void in *Korthalsella,* generally subcylindrical, sometimes “skittle shaped” (i.e. gradually dilated from bottom to top under the level of the anthers then abruptly narrowed at the level of these: the neck), smooth or having 4-5 longitudinal edges sometimes winged, glabrous, sometimes papillae, exceptionally hairy over part of its length, almost always deciduous, rarely having curvatures, never articulated in Africa. *Stigma* generally distinct morphologically (rarely reduced to a papillous end of the style), globose, ovoid, ellipsoid or obovoid, rarely conical or

peltate, slightly wider than the style, often ± distinctly 2- (5) -lobed at the top, finely papillate. *Disc* generally single (almost all the Loranthoideae of Africa), in the form of ring, sometimes dilated locally in 4-5 alternipetalous protrusions ± projecting), generally glabrous, rarely hairy, almost always shorter than the calyx. *Embryogeny* particularly curious in the family (still little known for African genera); the zygote undergoes a first vertical division in the Loranthoids, *Arceuthobium* and *Korthalsella,* transverse in *Viscum;* its development is then carried out according to the *Polygonum* type or the *Allium* type*;* after double fertilization, the endosperm, always cellular, develops independently in each sac or those of all the sacs are fused into a single mass. *False fruits* bacciform, never dry and drupaceous in Africa, globose, ellipsoid or ± pyriform, small (rarely exceeding 1 cm long in Africa), with pericarp formed from 3 tissues, the external often leathery, smooth or warty, glabrous or hairy, the middle visciferous, the internal ("testa" of the collectors) pellucid and sometimes vividly colored; viscin is born outside or inside the conducting strands of the perianth; no real seed exists: neither nucellus nor distinct integuments; one finds, in the cavity of the endocarp, the embryo surrounded by a cupuliform and amyliferous endosperm, undivided (never ruminated in Africa). *Embryo* generally solitary (rarely several in some *Viscum),* straight or arched, generally apical (rarely lateral in *Viscum),* subcylindro-conical or flattened, always devoid of a radicle, consisting of a superior hypocotyle (whose ± swollen end is flush or protruding at the top of the endosperm) and 2 generally green cotyledons, ± fused at their ends and sometimes a little unevenly. *Dehiscence* lateral, basal or apical, by tearing of the pericarp or by blettage of the tissues subjacent to the disc in Loranthoideae and African *Viscum*; it is explosive in *Arceuthobium. Dissemination* of fruit by falling and, actively or passively, by animals. *Germination* still unknown for almost all species of Africa; it requires sufficient light, humidity and temperature and can be carried out on different hosts, including other Loranthaceae (hyperparasitism) or even on the mother plant (autoparasitism); the hypocotyle is photo- and geotropic, very sensitive to contact and bulges early (sometimes already in the berry); when in contact with the host it turns into a haustorium, penetrating thanks to the emission of a mucilaginous substance and papillae, then by differentiation of a contractile tissue; the growth patterns of the haustorium inside the host tissue depend both on the nature of the parasite, that of the host, their age and their state of health.

Geographic distribution, especially tropical, on all continents; 4 genera and 51 species in Madagascar and the Comoros, including 2 genera and 47 endemic species.

KEY TO GENERA

1. Shoots not articulated at the nodes, leaves generally well-developed; recaulescent floral bract; flowers hermaphrodite with calyx and corolla; 5 (4) petals; three-lobed pollen in polar view; viscin layer outside the petal bundles; *Polygonum* type embryo sac; composite endosperm ..... LORANTHOIDEAE.

2. Plants entirely hairless; filaments generally very short, remaining erect at anthesis. …… .....1. BAKERELLA.

2'. Plants with storied [dendritic] hairs on all their organs at least in the young state and simple hairs or with irregular irregular ramifications on the style and on the internal face of the corolla lobes; very distinct filament, curved at anthesis ....2. SOCRATINA.

1'. Shoots articulated at the nodes; leaves always opposite, normal or reduced (up to scales less than 1 mm long), with subparallel nervation, rarely indistinct; always unisexual flowers and

mono- or dioecious plants; flowers with perianth undifferentiated into calyx and corolla; (2), 3 or 4 tepals; subcircular pollen in polar view; viscin layer located between the conducting bundles of tepals and those of carpels; *Allium* type embryo sac*;* individual endosperms. ..VISCOIDEAE.

3. Branches of flowering individuals at least 20 cm long, subcylindrical or flattened over a major part of their length, and, in the latter case, successive internodes oriented alternately in planes perpendicular to each other; normal or reduced leaves; terminal or axillary inflorescence, typically consisting of a "cymule", sometimes reduced to one or more naked flowers or covered, when young, by a deciduous cap (= perula); cymule composed of a cup, formed by 2 opposite-connate persistant bracts, containing 1 or more flowers arranged in a row; flowers with 4 (3) tepals; anthers sessile and fused dorsally to the opposite tepal, with multiple locules; generally short subcylindrical style, surmounted by a distinct stigma .. 3. VISCUM.

3'. Branches of mature individuals not exceeding 15 cm long, with subcylindrical or flattened branches; successive internodes are often all oriented in the same plane, at least between the ramifications (= phylloclades); leaves always reduced to scales; inflorescences in axillary fascicles of flowers of the 2 mixed sexes, accompanied by hairs; flowers with (2) 3 persistent tepals, males with stamens fused by their anthers in synandria, females with 3-lobed sessile stigma. ..... 4. KORTHALSELLA.

LORANTHOIDEAE

I. **BAKERELLA** Van Tiegh. in *Bull. Soc. Bot. Fr.* XLII (1895) 244. - *Loranthus* L. subgenus *Dendrophthoë* sect. *Bakerella.* Engl., *Nachtr.* I z. *Nat. Pflanzenfam.* (1897) 131; sect. *Dendrophthoë* sub-sect. *Bakerella* Krause, in *Nat. Pflanzenfam.* ed. 2, 16b (1935) 162. - *Scurrula* Don (not L.) *Gen. Hist.* III (1834) 401 (for *S. clavata* only). -– *Taxillus* (Van Tiegh.) Emend. Danser, in *Verh. Kon. Ak. Wet. Amsterd. natk.* 2 of ser. XXIX, 6 (1913) (40 and. 123 pp.; S. Balle, in *Webbia* XI (1955), 580.

Plants completely glabrous, sometimes darkening upon drying. Insofar as they are known: 1 primary *haustorium* and several secondary haustoria emerging on lateral axes climbing on the surface of the host branches. Main *branch* up to 20 m. long (DECARY); twigs generally subcylindrical, often. ± flattened at the nodes of the extremities, rarely 4-sided or 4-winged over most of their length; bark generally presenting rounded or slightly lenticular lenticels (sometimes very early), ± protruding and ± irregularly sparse, cracking irregularly, frequently flaking into small, greyish translucent lamellae. *Leaves* generally opposite or sub-opposite, sometimes alternate; usually petiolate, rarely sessile; petiole generally subsemicylindrical with edges sometimes a little winged; blade often obovate or elliptical, sometimes lanceolate, ovate or suborbicular, rarely linear, generally thick and leathery, often discolored when young (underside then russet), often ± wavy margin and very slightly upturned (at least on the dry state); ribs often "drowned" in the fresh state (according to the collectors), the main one often distinct, thin and protruding above, broad and protruding below in its lower region, emitting a small number of oblique or ascending lateral veins, dispersed over the entire length of the limb, or only 1-2 ribs ascending on each side, located near its base. *Inflorescences* generally axillary, rarely at the end of short leafy twigs, in 5-1-flowered umbels, generally briefly pedunculated, or in fascicles of some flowers, pedicelled or sessile; rarely twin or isolated flowers; base of peduncles or fascicles surrounded by small perulean scales or tears in the bark. *Bract* unilateral or ± deeply cupuliform,

often gibbous dorsally, rarely shortly spurred, never leafy, generally persistent on the fruit, rarely deciduous, generally with an entire or subentire margin. *Receptacle* urceolate, smooth (6), sometimes subsiding during fruiting, presenting (rarely) lenticels. *Calyx* shorter, of the same length or longer than the receptacle, generally persistent (rarely void and then generally papery) on the fruit, a subdued entire or subentire margin, ciliate or not, more rarely 5 (4) -lobed, sometimes tearing irregularly in length. *Flower* almost always with 5 (exceptionally 4) petals; generally arched, medium or fairly large (20-70 mm long), red, yellow or exceptionally white; sub-cylindrical bud with subulate or swollen apex, sometimes 5 (1) -winged [alatus]; sometimes with a median or basal bulge or both; tube splitting unilaterally ± deeply; sublinear lobes, often remaining coherent to a few millimeters from their tip, remaining erect or curving (rarely) in the tongue at anthesis. *Stamens* with a filament generally fused to the corolla tube up to near the end, remaining erect at anthesis and always devoid of an apical tooth; linear or oblong anther, always with a whole theca (7); sometimes very slightly extended beyond the locules. Filiform *style* 5 (4) -sided or -winged, of the same diameter over its entire length, exceeding by a few millimeters the top of the corolla at anthesis. *Stigma* always distinctly wider than the style, globular or obovoid. Sub-circular or 5 (4) -sided disc, usually barely protruding. *False fruit* bacciform, ellipsoid or obovoid, rarely oblong, generally blackish, sometimes greyish when dry, rarely provided with lenticels, smooth, containing a single, terminal and straight embryo, surrounded by the cupuliform endosperm; embryo with a superior hypocotyle and two indistinct cotyledons.

Genus endemic to Madagascar and the surrounding islands, with great affinities with *Taxillus* van Tiegh. from India.

1. Unilateral or almost one-sided floral bract, never deeply cup-shaped.
  2. Bract and calyx ± coriaceous (leathery), persistent on the fruit.
    3. Flowers sessile at the end of short shoots; small leaves (0.5-2.5 cm × 3-8 mm); corolla red or orange, 25-30 mm long; bud with apical ellipsoid-apiculate bulge, slightly 5-winged at the apex; distinct median and basal bulges .....1. *B. microcuspis.*
    3’. Inflorescences always axillary, in umbels or pauciflorous fascicles, or isolated flowers.
      4. Alternate leaves, 1.3-8 cm ca. 3-8 mm, thick and fleshy, linear, narrow, oblong or oblanceolate, rarely obovate, with 3-1 (0) subbasal veins; corolla red, 42-50 mm long; bud subulate, apex with ellipsoid bulge, c. 10 mm long; 4-mm anther. long; calyx 1.5-2 mm long. ..... 9. *B. belohensis.*
      4’. Leaves never at the same time alternate and linear or narrowly oblong or oblanceolate, with subulate buds.
        5. Calyx with entire or subentire margin (sometimes splitting lengthwise irregularly) but never with 5 equal and triangular lobes.
          6. Apical bulge of the ellipsoid bud, approx. 10 mm long by less than 2 mm diam.; corolla of 37-40 mm long; anther ca. 5 mm long; obovate, elliptical or oblong leaves, with subbasal venation .....3. *B. analamerensis.*
          6’. Buds generally clavate, apical swelling of various shapes and sizes; leaves with pinnate venation (sometimes indistinct: view many leaves).
            7. Inflorescences in umbels (often short peduncles) (8).
              8. Flowers not thick and fleshy; fruit not more than 12 mm long.
                9. Branches subcylindrical over most of their length, often a little flattened at the nodes of the extremities.
                  10. Umbels 2-3 (4) -flowered.

11. Leaves elliptical, ovate or oblong, rarely obovate or lanceolate, never linear-falciform (sickle-shaped) ..... 4. *B. clavata.*
11'. Leaves linear falciform 7-15 cm by 10-22 mm, umbels generally 2 (rarely 3) -flowered, peduncle 4-12 mm long, pedicels 4-7 mm long …….... 5. *B. collapsa.*

10'. Umbels always uniflorous: pedicel articulated on a short peduncle, generally ca. with the same diameter ..... 6. *B. Viguieri.*

9'. Branches 4-sided or 4-winged over the greater part of their length …….. 7. *B. gonoclada.*

8'. Flowers thick and fleshy; corolla up to 40-70 mm long and 3-6 mm (diameter, without medial or basal bulges; anther 6-11 mm long; calyx 2-3 mm and fruit 20-25 mm long ..... 8. *B. grisea.*

7'. Inflorescences reduced to fascicles or single flowers; never with a distinct peduncle.

12. Leaves with lateral veins regularly pinnate, but generally all not very distinct.
13. Corolla of 50-60 mm long, without basal bulge and topped with a very distinct constriction; anther 7-9 mm long ..... 9. *B. tandrokemis.*
13'. Corolla 25-35 mm long, provided with a globular basal swelling topped by a very distinct constriction; anther 2.5-4 mm long ……..... 10. *B. Perrieri.*

12'. Leaves with midrib giving rise to in its lower levels 2 (1) pairs of ascending veins, generally reaching the upper half of the limb (sometimes some leaves with only one distinct vein); corolla of 30-37 mm long; anther 3-5 mm long…….. ..... ….11. *B. ambongoensis.*

5'. Calyxwith 5 similar triangular lobes.

14. Calyx 2/3 to 1.5 mm high, with lobes equal or wider than long; leaves with (0) 1-3 basal veins ..... 12. *B. hoyifolia.*
14'. Calyx 3 to 4 mm high, with much longer than wide lobes 13. ……*B. mangindranensis.*

2'. Bract and calyx thin and membranous, deciduous after anthesis; bract from 1/3 to 1 mm long; calyx 1-3.5 mm, split irregularly along its length; corolla 20-35 mm long with lobes generally reflexed at anthesis; oblong, obovate, oblanceolate or ± narrowly elliptical leaves, rarely sublinear with 1-3 (5) subbasal veins ..... 14. *B. Poissonii.*

1'. Bract deeply cup-shaped, ventrally reaching 1-2.3 mm long; flowers sessile in pauciflorous axillary glomerules; leaves with 3-5 subbasal veins.

16. Leaves alternate; calyx slightly flared, ca. 3.5 mm long, with subtent edge, corolla 35-48 mm long; 5-7 mm anther. long. ..... 15. *B. tricostata.*
16'. Leaves opposite or subopposite; cylindrical calyx 4-5 mm long, on edge regularly 5-lobed; corolla of 30-37 mm long; anther 3-4 1/4 mm long. ..... 16. *B. diplocrater.*

1. **Bakerella microcuspis** (Bak.) Van Tiegh., In *Bull. Soc. Bot. Fr.,* XLII (1895), 246. - *Loranthus microcuspis* Bak. in *Trimen's Journ. Bot.,* XI (1882), 245; H. Lecomte, *Cat. Pl. Madag.* (1932), 8. - *Taxillus microcuspis* Danser, *in Verh. kon. Ak. Wet. Amst. Afd. Nat.* (2nd sect.), XXIX, 6 (1933), 125.

Plant entirely glabrous, haustoria unknown. *Branches* of observed samples up to 45 cm long, subcylindrical, sometimes slightly flattened at the nodes of the extremities, light gray, cracking

longitudinally, sometimes bearing small oblong lenticels irregularly dispersed, then the thick bark cracking irregularly lengthwise; internodes 0.2-2.5 cm by 1-5 mm. *Leaves* opposite or subopposite, first coppery, then light green when fresh (COURS), subsessile (petiole *ad* 1 mm long, flattened above); blade ovate or elliptical, with rounded base, cuneate or acute and with obtuse-cuneate or acute apex, sometimes apiculate, 0.5-2.5 cm long, 3-8 mm, fairly thick, rigid and leathery, ± discolored (the underside sometimes russet); midrib thin and prominent above (in the lower half) or indistinct. *Flowers* solitary, sessile, generally ending in short leafy branches, rarely axillary; at the base surrounded by 2 pairs of triangular scales, the external reaching 2-3 mm long by 1/2 at the base, the internals shorter, often not very distinct between the upper leaves which accompany them. *Bract* obliquely cup-shaped, with subentire margin and truncated, bilobed or obtuse apex, dorsally reaching 1 1/3-1 2/3 mm and ventrally 1/3 mm long. *Receptacle* smooth, urceolate, 1 2/3-2 mm long. *Caliculus* 1.3-2 mm long, sub-cylindrical or ± flared, on edge ± regularly denticulate ciliate, often splitting irregularly in length. *Corolla* (18) 25-30 mm long, cherry-red or yellow-orange, sometimes greenish; apical bulge ellipsoid ca. 5 mm by 1 2/3-2, spur narrowly 5-winged at the top, sometimes poorly separated from the median bulge which extends over ca. 12 mm long and 2 in diameter tapering gradually to ca. 3 mm from the base; basal ovoid bulge ca. 5 mm long; tube split unilaterally for ca. half of its length at anthesis; lobes linear-lanceolate, c. 4 mm long, thickened and two-winged at the apex which is very acute, reaching around 2/3 mm wide, apparently remaining erect at anthesis. *Stamens* with almost no filament or up to 2 mm long; anther oblong ca. 2 mm long, bright red on the outside, yellow on the inside, with apex ca. 3 mm away from the top of the opposite petal. *Disc* 5-sided, quite wide but barely protruding. *Style* filiform-5-sided, red, projecting slightly beyond the perianth at maturity. *Stigma* subglobular, red, ca. 2/3 mm of diameter. *False fruit* [pseudo-drupe] unknown. - FIG. I, 1-4.

Rain forests between 850 and 1200 m. alt. Fl.: February, June, October, November and December.

CENTER: Ankaraoka, *Cours* 2033 and *Homolle* 2033; Analamazoatra, *d'Alleizette* 614*;* Moramanga, *Cours* 874; La Mandraka, *Perrier de la Bâthie* 18235, Betsileo, *Baron* 54, K; *Hildebrandt* 3922.

Endemic.

2. **Bakerella belohensis** S. Balle, in *Adansonia,* new. ser., IV (1964), 109. - *Loranthus synantheroideus* Lec. (?) in Herb. P.

Plant glabrous, slightly glaucous when dry. *Haustoria* unknown. *Branches* of observed samples up to 35 cm long, gray-blackish, slightly flattened and dilated at the nodes of the extremities, sub-cylindrical below, finely wrinkled longitudinally, sometimes bearing small scattered rounded lenticels, becoming somewhat smooth and whitish towards the base; internodes 0.5-2.7 cm by 2/3-5 mm. *Leaves* alternate; petiole a few millimeters long, ill-defined upwards, flattened above; blade linear, narrowly oblong, oblanceolate or obovate, with rounded or obtuse apex and gradually narrowed towards the base, 1.3-8 cm by 3-8 mm, thick and leathery, with 1-3 subbasal veins, generally not very distinct, hidden when dry by the fine wrinkles of the epidermis. *Flowers* twin or isolated in the leaf axils; pedicel 3-7 mm long, surrounded at its base by a few deciduous scales not reaching 1 mm long. *Bract* obliquely cupuliform, ovate, ± gibbous or keeled dorsally, with subentire margin, sometimes tearing longitudinally, apex rounded, obtuse, truncated or indented, reaching ventrally 0.5-1 mm and

dorsally 1.5-3.5 mm long. *Receptacle* obconic-urceolate, 2-2.5 mm long. *Calyx* sub-cylindrical, slightly shorter or ca. the same length as the receptacle, with subentire edge sometimes splitting irregularly lengthwise, reaching 1,5-2 mm long. *Corolla* (42-50 mm long, red, arched; bud subulate with a weak apical bulge, narrowly ellipsoid ca. 10 by 2 mm, subacute at apex; weak median bulge, extending ca. 15 mm long and ca. the same diameter as the apical bulge; sometimes a slight ill-defined basal bulge; tube splitting unilaterally at anthesis ca. 30 mm long; lobes sublinear ca. 15 mm long, apex obtuse, appearing to remain fused between them, sometimes up to their apex, in lobe (tongue) that can be divided longitudinally into two (open flowers unknown). *Stamens* with linear filaments 1-2 mm long, anther linear 4-6 mm long with apex ca. 4-6 mm away from the top of the opposite petal. *Disc* circular-5-sided, barely protruding. *Style* filiform-5-winged, shorter than the corolla? (mature flower unknown); stigma ovoid, ca. 1 2/3 mm long, ellipsoid, smooth, ca. 7.5 mm. *False fruit* ellipsoid, smooth ca. 1.5 by 5 mm long, topped by the calyx cup ca. 1.5 mm long; "seed" endosperm ca. 4 mm long by 3; embryo ca. 2 1/2 mm long, subcyclindric, with slightly protruding hypocotyle. - FIG. I, 5-7.

Used as a poison against other "gris-gris" (DECARY).

Xerophilic bush on limestone slopes around 50-100 m. alt. Fl.: December and March. Fr.: July.

WEST and SOUTH-WEST: Beloha, on *Alluaudia procera, Decary* s. n °; Ambo-vombé, on *Alluaudia procera, Decary* 8345; bas Mandrare, opposite Amboasary, *Humbert* 29209; Onilahy at the W. by Benenitra, on *Euphorbia laro, Perrier de la Bâthie* 12737, *fr.*

Endemic.

3. **Bakerella analamerensis** S. Ball, in *Adansonia,* new. ser., IV (1964), 109.

Plant entirely glabrous, *haustoria* unknown. *Branches* of the samples observed not exceeding 20 cm long, subcylindrical, slightly flattened at the nodes of the extremities, light gray, exfoliating early around the rounded and irregularly scattered lenticels; internodes 0.5-2.5 cm. by 1.5-9 mm. *Leaves* opposite or subopposite; petiole up to 3 mm long by 1.5-2, flattened above, ± well delimited upwards; limb obovate, obovate-oblong or obovate-elliptical, with rounded or obtuse apex and base gradually narrowed towards the petiole, 3-5.5 cm on 10-28 mm, thick and fleshy, with 1-3 not very distinct subbasal veins often completely invisible. *Flowers* united in 2-4 fascicles in the leaf axils, surrounded by triangular or ovate scales less than 1 mm long; pedicel of ca. 2 mm long and ca. 2/3 in diameter. *Bract* subunilateral, ovate, gibbous dorsally, with subentire margin and obtuse or emarginate apex, reaching ca. 1 mm long; ventral margin of ca. 1/3 mm long. *Receptacle* urceolate, light gray, 2-2.5 mm ca. 1 2/3 long. *Calyx* subcylindrical, membranous, blackish, reaching ca. 1 mm high, with subentire edge irregularly splitting lengthwise. *Corolla* 37-40 mm long; bud swollen with apical swelling, ellipsoid long, ca. 10 mm long and almost 2 in diameter, subacute at the top; small median bulge; no basal bulge; tube splitting unilaterally at anthesis for approximately 12 mm lengthwise; sublinear lobes probably approximately 8 mm long (only one open flower observed and perhaps not fully opened); appearing to remain fused together over part of their length. *Stamens* with almost no filaments; anther linear ca. 5 mm with apex ca. 3 mm away from the top of the opposite petal; enire thecae exceeded by a small linear extension of the connective. *Disc* sub-circular or slightly 5-sided, barely protruding. *Style* filiform; *stigma* clavate reaching approximately 1/2 mm in diameter. *False fruit* unknown. - FIG. I, 8-10.

Tropophilic forests of hills and limestone plateaus between 50 and 400 alt. Fl. In January.

WEST (North): Analamera, *Humbert* 19210, type.
Endemic.

4. **Bakerella clavata** (Desrouss.) S. Balle, in *Adansonia,* new, ser., IV (1964), 110 (9).

Primary *haustorium* reaching almost 2 cm at the insertion level; base of the main branch very dilated after the emission of creeping axes on the surface of the branches of the host where they insert small discoid secondary haustoria a few millimeters in diameter and spaced a few centimeters apart. *Bush* up to 1.50 m in diameter according to BAKER, *branches* subcylindrical, sometimes ± flattened at the ends of the nodes, often blackening on drying, first dark brown and finely wrinkled superficially and longitudinally, then covered with lenticels, ± prominent, small, rounded or lenticular, irregularly dispersed, lighter than the bark, splitting longitudinally; bark becoming light brown-gray, and irregularly cracked lengthwise, then flaking into fine lamellae, becoming somewhat smooth and yellowish gray; internodes 0.5-12 cm by 1-16 mm. *Leaves* opposite or subopposite, rarely alternate, light green, with a waxy feel (COURS); petiole canaliculate, 2-18 mm long by 1-4; limb ovate, elliptical or oblong, more rarely obovate or lanceolate, with rounded apex, obtuse, cuneate or acute and with obtuse base, cuneate or subacute, rarely rounded, sometimes ± decurrent, 0.8-18 cm by 5-85 mm; ± thick and leathery, first discolored (pinkish underside then fresh green according to COURSE, becoming reddish as it dries); midrib generally evident on both sides, wider and protruding below but evanescent in the upper 1/3, thinner and longer above, rarely indistinct, emitting, on each side, 1-6 irregular lateral ribs, oblique or ascending, generally not very distinct; margin generally slightly refracted. *Umbels* axillary, isolated or fasciculate, sessile or subsessile (4-) 3-2-flowered; peduncle up to 6 mm long, sometimes reduced to a barely distinct base of cells; pedicels of 1-9 mm by 3/4 -1 long, thinner than the peduncle. *Bract* sub-unilateral or obliquely cupuliform, ovate, with entire or subentire margin, sometimes ciliated, sometimes irregularly torn longitudinally, with rounded apex, truncated, cuneate or superficially 2-lobed, sometimes gibbous or more rarely briefly spurred dorsally, with ventral edge reaching 1/4 - 3/4 mm and dorsal edge of 1-2 (-3) mm long, ± spreading during anthesis. *Receptacle* urceolate, 2-4 mm long, smooth. *Calyx* slightly flared, 0.5-1.5 (-2) mm high, with an entire edge or superficially and irregularly toothed, sometimes ciliated, often splitting ± regularly lengthwise, lobes sometimes subquadrangular. *Corolla* generally with 5 (exceptionally 4) petals; from 20-55 mm long, arched, red (HUMBERT, PERRIER DE LA BÂTHIE), bright pink (DECARY), rosé at the top, green (COURS, HUMBERT), with a brighter red tube at the end and white-yellowish petals (COURS), the tube purple halfway down, the rest white (PERRIER), dark red inside (COURS), red in the middle, lighter at the ends (PERRIER), pale red with a greenish end (PERRIER), orange-reddish at the top (HUMBERT); bud clavate with apical obovoid or ellipsoid bulge, (3) 5-6 mm long and 2-3 mm in diameter, somewhat smooth or with (4-) 5 ribs ± distinctly winged, with rounded or obtuse apex, rarely slightly apiculate; median bulge visible only (in general) on mature buds, extending over approximately 15 mm long and generally smaller in diameter, rarely equal to that of the apical bulge, exceptionally also 5-winged; sometimes a slight expansion at the base of the tube, gradually tapering upward; tube splitting unilaterally at the anthesis sometimes down to fairly close to its base; lobes linear-lanceolate, 5-mm long by 1 - 1 3/4, with obtuse or subacute apex and sometimes bi-winged edges, remaining erect at anthesis and generally fused together over part of its length (sometimes variable in the same flower) up to 1-3 mm from their end; sometimes separating into 2 lips. *Stamens* red (COURSES, HUMBERT) with a linear filament 0.5 -3 mm

long; anther linear-oblong, becoming yellow at maturity, 1 3/4-5.5 mm long, with apex ca. 1-2 mm away from the top of the opposite petal (10). *Style* filiform, 5-winged, generally exceeding the petals by 1-3 mm at anthesis, bright red (COURS), brown (HUMBERT) or green (COURS). *Stigma* globular-ellipsoid, up to 1 mm diameter, the same color as the style. *Disc* subcircular-5-sided, barely protruding (*ad* 1/3 mm high). *False fruits* bacciform ovoid or ellipsoid, 6-10 mm long, 3-5 wide, smooth, drying black, "seed" with cup-shaped endosperm of ca. 3.5 × 2.5 mm, subcylindrical embryo ± 2 mm long, with slightly protruding hypocotyle.– FIG. I, 11-13; II 1-19.

KEY TO VARIETIES

1. Apical bulge not distinctly 5-winged.
   2. Bud apical bulge generally clavate and with rounded or obtuse apex, cross section circular; bract obliquely cup-shaped on the edge reaching dorsally ca. 1.5 mm and ventrally ca. 1/2 mm from above; calyx generally extending the receptacle without constriction at its base; leaf apex generally rounded or obtuse; mainly eastern distribution. .....var. *clavata.*
   2'. Bud apical bulge generally ellipsoid and with a subapiculate apex, cross section 5-sided; bract subunilateral, on edge reaching dorsally ca. 1 mm and ventrally at most 1/3 mm from above; receptacle slightly narrowed at the base of the calyx; leaf apex generally acute or obtuse; mainly central distribution. ..... var. *Baronii.*
1'. Apical bulge distinctly 5 (4)-winged.
   3. Bud apical bulge wings narrow (less than 1/3 mm wide).
      4. Leaves neither very large nor very small.
         5. Corolla 34-40 mm long; anther of ± 4 mm long; apical bulge of the bud of 5-6 mm long; calyx 1-1.5 mm long. - North of Ile (Sb, N de l'O et du C….. ..... var. *aldabrensis.*
         5'. Corolla 45-55 mm long; anther of ± 3 mm long; apical oblong-obovoid bulge of ± 5 mm; calyx ± 1 mm.; S of E and C ..... var. *elongalata.*
      4'. Leaves small (0.8-5 cm by 6-15 mm); axes of inflorescences relatively long (peduncles 1-6 mm and pedicels 3-6 mm long); corolla of 20-40 mm long; 2-3 mm anther. long; 3-5 mm apical bulge of the bud. × 2.5-3; calyx up to 1.5 mm long……..... var. *lenticellata.*
      4''. Leaves large, broadly ovate (7-18 cm by 55-85 mm); corolla 46-50 mm long; anther ca. 3 mm long; calyx 1.5-2 mm long, sometimes superficially 5-lobed on edge ……..... var. *amplifolia.*
   3'. Bud apical bulge wings relatively large (2/5-1/2 mm).
      6. Wings located at the apical bulge, not extending below; anther 1 3/4-2 mm long; corolla relatively short (20-32 mm long); calyx of ca. 1 mm long..... var. *tsaratanensis.*
      6'. Wings extending over the median bulge towards the base of the corolla; anther 3.5-5.5 mm long; corolla (23) 28-40 mm long; calyx of ca. 3/4 mm long..... var. *peralata.*

Var. **clavata**. - *Loranthus clavatus* Desrouss. in Lam., *Encycl. Method.* III (1789), 598 DC, *Prodr.,* IV (1830), 304; J. de Cordemoy, *Fl. Réunion* (1895), 294; H. Lecomte, in *Not. Syst.,* Paris (1923), 44; *Cat. Pl. Madag., Lor.* (1932), 7. - *Taxillus clavatus* Danser, *in Verh. kon. Ak. Wet. Arnst. Afd. Nat.* (2 of Sect.), XXIX, 6 (1933), 123.

Rain forests on gneiss between 150 and 1,200 m. alt., coastal dunes and woods; coffee plantations. Fl.: January, March, April, May, September, November, December. Fr.: March-April.

SAMBIRANO: Nossi Bé, *Humblot* 128.

EAST Androranga, *Humbert* and *Capuron* 23970 and 24066; Andapa, *Hum-bert 21983;* Antalaha on *Tsirindra madagascariensis* (11) and on *Mangifera, Perrier de la Bâthie* 10707 *and Herb. Res. Nat.* 3358; Mananara, *Decary* 84, 110; Zahamena, *Decary* 16544; Maningory Falls, *Homolle* 556; Ambodiriana, *Cours* 1910; Vatomandry, *Guillot* 70; Mananjary, *Geay* 7081, 7299,7735, 7736, 7741, 7843.

CENTER: Ambatondrazaka-Menaloha, 1,200 *m., Cours 2745.*

Without locality: "in Madagascar", *Martin* sn, holotype, in *Herb. Del.*

Endemic.

Var. **Baronii** (Baker) S. Balle, in *Adansonia,* new. ser., IV (1964), 110. - *Loranthus Baroni* Baker, *in Trimen's Journ. Bot.* (1882), 266; H. Lec. *in Not. Syst.,* IV Paris (1923), 45; *Cat. Pl. Madag.* (1932), 7. - *Taxillus Baroni* Danser in *Verh* (1933), 123. - *Loranthus monophlebius* Bak. in *Journ. Linn. Soc.,* XX (1883), 24-57; H. Lec., *Loc. cit.,* 44 and 8. - *Taxillus monophlebius* Dans., *Loc. cit.,* 125.

Eastern coastal woods, eastern and central rain forest on siliceous soils and gneiss laterite, up to 2,100 m. alt., on *Ficus, Maesa, Psorospermum, Vernonia and Myrtaceae.* Fl.: January, February, April, June, July, August, September, October, November, December. Fr.: February, March, April, November.

EAST: Ambatondrazaka, *Cours* 1092; Bas-Matitana, *Perrier de la Bâthie* 10670; Vohiparare, *Poisson* 3152; near Fort-Dauphin, *Cloisel* 6, *Humbert* 20747*;* east *coast*, *Hatter* 81.

CENTER and HIGH MOUNTAINS: Tsaratanana, *Humbert* 18204, 18268; *Perrier* 10698, 10710; Upper Sofia, *Humbert* 18096; Andilamena, *Perrier* 15022; Mandraka, *d'Alleizette* 650; *Humbert* 2306; *Perrier* 10678; *Herb. Jard. Tan.* 2387; Ankazobe, *Humbert* 11118; *Perrier* 10690; Anjozorobe, *Cours* 3025; Moramanga, *Decary* 15333, *Leandri* 1662; Manjakandriana, *Waterlot* 1016; Antanamalaza, *Tan.* 3526; Ambatolampy, *Humbert* and *Viguier* 1833; Ambositra, *Decary* 13515; Betsileo, *Baron* 20, type of *L. Baroni,* K; 1931, type of *L. monophlebius,* K; 2844, 3817 and 6050; Ambatofinandrahana, *Bosser* 1854*; M. Keraudren* 279*;* Ambatofitorohana, *Bosser* 1344*; Fiana-rantsoa, Bosser* 1386; Ambalavao, *SF.* 7328; Ivohibe, *Humbert* 3075; Kalambatitra, *Humbert* 11830, 11913*;* Beampingaratra, *Humbert* 6452; Andohahela, *Humbert* 6193 and 13592; Ampandrandava, *Seyrig* 848; Amparihifarambolosy, *Cours* 2863; Ankaramadmika, *Scott Elliot* 1886.

Endemic.

Var. **aldabrensis** (Turr.) S. Balle in *Adansonia,* new. ser., IV (1964), 110. - *Loranthus aldabrensis* Turrill *in Kew Bull.* (1918), 203. - *Loranthus Renschii* Vatke, *nomen,* in *herb. Berol., Vindob., Deless.* and *P.* - *Taxillus aldabrensis* (Turrill) Danser, *loc. cit., 123.* - *Taxillus Baroni* var. *Hildebrandtii* S. Ball *in herb. Boiss. and Del.* - *Taxillus Baroni* var. *Renschii* S. Ball *in herb. Boiss. and Del.*

Rain forests on silica and lateritic clay, over-calcareous tropical forests on Araliaceae and *Citrus aurantium* plantation; between 30 and 1,000 m above sea level, Fl.: January, February, April and from September to December. April.

WEST: Ankarana and Montagne d'Ambre, *Cours* 5365 and 5549, *Homolle* 13, *Humbert* 31 / u, 86 / v, 63 / w and 39 / x; *Perrier de la Bâthie 10657*; Ambato-Boeni, *Saboureau* 1079; Ankarafantsika, *Bosser* 8470; Soalala, *Herb. Res. Nat.* 8155.

SAMBIRANO: Nossi-Komba, *Hildebrandt* 3246.

CENTER: high Sambirano, *Humbert* 18722; Beondroka, *Humbert* 23482; Ankaizina, *Decary* 1887 *and* 1892; Andrangoloaka, *Hildebrandt* 3699; Manakaest, *Herb. Res. Nat.* 6350.

ALDABRA, on *Tamarix* and "Noia Noné", *Thomasset* 229, type of *Loranthus aldabrensis; Dupont 107, Fox* 241 *and Freyer* 8, all at K.

Var. **elongalata** S. Balle in *Adansonia,* new. ser., IV (1964), 110. FIG. II, 14-15.

Rainforests on laterite clay and granite and ericoid bush, between 650 and 1.576 m. alt. Fl.: February, March, April. Fr.: March.

CENTER (south): Mt Papanga, *Humbert* 6394; Androy, *Herb. Res. Nat.* 5052.

EAST (south): Mt Vohimavo, *Humbert* 20665 and 20678; Fort-Dauphin, *M. Keraudren* 1053.

Endemic.

Var. **lenticellata** (Bak.) S. Balle *in Adansonia,* new. ser., IV (1964), 111. - *Loranthus lenticellatus* Baker *in Journ. Linn. Soc., XVIII (1881), 278.* - *Loranthus rubroviridis* Bak., *Ibid., XX* (1882), 245. - *Taxillus lenticellatus* Dans., *Loc. cit.,* 124. - *Taxillus rubro-viridis* Dans., *ibid.,* 125; Lec. in *Not. Syst.,* Paris, IV (1923), 46; in *Cat. Pl. Madag. Lor.* (1932), 9. - FIG. II, 4-8.

Forests and lichen silves on gneiss and quartzite between 1,200 and 2,000 m.Fl.: January, March, August, November, December.

CENTER and HIGH MOUNTAINS: Tsaratanana, *Perrier de la Bâthie* 15290; Marojejy, *Humbert* 22561; Anjanaharibe, *Cours* 3813; *Humbert, Capuron* and.*Cours* 24732, Ambatolaona, *Humbert and Viguier* 1259 *and Herb. Jard. Tan.* 3092; Anjozorobe *Bosser* 12906; Mandraka, *d'Alleizette* 973; "Center", *Baron* 2170, type of *L. rubroviridis,* K; 3113, 3436 and 3627; Andringitra, *Cours* 2325; Tanala, *Kitching* s. No., type of *Lor. lenticellatus,* K.

Endemic.

Var. **amplifolia** (H. Lec.) S. Balle in *Adansonia,* new. ser., IV (1964), 110. - *Loranthus amplifolius H.* Lec. in *Not. Syst.* (1923), 39; *Cat. Pl. Mad.,* 7; non Merrill. - *Taxillus amplifolius* Danser, *loc. cit.,* 123. - FIG. II, 11-13.

Rain forests on silica and lichen silves, between 1,400 and 2,000 m above sea level, on *Weinmannia* and Samydaceae. Fl.: October and December. Fr. December.

CENTER: Tsaratanana, *Humbert* 18228 and 18618; *Perrier de la Bâthie* 10701 *bis,* type and 15573.

Endemic.

Var. **tsaratanensis** (H. Lec.) S. Balle *in Adansonia,* new. ser., IV (1964), 111. - *Loranthus tsaratanensis* H. Lec. in *Not. Syst.,* Paris (1923), 43; in *Cat. Pl. Mad.,* 9. - *Taxillus tsara-tanensis* Danser, *loc. cit.,* 126. - FIG. II, 18-19.

Coastal woods, rain forests on gneiss and lichen silves of the crowns, from 50 to 2,000 M. on *Haronga.* Fl.: January, March and October to December. Fr.: October.

EAST: Lokoho, *Humbert* 23349; Ambatosoratra, *Cours* 3276; Mahanoro, *Perrier de la Bâthie* 14185 *bis.*

CENTER: Tsaratanana, *Perrier de la Bâthie* 10703, type.

WEST: Montagne d'Ambre, *Homolle* 438.

Endemic.

Var. **peralata** (H. Lec.) S. Balle *in Adansonia,* new. ser., IV (1964), 111. - *Loranthus peralatus* H. Lec. in *Not. Syst.,* Paris (1923), 42; in *Cat. Pl. Mad.,* 8 and var. *scaber, ibid.* - *Taxillus peralatus* Dans., *loc. cit.* - FIG. II, 16-17.

Coastal woods and forests up to 2,000 m. alt., on *Vernonia.* Fl.: April, August to December.

EAST: Mahanoro, *Perrier de la Bâthie* 14185, type of *L. peralatus;* Matitana, *Perrier* 10668; Fort-Dauphin, *Humbert* 20747.

CENTER: Alaotra, *Cours* 602; *Ambatondrazaka, Saboureau* 1787; Tsiton-droïna, *Herb. Jard. Tan.* 4786; Moramanga, *Humbert* 1135 *bis;* Middle Man-goro, *Decary* 18486; Ambalavao, *Herb. Res. Nat.* 1844 *and.* 2281; Ivohibe, *Humbert* 3239; Andringitra, *Humbert* 3713.

Endemic.

5. **Bakerella collapsa** (H. Lec.) S. Balle in *Adansonia,* new. ser., IV (1964), 113. - *Loranthus collapsus* H. Lec. in *Not.Syst.* (1923), 43. - *Taxillus collapsus* Danser in *Verh. Kön. Ak. weten., Amst. Afd. Nat.* (2nd sect.) XXIX, 6 (1933), 123.

Haustorium unknown. *Branches* pendant (PERRIER DE LA BÂTHIE); branchlets subcylindrical, ± flattened at the nodes of the extremities, first smooth and shiny then finely and profusely wrinkled longitudinally; lenticels rounded, very irregularly dispersed and ± prominent; often light brown or reddish, becoming light gray; internodes 2-9.5 cm long by 1.5-5 mm. *Leaves* opposite or subopposite; petiole 6-12 mm long, flattened above; blade linear-oblong or more rarely linear-elliptical with rounded or obtuse apex and base gradually narrowed, from 7-16 cm by 10-22 mm, leathery and not very thick, with protruding midrib on both sides, at least in the lower half, emitting on each side, 3-5 main ascending veins, sometimes bifurcated and ± anastomosed. *Umbels* axillary, 5-2-flowered; peduncle 4-12 mm by 3/4 long; pedicels thinner, 4-7 mm long. *Bract* subunilateral, ovate, strongly gibbous dorsally, with subentire margin, dorsally reaching 1.5 mm and ventrally less than 1/4 mm long. *Receptacle* ovoid, reaching ca. 2 mm long and 1 2/3 in diameter. *Calyx* very small with a weakly irregularly lobed edge, reaching ca. 1/4 mm long. *Corolla* 25-30 mm long, brownish, becoming imperceptibly red at the base, dark red on the inside; bud clavate-5-sided, with obovoid apical bulge of ca. 5 mm long by 2 in diameter, narrowly 5-winged, without medial or basal bulge; mature flower poorly known; lobes oblanceolate, c. 5 mm long, thickened towards the end and slightly bi-winged. *Stamens* with linear filaments, 1-1.5 mm long, bright red when fresh; anther oblong-subtriangular, ca. 1/3 mm long, with apex ca. 2 mm away from the top of the opposite petal. *Disc* circular sub-5-sided, barely protruding. *Style* filiform-5-winged. *Stigma* obovoid, ca. 2/3 mm long. *False fruit* when ripe black-purplish (PERRIER DE LA BÂTHIE), ellipsoid, exceeding 10 mm long; "seed" yellow with dark pulp, up to around 4 mm long by 2; embryo hypocotyl protruding ca. 1 mm. - FIG. III, 1-5.

SOUTH *Cephalanthus spathelliferus.* Buds in September. Fr. in March.

WEST Betsiboka Valley, *Perrier de la Bâthie* 142, 852, type. Endemic.

Perhaps just a geographic subspecies of *B. clavata* flowers to look for.

6. **Bakerella Viguieri** (H. Lee.) S. Balle *in Adansonia, new* edition, IV (1964), 117 (12).

Primary *haustorium* up to ca. 1 cm in diameter at insertion level; main branch emitting, at its base, several lateral axes crawling on the surface of the host branches where they insert discoid secondary haustoria of ca. 1/2 cm in diameter and irregularly distant. *Branches* of observed

samples reaching up to 75 cm long; twigs ± flattened at the nodes of the extremities then subcylindrical, brown ± slender and smooth, becoming clearer and greyish, finely striated longitudinally, lenticels small, scattered, rounded or lenticular, rarely protruding, splitting longitudinally, then flaking into fine translucent shiny lamellae, which then show a whitish lumpy cork sometimes covered with foliose lichens; internodes 0.5-14 cm by 1-12 mm. *Leaves* opposite or subopposite; "light green, thick and brittle when fresh" (COURS); petiole somewhat semicylindrical, 3-13 mm long, with somewhat winged edges; blade ± broadly elliptical or lanceolate-elliptical, more rarely ovate or obovate, with acute or obtuse apex, rarely rounded and with base gradually narrowed, cuneate or obtuse, exceptionally rounded, 2-14 cm by 12-70 mm, thick and leathery, often discolored, with a wavy cartilaginous margin, sometimes slightly upturned; midrib protruding widely in the lower region below, thinner and projecting almost to the top above, emitting on each side, (1-) 2-5 main lateral ribs oblique or ascending, sometimes not very distinct. *Umbels* axillary, uniflorous, isolated or more commonly fascinated, sometimes in large numbers; peduncle 0.5-3 mm, 1/2-1 mm long; pedicel 1.5-6 mm long, the same diameter as the peduncle. *Bract* unilateral or subunilateral (ventral margin up to 1/4 mm long), ovate, generally slightly gibbous dorsally, with entire or subentire margin and rounded apex, truncated, obtuse or superficially bilobed, sometimes very spreading, reaching dorsally 1 1/4-2.5 mm long. *Receptacle* urceolate, 2-4 mm by 1.5-3 mm in diameter. *Calyx* ± flared, 3/4-1 mm long, with entire or subentire margin, often splitting ± regularly into lobes sometimes subquadrangular. *Corolla* from 32-60 mm long, ± arched, red with yellow tip (COURS), with 5 (exceptionally 4) petals, becoming blackish on drying; bud clavate, with apical ellipsoid, obovoid or oblongoid swelling, (4) 5-10 mm long and 2-2.5 in diameter; 5-ribbed or 5-winged and with rounded apex, obtuse or more rarely apiculate; median bulge extending over 15-20 mm in length, often appearing late, of a diameter generally less than that of the apical bulge but sometimes reaching up to 3 mm; basal globular swelling, sometimes clear and topped by a very distinct constriction, or followed by a progressive narrowing of the corolla; tube splitting unilaterally at anthesis up to around 15 mm from its base; linear-oblanceolate-oblong lobes, from 7 to 9 mm long, slightly thickened,with subacute apex and ± wavy-winged edges appearing to remain erect (sometimes reflexing?) at anthesis, remaining irregularly coherent with each other, sometimes up to 2 mm from their end; possible wings (var.) better marked at the top, decreasing in width towards the base. *Stamens* linear ca. 1/2 mm long; linear anther 4-6 mm long, with apex ca. 2 mm away from the top of the opposite petal (13). *Style* filiform-5-winged, at anthesis exceeding the perianth by 2-3 mm. *Stigma* globose or obovoid, reaching 1 to 1 1/4 mm in diameter. *Disc* subcircular-5-sided, reaching up to 1/4 mm from above. *False fruit* unknown. - FIG. III, 6-11.

KEY TO VARIETIES

1. Bud apical bulge never 5-winged; leaves generally rounded, obtuse or cuneate (rarely acute) at the end..... var. *Viguieri.*
1'. Bud apical bulge 5-winged; leaves generally, acute (rarely obtuse) at the top ……
.....var. *marojejensis.*

Var. **Viguieri**. *Loranthus Viguieri H.* Lec. in *Not. Syst.* (1923), 41. - *Taxillus Viguieri* Danser, *in Verh. Ak. Wetens.Amst. Afd. Nat.* (2 e sect.), XXIX, 6 (1933), 126.

Fl.: May, July, October, November.

CENTER: 900-1,000 m. of alt., Moramanga, *Cours* 832; *Viguier* and *Humbert* 9961 type.

EAST: Fort-Dauphin, *Decary* 4286, 9983; *Scott Elliot* 2681.
Endemic.

Var **marojejensis** S. Balle in *Adansonia* (1964), 117.
Rain forests on gneiss and quartzite laterite and lichen silves, between 1,000 and 2,200 m. from alt., on *Oncostemon.* Fl. In January, March, April, November, December.
CENTER and HIGH MOUNTAINS: Tsaratanana, *Perrier de la Bâthie* 15571,15572, 16470; Marojejy, *Cours* 3498, *Humbert* 22498, 22499 *and* 23687; Anjanaharibe, *Cours* 3730, *Humbert* 24620; Ambatosoratra, *Cours* 3274, *Humbert* 22881; Matitana, *Humbert* 3608.
Endemic.

7. **Bakerella gonoclada** (Bak.) S. Balle in *Adansonia,* new. ser., IV (196i), 113. - *Loranthus gonocladus* Baker in *Journ. Linn. Soc.,* XX (1883), 247; H. Lec in *Cat. Pl. Madag.* (1932), 7. - *Loranthus madagascaricus* Hochr. *in Anne Conserv. Geneva,* XI-XII (1908), 57; Lec., *Cat. Pl. Madag.,* 8. - *Taxillus gonocladus* and *Taxillus madagascaricus* (Baker) Dans., *In Verh. Kön. Ak. Wetens. Amst. Ald. Nat.* (2 e sect.) XXIX, 6 (1933), 124.

Haustorium unknown. Plant blackening on drying. *Branches* very robust, reaching 2-3 m long (MOCQUERYS), flattened at the nodes of the extremities, then quadrangular or quadri-winged, becoming subcylindrical near the base, the 4 edges remaining visible very low; dark brown then pale gray, first smooth then cracking longitudinally, lenticels rounded or oblong, of variable dimensions, sometimes barely distinct; internodes 1-12 cm by 2-10 mm. *Leaves* opposite or subopposite; “supple and shiny dark green when fresh” (COURS), petiole from 10 to 18 mm long, flattened above; blade ovate, elliptical, or sometimes oblong, with rounded or cuneate base and acute apex, obtuse or rounded, from 3.5 to 15 cm over 18 to 65 mm, fleshy and thick, sometimes slightly discolored (red underneath), generally becoming blackish on drying; margin sometimes more or less revolute; midrib wide and protruding below at least in the lower half, emitting, on each side, 4 to 8 more or less distinct oblique or ascending main lateral ribs. *Umbels* axillary, sessile or subsessile, 5-2-flowered, fasciculate on old nodes; peduncle thick (1-2 mm in diameter) up to 4 mm long, with a deeply honeycombed top; pedicels thinner, from to 5 mm long. *Bract* obliquely cupuliform, ovate, with a membranous subentire border, sometimes tearing, gibbous dorsally, with a truncated top, sometimes bidentate, dorsally reaching 2 mm and ventrally ca. 1/2 mm long. Receptacle urceolate, ca. 2.5 mm long and 1 to 1.5 in diameter. *Calyx* ± flared, from 1/2 to 2/3 mm long, with membranous border, subentire, sometimes tearing ± irregularly into lobes. *Corolla* from 25-40 mm long, pink (COURS, DECARY, MOCQUERYS), or red with a black top (anonymous note), slightly greenish rosy at the tip (COURS); bud clavate with obovate apical bulge, rounded at the top and 5-6 mm long by 2 in diameter, with sutures of the lobes sometimes very slightly winged; median bulge extending ca. 15 mm long and up to 1.5-2 mm in diameter; globular basal bulge ca. 1.5 mm of diameter; tube splitting unilaterally at anthesis for ca. half of its length, internally papillate; lobes linear-lanceolate, 5 to 6 mm long by 1 mm wide, sub-acute at their extremity, remaining erect at anthesis, often remaining irregularly coherent up to a few millimeters from their apex. *Stamens* with linear filaments, ca. 2 mm long, anther linear, 2.5-4 mm long, purple on the inside (COURS), with apex ca. 1.5 mm away from the top of the opposite petal. *Disc* 5-sided, reaching approximately 1/2 mm from above. *Style* filiform-5-sided, ca. the same length as the perianth, dark purple (COURS). *Stigma* globular, ca. 3/4 mm in diameter. *False fruit* oblong, ca. 6 mm long, edible (COURS). - FIG. IV, 1-3.

Rain forests on gneiss laterite, up to 500 m. alt. and on cultures of *Citrus medica.* Fl.: January, March, October, November, December. December.

EAST: Manantenina, *Humbert 22413, Humbert and Cours 22787; Antongil, Mocquerys* 276,389; *Richards* 10; Analamazoatra, *Serv. For.* 3278; Brickaville, *Herb. Jard. Tan.* 6235; Tanala, *Baron* 296, type, K; *Forsyth Major* 6; Vatomandry, *Guillot* 59; Ifanadiana, *Decary* 13628; Ambohimarangitra, *Cours* 3187; Ambatovola, *Perrier de la Bâthie* l0681.

Endemic.

8. **Bakerella grisea** (Scott Ell.) S. Balle in *Adansonia,* new. ser. IV (1964), 113.

Liana of 15-20 m. long (DECARY) with main branch up to 3 cm in diameter at the base, blackening on drying, with *haustoria* unknown. *Branches* smooth, slightly flattened at the nodes of the extremities, then subcylindrical and irregularly cracked lengthwise, first brown and ± glaucous, becoming light gray-brown then blackish, lenticels ovate or rounded, quite irregularly spaced, sometimes prominent and generally red; bark up to 2 mm thick; internodes 2-7.5 cm. long by 2-17 mm. *Leaves* opposite or subopposite, rarely alternate; "plain or light green, mat and very smooth, not very thick and brittle" when fresh (COURS); petiole 4-23 mm long by 3-5, slightly flattened above; blade largely elliptical or ovate, rarely obovate, with cuneate or truncate base and slightly recurrent, and with apex rounded, obtuse or broadly cuneate, 4.8-14 cm by 20-90 mm, thick and cartilaginous; midrib broad and slightly protruding on both sides, especially in the lower half, emitting, on each side, 2-5 main lateral veins often not very distinct. *Umbels* axillary, with 2-3 flowers isolated or fascicled on old wood; peduncle 2.5-6 mm long and 2-3 in diameter, with a deep honeycomb top; pedicels 3-4.5 mm by1-2. *Bract* obliquely cup-shaped, with subentire border, sometimes tearing irregularly, gibbous or rarely shortly spurred dorsally, apex rounded, reaching 1.5-3 mm high dorsally and 1-2 mm ventrally, generally very spreading (up to 6 mm wide). *Receptacle* urceolate or sub-conical, smooth, "light green, dark at the extremity" (COURS), gray upon drying, 3-7 mm long by 3-6. *Calyx* cylindrical or slightly flared, with subentire border, frequently tearing irregularly lengthwise, from 1-3 mm long; "membranous with red border" (COURS). *Corolla* from 40-70 mm long, fleshy, orange-red or carmine red at the base and yellow at the top (DECARY), yellow on the outside and pink on the inside (COURS), bud clavate, darkening on drying, with apical bulge rounded at the top, reaching 12-15 mm long and 3-6 wide, rarely with winged sutures (and sometimes very slightly); no medial or basal bulges; tube splitting unilaterally over less than half its length; lobes linear-lanceolate, varying in length from 12 to 15 mm ca. 2-2.5 wide, ca. 1 mm thick, acute at the top, remaining (generally) erect (sometimes reflexed?) at anthesis and irregularly separating from each other, remaining ± coherent sometimes up to 3 mm from their summit. *Stamens* with linear filaments, 1-2 mm long; anther bright red (COURS), linear, 6-13 mm long, with apex ca. 3-4 mm away from the top of the opposite petal. *Disc* 5-sided, very narrow, not very prominent. *Style* filiform, 5-sided, bright red (COURS). *Stigma* globular-5-lobed, up to ca. 1 mm in diam. *False fruits* obovoid-pyriform, 20-25 mm long and ± 15 in diameter at the top, greyish with lenticels, topped by the calicinal cup, "seed" pyriform, ca. 9 × 4 mm; embryo hypocotyle barely protruding. - FIG. IV, 4-7.

KEY TO VARIETIES

1. Bud apical bulge not winged..... var. *grisea.*
1'. Bud apical bulge distinctly 5-winged..... var. *alata.*

Var. **grisea**. - *Loranthus griseus* Scott Elliott *in Journ. Linn. Soc.* XXIX (1891), 46; H. Lec., *Cat. Pl. Madagas., Lor.* (1932), 8. - *Loranthus griseus* var. *grandiflores* H. Lec. in *Not. Syst.* Paris (1923), 46; *Cat.* (1932), 8. - *Taxillus griseus* Danser in *Verh. Kön. Ak. Wet. Amst. Afd. Nat.* (2 e sect.) XXIX, 6 (1933), 124.

Rain forests on gneiss laterite and lichen sylves on quartzite, between 600 and 1,700 m. alt. Fl.: January, February, March, April, August. Fr.: January.

CENTER: Tsaratanana, *Perrier de la Bâthie* 15574; Mangindrano, *Humbert* 25131; Beondroka, *Humbert* 23423, 23434; Ambatoharanana, *Cours* 4009; Andringitra, *Cours* 2329.

EAST: Zahamena, *Decary* 16541, 16711; Aualainazoatra, *Perrier de la Bâthie* 10684; Périnet, *Serv. For.* 3278; Andranampony, *Cours* 4521; Farafangaria, *Decary* 4829; near Vangaindrano, *Scott Elliott* 2260, type K; Tanandava, *Humbert* 20520.

Endemic.

Var. **alata** S. Ball in *Adansonia* new. ser. IV (1964), 113.

Rain forests on gneiss laterite between 800 and 2,000 m. alt. Fl.: January, March, April. Fr.: November-December.

CENTER: Andringitra, *Humbert* 3746; Fianarantsoa, *Humbert* 28435; Sendrisoa, *Herb. Res. Nat.* 5584; Ambondrombe, *Herb. Jard. Tan.* 4613.

Endemic.

9. **Bakerella tandrokensis** (H. Lec.) S. Balle in *Adansonia,* new. ser., IV (1964), 117. - *Loranthus tandrokensis* H. Lecomte in *Not. Syst.,* Paris (1923), 40; *Cat. Pl. Mad.* (1932), 9. - *Taxillus tandrokensis* (H. Lec.), Danser in *Verh. Kon. Ak. Wet. Amsterd.,* XXIX (1933), 136.

Haustorium unknown. *Branches* of observed samples up to 1.10 m. long; flattened at the nodes of the extremities, with a light gray-brown bark, first finely wrinkled longitudinally, then finely cracked, with thin translucent strips coming off; lenticels small, round, sparse, splitting at the end longitudinally; internodes 1-7.5 cm by 1-6 mm. *Leaves* opposite or sub-opposite; petiole 3-7 mm long, sub-semicylindrical, with somewhat winged [subalate] ridges; blade ovate-lanceolate, acuminate or gradually narrowed towards the acute or subacute apex, base cuneate or obtuse, rarely rounded; 4.5-10.5 cm by 15-41 mm, dull and leathery, margin curling up in the dry state; midrib single distinct, narrowly protruding above, broadly protruding below near its base, emitting, on each side, 1-3 main lateral ribs ± ascending, generally barely visible. *Flowers* axillary, isolated, then twin or fasciculate; pedicel 1.5-3.5 mm long by 1/2. *Bract* obliquely cup-shaped, ovate, with entire edge and obtuse or rounded apex, often slightly gibbous dorsally, reaching 1/3-1/2 mm long ventrally and 1-1.5 mm dorsally. *Receptacle* urceolate, reaching approximately 2 mm long by 1-1.5 wide. *Calyx* flared, ca. 1/2 mm high, with subentire rim, tearing ± irregularly into truncated lobes. *Corolla* from 50-70 mm long, first yellowish in the middle then entirely dark red (PERRIER), strongly arched; apical bulge oblong, 7-10 mm by 2 mm long, obtuse or rounded, sometimes slightly apiculate at the apex; median bulge extending ca. 20 mm long and 2-2.5 in diameter; basal bulge barely distinct and poorly delineated; tube splitting unilaterally at anthesis up to around 20 mm from its base; sublinear lobes, 8-10 mm

long, sub-acute at the top, slightly bi-winged on 2-3 mm upper part, at anthesis remaining erect and consistent up to 2-3 mm from the summit. *Stamens* almost without filaments; anther linear, 5-8 mm long, with apex ca. 3 mm away from the top of the opposite petal. *Style* filiform-5-winged slightly beyond the corolla at anthesis. *Subglobulous* stigma, around 1 mm of diameter. 5-lobed *disc*, ca. 1/4 mm from above. Unknown *false fruit*. - FIG. V, 1-3.

Moss forests around 1,700-1,800 m. alt. Fl.: April and September.

CENTER: Tsitondroïna, *Herb. Jard. Tan* 4796; Andringitra, *Perrier de la Bâthie* 10667, type.

Endemic.

10. **Bakerella Perrieri** S. Balle in *Adansonia,* new. ser., IV (1964), 116.

Primary *haustorium* up to ca. 1.5 cm diameter at insertion level; main branch emitting, at its base, axes parallel to the branches of the host, carrying discoid secondary haustoria of ca. 3 by 2-3 mm in diameter and a few centimeters apart, sometimes dilated into a node carrying a flowering branch. *Branches* up to ca. 40 cm long, light gray-brown, irregularly furrowed and split lengthwise, irregularly covered with small rounded, slightly protruding lenticels that sometimes split transversely; end nodes often slightly flattened; internodes 0.5-3 (6) cm long by 1-5 mm. *Leaves* opposite or subopposite; petiole 1-3 (5) mm long, flattened above; blade, usually narrow, rarely broadly elliptical or sometimes ovate-elliptical, with narrowed base and subacute or more rarely obtuse apex, 1-5 cm by 3-9 mm, with 1 strongly projecting rib below, little above, emitting rare lateral veins generally barely distinct. *Flowers* axillary, isolated or twin, rarely fascicled in 5-8, with pedicel 1-2 (4) mm long, surrounded at its base by small triangular subacute scales less than 1 mm long. *Bract* unilateral, ovate, gibbous dorsally, acute or more rarely bidentate at the apex, ca. 1.5 mm long. *Receptacle* urceolate, ca. 2.5 mm long. *Calyx* ± flared, with full edge or, more rarely, superficially and irregularly lobed, 1-1.5 mm long, splitting irregularly lengthwise. *Corolla* (25) 32-35 mm long, red; apical bulge ellipsoid, reaching 5 × 2.5 mm, apex subacute-subapiculate; median bulge generally as large (at maturity) as the apical; basal bulge subglobular-ellipsoid, 2-3 mm long by 3-5 in diameter, topped by a very marked constriction; tube splitting unilaterally at anthesis up to around 1 cm from its base; lobes 5-6 mm long, sub-linear, sub-acute at the top, seeming to reflex at anthesis. *Stamens* with filaments ca. 1 mm long; anther linear 3-4 mm long with apex ca. 1 mm away from the top of the opposite petal. *Style* filiform-5-sided, protruding ca. 2 mm from the petals at anthesis. *Stigma* subglobular, ca. 1/2 mm of diameter. *Disc* hard, 5-sided. *False fruit* smooth (14), ellipsoid, 8-9 mm by ± 4 mm, blackish on drying, topped by the calicinal cup ca. 1 mm from above; "seed" obovoid ca. 3.5 mm by 1.5 mm; embryo ca. 1 mm long, subcylindrical, with a slightly protruding hypocotyle. - FIG. V, 4-8.

Lichen silves on gneiss and basalt rockeries, on *Weinmannia,* and ericoid bush between 1760 and 2500 m. alt., on *Philippia.* Fl.: January-February, April, June. Fr.: October-December (?).

CENTER and HIGH MOUNTAINS: Tsaratanana, *Perrier de la Bâthie,* 16338 and 16339, type, 10705, *Humbert* 18343; Mangindrano, *Humbert* and *Capuron* 25240; Ankaiziva, *Decary* 1968.

Endemic.

11. **Bakerella ambongoensis** S. Balle in *Adansonia,* new. ser., IV (1964), 108.

Haustorium unknown. Fragments of the *branches* for the samples observed reaching up to 40 cm long; subcylindrical branches with nodes of ends slightly flattened; bark initially smooth, then detaching thin gray lamellae which expose a rough, irregular, dark brown surface; internodes 0.5-7.5 cm × 1-7 mm. *Leaves* opposite or subopposite; petiole 2 -13 mm. long, sub-semicylindrical, narrowly bi-winged; limb elliptical-oblong, elliptical or lanceolate, more rarely obovate, with acute base, obtuse or cuneate and obtuse or rounded apex, 2.1-9.5 cm × 13-42 mm, thick, fleshy and brittle, midrib wide and slightly protruding near the base, then becoming very thin, sometimes distinct, generally emitting, on each side of its lower 1/3, 2 (1) ascending ribs. *Flowers* axillary, isolated or agglomerated; pedicel 2-5 mm long by 1/2. *Bract* unilateral, ovate, with a truncated or ± irregularly toothed apex, ± gibbous dorsally, reaching 3/4-1 mm long. *Receptacle* urceolate, ca. 2 mm long. *Calyx* slightly spreading, 1/2-2/3 mm high, with whole edge or superficially and irregularly lobed. *Corolla* arched, 30-37 mm long, purple with a dark top; young bud clavate, apical bulge oblong, 5-8.5 mm long by 2.5-2 3/4, apex rounded obtuse, sometimes slightly apiculate; median bulge extending over 12-15 mm long and up to ca. 2.5 mm of diameter; basal bulge globular, 1.5-2 mm in diameter topped by a very distinct constriction; tube splitting unilaterally at anthesis up to 15-20 mm from its base; lobes sublinear c. 7 mm long, subacute at the apex, remaining fused together to 2-3 mm from their tip, erect or reflexed a little at anthesis. *Stamens* linear, up to 1 mm long; anther 3-5 mm long, linear, with apex ca. 1 mm away from the top of the opposite petal. *Style* filiform, 5-winged, protruding by 2-3 mm from the corolla at anthesis. *Stigma* globular, ca. 3/4 mm in diameter. *Disc* 5-sided, reaching up to 1/5 mm from above. *False fruit* unknown. - FIG. V, 9-11.

Sandy woods and coastal dunes, on different shrubs. Fl.: March, April, June, July.

WEST: Ambongo, *Perrier de la Bâthie* 1540, type, 10666; Majunga, *Perrier* 14681; Soalala, *Herb. Res. Nat.* 7906; Beravi, *Hildebrandt* 3056.

Endemic.

12. **Bakerella hoyifolia** (Bak.) S. Balle in *Adansonia,* new. ser., IV (1964), 114.

Primary *haustorium* up to ca. 1.5 cm in diameter at insertion, causing a globular tumor of the host (*Gaertnera*), with an irregular surface. Main branch emitting, at its base, climbing axes on the surface of the branches of the host in which they insert secondary haustoria of ca. 5 mm in diameter and high, distant each other by a few centimeters. *Branches* of the samples observed reaching up to fifty centimeters in length, a little flattened at the ends, sometimes a little angular, at first a fairly dark brown, then becoming paler and greyish, sometimes ± mottled, first smooth then wrinkling irregularly longitudinally, finally cracking more and more widely, with rounded, ± protruding, ± tight lenticels that sometimes appear very early and split longitudinally; bark fragmenting at the end into thin translucent lamellae which detach; internodes 0.5-5 cm long by 1.5-8 mm. *Leaves* opposite or subopposite; dark green, thick and brittle when fresh (COURS) often discolored when young (brown-gray above, yellow-red below when dry), becoming brownish on both sides; petiole sub-semicylindrical, 2-8 mm long by 1-2, sometimes poorly delimited upwards; Limb elliptical, obovate or oblong, rarely ovate, with apex obtuse, rounded or more rarely subacute and base gradually narrowed or cuneate, 1.2-8 cm by 8-34 mm, thick and rigid, with cartilaginous margin often slightly upturned; thin midrib above, wider and sometimes slightly protruding below, quite often indistinct, emitting, near its base, 1, or very

rarely, 2 pairs of ascending ± distinct ribs; collectors often note "submerged ribs". *Umbels* axillary, 1-2- (4) -flowered, isolated or fasciculate, sessile or subsessile or axillary flowers isolated or more often fascicled; peduncle up to 3 mm long; pedicels (1) 2-3 mm long by 1/2-1.3 in diameter. *Bract* subunilateral or obliquely cupular, ovate, with acute apex, edge truncated or bilobed and generally ciliated, wholely or irregularly toothed, gibbous dorsally, reaching 1-2.5 mm dorsally and up to 1/2 mm long ventrally. *Receptacle* urceolate, 1.5-2.5 mm long by 1-1.5 [wide], often oriented at a broadly acute or right angle to the pedicel, or subparallel to the twig if the flower is sessile. *Calyx* erect or slightly spreading, 2/3-1.3 mm long, edge generally ± deeply 5-lobed; lobes triangular, often ciliated, rarely subdenticular, up to approx. 1/2 mm deep, sometimes separating irregularly by tears. *Corolla* (20) 25-42 (50) mm long, light red with darker top (PERRIER DE LABÂTHIE), pink and lilac (DECARY), pink with green top (COURS), reddish with yellow tip (HUMBERT), bright orange (DECARY), red with green tip becoming bright red when aging (COURS), arched; bud first subcylindrical and very thin then more or less clavate; apical bulge subglobular or ellipsoid, with rounded or obtuse apex, 2.5-5 mm long by 1.5-2 mm; median bulge extending over 10-15 mm long and up to ca. 2.5 mm in diameter, often appearing late; exceptionally a very distinct basal bulge (var.); tube splitting unilaterally at anthesis exceeding half its length (few open flowers observed); lobes oblong-linear, 3-6 mm long, with obtuse or subacute apex, coherent to a few millimeters from their end and remaining straightened (sometimes reflexed?) at anthesis. *Stamens* bright red (COURS); filaments linear, almost absent; anther oblong-linear 1 3/4-4 mm long, turning brown (COURS), with apex ca. 3/4 mm away from the top of the opposite petal. *Disc* 5-sided, up to 1/4 mm from above. *Style* filiform, 5-winged, red, exceeding approximately 2 mm the corolla at anthesis, persisting quite often on the young fruit (in herbarium). Stigma subglobular-obovoid, 1/3-1/2 mm in diameter. *False fruit* ellipsoid or obovoid, smooth, drying blackish, up to 6mm long, often topped by the torn calicinal cup; pedicel ± thickened; "seed" endosperm ca. 4 mm long by 2 wide; subcylindrical embryo 2-2.5 mm long, with a slightly protruding hypocotyle. - FIG. VI, 1-10.

KEY TO VARIETIES

1. Umbels never single flowered ..... subsp. *hoyifolia.*
  2. Bract unilateral or sub-unilateral, not exceeding dorsally 1.5 and ventrally 1/3 mm long.
    3. Corolla tube without a well defined basal bulge.
      4. Calyx lobes generally devoid of cilia and less than 1/2 mm long; flowers often in fascicles; pedicel generally short (1/2-1 mm) ..... var. *Parkeri.*
      4'. Calyx lobes usually ciliate, triangular (isoceles) and 1/2-3/4 mm deep; flowers often in short pedunculate umbels; pedicel 1/2-3 mm long ..... var. *hoyifolia.*
    3'. Corolla tube with a subglobular basal bulge topped by a clear constriction …..……var. *basiinflata.*
  2'. Bract clearly obliquely cup-shaped, dorsally 2-2.5 mm and ventrally 1/3-1/2 mm long... .....var. *itrafanaombensis.*
1'. Umbels single-flowered with peduncle and pedicel of the same diameter and very short ..... subsp. *boinensis.*

Var. **hoyifolia**. - *Loranthus hoyaefolius* Baker *in Journ. Linn. Soc. XVIII* (1881), 277; H. Lec. in *Not. Syst.* Paris (1923), 44; *Cat. Pl. Mad.* (1932), 8. - L. *filifolius* Bojer *nom*. in Benth. and

Hook., *Gen. Pl.* III (1880), 209. - *L. filiflorus* Baker, *loc. cit.,* XX, (1883), 246. - *L. microlimbus* Bak. *loc. cit* and H. Lec., *Cat.,* 8. - *L. pachyphyllus* Bak. in *Trimen's Journ. Bot.* (1882), 245; Lec. *Cat.,* 8. - *L. pachyphyllus* var. *filiflorus* Bojer *name.* in Herb. P.; H. Lec. in *Not. Syst.,* 64 and *Cat.,* 8. - *Taxillus hoyifolius, microlimbus and pachyphyllus* Danser in *Verh. Kön. Ak. Wet. Amst. Afd. Nat.* (1933), 125.

Rain forests on gneiss, from 700 to 1,250 m. alt., on *Calophyllum, Gaertnera, Symphonia and Myrtaceae. Fl.:* March, April, June, August, September, October and November. Fr.: September?

EAST: Androranga, *Humbert and Capuron* 24087 and 24354; Sainte-Marie, *Boivin* s. n°; Analamazoatra, *Baron* 1407, type of *L. microlimbus,* K and *Benoisi* 1194; Farafangana, *Decary* 3460, 5083.

CENTER: Sahamalaza, *Herb. Jard. Tan.* 2776; Moyen Mangoro, *Decary,* 18509, *Perrier de la Bâthie* 10636, 10637; Tananarive-Tamatave, *Gillardet 119;* Betsileo, *Baron* 224, type of *L. pachyphyllus,* K; 2906, 5684, 6326; *Langley Kitching* s. No., type of *L. hoyaefolius,* K; Bezong Bezong, *Bojer* s. No., type of *L. filiflorus;* Ankaramadmika, *Leandri* 3206.

Endemic.

Var. **Parkeri** (Bak.) S. Balle, comb. and stat. Nov - *Loranthus Parkeri* Baker *in Journ. Linn. Soc.* XX (1883), 245; H. Lec. in *Cat. Pl. Mad.,* 8. - *L. sordidus* Sc. Ell. in *Journ. Linn. Soc.,* XXIX (1890), 46; H. Lec. *in Cat.,* 9. - *Taxillus Parkeri* Danser, *loc. cit., 126.* - *T. sordidus* Danser, *loc. cit.,* 126. - FIG. VI, 5-6.

Rain forests on laterite clay and granite, on *Leptolaena pauciflora;* coastal forests on silica sand, lichen silves on gneiss and ericoid bush on *Philippia.* F1.: January, February, March, April, June, July, August, September, October and December. Fr. March, September and October.

EAST: Antalaha, *Herb. Res. Nat.* 9488; Haut Bemarivo, *Perrier de la Bâthie* 10642; Soanierana, *Perrier* 10697; *Tamatave, Herb. Res.* Nat. 8331, 8483; Namorona, *Perrier* 10669; Fort-Dauphin, *d'Alleizette* 8, *Decary* 4240, 7142, 10222, 10336 and. 10618; *Humbert* 5807, 20751; *Poisson* 2656; *Scott Elliot* 2469 and. 2582, type of *L. sordides,* K; Bas Mandrare, *Humbert* 20515.

CENTER and HIGH MOUNTAINS: Marivorahona, *Humbert* 25794; Tsaratanana, *Perrier* 16133; Anjanaharibe, *Cours* 3804; Antsianaka, *Humblot* 544; Ambatondrazaka, *Cours* 345; 713; *Botoalina* 7573; Ankazobé, *Decary* 14920, *Bosser* 8510, *Perrier* 10692, *Saboureau* 1011, K; Andrangoloaka, *Parker* s. number, type of *L. Parkeri,* K; Ambatoharanana, *Cours* 4090; Arnbositra, *Bosser* 9800; Center Madagascar, *Baron* 2265, 4997 and. 6180; Analamarzoatra, *Perrier de la Bâthie* 10682.

Var. **itrafanaombensis** S. Ball in *Adansonia,* new. ser., IV (1964), 114. - FIG. VI, 8-9.
Gneiss ridge rain forest between 1,600 and 1,963 m. alt. Fl.: December.
SOUTH CENTER: Itrafanaomby, *Humbert* 13461, type.

Var. **basiinflata** S. Balle in *Adansonia,* new. ser., IV (1964), 114. FIG. VI, *7.*
Forest around 1.350 m. alt. Fl.: July.
CENTER: Ambondrombe, *Heim* s. no.; Ambositra, *Humbert and Swingle* 4847, type.

Subsp. **boinensis** S. Balle in *Adansonia,* new. ser., IV (1964), 114. - FIG. VI, 10.
Riverside on *Eugenia.* Fl.: July to September. Fr. October and November.

WEST Beritzoka *Perrier de la Bâthie* 329; Boina, *Perrier* 10643, type; 10650 and 10656; *Serv. For.* 15983.

Endemic (type, subspecies and varieties).

13. **Bakerella mangindranensis** S. Balle in *Adansonia,* new. ser., IV (1964), 115.

Haustorium unknown. Fragments of the *branches* of the sample up to around thirty centimeters long; slightly flattened end nodes; bark initially dark brown, then pale brown-gray, early on covered with irregularly sparse, small, fairly prominent, ± elliptical lenticels, that crack longitudinally; internodes 1-5.5 cm by 1-5 mm; as far as we can judge, the ramification is dichotomous. *Leaves* opposite or subopposite; petiole 3-10 mm long, flattened above, slightly bi-winged; limb elliptical or shortly oblong, sometimes ovate, with cuneate or obtuse apex and cuneate base slightly and shortly decurrent, 1.8-8 cm by 10-31 mm, rather thick and leathery, with 1 midrib, sometimes not very distinct even below where it is generally very prominent in the lower 1/3 of large leaves; sometimes there seem to be 3 basal veins; margin slightly upturned, cartilaginous. *Umbels* axillary, 2-3-flowered, isolated or grouped, or flowers axillary, isolated or twin; peduncle of approximately 1 mm long; pedicel of 1/2-1 mm long. *Bract* obliquely cupuliform, sub-unilateral, reaching ventrally 1 / 5-1/3 mm and dorsally 2-2 2/3 mm long, lanceolate, bi- or irregularly pluridentate at the apex, strongly gibbous dorsally, with ciliate margin. *Receptacle* urceolate, 2-3 mm long and ca. 1 in diameter. *Calyx* with 5 narrow triangular lobes, 3-4 mm long; lobes with ciliated edges, 2.5-3.5 mm long by 2/3 at the base, bending outwards. *Corolla* up to 45-50 mm long, of unknown color; bud delicate with apical ellipsoid or slightly obovoid bulge reaching ± 5 mm long and ca. 2 in diameter, with apex sometimes a little apiculate, poorly demarcated downwards; median bulge extending ca. 25 mm long and up to ca. 2.5 mm in diameter, wider than the apical bulge; no basal bulge; tube splitting unilaterally at anthesis up to around 25 mm from its base; lower lobes then elliptical, ca. 5.5 mm long, sub-acute at the top, remaining erect (?) at anthesis (unknown open flowers). *Stamens* almost without filaments; anther linear ca. 4 mm long, with apex ca. 2 mm away from the top of the opposite petal. *Style* filiform, 5-winged, extending ca. 3 mm beyond the corolla at anthesis. *Stigma* globular-obovoid, ca. 3/4 mm long, 1.5 to 2 times wider than the style. *Disk* subcircular-5-sided, barely protruding. *False fruit* unknown. Fig. VI, 10-11.

Lichen silve on gneiss around 2.100 m. alt. Fl.: January.

HIGH MOUNTAINS: Mangindrano, *Humbert and. Capuron* 25239, *type.*

Endemic.

14. **Bakerella Poissonii** (H. Lec.) S. Balle *in Adansonia,* new. ser., IV (1964), 116.

Main *haustorium* up to approx. 10 mm in diameter at the insertion level, causing a globular tumor on the host from which several ± spread axes emerge, some of which are attached parallel to the branches of the host in which they send small discoid secondary haustoria of ca. 3 mm in diameter and separated by a distance of 1.5-2.5 cm. *Branches* of observed samples up to ± 50 cm long; flattened at the nodes of the extremities, first light gray-brown then gray-blackish or yellowish, with rounded lenticels, sometimes very early, irregularly dispersed, slightly brittle, darker in color than the bark which first wrinkles slightly longitudinally, then cracks and exfoliates into fine translucent flaps; internodes 0.5-4.5 cm by 1-8 mm. *Leaves* opposite or subopposite; petiole poorly demarcated upward, sub-semicylindrical, bi-winged, reaching 1-4

mm long; limb oblanceolate, oblong, obovate or ± narrowly elliptical, rarely sublinear-oblong, with rounded or obtuse apex and gradually narrowed base, 1.8-6 cm by 4-20 mm, thick and leathery, generally with only the median rib distinct, sometimes none or visible only near the base, emitting on each side near its base, at slightly different levels, 1 (2) ascending, ± distinct lateral veins that protrude slightly above. *Umbels* axillary, 2-3-flowered, subsessile, or axillary flowers fascicled in 1-7, sometimes accompanied by a rosette of leaves; peduncle not exceeding 3 mm long; pedicels 1-6 mm long. *Bract* unilateral, thin and ± membranous, ovate-subsemicircular, 1/3-1 mm long, prematurely caducous (invisible after anthesis). *Receptacle* obtronconic [truncate conic, turned upside down] or campanulate, first brown then light gray, smooth and sometimes exfoliating like the branches; 2-3 mm long. *Calyx* membranous, flared, 1-3.5 mm long, reddish-brown, with an almost entire edge, splitting ± irregularly longitudinally, shorter, of the same length or longer than the receptacle, quickly caducous after anthesis. *Corolla* of 20-35 mm long, light purple (FISH), pink (CATAT), red-orange (DECANY), purple with yellow lobes (PERRIER DE LA BÂTHIE), thin; bud first clavate, then with 3 swellings, apical ± distinct, ellipsoid, oblong or obovoid, 4-7 mm by 1.7-2.5, with rounded or obtuse apex; median bulge extending over 12-15 mm lengthwise and ca. the same diameter as the apical; basal bulge 1.5-3 mm in diameter, subglobular, surmounted by a generally distinct constriction; tube split unilaterally at least over half its length at anthesis, sometimes up to 5 mm from its base; lobes linear-ellipsoid, 5-7 mm long, with an obtuse apex, remaining erect or reflexing more often and sometimes at anthesis remaining coherent in a sort of ligule up to 3-1 mm from its extremity. *Stamens* linear not exceeding 1 mm long; anther linear, 3-5 mm. long (sometimes seeming to remain consistent with its neighbors around the style at anthesis?). style filiform-5-winged, exceeding the corolla by 1-2 mm at anthesis. *Stigma* subglobular ca. 1/2 mm in diameter. *Disc* hardly protruding subcircular-5-sided. *False-fruit* obtronconic-ellipsoid, reaching ± 6 mm long by 4, gray and smooth, sometimes lenticellate, then flaking like the branches, with lower and upper flat surfaces, devoid of bract and calicinal cup. - FIG. VI, 13-14.

KEY TO SUBSPECIES AND VARIETIES

1. Calyx always shorter than the receptacle and reaching approximately 1 mm long. …….ssp. *Poissonii.*
   2. Bud apical bulge not 5-winged. .....var. *Poissonii*
   2'. Bud apical bulge clearly 5-winged ..... var. *alata*
1'. Calyx ca. the same length or longer than the receptacle, reaching 2-3.5 mm long ……ssp. *parvibracteata.*

Var. **Poissonii**. – *Loranthus Poissonii* H. Lec. in *Not. Syst.* Paris (1923), 39; *Cat. Pl. Mad.,* (1932), 9. – *Taxillus Poissonii* Danser, *in Verh. kon. Ak. Wet. Amst. Afd. Nat.* (2nd sect.), XXIX, (1933), 125.

Forests on basalt and sandstone and Didiéréaceae bush on limestone, up to 1,200 M. alt. – On *Ficus and "Varo"* (probably *Hibiscus tiliaceus* L.) Fl.: February, March, May, June, July, August. Fr.: November and May.

SOUTH: Environs de Tuléar, *Geay* 6066, *Humbert* 5161*, Leandri* 3803, *M. Keraudren* 887, *Perrier de la Bâthie* 10672, *Poisson* 230, type, *Herb. Res. Nat.* 2507, 2788; Fiherenana, *Perrier de la Bâthie* 19188*;* Mahafaly, *Bosser* 14358, *M. Keraudren* 806; Betioky, *Herb. Res. Nat.* 4160;

Androy, *Herb. Rea. Nat.* 5186; Ambovombe, *Cours* 5278, *Decary* 2773, 2815, 3716 and 9048; Fort-Dauphin, *Cloise* l6 *bis, Decary* 4107 *and Geay* 6747.

Var. **alata** S. Ball in *Adansonia,* new. ser., IV (1964), 116.

Tropophilic forests on sandstone and silica sands around 500 m. (?) alt. Fl.: February to March.

WEST: Haute Malio, *Humbert* 28787, separate flowers and leaves, sub *Velomiato;* Mouroundava, *Grevé* 1, type.

Subsp. **parvibracteata** (H. Lec.) S. Balle in *Adansonia,* new. ser., IV (1964), 116. – *Loranthus parvibracteatus* H. Lec. in *Not. Syst.,* Paris (1923), 40; *Cat. Pl. Mad.,* 8. – *Taxillus parvibracteatus* Danser, *loc. cit.,* 125.

Forests (western slopes around 1,350 m above sea level, on *Philippia.* Fl.: January, February, March, June, July. Fr. July.

CENTER: Ambohitantely, *Decary* 707; Tsinjoarivo, *Perrier de la Bâthie* 16939; Sendrisoa, Res. 5, *Herb. Res. Nat.* 3056, 9875; Ambalavao, *Herb. Res. Nat.* 7167, 9286; Analamananara, *Perrier de la Bâthie* 12672, type; Ambolo, *Calai* 4332.

Endemic (type, subspecies and varieties).

15. **Bakerella tricostata** Lec.) S. Ball in *Adansonia, new* ser., IV (1964), 117. – *Loranthus tricostatus* H. Lec. in *Not. Syst.,* Paris (1923), 41. – *Taxillus tricostatus* Danser, *loc. cit.,* 126.

Plant generally glaucous, with primary *haustorium* reaching ca. 1 cm diameter at insertion level; base of the main branch swollen, emitting several creeping axes on the surface of the host branches and embedding secondary haustoria of ca. 1/2 cm in diameter and a few mm thick, more or less spaced. *Branches* of observed samples up to ca. 40 cm long, subcylindrical except at the nodes of the ends which are flattened, brown, becoming light gray, first smooth, then wrinkled and ± roughly cracking lengthwise, sometimes showing small, rounded, very scattered lenticels; internodes 0.5-3.3 cm by 1-6 mm. *Leaves* alternate, rarely subopposite; petiole 3-7 mm long, flattened above; limb elliptical or oblong, obtuse or cuneate at each end, 1.8-8 cm by 4-41 mm, thick and fleshy, with 5-3 sub-basal veins, finely protruding above. *Flowers* axillary, sessile, isolated, twin or in threes, appearing to emerge from a tear in the bark. *Bract* deeply cup-shaped, thick, with entire or subentire margin, apex rounded or truncate, reaching ventrally ca. 2 1/3 mm long and dorsally 3 mm long. *Receptacle* urceolate, ± 2.5 mm long by 2. *Calyx* sub-cylindrical or slightly flared, with entire edge tearing irregularly longitudinally, glaucous like the rest, reaching 3-3.5 mm in length. *Corolla* 35-48 mm long, red, arched; bud with apical bulge sometimes barely distinct, slightly ellipsoid or oblong, rounded at the apex, reaching ± 8 mm long and 2.5 in diameter; median bulge extending over approximately 25 mm long, ± 3.5 mm wide; exceptionally a small, poorly delimited subglobular basal swelling; tube at anthesis splitting unilaterally over a little more than half of its length; lobes linear-lanceolate, obtuse at apex, fleshy, 6-7 mm long, ± 1 2/3 mm wide, erect and sometimes at anthesis remaining fused up to 1.5 mm from their apex, irregularly separating from each other. *Stamens* linear up to 1.5 mm long; anther linear, 5-7 mm long, with thecae protruding at the top by a flattened and rounded extension of the connector, up to 2/3 mm long. *Disc* circular-5-sided, with lobes up to 1/2 mm high. *Style* filiform-5-sided, not exceeding the mature corolla (?). *Stigma* globular, up to 1.5 mm in diameter. *false fruit* purple, ovoid-ellipsoid, up to ca. 8 mm long by 6, topped by the calicinal cup of ca. 2 mm long, “seed” not observed. - FIG. VII, 4-6.

Tropophilic forests on limestone, from 500 to ± 1,000 m. alt.; on *Rhus Grandidieri, Protorhus, Cephalanthus spathelliferus and Weinmannia.* Fl. February, March, April, November. Fr. in May.

WEST: Bemaraha, Res. 9, *Leandri* 1053; Matsiatra, *Perrier de la Bâthie* 12504, type; Morondave, *Grandidier,* s. no.

CENTER: Haut Fiherenana, *Humbert* 14294, 14319; Isalo, *Humbert* 14253; Ampandrandrava, *Seyrig* 33, *Herb. Jard. Tan.* 5001, 6005, 6006.SUD Ambovombe, thicket *with Alluaudia, M. Keraudren* 973.

16. **Bakerella diplocrater** (Baker) Van Tiegh. in *Bull. Soc. Bot. Fr.,* XLII (1895), 244. – *Loranthus diplocrater* Baker in *Journ. Linn. Soc.,* XX (1882), 246; H. Lec. in *Not. Syst.* Paris (1923) 45; in *Cat. Pl. Mad.* (1932), 7; *Loranthus diplocrater* var. *attenuatus* H. Lec., *loc. cit.,* 45 and 7. – *Taxillus diplocrater* (Baker) Danser in *Verh. kon. Ak. Wet. Amst. Afd. Nat.* (2nd sect.), XXIX, 6 (1933), 124.

Haustorium unknown. *Branches* of observed samples reaching up to 50 cm long; branchlets subcylindrical, flattened at the nodes of the ends, pale brown or dark, sometimes becoming pale gray; first smooth, wrinkling, then cracking irregularly longitudinally, sometimes covered with small oblong or rounded ± protruding lenticels, which split longitudinally, sometimes exfoliating into thin translucent lamellae; internodes 0.5-5 cm. by 1-8 mm. *Leaves* opposite or subopposite; petiole flattened above, 2-7 mm long, poorly delimited upwards; limb obovate or more rarely elliptical, with rounded or more rarely obtuse apex and base cuneate or attenuate, gradually narrowing (limb ± decurrent), 1.2-5 cm long by 5-35 mm, fleshy and rigid, often discolored (reddish underside); with 3 sub-basal veins generally not very distinct; margin cartilaginous ± upturned. *Flowers* axillary, sessile, isolated or in fascicles of 3. *Bract* deeply cup-shaped, up to 2.5-4 mm long by 2-2.5 wide, with a dorsal gibbosity ± flattened in keel and superficially lobed, margin ciliate. *Receptacle* urceolate, up to ca. 1 mm tall, reddish-brown. *Calyx* cylindrical, 4-6 mm long, pale gray-brown, with margins ± regularly 5-lobed, ciliated at the top of the lobes, sometimes splitting irregularly longitudinally; lobes up to 0.8 mm in depth. *Corolla* 30-37 mm long, red, arched; bud with no real apical bulge, subcylindrical within 7-8 mm where it reaches ± 2 mm in diameter, rounded at the top; median bulge extending ca. 15 mm long and up to ca. 3.5 mm in diameter; no basal bulge; tube at anthesis split unilaterally over more than half its length; lobes linear-lanceolate, slightly fleshy, slightly thickened at the tip, sub-acute at the top, 6-7 mm long, separating very irregularly from each other at anthesis, (some may remain fused up to 2 mm from their apex, others becoming free over 12 mm long, in the same flower), remaining erect (perhaps sometimes reflexing) at anthesis. *Stamens* linear up to ± 1 mm long; anther linear 3-4 1/4 mm, with apex ca. 2.5-3 mm away from the top of the opposite petal; thecae sometimes exceeded by a flattened extension of the connective reaching 1/4 mm in length. *Disc* barely protruding, 5-sided, subcircular. *Style* filiform, 5-sided, sometimes a bit twisted in its upper region (probably when the opening of the lobes is not fast enough relative to the growth of the style), when ripe, exceeds the top of the corolla by ca. 2 mm. *Stigma* subglobular, reaching ± 1 mm in diameter. *False fruit* obovoid, red-brown, ca. 8 by 5 mm, topped by ± torn remains of the calyculus; "seed" not observed. - FIG. VII, 3.

Rain forests, between 800 and 1,000 m. alt. Fl.: March, June, July, Mît, October. Fr.: March and October.

CENTER Zahamena, *Humbert* and *Cours* 17639; Ambatondrazaka, *Cours* 1209 e *t Herb. Res. Nat.* 7573; Analamazoatra, *Baron* 1389, type, K and *Herb. Jard. Tan.* 3770; Mandraka, *Herb. Jard. Tan* 3682; Moramanga, *Decary* 17861, *Herb. Res. Nat.* 6128 and 8020; Imerina, *Bojer* s. n°; Mangoro, *Catat* 1295; Beravina, *Serv. For.* 3777.

? Mayotte, *Humblot* 47, type of var. *attenuatus.*

2. **SOCRATINA** S. Balle in *Adansonia,* new. ser., (1964), 130.

Plants with multicellular branched hairs on the flowers and young vegetative organs, forming a whitish or brownish tomentum ± dense and ± long-lasting. *Haustoria* unknown. *Branches* sub-cylindrical or slightly flattened at the nodes of the extremities, coated in the young state, with tiers ± rapidly deciduous hairs, then covering themselves with small rounded generally not very prominent lenticels, then cracking irregularly longitudinally. *Leaves* alternate, opposite or subopposite, petiolate; limb suborbicular, ± broadly ovate or elliptical, obovate, oblong, lanceolate or oblanceolate, exceptionally bilobed (15), ± thick, with irregular or subbasal venation generally not very prominent, sometimes not very distinct below; tomentum similar to that of young twigs, generally disappearing on the largest part of the blade, ± persistent at its base below or on the petiole. *Inflorescences* axillary or perhaps sometimes terminal on short shoots; reduced to single or twin flowers, with no or a very short pedicel. *Bract* always unilateral and persistent, ovate or lanceolate, sometimes a little enlarged-foliaceous, sometimes a little keeled along the midrib, rarely a little gibbous or spurred dorsally; with an entire margin or ± angular and cuneate or subacute apex, shorter, of the same length or a little longer than the calyx; generally covered, externally (and sometimes also internally) with ± regularly distributed tomentum. *Receptacle* urceolate, slightly longer than wide, covered with tomentum. *Calyx* a little flared, with an entire margin or superficially 5-lobed, always ± shorter than the receptacle and persistent, carrying, externally, hairs similar to those of the receptacle, but less abundant and shorter. *Corolla* 30-55 mm long, straight or arched, with 5 petals fused for at least half of their length, covered externally with a ± dense hair layer forming a whitish or brownish coating; bud thin or thick, subcylindrical or with 1-2 ± marked bulges; apical bulge ellipsoid or obovoid-subconical, with rounded or obtuse apex, sometimes apiculate; basal bulge poorly defined and appearing late; tube ca. the same length or much longer than the lobes, at anthesis splitting or not unilaterally; lobes lanceolate or sublinear below and somewhat enlarged at the level of the apical bulge, with obtuse or subacute apex, appearing to remain erect at anthesis, remaining coherent for a certain time by their ends, externally carrying layered hairs and internally, in their upper region, simple, stiff, appressed hairs, oriented from bottom to top. *Stamens* with linear filaments or sometimes a little widened towards the base, inserted at the base of the opposite lobe or markedly higher, presenting a sometimes ± emarginated apical tooth, often not very distinct, curving at the anthesis; anther linear or oblong, with 1 theca not transversely partitioned, sometimes exceeded by a small extension of the connective. *Style* subfiliform-5-winged, sometimes slightly thickened towards the base then tapering gradually, ca. the same length or slightly longer than the corolla, covered in its median region with short, erect hairs, irregularly distributed. *Stigma* subglobular or ovoid, barely wider than the style, not exceeding 1 mm long. *Disc* sub-circular-5-sided, ± protruding, with ± branched hairs. *False fruit* bacciform, still incompletely known; “seed” with cup-shaped endosperm and a straight apical embryo, with protruding hypocotyle and 2 cotyledons.

Endemic to Madagascar, with 2 species located in the Leeward Region.

1. Flowers thin (buds 1-2 mm in diameter in the middle), covered with hairs not forming a thick covering; tube ca. the same length as the lobes; filaments inserted far above the base of the lobes; leaves always significantly longer than wide..... 1. *S. Keraudreniana.*
1'. Flowers thick (buds 3-4 mm in diameter in the middle), covered with a thick tomenturn russet; tube much longer than the lobes; filaments inserted at the base of the lobes; leaves broadly ovate or elliptical, or suborbicular..... 2. *S. bentarivensis.*

1. **Socratina Keraudreniana** S. Balle in *Adansonia,* new. ser., IV (1964), 135.

Haustorium unknown. *Branches* of the observed specimens up to ca. sixty centimeters long, with ends covered with a rapidly deciduous whitish tomentum, becoming glabrous, greyish-brown irregularly wrinkled longitudinally, with small rounded lenticels cracking transversely; internodes 0.5-4.5 cm. by 1-5 mm. *Leaves* alternate or rarely subopposite, first covered with whitish stellate hairs generally disappearing, except near the base; petiole 3-7 mm long and ca. 3/4 wide, ± flattened above, poorly demarcated upwards; limb oblancolate or obovate (16) with rounded apex and gradually narrowed base, of 1-4 cm × 3-8 mm, ± thick, with midrib emitting, on each side, 1-2 irregular nerves, the lower ones sometimes subbasal and more developed, all slightly protruding above, often not very distinct below. *Fascicles* of 2 flowers, ending in short axillary branches (a few mm) bearing 4-6 leaves similar to those of other, sterile, longer (up to 20 cm) lateral branches; pedicel 1-3 mm long, almost 1 mm. in diameter, covered with the same tomentum as the young twigs. *Bract* unilateral, ± broadly ovate, membranous and brownish or slightly leafy, reaching 3-5 mm long and 2-4 wide, with an entire margin and obtuse or cuneate apex, sometimes slightly keeled dorsally or provided with a very short spur under its apex, externally bearing short scattered hairs, ± deciduous except on the edges and, sometimes internally, a thicker tomentum. *Receptacle* urceolate, 2-3 mm long and ca. 2 in diameter, covered with coarse-bristled hairs, white ± reddish, up to 1 mm long. *Calyx* flared ca. 2/3 mm high, membranous, with a 5-toothed edge, blackish and glabrous internally, covered externally with a tomentum less dense than the receptacle. *Corolla* 30-40 mm long, covered with reddish-white, irregularly branched layer of hairs, reaching 1 to 1.5 mm long, not forming as dense a tomentum as on the receptacle; bud arched, clavate, with apical ellipsoid or slightly obovoid bulge, 5-7 mm long and almost 2.5 in diameter, slightly apiculate at the top; no median bulge; tube 15-20 mm long, slightly dilated at its base by 2-3 mm long and ca. 2 wide, tapering gradually upward, not appearing to split unilaterally at anthesis; lobes linear below, oblancolate in their upper quarter, reaching ca. 20 mm long by 1.5 wide near the top, remaining erect and coherent by their tip at anthesis, internally bearing, above the insertion of the filaments, stiff, coated hairs, of a brilliant reddish-white, appressed from bottom to top; tip of lobes slightly thickened inwards in a small beak; it seems that one of the slits which separate the upper parts of the lobes at anthesis is wider than the others. *Stamens* with linear filament inserted 8-10 mm above the base of the opposite lobe, 4-5 mm long, apparently with scattered hairs (17) over a large part of their length and an apical ± emarginate tooth up to 1/8 mm long at the top, bending or coiling at anthesis; anther linear, 2.5-4 mm long, theca entire; top of the connective truncated or rounded, sometimes exceeding them very slightly. *Style* filiform-5-winged, slightly longer than the corolla at anthesis, appearing to persist quite often after it for a certain time, covered with irregularly dispersed, short, obliquely erect, yellowish hairs, 4-5 mm from its apex over a distance of ca. 1/2 cm. *Stigma* globular-obovoid, slightly wider than the style. *Disc* sub-circular-5-sided, bristling with a

small tuft of whitish hairs up to ca. 1/2 mm from above. *False fruit* obovoid bacciform, up to around 7.5 mm long by 4.5, topped by the calicinal cup ca. 3/4 mm high, covered with ± scattered hair layers; "seed" obovoid ca. 2 mm by 1, with cupuliform endosperm topped by 5 gibbosities; embryo ca. 1.5 mm long, with a weakly protruding hypocotyle - FIG VII, 11-15.

Tropophilic forests and xerophilic bush on limestone, between 30 and 300 m. d alt. Fl.: January and. February. Fr.: February.

WEST: Gorges du Fiherenana, *Humbert* 19902, type; around Tulear, *M. Keraudren* 1368; around Tsimanarnpetsotsa lake, *Leandri* 4034.

Endemic.

2. **Socratina bemarivensis** (H. Lecomte) S. Balle in *Adansonia, new. ser.,* IV (1964), 135. – *Loranthus bemarivensis* H. Lecomte in *Not. Syst.,* Paris, 1V, (1923), 37, fig. I; *Cat. Pl. Mad.* (1932), 7. – *Tapinanthus bemarivensis* Danser in *Verh. Kon. Ak. Wet. Arnst. Afd. Natk.,* 2 nd ser., XXIX, 6 (1933), 67, 108.

Shrub up to 2 m. in diameter, very bushy (PERRIERDE LA BÂTHIE), *haustoria* unknown. Main *branch* short and branchlets spread out at right angles, subcylindrical, first reddish and tomentose, becoming greyish brown and glabrous, with small reddish (PERRIER) rounded, irregularly dispersed, lenticels that split longitudinally or transversely; internodes 1-3.5 cm. long by 2.5 mm in diameter; pubescence farinose, yellow, then cinnamon, removed under the fingers (PERRIER), hairs up to 1.5 mm thick. long, rapidly caducous. *Leaves* alternate or more rarely subopposite, tomentose and yellowish red at first, becoming brownish-reddish and glabrescent in the mature state (hairs ± persistent below), those of the short shoots smaller, more hairy, with a narrower base than those of the long shoots; petiole ± canaliculate, 3-8 mm long by 2; limb suborbicular, broadly elliptical or ovate, with rounded top and rounded or truncate base, rarely cordate or cuneate, slightly decurrent, 1-6 cm long by 8-48 mm broad, thick, with midrib emitting on each side, 1 (2) oblique or ascending veins, the lower basal and more pronounced, sometimes itself bifurcated, often not very distinct below. *Flowers* single or paired, sessile or subsessile, ending in short branches with 2-6 small leaves, or axillary; pedicel not exceeding 1 mm long. *Bract* unilateral, ovate or elliptical, with obtuse or subacute apex, reaching 3-4 mm long and 2-3 wide, ± keeled or sometimes dorsally gibbous, externally tomentose. Receptacle urceolate, ca. 4 mm long by 3, covered with red hairs in layers reaching 3/4 mm long. *Calyx* ± flared, 1-1.8 mm long, 5-lobed and ciliate at the edge, externally covered with red hairs that are shorter and less dense than those of the receptacle. *Corolla* 50-60 mm long, red with yellow apex on the outside, yellowish on the inside (PERRIER), entirely covered with a dense tomentum of red hairs in many layers, reaching 2.5 mm in length (shorter near the top); apical bulge ovoid-subconical reaching ca. 12 mm long and 5-8 in diameter at the base, apex obtuse-5-ribbed, no median bulge; basal bulge ellipsoid, ill-defined, reaching approximately 6 mm in length, appearing only very late; at anthesis tube splitting unilaterally ca. 15 mm deep; lobes lanceolate, 10-15 mm long and ca. 2 wide and 1/2 thick, with an acute apex carrying a small tuft of descending hairs and edges slightly thinned near the end, remaining erect at anthesis, upholstered internally, in their three upper quarters, with simple brownish, straight hairs, lying down above and reaching 1 mm long. *Stamens* yellowish white (PERRIER), with a sub-linear filament slightly widened towards the base, 4-6.5 mm long, inserted at the base of the opposite lobe, curving at the anthesis, ending in a rounded tooth reaching up to 1/4 mm long; anther oblong-linear, 2.5-3 mm long, with thecae slightly exceeded by a rounded or truncated extension of the

connective which can reach 1/3 mm long. *Style* tender green (PERRIER), filiform-5-winged, reaching ca. the length of the corolla at anthesis, glabrous at the base for a few millimeters then gradually more and more hairy until the middle, then less and less until 5-5 mm from its end; hairs simple or slightly branched, brownish up to 1/2 mm long. Stigma ellipsoid or obovoid with a truncated apex, up to 3/4 mm long, barely wider than the style. *Disc* sub-circular-5-sided, 1/4-2/3 mm tall, bristling with red hairs up to 1/4 mm long. *False-fruit* bacciform, ellipsoid, red (PERRIER), drying blackish, up to around 13 mm by 7 and topped by the green calicinal cup ca. 2 mm tall, covered with layered hairs; "seed" surrounded by orange pulp, with white endosperm and a 6 mm long by 1 green embryo (PERRIER). FIG. VII, 7-10.

Fl. All year round.

WEST: Boina, wood from the Bemarivo basin, on arboreal *Acacia, Dalbergia, Eugenia* and *Vernonia*, *Perrier de la Bâthie* 10646, type, and 10652.

Endemic.

II
VISCOIDEAE

3. **VISCUM** Tourn. ex L., *Gen.,* I (1737), 284.

Mono- or dioecious, glabrous shrub or herbaceous plants, sometimes blackening on drying, forming clumps up to 1.5 m in radius, on the branches of various trees and shrubs, into which they insert a single *haustorium* causing localized swelling of the host branch. Main *branch* always subcylindrical and often oriented at an almost right angle to that of the host, branching abundantly little above its base in all directions; di- or tri- branching, rarely polychotomic; twigs articulated at the nodes, with a papillary surface (better visible when young), often flattened at their ends, sometimes over their entire length; in this case, successive internodes oriented perpendicular to each other; internodes with a papillary surface, generally having several more or less regular longitudinal ribs sometimes winged, more rarely irregular wrinkles; when the internodes are flattened, their width generally decreases from the top to the base. *Leaves* always opposite, often thick and leathery, generally persistent (rarely deciduous and then reduced, in certain Madagascan species only); sometimes replaced by scales (cataphylls) not articulated at their base and not exceeding 1-2 mm in the so-called "aphylla" species; petiole sheathing, articulated at its base, flattened or canaliculate above, generally poorly delimited upwards; blade always ± decurrent at its base, with narrow translucent margin, with (1) 3-5 (7-9) subbasal veins, (rarely with many fine parallel veins covering all of its surface; in Madagascar only). Prophylls generally number 2, ovate or triangular, often ± fleshy, often ciliated, fairly quickly caducous, not exceeding 2 mm in length, sometimes fused in pairs edge to edge (= *perule,* a type of scale that covers the young bud and dehisces at its base; in Madagascar only). Inflorescences axillary or terminal, generally consisting of cymules, composed of a pedunculate or sessile bibracteal cup, containing 1 or more flowers of the same sex or of different sexes, generally in odd number and aligned along its long axis; cup formed by 2 opposite bracts similar to cataphylls; rarely bare flowers (then often perulose), isolated or fasciculate (South Africa and Madagascar); rarely the central axis of the cup extends beyond it to form one or more new superimposed cups, perpendicular to each other; single axillary inflorescences [appear] first, transforming with age into glomeruli. *Flowers* always unisexual and a few millimeters long, actino- or subactinomorphic, with 3-4 tepals, and devoid of a proper bract; receptacle subhemispherical

cup-shaped, at the edge of which are inserted, with or without articulation, slightly fleshy tepals, with a thin translucent margin, ± triangular, slightly unequal in pairs if there are 4; *male flowers* always sessile or subsessile, generally with a hollow receptacle and non-articulated tepals; stamens reduced to their anther, partly fused dorsally to the opposite sepal, largely elliptical or polysided, thick and hollowed out, on its internal face (rarely also on the upper part of its external face) numerous rounded locules, distributed without order and opening independently; globular pollen with 3 (5) grooves of complex structure; *female flowers* sessile or ± long pedicelled, with receptacle filled by the inferior ovary and topped by the circular nectariferous disc surrounding the base of the style; tepals articulated at their base; style subcylindrical or ± flared down, short and persistent; stigma globular, finely papillate, slightly wider than the style, ± distinctly bilobed; carpels 2, morphologically indistinct. *False fruit* bacciform, subglobulous or slightly longer than wide, never exceeding 1 cm long, pedicelled or sessile (but with pedicel not articulated at the top); always topped by the style, often also by stigma, very rarely by tepals; pericarp often papillate, smooth or warty, often leathery, sometimes translucent, white or ± brightly colored; visciferous mesocarp; viscin of variable consistency, appearing sometimes in the form of filaments meeting the endo- to the epicarp, between the veins of the tepals and those of the carpels; endocarp pellucid, supported by the highly branched veins of the carpels. “seed” lenticular-ellipsoid, free inside the endocarp, with a slightly flattened endosperm; embryo generally single (sometimes 2, exceptionally 3), apical or lateral, straight or arched, with hypocotyle ± swollen at its end, flush on the surface of the endosperm or already emerging in the non-dehiscent fruit; cotyledons 2, generally green, ± distinct (often long fused), frequently somewhat uneven.

Genus located in the Old World which its area covers almost entirely; ca. 75 species including sixty in Africa *(sensu lato*); 29 endemic to Madagascar; 1 species common to the Comoros, the Eastern Archipelagos and the Continent but apparently absent in the Big Island.

1. Plants bearing flowers of both sexes [= monoecious] (18).
  2. Bibracteal cups generally containing several flowers (very rarely only one).
    3. Internodes sub-cylindrical or flattened, never both regularly obconical and deeply 6-furrowed; bisexual cymules often accompanied by female 3-flowered cymules, exceptionally cymules of other types (19).
      4. Branches sub-cylindrical over most of their length, sometimes ± flattened at the tip; berries smooth or, rarely, with some sparse and not very prominent warts.
        5. Cymules mostly bisexual; Madagascar..... 1. *V. tsiafajavonense.*
        5’. Cymules predominantly 3-flowered, unisexual; Comoros.....7. *V. triflorum.*
      4. Branches flattened over most of their length, internodes wider at the top than at the base; berries with numerous and strongly protruding warts.
        6. Plant blackening on drying; Center .....2. *V. tsaratananense*
        6’. Plant remaining yellowish in the dry state; East .....3. *V. ambongoense.*
    3’. Internodes obconic with 6 strong ± winged ribs; cymules of various types: uni-pluriflores, uni- and bisexual. .....12. V. *hexapterum.*
  2’. Bibracteal cup absent, just bare flowers, fasciculate at the nodes, those of the 2 sexes mixed; leaves generally oblanceolate, rarely oblong, elliptical or obovate..21. *V. echinocarpum.*
1’. Plants dioecious.
  7. Specimens male (20).
    8. Plants leafy (23).

9. Bibracteal cup enclosing cymules
10. Cymules multiflowered
11. Flowers 1.5-3.5 mm long.
12. Branches sub-cylindrical over most of their length: see the following species, better differentiated by their female reproductive organs and, possibly through their habit (cf. Fig. IX and X). 8. *V. cuneifolium* p. 73; 9. *V. radula* p. 77; 14. *V. multiflorum* p. 84; 15. *V. Perrieri* p. 85.
12'. Branches flattened over most of their length.
13. Plants generally robust with large leaves, blades (1.6) 5-9 (14) cm by (8) 30-10 (70) mm ..... 10. *V. lophiocladum.*
13'. Plants small, leafy, blades 0.6-1.6 cm by 2-3 mm..... 19. *V. vohimavoense.*
13''. Plants neither particularly robust nor spindly; blades 1-2.5 (4) cm by 6-15 (25) mm ..... 9. *V. radula*.
11'. Flowers 4.5-6.5 mm long; leaves lanceolate or narrowly elliptical ……..….. .....11. *V. longipetiolatum.*
10'. Flowers single.
14. Leaves with 1-7 subbasal veins.
15. Leaves not exceeding 1 cm long and 6 mm wide; flowers ca. 2 mm long 17.… .....*V. Roncartii.*
15'. Leaves 4-10.5 cm by 10-50 mm; flowers 3-4 mm long. .16. *V. multirostatum.*
14'. Leaves with many fine parallel veins; lanceolate or narrowly elliptical, sometimes linear, often faciform ..... 23. *V. Decaryi.*
9'. Bibracteal cup absent, flowers bare, isolated or fasciculate; leaves of very different shapes.
16. Branches sub-cylindrical over most of their length .....24. *V. myriophlebium.*
16'. Branches flattened over most of their length. .....25. *V. apiculatum*
8'. Plants aphyllous (24).
17. Cymules 1-3 (5) -flowered, provided with a bibracteal cup, branches flattened over most of their length, sometimes bearing on the last nodes small deciduous leaves not exceeding 1.5 mm long. ..... 13. *V. Tieghemii.*
17'. Bare flowers, devoid of bibracteal cup, isolated or fasciculate.
18. Branches sub-cylindrical over most of their length .....26. *V. trachycarpum.*
18'. Branches flattened over most of their length.
19. Plants neither pruinose nor of a glaucous pink.
20. Male flowers ± 1.5 mm long, with 3 tepals; anthers with 3-5 locules; Center (northeast) .....29. *V. Coursii.*
20'. Male flowers ± 3.5 mm long, with (3) 4 tepals; anthers with 30-50 locules; Center (northwest and middle) ..... 27. *V. rhipsaloides.*
20 ". Male flowers with 4 tepals, unknown in the mature state; Middle and West center .....28. *V. calcaratum.*
19'. Pruinose plants, glaucous pinkish, with stiffened branches, totally devoid of leaves; Center (South) ..... 30. *V. fastigiatum.*
7'. Specimens female (25).
22. Plants leafy (26).
23. Cymules provided with a bibracteal cup.
24. Cymules multiflowered.

25. Flowers and berries with pedicel larger than 1/2 mm long.
26. Leaves thin, lanceolate or ovate, with acute or subacute apex ……
..... 5. *V. pentanthum.*
26’. Leaves thick, elliptical or obovate, with obtuse or rounded apex…..……4.
..... *V. multipedunculatum.*
25’. Flowers and berries sessile, or with pedicel not exceeding 1/2 mm long.
27. Branches sub-cylindrical over most of their length.
28. Berries smooth ..... 8. *V. cuneifolium.*
28’. Berries warty..... 9. *V. radula.*
27’. Branches flattened over most of their length.
29. Berries smooth ..... 10. *V. lophiocladum.*
29’. Berries warty..... 9. *V. radula.*
24’. Flowers single.
30. Leaves with 1-7 veins.
31. Branches sub-cylindrical over most of their length.
32’. Leaves not exceeding 2 cm long and 12 mm wide.
33. Leaves thick, elliptical, more rarely ovate or obovate, 0.7-2 cm on 4-11 mm 18. .....V. *itrafanaombense.*
33’. Leaves thin, oblanceolate, 0.6-1.6 cm ca. 2-3 mm.; plant small ……19. *V. vohimavoense.*
32’. Leaves over 2 cm by 12 mm
34. Leaves thin, lanceolate or sub-rhomboidal or more rarely ovate or elliptical, with an obtuse or acute apex and cuneate or progressively narrowed base; blade 1-4.5 cm by 2.5-17 mm with 3-5 fine ribs; tepals 1-1.3 mm long …15. *V. Perrieri*
34’. Leaves with an ovate or lanceolate-elliptic blade, rarely oblong or obovate, 4-10 cm by 10-50 mm; tepals 1.5-2 mm long ..... 16. *V. multicostatum.*
31’. Branches flattened over most of their length (27) .....20. *V. semialatum.*
30'. Leaves with many fine parallel veins, lanceolate or narrowly elliptical, sometimes sublinear, often falcate ..... 23. *V. Decaryi.*
23’. Bare flowers, devoid of bibracteal cup, young generally (28) perulose.
35. Leaves with 1-7 veins.
35. Flowers with smooth receptacle, arranged by 3 at the end of a common peduncle; leaves oblanceolate, narrowly elliptical or oblong, more rarely obovate, 0.8-4 cm by 2-5 mm ..... 6. *V. Boivinii.*
36’. Single flowers, never grouped at the end of a common peduncle.
37. Receptacle smooth.
38. Leaves thin, lanceolate or sublosangic, more rarely ovate or elliptical, with an obtuse or acute apex and cuneate base or gradually narrowed; blade 1-4.5 cm by 2.5-17 mm with 3-5 fine ribs; berries approximately 6 × 5 mm.... 15. *V. Perrieri.*
38’. Leaves thick and brittle, broadly elliptic or ovate, with rounded apex, cuneate or obtuse and base broadly cuneate or rounded; blade 1-6 cm by 8-45 mm, with 5-7 ribs; berries 8-10 mm, ca. 8. ..... 14. *V. multiflorum.*
37’. Receptacle verrucose .....22. *V. ceibarum.*
35’. Leaves with many fine veins.
39. Branches sub-cylindrical over most of their length .....24. *V. myriophlebium.*
39’. Branches flattened over most of their length .....25. *V. apiculatum.*

22’. Plants aphyllous (29).
40. Branches sub-cylindrical over most of their length .....26. *V. trachycarpum.*
40’. Branches flattened over most of their length.
41. Plants neither pruinose nor rosy glaucous.
42. Berries warty, sessile or subsessile; flowers with 4 tepals; small deciduous leaves; Middle and West Center .....28. *V. calcaratum.*
42’. Berries smooth or nearly so (see also *V. calcaratum*).
43. Berries sub-spherical of ca. 3 mm diameter with pedicel ca. 1 mm long and 1/2 in diameter; flowers with 4 (3) tepals; small deciduous leaves; Center (North-West and Middle) ..... 27. *V. rhipsaloides.*
43’. Berries spherical ca. 5 mm in diameter, quite sessile; flowers with 3 tepals; no leaves; Center (North-East).....29. *V. Coursii.*
41’. Plants pruinose, rosy glaucous with fastigiate stiff twigs, totally devoid of leaves; flowers with 1 tepal; berries warty, pedicel 0.5-1.5 mm long. Center (South)…… .....30. V. *fastigiatum.*

1. **Viscum tsiafajavonense** S. Balle in *Lejeunia,* Mém. XI (1960), 75: pl. II, 24 and III, 1.

Species monoecious, *haustoria* unknown, becoming blackish when drying. *Branches* of observed specimens up to fifty centimeters long, with mostly dichotomous branching; internodes almost all subcylindrical except a few ± flattened at the ends of the branches, 0.5-6 cm by 1-5 mm, with (4) 6 (8) strongly protruding longitudinal ribs, decreasing with age. *Leaves* sessile or subsessile, dark green (COURS); petiole 1-5 mm long; blade generally elliptical, sometimes ovate or obovate, with cuneate apex, obtuse or acute, rarely rounded and base cuneate or gradually narrowed, 1-6.5 cm by 5-23 mm, fairly thick and rigid, with (1) -3- (5) fine ribs projecting above, generally indistinct below, with ± wavy edge; prophylls 0.3-1 mm long, ovate-triangular, ciliated. *Inflorescences* axillary or rarely terminal, in bisexual cymules or more rarely with 1, 2 or 3 flowers of the same sex, provided with a pedunculated bibracteal cup. Cup 3/4- 3 (5) mm long by ± 0.5 wide; exceptionally two cups superimposed at right angles. *Flowers* a yellowish white (COURS), sessile, with 4 tepals, the subglobular then campanuliform *males*, sometimes abnormal as in *V. tsaratananense,* ca. 2.5 mm long of which ca. half is the receptacle; anthers oblong ca. 1 mm long, with ca. 25 locules. *Female* flowers with sub-cylindrical-oblong receptacle, green (COURS), tepals ovate, 1.5-2 mm by ca. 1 mm long; style and stigma together reaching around 2/3 of a mm long; globular stigma ± bilobed. *False fruit* obovoid or ellipsoid, sessile, generally smooth or rarely with some slightly protruding warts, drying blackish, ca. 6 mm long by 4-5; “seed” lenticular, ca. 5 mm long, 3 wide and 1 thick; embryo straight, terminal subcylindrical, around 3 mm long with hypocotyl swollen at the top and green cotyledons. - FIG. VIII, 1-2.

Forests between 1,100 and 2,600 m. alt., on *Ilex monticola.* Fl. In March, May and July.

CENTER and HIGH MOUNTAINS: Tsiafajavona, *Benoist* 961; *Decary* 19420, type; *Humbert* 4514, *Herb. Jard. Tan.* 2518 and 4158; *Poisson* s. n°; Ambatondrazaka, *Cours* 303.

Endemic.

2. ***Viscum tsaratananense*** H. Lee. in *Not. Syst.,* Paris, IV (1927), 80; *Cat. Pl. Mad.* (1932), 12; S. Balle in *Lejeunia,* Mém. XI (1960), 74, pl. II, 19.

Species apparently monoecious (30), *haustoria* unknown; plant often becoming blackish upon drying. *Branches* of the observed specimens up to forty centimeters long, with lower internodes subcylindrical and reaching ca. 5 mm in diameter, middle and upper ± strongly flattened and narrow, reaching 1 to 6 cm long by 2.5-5 mm wide at the top and 1-3 at the base, presenting (4) 6-8 very prominent longitudinal ribs, the margins slightly translucent and arranged alternately from one internode to the next, still distinct on the lower subcylindrical internodes. *Leaves* yellowish-green and very brittle when fresh (COURS), petiole 2-4 mm long by ca. 1; limb elliptical or ovate, more rarely slightly obovate, with cuneate or obtuse apex, rarely rounded and at base broadly rounded or cuneate, then abruptly and briefly decurrent, gradually narrowed, from 1.2-5 cm by 5-27 mm, quite thick, with 3-5 fine ribs protruding on both sides, sometimes not very distinct. Prophylls rounded, long ciliate on the edge, ca. 1/2 mm long. *Inflorescences* axillary, in apparently bisexual cymules or trifloral female, provided with a pedunculated bibracteal cup. Cups 3-4 mm long, with ciliate edge and obtuse or subacute apices; peduncle 1-4 mm long by ca. 1 wide. *Flowers* sessile with 4 tepals; abnormal *male flowers*, obovoid, with receptacle ca. 1.5 mm long and tepals ovate, subequilateral, ca. 3/4 mm long, articulated at the base; anthers poorly formed and fewer than tepals; *female flowers* with obovoid, subcylindrical receptacle ca. 1.5 mm long; tepals ovate, ca. 3/4 mm long; style subcylindrical of ca. 1/3 mm long; stigma globular ca. 1/4 mm in diameter. *False fruit* green (COURS), globose with irregularly dispersed rounded warts when young, ca. 3 mm in diameter, sessile or pedicel less than 1/2 mm long.; “seed” not observed. - FIG. VIII, 10-11.

Lichen forests and silves, between 850 and. 2,400 m. alt., on *Philippia.* Fl. January, March, April and December. Fr. in January. A decoction of crushed and boiled leaves would be effective against epilepsy (COURS).

CENTER and HIGH MOUNTAINS: Tsaratanana, *Perrier de la Bâthie* 16337, type; Mangindrano, *Humbert* 25236; Ankaraoka, *Cours* 2059; *Homolle s.* n °; Manaka E, *Botoalina* 7574; Sahanialaza, *Cours* 2650.

Endemic.

3. **Viscum ambongoense** S. Balle *in Lejeunia, Mém.* XI (1960), 30, pl. II, 20-21 and V.

Species monoecious, *haustorium* unknown, remaining yellowish-brown-upon drying. Branches of the specimen observed up to ca. 40 cm long, with branching mostly di-, sometimes trichotomous, subcylindrical near the base, very flat at the tips; having, in the intermediate region two opposite cartilaginous edges, alternating from one internode to another; internodes 1-3.8 cm by ca. 1-4 mm. *Leaf* petiole up to 2-3 mm long by 1.5; limb elliptical or obovate, with rounded or obtuse apex and gradually narrowed base, 2-5 cm by 9-23 mm, thick and rigid, with 1-3 (5) often not very distinct ribs. *Inflorescences* axillary in bisexual cymules, single or in groups 2-3, provided with a pedunculate bibracteal cup. *Cup* 1.5-3 mm. long, with ciliated edge and obtuse top; peduncle 0.5-2 mm long by ca. 1/2. *Flowers* sessile with 4 tepals, males known only in buds, ca. 1.5 mm in diameter; *female* receptacle ± verrucose, 1-1.5 mm long, tepals ovate, ca. 2/3 mm long; style subcylindrical ca. 1/3 mm long; stigma globular barely wider than style. *false fruit* Unknown. - FIG. VIII, 3-4.

Fl.: September.

WEST: Ambongo, sandy boxwood, *Perrier de la Bâthie* 10677, type.

Endemic.

4. **Viscum multipedunculatum** H. Lec. in *Not. Syst.,* Paris, IV (1927), 77; *Cat. Pl. Mad.* (1932), 11; S. Balle in *Lejeunia,* Mém. XI (1960), 55, pl. II, 25.

Plant apparently dioecious, blackening on drying or remaining yellowish green, with a single *haustorium* up to ca. 10 mm at the insertion level and forming large, rounded, compact clumps. Main branch branching di- or trichotomous. *Branches* up to forty centimeters long, very papillate at the ends, entirely subcylindrical or sometimes ± flattened, with nodes ± swollen; 0.8-5.5 cm internodes. on 1-5 mm, with 6 main ribs ± protruding and regular. *Leaves* with canaliculate petiole, 2-5 mm long by 2-4; blade largely obovate or elliptical, with rounded or obtuse apex and cuneate base, 1.5-7.5 cm ca. 8-34 mm, fleshy and brittle, rarely reduced locally to a ± distinct cataphyll, with 3 (5) fine ribs projecting above, indistinct below. *Prophylls* ovate-triangular, subacute, ciliate, 1/3-1 mm long. *Inflorescences,* only females known, in cymules (1) 3-5 (7) - flowered, axillary or terminal, isolated or fasciculate, provided with a bibracteal cup generally pedunculated; cup 2-4 mm long, with ciliate edge and obtuse or subacute apex; peduncle 0.5-12 mm long; sometimes 2 superimposed cups, the central axis of the lower extending to form, in place of the flower, a new cymule or a single, naked flower. *Female and* male *flowers* little known (cf. *Lejeunia* loc. cit.). *False fruit* ellipsoid, smooth, up to ca. 4 × 2.5 mm, style subcylindrical, ca. 1/3 mm long; stigma indistinct; 0.5-4 mm pedicel. long, finished, after the fall of the berry, by a small disc of ca. 1 mm in diameter indicating a basal dehiscence; "seeds" sometimes abundant on the mother plant (autoparasitism), ca. 4 × 2 × 1 mm, whitish, surrounded by the translucent endocarpic membrane; endosperm oblong; embryo subconic, ca. 1.5 mm long, with hypocotyle protruding 1/2-1 mm, ± dilated at the top. - FIG. VIII, 5.

Forests between 500 and 1,000 m. alt.; on *Symphonia.* Fr. from September to November.

CENTER and EAST: Tampoketsa between Bemarivo and Mahajamba, *Perrier de la Bâthie* 10645; Sambava, *Perrier* 10700, type; Masoala, *Perrier* 10706.

Endemic.

5. **Viscum pentanthum** Baker in *Journ. Linn. Soc.,* XX (1883), 249; S. Balle in *Lejeunia, op. cit.,* 59 and pl. II, 41 and XXII; non H. Lec. in *Not. Syst.,* Paris, IV, p. 76 and *Cat. Pl. Mad.,* Pl. II.

Species apparently dioecious; *haustoria* unknown. *Branches* of observed specimens up to forty centimeters long, thin, subcylindrical, or sometimes slightly flattened at the ends; especially trichotomous ramification; internodes 1.2-6.5 cm by 1-3 mm, finely wrinkled longitudinally but without regular ribs. *Leaf* petiole 6-10 mm long by ca. 1, poorly demarcated upwards; blade ovate or lanceolate, with acute apex and rounded-cuneate base, shortly decurrent, 2-8 cm by 9-42 mm, fairly thin, with (3) 5 (7) thin, slightly protruding veins, generally distinct only in the lower half of the blade; prophylls triangular-pointed, sometimes ciliated, ca. 2/3 mm long. *Inflorescences* female only known, axillary, in 5-flowered cymules, single or fasciculate, provided with a long pedunculated bibracteal cup. Cup 2.5-3 mm long, with ciliated edge and obtuse apex; peduncle 3-5 mm long by ca. 2/3. *Female flowers* with 4 ovate tepals ca. 2/3 mm long; smooth receptacle of ca. 2 1/3 mm long by ca. 1; style ca. 1/3 mm long; stigma poorly differentiated; pedicel 1-2 mm long by ca. 1/3. *False fruit* unknown. - FIG. IX, 1-2.

Fl.: January-February.

EAST: Ile Marossi in Antongil Bay, *Bojer,* without number, type, K and P.

Endemic.

6. **Viscum Bovinii** Van Tiegh. in *Bull. Soc. Bot. Fr.,* XLIII (1896), 189; S. Balle in *Lejeunia* (1960), 32 and pl. II, 11 and III, 3.– V. *pedicellatum* H. Lec. in *Not. Syst.,* Paris, IV (1927), 78 and *Cat. Pl. Mad.* (1932), 12.

Plant apparently dioecious; *haustorium* unknown. *Branches* of the specimens observed up to forty centimeters in length, entirely subcylindrical, relatively thin, light gray brown when dry, sometimes becoming ± reddish; fairly regularly branching, more rarely trichotomous; 1-7 cm by 1-4 mm, with 6-12 longitudinal ribs. *Leaves* sessile, oblanceolate or narrow, internodes elliptical-oblong, rarely elliptical or obovate, with obtuse apex or more rarely subacute and base gradually narrowed, 0.8-4 cm by 2-6 mm, thin and delicate, with (1) 3 fine veins slightly protruding on both sides, sometimes indistinct. *Inflorescences* only female known; in terminal or axillary cymules, 3-flowered (31), devoid of bibracteal cup but perulated and generally fairly long-pedunculated; bulbous, perule yellowish, apiculate, ca. 2 mm long and wide at maturity, those of the inflorescence encasing the 3 small floral perules, which may contain either a flower, or a new triad (32); peduncle 1-6 mm long by 1/2-2/3 in diameter. *Female flowers* with an ovoid-subcylindrical receptacle of ca. 2 mm long (sometimes slightly warty?), with 3 oblong-triangular tepals (1) 2 mm long; cylindrical style and stigma together reaching almost 1 mm long; globular stigma slightly darker in color than style; (0.5) 2-2.5 mm pedicel. ca. 1/2 long. *False fruit*, mature unknown; young smooth, berries ovoid, ca. 2.5 mm in diameter, with 1-2 mm long pedicel. - FIG. VIII, 8-11.

Sandy wood. Fl.: March, April and October.

EAST: Côte ou Sainte-Marie, *Boivin* 2250, type of *V. Boivinii, and* specimens called *gracile and madagascariense:* G. (33).

WEST: Port Leven, *Boivin* 2550 (3), Manongarivo de l'Ambongo, *Perrierde la Bâthie* 10653; Ankaladina, *Perrier* 10654, type of *V. pedicellatum;* Tsitondroïna, *Perrier* 1164.

Endemic.

7. **Viscum triflorum** DC, *Prodr.,* IV (1830), 279. S. Balle in *Adansonia,* new. ser., IV (1964), 139. - *V. venosum* DC, *loc. cit*. and var. *lanceolatum* DC, *loc. cit.;* Lec., *Cat. Pl. Mad., Lor.* (1932), 13. - *V. comorense* H. Lec. in *Not. Syst.,* Paris, IV (1927) 71 and Cat*.,* 10.

Species monoecious with a single haustorium up to 11 mm at the insertion level and causing subglobular or ellipsoid swelling of the host branch. Plant frequently darkens during desiccation. Main *branch a* few centimeters long, branching di- or trichotomous, giving rise to a clump which can reach 1 m. in diameter. *Branches* sometimes pendulous, yellowish green when fresh, subcylindrical over most of their length, generally flattened at the tip over a variable length, then ± angular; internodes of 0.5-6.5 cm by 1-7 mm, with 6 generally regular longitudinal ribs, which diminish with age, those which are often flattened, clearly narrowed from the top to the base. *Leaves* with 1-4 mm long petiole, canaliculate, poorly delimited upwards; limb elliptic, ovate or obovate, more rarely lanceolate or oblanceolate, with obtuse or cuneate apex, more rarely rounded or subacute and with cuneate or rounded base then abruptly decurrent, 1.2-10 cm ca. 8-35 mm, generally leathery, ± thick, with 3 (5) main veins, above all protruding, separated by a fine reticulation. *Prophylls* ovate-triangular, apex obtuse and edges ciliate, up to 3/4- 2 mm long. *Inflorescences* in axillary cymules, (1) 3 (5) flowered, first solitary, then grouped by 2-3 or more on the old twigs, generally unisexual, those of the 2 sexes mixed on the same node or on the

same branch (34), rarely bisexual; cups 2-3 mm long with ciliated edge and obtuse or subacute vertices; peduncle 1-12 mm, often flattened and furrowed longitudinally, female cymules generally longer than males. *Flowers* sessile or subsessile; tepals 4 (3), externally green, internally whitish, ovate-triangular, 1/2-1 mm long, cuneate or truncate, thick and fleshy; the *male* globular then campanuliform, 1.5-2 (3) mm long; anthers 3-4-sided, ca. 3/4 of a mm long, with 18-25 locules; *females* ca. 3 mm long by 1, receptacle at first a little warty, quickly becoming smooth; tepals ovate c. 1 mm long, ± persistent on the ripening fruit; style subcylindrical, slightly flared at the base, ca. 1/3 mm long; stigma globular sub-bilobed a little wider than the style. *False fruit* white, pale green or translucent, ovoid, subspherical or ellipsoid, smooth, up to 6 by 4 mm, sessile or pedicel not exceeding 1/2 mm long, often crowned by tepals; pericarp laterally dehiscent; "seed" ovoid and thick, 2.5-3 mm long by 1.5-2 wide; embryo terminal, straight, ca. 1.5 mm long with hypocotyl slightly enlarged at the top and flush with the surface of the endosperm; cotyledons long fused. Self-parasitism has been observed.

COMOROS: Grande Comore and Mohéli. - Fl. March (or May) ?:

East Africa, from Eritrea to Natal; Sao Thomé (?); Mascareignes and Seychelles. Does not seem to exist in Madagascar.

8. **Viscum cuneifolium** Baker emend. S. Balle in *Lejeunia,* Mém. X I (1960), 38 and *Adansonia* New. ser., IV (1964), 139 (35).

Plant dioecious, *haustorium* to around 6 mm in diameter at insertion level, sometimes blackening during drying. *Branches* of the specimens observed up to fifty centimeters long, yellowish brown, reddish or blackish when dry, with di- or trichotomous branching, entirely subcylindrical or ± long flattened from their tips; internodes 0.5-12 cm by 1-6 mm, those of the ends strongly papillate and ± narrowed downwards, with ± regular ribs. *Leaves* a clear green, yellowish or dark according to their exposure, sometimes brilliant when fresh (COURS), petiole 1-5 mm long by 1-2; blade generally elliptical or ovate-elliptical, more rarely obovate, ovate-lanceolate, oblaneolate or lanceolate, with cuneate apex, obtuse or more rarely rounded or acute and with rounded or cuneate base then shortly narrowed and decurrent, rarely gradually narrowed, 0.8-14 cm by 3-70 mm, ± thick and papillate, with flat or ± wavy margin, with 3-5 ribs, generally distinct on the 2 sides but less below; prophylls triangular, obtuse or acute, ± 1 mm long, ciliated. *Inflorescences* axillary, single or fasciculate, (1) 3-5-flowered, unisexual, provided with a bibracteal cup ± long pedunculate; cup 2.5-4 mm long, with ciliate edge and obtuse or subacut apex; peduncle 1-7 mm long. *Flowers* yellowish or very green (COURS), sessile or subsessile (pedicel not exceeding 1/4 mm long), with 4 tepals, *males* globose then campanuliform, 2.5-3.5 mm long, of which ca. half is for the ovate-triangular tepals; anthers oblong, 1-1.5 mm long by 0.5-1 wide, almost or completely fused to the tepal, 25-45 locules; *female flowers* with a smooth, ellipsoid receptacle, 1.5-2.5 mm long; tepals ovate-triangular 3/4-1.5 mm long; style and stigma together reaching around 3/4 mm long; stigma globular, ± bilobate, up to 1/4-1/3 mm in diameter. *False fruit* light green, translucent when fresh (COURS), globose, ovoid or ellipsoid, ca. 5 mm long by 3-4 wide, smooth, sessile or subsessile (pedicel not exceeding 1/2 mm long); "seed" with an ovate, elliptical or obovate endosperm, 3-3.5 mm long by 2 wide and 1 thick; embryo straight, subcylindric, apical, reaching ca. 2 mm long, with cotyledons appressed and hypocotyl sometimes protruding and dilated at its apex in the still closed pericarp; dehiscence by lateral tear. - FIG. IX, 3-10.

KEY TO VARIETIES

1. Leaves mostly not obovate with rounded tips.
  2. Leaves mostly not small.
    3. Blades of medium dimensions (1.5-6.4 cm by 10-24 mm); limb ovate or elliptical, rarely obovate or ovate-lanceolate, with cuneate apex, obtuse or subacute .....var. *cuneifolium.*
    3'. Blades large ((2) 4-14 cm by (10) 20-70 mm); leaf blade generally wavy, ovate-lanceolate or elliptical, with acute or subacute apex; fruit translucent green (COURS). ....var. *grandifolium.*
  2'. Blades small (0.8-3 cm by 3-8 (15) mm).
    4. Limb generally elliptical or elliptical-ovate, rarely lanceolate, obovate or oblanceolate, with obtuse or subacute apex, rarely acute or rounded ..... var. *cryptophlebium.*
    4'. Limb generally narrowly elliptical or lanceolate..... var. *lanceolatum.*
1. Leaves mostly obovate, rarely oblanceolate or elliptical, with generally rounded apex, rarely obtuse, 1.5-6 cm ca. 6-23 mm; flowers dull lemon yellow.....var. *demissum.*

Var. **cuneifolium**. *Viscum cuneifolium* Baker in *Journ. Linn. Soc.,* XXI (1885), 438; H. Lec., *Not. Set.,* Paris, IV (1927), 72 and *Cat. Pl. Mad.* (1932), 10; S. Balle *in Lejeunia, loc. cit.,* 59; pl. II, 14 and XI. - *V. Bakeri* Van Tiegh. in *Bull. Soc. Bot. Fr.,* XLIII (1896), 190, nom.; H. Lec. *in Not. Syst.,* IV, 71; *Cat.,* 9. - *V. granulosum* Bak., *Loc. cit.,* 438.

Forests (littoral and ombrophiles) and silves at lichens between 400 and 2,400 m. Above sea level, on lateritic clays, gneiss, granite, basalt and sandstone, on *Symphonia and Weinmannia.* Fl.: January, February, March, May, June, July, August, October, November and December. Fr.: March to July.

EAST: Ambatosoratra, *Cours* 3298; Tampina, *Perrier de la Bâthie* 13281; Mananjary, *Geay* 7440; Mt Vohimavo, *Humbert* 20668.

CENTER and HIGH MOUNTAINS: Tsaratanana, *Perrier* 10711*;* Mangindrano, *Humbert* 25101, *Res. For.* 6024; Anjanaharibe, *Humbert 24644;* Ankaraoka, *Humbert* 17481; Analamazoatra, *Perrier* 10680 and 10685; Antananarivo, *d'Alleizette* 1126; Mandraka, *Herb. Jard. Tan.* 4463; Moramanga, *Capuronet Leandri* 1511; Tsiafajavona, *Perrier* 13524; Imerina, *Baron* 3115, type of *V. granulosum,* K; 3625, type of *V. Bakeri,* K; and 3807, type of *V. cuneifolium,* K; Ambositra, *Perrier* 10640, Amhalavao, *Herb. Res. Nat.* 9944; Andringitra, *Cours* 2344; Vodivato, *Cours* 3051.

WEST: Analavelona, *Humbert* 14220, with more flattened branches.

Endemic.

Var. **grandifolium** S. Balle in *Adansonia,* new. ser., IV (1964), 139. - *Viscum lophiocladum* Bak. var. *subcylindricum* S. Balle *in Lejeunia, op. cit., 52,* pl. II, 2-3 *and* III, 2.

Wood around 1,200 m. alt., on *Hirtella. Fl.:* January, June, August and October.

SAMBIRANO-CENTER: Valleys of Sambirano, *Perrier de la Bâthie* 10665, type; and Ifasy, *Perrier de la Bâthie* 10694; Ambatondrazaka, *Cours* 2393; Imerina, *Baron* 6225.

WEST: Marovato, *Herb. Jard. Tan.* 4172 *and* 4386; Maromandia, *Decary* 14859.

Endemic.

Var. **eryptophleblum** (Baker) S. Balle *in Adansonia, loc. cit. Viscum cryptophlebium* Baker in *Trimen's Journ. Bot.* (1882), 245; H. Lec. in *Cat. Pl. Mad.,* 10. - *V. cryptophlebium* S. Balle in

Lejeunia, op. cit., 37, pl. IX, excl. fa. *lanceolatum.* - *V. rhytidocarpum* Baker in *Journ. Linn. Soc.,* XXI (1885), 438; H. Lec., *Cat.,* 12; S. Ball, *loc. cit.,* pl. II, 37.

Lichen moss and silve forests around 1,650 m. alt. Fl.: April and August.

MIDDLE CENTER: Ankazobé, *Decary* 14919; Imerina, *Baron* 3092, 3110, type of *V. rhytidocarpum,* K; 3881, type of *V. cryptophlebium,* K; and *Parker* without number; Ambondrombe, *Herb. Jard. Tan.* 4629 *and* 4652.

Endemic.

Var. **lanceolatum** S. Balle in *Adansonia, loc. cit.* - *Viscum cryptophlebium fa. lanceolatum* S. Balle in *Lejeunia, op. cit.,* 38, pl. II, 29 and X.

Between 400 and 1,250 m. alt. Fl.: January, March, November.

EAST: Ambatosoratra, *Cours* 3246.

CENTER: Ambohitantely, *Herb. Res. Nat.* 167; Ankazobé, *Decary* 7391 and 7458, type.

Endemic.

Var. **demissum** (H. Lec.) S. Balle in *Adansonia, loc. cit. Viscum demissum* H. Lec. in *Not. Syst.,* IV, (1927), 73; *Cat.,* 10; S. Balle in *Lejeunia, op. cit.,* 41 and pl. I, 3 and II, 15. - *V. demissum* var. *mahafalense* H. Lec. *in Not. System, loc. cit.,* 73.

Sclerophyllous forests and calcareous woods between 300 and 1,400 m, alt. Fl.: February, May, July, September, November and December. Fr.: February.

SOUTH: Tuléar, *Perrier de la Bâthie* 16654; Fiherenana, *Humbert* 11555 and 20102; Onilahy, *Humbert* 2667, type of *V. demissum,* and 5201; Mahafaly, *Perrier* 10673, type of var. *mahafalense.*

CENTER: halo, Bara plateau, *Perrier de la Bdihie* 19232; Andohahela, *Humbert* 13890; top Mandrare, *Humbert* 13219.

Endemic.

9. **Viscum radula** Baker emend. S. Balle *in Lejeunia* Mém. XI (1960) 61, pl. I, 9, II, 23 and XXIV.

Plant apparently dioecious, *haustorium* unknown, ± blackening upon drying. *Branches* of the samples observed reaching 30 cm in length, subcylindrical or ± flattened, sometimes over a fairly long length from their tip, which is often very papillate; branching di- or trichotomous; internodes 0.5-4 cm by 1-5 mm, with 6-12 regular longitudinal ribs ± protruding, sometimes very wide from bottom to top. *Leaf* petiole 1-4 mm long by ± 1, poorly delimited upwards; limb ovate, elliptical or obovate, obtuse or cuneate, rarely acute or rounded and with cuneate base then gradually narrowed, from 1-2.5 (4) cm by 6-15 (25) mm, fairly thick and rigid, ± rough on both sides, with 3-5 fine ribs generally not very distinct and only above, near the base. Prophylls triangular, obtuse or acute, from 1/3 to 1/2 mm long, often not very distinct. *Inflorescences* only female known, axillary and terminal, in cymules (1) 3 (5) - flowered, single or grouped, provided with a bibracteal cup shortly pedunculated; cup 2.5-3.5 mm long, with ciliate edge and obtuse or subacute apices; peduncle reaching 1-4 mm long by ca. 1. *Female flowers* green-yellow (BAKER) or yellowish white (HUMBERT), sessile, with 4 tepals; receptacle ellipsoid, ± smooth, 1-2.5 mm long; tepals ovate-triangular 3/4-1.5 mm long; style subcylindric, slightly flared at the base, 2/3 to 1 1/4 mm long, including the globose, bilobed stigma, ca. 1/2 mm in diam. *False fruit* ellipsoid or globose, ca. 4.5 mm by 3.5, sessile or pedicel not exceeding 1/2

mm long, bearing large rounded ± abundant and ± regularly dispersed warts; "seed" of ca. 2.5 mm long by 1.5 wide and 1 thick, with reniform ovoid endosperm and subcylindrical embryo of ca. 1.5 mm.; hypocotyle barely protruding. - FIG. IX, 11-14.

KEY TO VARIETIES

1. Tepals ca. 3/4 mm long; style and stigma together reaching ca. 2/3 mm long.....
.....var. *radula.*
1'. Tepals ca. 1.5 mm long; style and stigma together reaching ca. 1.2 mm long …….....
.....var. *vaccinifolium.*

Var. **radula**. - *Viscum radula* Baker in *Journ. Linn. Soc., XXI* (1885), 439, - H. Lec. in *Cat. Pl. Mad.* (1932), 12.

Low sclerophyllous forests between 500 and 850 m. alt. Fl.: December and January. Fr.: October and December.

CENTER: Imerina, *Baron* 3072, holotype at K.; Mont Vohibaria, *Humbert* 12604; Mont Vohitrotsy, *Humbert* 12664; around Alaotra lake, *Homolle* 2650.

Endemic.

Var. **vaccinifollum** (Baker) S. Balle in *Lejeunia, op. cit.,* 62. - *Viscum vaccinifolium* Baker, *loc. cit.,* XXV (1890), 343; H. Lec. *in Not. Syst.,* Paris, IV (1927), 82; in *Cat.* (1932), 13.

Laterite forests between 1,200 and 1,800 m. alt. F1.: December.

CENTER: Imerina, *Baron* 5287, holotype at K.; isotype at P.; Ambohitantely, *Humbert* 11102.

Endemic.

10. **Viscum lophiocladum** Baker emend. S. Ball in *Adansonia,* new. ser., IV (1964), 139.

Plant dioecious, *haustoria* up to 12 mm in diameter at implantation level. *Branches* of the observed samples up to forty centimeters long, generally flattened over a large part of their length, branching di- or trichotomous; internodes clearly narrowed towards their base, reaching 1-12 cm by ca. 2-7 mm at their apex, 1-5 at their base, and 1-5 thick, with 2 strong marginal ribs alternating from one internode to the next; ribs or secondary wrinkles generally not very distinct on each side. *Leaf* petiole 7-10 mm long by 1-2; blade ovate, lanceolate or elliptical, rarely obovate, with acute or obtuse apex, more rarely rounded and base rounded or cuneate then abruptly narrowed and ± decurrent, (1.6) 5-9 (14) cm by (8) 20-40 (70) mm, thick and leathery, with 1-3 (5) sometimes barely distinct ribs and frequently wavy margin (at least when dry); prophylls ovate, rounded or obtuse, c. 1 mm long, ciliated. *Inflorescences* axillary, isolated or fasciculate, in cymules 3 (5-7) flowered, provided with a pedunculate bibracteal cup. Cup 3-4 mm long with ciliate edge and vertices obtuse or acute; peduncle 1-6 mm long. *Flowers* sessile or subsessile, with 4 (3) tepals; males reaching 2.5-4 mm in length of which ca. half is for the tepals; anther largely oblong, 1-1.5 mm by 1, with 17-25 locules; *female flower* with smooth ellipsoid receptacle, 1.5-2 mm long and tepals ca. 1 mm.; style and stigma together reaching around 2/3 mm in length; style slightly enlarged at the base; stigma globular ± bilobed. *False fruit* sessile or with pedicel not exceeding 1/2 mm in length, smooth, translucent green when fresh (COURS), blackish when dry, ovoid or ellipsoid, more rarely globular, reaching 5-6.5 mm

in length and 3-4.5 width; “seed” 2-3.5 mm long by ca. 2 wide and 1 thick, with a subcylindrical terminal embryo up to ca. 1 3/4 mm long; hypocotyle barely protruding. - FIG. IX, 15-19.

KEY TO VARIETIES

1. Leaves mainly not obovate, generally elliptical to lanceolate or more rarely ovate-lanceolate or ovate-elliptical; fruit generally ellipsoid or narrowly ovoid.
  2. Blades mostly relatively large..... var. *lophiocladum.*
  2’. Blades mostly smaller.....var. *conicum.*
1’. Leaves mostly obovate; fruit globular or largely ovoid ..... var. *papillosum.*

Var. **lophiocladum**. - *Viscum lophiocladum* Baker in *Journ. Linn. Soc.,* XXI (1885), 437. - *V. lophiocladum* var. *lophiocladum* S. Balle *in Lejeunia, op. cit.,* 52 pp. and pl. II, 3.

Fl. In November (Center).

EAST: Tamatave, Réserve Naturelle n ° 1, *Decary* 16928; *Herb. Res. Nat.* 2871.

CENTER: Tsaratanana, 1,000 m. alt., on *Oncostemon, Perrier de la Bâthie* 15214; “Center”, *Baron* 2751, male type, K; 6105, female type, K.

Var. **conicum** (H. Lec.) S. Balle, in *Adansonia, loc. cit., - Viscum conicum* H. Lec., *in Not. Syst.* IV, (1927), 71. - *V. lophiocladum* var. *lophiocladum* S. Balle, *in Lejeunia, loc. cit. pp,* pl. II, 17 and XVIII.

Rain forests between 300 and 1,900 m. alt., on gneiss; on *Croton.* Fr.: January and December.

EAST: Androranga, *Humbert* 24064; Betampons, *Perrier de la Bâthie* 17459, female type.

CENTER: Andapa, *Cours* 2773; Anonokambo, *Cours* 2660; Ambatondrazaka, *Cours* 970; Tsitondroïna *Herb. Jard. Tan.* 4789.

Var. **papillosum** (H. Lec.) S. Balle, *in Adansonia, loc. cit. - Viscum papillosum* H. Lec., In *Not. Syst.,* 78; *Cat.,* 11; S. Balle *in Lejeunia, op. cit.,* 58 and pl. II, 31. - *V. spathulatum* (Van Tiegh.) H. Lec. var. *crassopedunculum* (Van Tiegh.) H. Lec., *Cat.,* 12.

Lichen forests and silves between 1000 and 2.135 m. alt., on a Melastomataceae. Fl.: January, March, September, October and December.

CENTER: Tsaratanana, *Perrier de la Bâthie* 10699, type of var. *crassopedunculum;* 15580; Marojejy, *Cours* 3458; *Humbert* 22545, 23746; Ankaïzina, *Perrier* 15152, type of *V. papillosum;* Andringitra, *Humbert* 3724.

Endemic (type and varieties).

11. **Viscum longipetiolatum** S. Balle in *Lejeunia,* Mém., XI (1960), 49, pl. II, 4 and XVII.

Plant apparently dioecious, *haustorium* unknown, known only by 4 *branches* up to 30 cm long, drying blackish, subcylindrical towards the base, slightly flattened towards the ends, with branching di- and trichotomous; internodes 1-6 cm by 1-4 mm, wrinkled but not regularly furrowed longitudinally. *Leaf* petiole 5-10 mm long by ± 1; blade lanceolate or narrowly elliptical, narrowed at each end, with acute apex or more rarely obtuse, 3-8 cm by 8-30 mm, rather thick, with (3) 5 (7) fine veins slightly protruding above, ± distinct below; prophylls subacute, ovate-triangular, up to around 3/4 mm long. *Inflorescences* only male known; in 3-5-

flowered axillary cymules, provided with a bracteal cup and peduncles; cup 3-4 mm in length with non-ciliated edge and obtuse apex; peduncle 2-5 mm long. *Male flowers* campanulate ca. 4.5-6.5 mm long by ca. 4 wide; tepals 4, thick (up to ca. 1/3 mm), ovate-triangular ca. 2.5-3 mm long and wide; anther elliptic-oblong, 3-4 mm long by 1.5-2, nearly 200 locules, fully fused to the tepal; pedicel 1/2-3/4 mm long and wide. *False fruit* unknown. - FIG. X, 12.F1.: October.

EAST: Analamazoatra forest, around 800 m., On *Erythroxylon, Perrier de la Bâthie* 10683, type.

Endemic.

12. **Viscum hexapterum** S. Balle in *Lejeunia, Mém.,* XI (1960), 47; pl. II, 33-34 and XV.

Monoecious species with a cylindro-conical *haustorium* of ca. 6 mm long by 3 in diameter, with a wavy edge. Main *branch* reaching at its base ca. 5 mm in diameter, slightly overflowing around the insertion zone, with abundant branching, especially di-, more rarely trichotomous; branches with obconical internodes, 1-3.5 cm long by 4-6.5 mm wide at the top and 2-3.5 at the base, with 6 very prominent sides, ± broadly winged. *Leaves* subsessile (petiole not exceeding 2 mm long and poorly delimited); limb obovate, ovate or suborbicular, with rounded apex or more rarely obtuse, 0.3-2 cm by 2-15 mm, rather thick and appearing brittle, with 1-3 ribs generally distinct only above; prophylls ovate-triangular, ca. 2/3 mm long. *Inflorescences* axillary, single or fasciculate, in uni- or bisexual cymules (1-2) 3-5 (-7) flowers, provided with a bibracteal cup on a ± long peduncle; cup 1.5-3 mm long, with ciliated edge and obtuse top; peduncle 0.5-3 mm long by ca. 1 in diameter. *Flowers* with 4 tepals, *males* sessile; globular buds of ca. 1.5 mm in diameter of which a little more than half is for the tepals; anther subcircular, ca. 2/3 mm in diameter, with 3-7 locules. *Female flowers* sometimes distinctly pedicelled (pedicel 1/2-3/4 mm long); receptacle ellipsoid, 1-1.5 mm long and ca. half as wide; tepals ovate, ca. 1/2 mm long; style and stigma together reaching 1/3-1/2 mm in length, the latter not very distinct. *False fruit* ellipsoid, smooth, finely papillate, up to 2.5-3 mm long by ca. 2 wide, dehiscing by a basal tear, pedicel ± 2/3 mm long and slightly less wide; “seed” ca. 2 mm long, 2/3 wide and 1/2 thick, endosperm ca. 1.5 mm by 1/2 wide; embryo subcylindrical with hypocotyl protruding ca. 1/2 mm, not enlarged at the top. - FIG. X, 8-11.

Silves at Lichens on gneiss and quartzite between 1,000 and 1,700 m. alt. on *Symphonia.* Fl.: December; Fr.: March.

CENTER (North): Marojejy, *Humbert* 23520, and. Anjanaharibe, *Cours* 3859, type.

Endemic.

13. **Viscum Tieghemii** S. Balle in *Lejeunia, Mém.,* XI (1960), 66 and pl. XXIX.

Plant apparently dioecious, *haustoria* unknown. *Branches* of observed samples up to 50 cm long, flattened over most of their length, branching (di-) trichotomous; internodes oblong-linear, distinctly narrowed towards their base, 0.5-6 cm long by 2-5 mm wide near the top, 1-3 mm at the base and 0.5-3 thick, with marginal ± cartilaginous ribs and 3-9 longitudinal ribs ± protruding on each side. *Leaves* very reduced and caducous, visible only at the ends of the branches, ovate with obtuse apices, 0.5-1.5 mm long, thick and fleshy, articulated at the base; prophylls ovate-triangular, ciliate, 1/2-2/3 mm long. *Inflorescences*, only male known; axillary and terminal, in isolated or fasciculate cymules, 1-3 (5) -flowered, provided with a subsessile bibracteal cup; cup 1.5-3 mm. long, with ciliate edge and rounded or obtuse apices; peduncle 0.5-mm long. *Male*

flowers sessile, with 4 tepals, known only in globular buds of ca. 2.5 mm long, of which ca. 2/3 is for the tepals; anther little distinct. *False fruit* unknown. - Fig. X, 5-7.

Low rain forests and ericoid bush of gneiss ridges, between 1,300 and 1,963 m. alt. Male buds in December.

CENTER SOUTH: Mont Itrafanaomby, *Humbert* 13532 type; Mountain. Papanga de Befotaka and Haut Mandrare?, *Humbert* 6807, 6939 and 6537, sterile.

Endemic.

14. **Viscum multiflorum** H. Lec. in *Not. Syst.,* Paris, IV (1927), 76 and *Cat. Pl. Mad.* (1932), 11; S. Balle *in Lejeunia,* Mém.*,* XI (1960), 54 and pl. XX.

Plant dioecious, *haustoria* up to around 1 cm in diameter at insertion level, blackening on drying. *Branches* of the samples observed reaching ca. fifty centimeters long, entirely subcylindrical or slightly flattened (rarely long enough) at their tip which is often papillate; branching di- (tri) -chotomous; internodes 2-10 cm long by 2-8 mm, with irregular longitudinal wrinkles. Leaves light green, slightly yellowish or darker depending on the exposure (COURS) with petiole 1-3 mm long by 1-1.5, poorly delimited; blade largely elliptical, more rarely broadly ovate, with rounded apex, wedge-shaped or obtuse and base broadly wedge-shaped or more rarely rounded then shortly descending, 1-6 cm long by 8-45 mm, fairly thick and brittle, with 5-7 slightly protruding ribs on the upper side, generally barely distinct below, often with ± wavy edge when dry; peruliform prophylls. *Inflorescences* axillary and terminal, single or fasciculate, males in cymules (3) 5 (11) -flowered, pedunculate, provided with a bibracteal cup ca. 5 mm in length, edge ciliate and top obtuse; peduncle 1-4 mm. long by ca. 1 wide at its base, strongly enlarged and flattened at the top, which can reach 5 mm wide; female cymules perulose in the young state, reduced to single flowers devoid of cup and sessile; perules subconic, yellowish-white, 1.5-2 mm long and wide, with an obtuse or apiculate top. *Flowers* greenish, tepals 4, the *males* sessile or subsessile, campanulate, reaching ca. 2.5 mm in length, of which ca. half is for ovate-triangular tepals; anthers yellowish-white (HUMBERT), oblong, ca. 1 mm 1/2 long, ca. 10 locules. *Female flowers* with pedicel of 1-1.5 mm long by ca. 2/3, with a smooth, subcylindrical-obovoid receptacle, 3-3.5 mm long; tepals 1.5-1.8 mm long and 1/4 mm thick; style widened at its base, ca. 1/2 mm long; stigma globular-bilobed, reaching approximately 3/4 mm wide. *False fruit* smooth, globular-ellipsoid, shiny black when dry, up to 8-10 mm long by 6 to 8, pedicel 1-5 mm long; “seed” broadly ellipsoid, ca. 4 mm long, 3 wide and 1 thick; endosperm almost completely enclosing the lateral and straight subcylindrical embryo, with hypocotyle slightly dilated at the top; cotyledons distinct at their ends. - Fig. X, 1-4.

Rain forests on gneiss and quartzite and silves at Lichens, between 1,200 and 2,244 m. alt., on *Uapaca.* Fl.: March, May, August, October and November.Fr.: March.

CENTER and HIGH MOUNTAINS: Marivorahona, *Humbert* 25709; Tsara-tanana, *Perrier de la Bâthie* 15237, 16156; Manongarivo, *Perrier* 10662; Varahina, *Herb. Jard. Tan.* 2733; Ambatofinandrahana, *Decary* 15159; West Betsileo, *Humbert* 28262; Ankazobé, *Decary* 7432; Andringitra, *Herb. Res. Nat.* 3467.

Endemic.

15. **Viscum Perrieri** H. *Lec.* in *Bull. Mus. Par.,* XXXII (1926), 385 and XXXIII (1927), 99; *in Not. Syst.,* Paris, IV (1927), 79-81; in *Cat. Pl. Mad.* (1932), 12; S. Balle in *Lejeunia, Mém.,* XI (1960), 60, pl. II, 23 and XXIII.

Plants dioecious, *haustorium* unknown, blackening during drying. *Branches* of observed samples up to 40 cm long; subcylindrical over their entire length, slender, with di-trichotomous branching; internodes 1-7 cm by 0.5-3 mm, fairly irregularly wrinkled longitudinally. *Leaf* petiole 1-2 mm long by ca. 2/3, poorly demarcated; blade generally lanceolate or subrhombic [sublozengic], more rarely elliptical or ovate, with obtuse or acute apex and base cuneate or gradually narrowed, slightly recurrent, from 1-4.5 cm by 2.5-17 mm, thin, with 3-5 fine ribs prominent above, indistinct below; triangular prophylls, of ca. 1/3 mm long, usually absent. Inflorescences axillary and terminal, always pedunculated; the males always and the females sometimes provided with a bibracteal cup; male cymules 3-7-flowered; female cymules 1-flowered or reduced to single isolated flowers and, in this case, wrapped in the young state with a subconic perule ± distinctly apiculate, of ca. 1 mm long and slightly less in diameter, bordered ± lacinate, brownish-white; cup 1-3 mm long, with entire edge and obtuse apices; peduncle 1-3 mm long. *Flowers* with 4 tepals, the *males* subsessile, campanulate, reaching ca. 1.5 mm in length, ca. half of which is for the ovate-triangular tepals; anthers oblong-subcircular, ca. 1/2 mm long and slightly less wide, with 7-12 locules. *Female flowers* sessile or shortly pedicelle with subcylindrical or ovoid-oblong receptacle, smooth, ca. 3 mm long by 1 wide; tepals 1-1.3 mm long; style and stigma together reaching ± 2/3 mm in length; stigma globular-sub-lobed ca. 1/2 mm wide; pedicel less than 1 mm long. *False fruit* smooth globular-ellipsoid, ca. 6 mm long by 5 wide, with pedicel 1-2 mm long by ca. 1/2; “seed” of ca. 3 mm long by 2-3 wide, thick; embryo terminal or lateral, subcylindrical, with hypocotyl strongly dilated at the top and distinct cotyledons at their end, sometimes germinating in the berry. Fig. X, 13-15.

Rain forests on gneiss and quartzite; lichen silves and ericoid bush, between 400 and 2,600 m. alt., on *Philippia and Weinmannia.* Fl.: January, April, May, October.; fr.: January.

CENTER and HIGH MOUNTAINS: Tsaratanana, *Perrier de la Bâthie* 10702, female type; 16335, male type; 16336; Manongarivo, *Perrier* 10658 and 10660; Mangindrano, *Humbert* 25233; Ambatosoratra, *Cours* 22888; Marojejy, *Humbert* h / 13.

Endemic.

16. **Viscum multicostatum** Baker in *Journ. Linn. Soc.,* XX (1883), 248; H. Lec. in *Not. Syst.,* Paris, IV (1927), 76, *pp;* in *Cat. Pl. Mad.* (1932), 11; S. Balle *in Lejeunia* (1960), 53, p1. 11,26, III, 4 and XIX incl. var. *laevibaccatum.* - *V. apodum* Baker, *loc. cit.,* XX I (1885), 439; H. Lec. in *Cat.,* 9. - *V. farafanganense* H. Lec. in *Not. Syst.,* 68 and *Cat.,* 10.

Plants dioecious, *haustoria* unknown. *Branches* of the specimens observed up to sixty centimeters long, sub-cylindrical, more or less 4-sided or flattened at their ends, robust, with trichotomous branching; internodes 1.5-8 cm long by 1-6 mm, with 6 longitudinal ribs generally well marked and regular. *Leaf* petiole 3-6 mm long by 1-2, ± well defined; blade ovate, lanceolate or elliptical, rarely oblong or obovate, apex acute or obtuse, rarely rounded, and base rounded or cuneate then shortly decurrent, more rarely acute, 4-10 cm long by 10-50 mm, thick and rigid, with 3-5 (7) sometimes not very distinct ribs especially on the underside, irregularly joined by ± distinct anastomoses; broadly triangular prophylls, edge ciliate, reaching ca. 1/2 mm long. Inflorescences axillary and terminal, isolated or fasciculate, in sessile uniflorous cymules, provided with a bibracteal cup. Cup ca. 3 mm long with ciliate edge and obtuse or acute peaks. *Flowers* with 4 tepals, sessile, *males* campanulate, reaching 3-4.5 mm long and wide, including ca. 2 for triangular tepals; anther elliptic-obovate, reaching approximately 3 mm long and 2

wide, 100-120 locules; *female flowers* with smooth ellipsoid receptacle (sometimes warty?) ca. 3 mm long by over 1; tepals of ca. 1.5 mm long; style subcylindrical ca. 1/2 mm long; stigma globular ca. 1/3 mm in diameter. *False fruits* globose or ellipsoid, smooth or warty, sessile, 5-7 mm long and 4-7 in diameter; subconical warts up to 1/2 mm long; "seed" 2-3.5 mm long, 1.5-2.5 wide and 1-1.5 thick; embryo lateral subcylindrical, with hypocotyl dilated at the top and flush with the surface of the endosperm and with distinct cotyledons at its end. - FIG. XI, 1-7.

Rain forests, up to 1,700 m. (a.; on *Burasaia.* Fl. and fr. June, September.

EAST: Scanierana, *Perrier de la Bâthie* 10696; Farafangaria, *Decary* 5085, type of *V. farafanganense;* Fort-Dauphin, *Humbert* 5935; *Scott Elliot* 2483.

CENTER: Imerina, *Baron* 465, 3012, type of *V. apodum,* K; 1074 type of *V. multicostatum,* K; Andringitra, *Cours* 2287; Fianarantsoa, *Serv. For.* 4780; Ambatofinandrahana, *Bosser* 1855.

Endemic.

17. **Viscum Roncartii** S. Balle in *Lejeunia,* Mém., XI (1960), 63, pl. II, 36 and XXVII.

Plants apparently dioecious, *haustoria* unknown. *Branches* of observed specimens up to 40 cm long, slender, dark brown when dry, subcylindrical-4-winged or quadrangular at their tips, with (di) -trichotomous branching; internodes 0.4-3 cm by 2/3-4/5 mm, 4 longitudinal ribs strongly protruding at first, diminishing over time. *Leaves* shiny green (COURS), sessile, elliptical or obovate, with acute or obtuse apex, rarely rounded and apiculate, and with cuneate or acute base, 0.5-1 cm by 3-6 mm, fairly thick and leathery, with 1-3 slightly protruding ribs when dry, as well as the network above, indistinct below; ovate prophylls with acute apex, 1/3-2/3 mm long. Only *male inflorescences* known, axillary or more rarely terminal, in sessile uniflorous cymules, provided with a bibracteal cup; cup 1.5-2.5 mm long with ciliate edge and acute apices. *Male flowers* with 4 (3) tepals, greenish-white (COURS), sessile, campanulate, ca. 2.5 mm long and wide, ca. half of that for the ovate-triangular tepals; ellipsoid-subquadrangular anthers of ca. 1 mm 2/3 long, 30-45 locules. *False fruits* "green and transparent" (COURS), not observed. - FIG. XI, 14-16.

CENTER: Ambatoharanana, 1,000 in. alt., March, *Cours* 4060, type; Marakazina-Soalazaina, 1,200 m., January, *Cours* 1777.

Endemic.

18. **Viscum itrafanaombense** S. Balle, *in Lejeunia,* Mém. XI (1960), 48, pl. II, 35 and XVI no. III, 5.

Species apparently dioecious *haustorium* unknown, irregularly blackish when dry. *Branches* of the observed sample up to around 25 cm long, subcylindrical over most of their length, slightly flattened at the tip, with di- (tri) chotomous branching; internodes 0.5-3.5 cm by ca. 0.5-5 mm. *Leaf* petiole 1-3 mm long by 3/4, poorly delimited; limb elliptical, more rarely ovate or obovate, with obtuse or cuneate apex, rarely acute or rounded and with cuneate base then briefly decurrent or acute, 0.7-2 cm by 4-11 mm, rather thick, with (1) -3 fine veins slightly protruding above, often indistinct; triangular, acute, ciliated prophylls, around 1 mm long. *Inflorescences,* only female known, axillary or terminal, in sessile uniflorous cymules, provided with a bibracteal cup; 2-4 mm long, with non-ciliate margin and with acute or subacute apices; peduncle not cup exceeding 1 mm long. *Flowers* all unknown. *False fruit* largely ellipsoid or sub-spherical, probably smooth (36) up to 5-6 mm long by 4-6; style subcylindrical ± 2/3 mm long; stigma

globular ± 1/2 mm in diameter; "seed" ± 2.5 mm long, 2 wide and 3/4 thick; embryo not observed. - FIG. XI, 8-11.

CENTER (south): Mount Itrafanaomby, ridge rain forest between 1,600 and 1,963 m. alt.; December, *Humbert* 13434 type.

Endemic.

19. **Viscum vohimavoense** S. Balle in *Lejeunia, Mém.* XI (1960), 77, emend. New *Adansonia* ser. IV (1964), 138.

Plant apparently dioecious, *haustorium* unknown. *Branches* of observed specimens up to 20 cm long, sub-cylindrical or flattened over most of their length (see var.), slender and greenish when dry, with dichotomous branching; internodes 0.9-3 cm by over 1-3 mm, with 4 or 6 regular strongly projecting ribs, sometimes ± winged. *Leaves* subsessile (petiole not exceeding 1 mm long); limb oblanceolate with rounded apex or more rarely obtuse and at base gradually narrowed, from 0.6-1.6 cm ca. 2-3 mm, thin, with 1 vein generally barely distinct and only on the upper surface; prophylls triangular, ciliate, around 1/3 mm long. *Inflorescences* axillary or terminal, single or sometimes paired, provided with a pedunculate bibracteal cup, females unifloral (var. *vohimavoense*); other 3-flowered with central male flower (37) (var. *complanatum*); cup 1.5-2 mm. long, with ciliate margin and obtuse vertex; peduncle 0.5-2 mm long by ca. 1/2. *Flowers* sessile with 4 tepals, males in globose buds not exceeding 2/3 mm in diameter; females with a sub-cylindrical receptacle of ca. 2.5 mm long by 2/3; tepals oblong-triangular ca. 1 mm long, obtuse apex; style subcylindrical, ca. 1/2 mm long; stigma globular, slightly bilobed, barely wider than the style. *False fruit* unknown at maturity; young berries ovoid, smooth but very papillate, up to 3.5 mm long by ca. 2, sessile. - FIG. XI, 12-13.

KEY TO VARIETIES

Branches sub-cylindrical or 4-gonal over most of their length; female cymules single flowering .....var. *vohimavoense.*
Branches flattened with 6 ribs over most of their length; cymules 3-flowered, with central male flower .....var. *complanatum.*

Var. **vohimavoense** S. Balle, in *Lejeunia, loc. cit.,* pl. II, 12, III, 5 and XXXV.

EAST: Mount Vohimavo, rain forest around 700 m. alt. on laterite and granite gneiss; March, *Humbert* 20677, type.

Var. **complanatum** S. Ball; *V. vohimavoense* pp in *Adan-sonia* new. ser., IV (1964), 138.

EAST: Mount Vohimavo, rain forest on lateritic clay and granite between 600 and 700 m. alt.; March, *Humbert* 20666, type.

Endemic (type and variety).

20. **Viscum semialatum** H. Lec. in *Not. Syst.,* Paris, IV (1927), 80; *Cat. Pl. Mad.* (1932), 12; S. Balle in *Lejeunia* (1960), 64, pl. II, 22.

Species apparently dioecious, *haustoria* unknown. *Branches* of the observed specimen up to ca. 25 cm long, strongly flattened over their entire length, branching di- trichotomous; internodes

1-5 cm long by 2-5 mm wide at the top, 0.5-3 at the base and 3/4-2 mm thick, strongly flattened-bi-winged, weakly and irregularly wrinkled longitudinally on each side, markedly narrowed towards the base. *Leaf* petiole 1-3 mm long, ill-defined; limb obovate or rarely elliptical, with rounded or obtuse apex and gradually narrowed base, 1-3 cm by 5-15 mm, rather thick, with (1) 3-5 fine ribs generally distinct only at the base and on the upper side; prophylls triangular, obtuse, 1/3-2/3 mm long. *Inflorescences* only *female* known, axillary, in uniflorous cymules, provided with a pedunculated bibracteal cup; cup 1.5-2 mm long with ciliate edge and subacute apex; peduncle 1-2.5 mm long by ca. 2/3. *Flowers* all unknown. *False fruit* unknown at maturity; young berries ovoid, surface smooth, reaching ca. 3 mm long by ca. 2, with a pedicel of ca. 1/2 mm long; barely distinct (broken) subcylindrical style? - FIG. XI, 17-18.

EAST: Analamazoatra Forest, around 800 m. alt.; January, *Perrier de la Bâthie* 10679, type.

Endemic.

21. **Viscum echinocarpum** Baker in *Journ. Linn. Soc.,* XX (1883), 248; H. Lec. in *Cat. Pl. Mad.* (1932), 10; S. Balle *in Lejeunia* (1960), 42, pl. I, 8 excl. II, 9. - V. *Grandidieri* H. Lec. in *Not. Syst.,* Paris, IV (1927), 74; in *Cat.* (1932), 11. - *Aspidixia Grandidieri* Van Tiegh. in *Bull. Soc. Bot. Fr.,* XLIII (1896), 193.

Species monoecious, *haustoria* unknown. *Branches* of observed samples up to 50 cm long, subcylindrical, light brown when dry, with di- and trichotomous branching; internodes 0.5-7 cm by 2-7 mm, 4-6 longitudinal ribs ± regular and protruding. *Leaf* petiole 1-3 mm long, ill-defined; limb oblanceolate, rarely oblong, elliptical or obovate, with rounded apex, rarely obtuse or wedge-shaped, the base gradually narrowed, from 1-5.3 cm by 4-10 mm, thick and fleshy, generally without veins, sometimes with 1-3 fine veins ± distinct, slightly protruding above; prophylls triangular, subacute, ciliate, 0.5-1 mm long. *Inflorescences* axillary and terminal, reduced to bare flowers, single or fasciculate, males and females mixed up without order; without either bibracteal cup nor perule: the flowers are accompanied by 2 independent lateral scales (prophylls). *Flowers* all sessile, with (3) 4 ovate-triangular tepals 1-1.3 mm long, campanulate *males*, 2-2.5 mm long and wide; ca. 1 mm long and slightly less wide subrhombohedral anther, 18-25 locules; the *female* with a subterete to ellipsoid receptacle, almost smooth or rough, ± 2 mm long by 1 wide; style flared downward, ca. 1/4 mm long; stigma globular of ca. 1/3 mm in diameter. *False fruit* ovoid, green-brown, ± golden when dry, up to ca. 5 mm long by 3.5 wide, bearing, especially in its upper part, large ± regularly dispersed rounded warts; "seed" with blackish endosperm of ca. 3 mm long and slightly less wide and ca. 1 thick; embryo straight, apical or lateral, subcylindrical, ca. 2.5 mm long, hypocotyl very dilated at the top, flush on its surface and with distinct cotyledons at its ends; dehiscence of the fruit by basal tear. - FIG. XII, 11-12.

Coastal woods, on *Ceriops Boiviniana, Didierea, Rhizophora mucronata and Salvadora.* Fl.: February, March, April, August, September and December; fr.: February and June.

EAST: Fort Dauphin, *Scott Elliot* 2470.

WEST: Maromandia, *Decary* 14825; Majunga, *Perrier de la Bâthie* 10676; Ambongo, *Pervillé* 577; Morondava, *Humbert* 2387.

SOUTH: Manombo, *Decary* 18717; Tulear, *Geay* 3323; *Grandidier* without number, type of *V. Grandidieri; Perrier 12810;* Bay St. Augustine *Bojer* without No., type *V. echinocarpum,* K; mouth of Fiherenana, *M. Keraudren* 717; mouth of the Onilahy, *Humbert* 2606; around Tsimanampetsotsa lake, *Humbert* 5333; Mahafaly country, *Perrier* 10671.

Endemic.

22. **Viscum ceibarum** S. Balle in *Lejeunia, Mém.,* XI (1960), 35, pl. II, 16.

Plant apparently dioecious*, haustorium* unknown, blackening on drying. *Branches* of the observed specimen up to around 25 cm long, subcylindrical, slightly flattened at the ends, with di- (tri) -chotomous branching; internodes 1-3.5 cm by 1-6 mm, with 6 regular longitudinal ribs. *Leaves* subsessile; petiole not exceeding 3 mm ca. 1 long; limb elliptical or obovate, with rounded or obtuse apex and cuneate base, of 1-3 cm 7-15 mm, fairly thick, with 3 fine ribs slightly protruding above, indistinct below; triangular-acute prophylls, up to around 1 mm long. *Inflorescences* only female known, axillary, reduced to isolated and sessile naked flowers. *Flowers* all unknown. *False fruit* globose or broadly ellipsoid, sessile, up to around 5.5 mm long and almost as wide, covered with large, fairly regularly dispersed rounded warts; style sub-cylindrical ca. 1/2 mm long; stigma globular slightly wider than the style, "seed" with suborbicular blackish endosperm ca. 3 mm in diameter, over ± 1 mm thick; embryo apical, straight, subcylindrical, ca. 1.5 mm long, hypocotyl barely protruding. - FIG. XII, 1-2.

EAST: Coastal forest on Kapokier; Fort-Dauphin, July, *Decary* 10334, *type.*

Endemic.

23. **Viscum Decaryi** H. Lec. in *Not. Syst.,* Paris, IV, (1927), 72; *Cat. Pl. Mad.* (1932), 10; S. Balle in *Lejeunia* (1960), 41, pl. II, 6-7 and. XII.

Plant dioecious, *haustoria* unknown. *Branches* olive green when dry, for specimens observed fifty centimeters long, subcylindrical over the greater part of their length, a little flattened at their end, branching di- (tri-) chotomous; internodes 1.5-11.5 cm by 1-5 mm, with 6-8-12 longitudinal ribs ± regular and protruding. *Leaf* petiole 2-7 mm long by 1-1.5, poorly delimited; blade lanceolate or narrowly elliptical, sometimes sublinear and often ± sickle-shaped, long narrowed at each end, with acute or obtuse apex, 3-10 cm on 3-15 mm, fairly thin, with 15-20 fine ± distinct and anastomosed subparallel veins; prophylls broadly triangular, ciliate, 1/2-1 mm long. *Inflorescences* axillary and terminal, constituted by uniflorous cymules, single or in bundles, provided with a sessile bibracteal cup; cup yellowish and fleshy ca. 2 mm long, on margin ± ciliate and apices rounded or obtuse. *Flowers* sessile, very pale yellow green (HUMBERT), with 4 tepals; the *male* campanulate up to ca. 3 mm long and wide, including ca. 2 for the ovate-triangular tepals; anther oblong-elliptical, 1.5-2 mm by 1-1.5 wide, 50-60 locules; *female flowers* with subcylindrical to ovoid receptacle 1.5-2.5 mm long by 1, smooth, and with tepals ca. 1.5 mm.; style slightly flared towards its base, ca. 1/2 mm long; stigma globular-bilobed, slightly wider than the style. *False fruit* sub-spherical, smooth, sessile, ca. 4 mm in diameter, "seed" with blackish endosperm, ovate-suborbicular ca. 2.5 mm long by a little less wide and 1 mm thick; embryo straight, lateral, c. 2 mm long, with hypocotyle not dilated at the top and barely protruding and with cotyledons appressed. - FIG. XII, 3-6.

Rain forests on gneiss laterite, up to 1.650 m. alt.; on Ebénier. Fl.: April, July and August; fr.: June.

SAMBIRANO: Nossi Bé, *Boivin* without number *and Pervillé* 335, type *of Ixosoma elongata.* VT mss.

CENTER: Marojejy, *Humbert* 22231; Ambositra, *Decary* 13556, *Humbert* 4888; Tsianovoha, *Heim* without number; Mount Taolana, *Herb. Jard. Tan.* 4550.

EAST: Sakaleona, *Decary* 14224, type; Farafangana, *Decary* 5121 *and* 5368.
Endemic.

24. **Viscum myriophlebium** Baker emend. S. Ball in *Adansonia* new. ser., IV (1964), 139 (38).

Plant dioecious, *haustorium* up to around 8 mm diameter at insertion level. *Branches* of observed specimens up to fifty centimeters long, subcylindrical over most of their length, sometimes slightly flattened at their ends, sometimes ± swollen at the nodes, with di- (tri-) chotomous branching; internodes 0.5-7 cm by 1-6 mm, with 4-6 (8) regular longitudinal ribs, sometimes ± winged, the extremities sometimes strongly papillate. *Leaves* sub-sessile; petiole not exceeding 3 mm long by ca. 1 mm, poorly defined, limb extremely variable in shape, elliptical, ovate, obovate, oblong, lanceolate, oblanceolate, more rarely suborbicular or subrhombic [sublozengic], with acute apex, obtuse, more rarely rounded, often apiculate and at base cuneate or ± long narrowed, 0.8-5.5 cm by ca. 2-40 mm, thick and leathery, generally rigid, with numerous fine anastomosed subparallel veins near the base. *Inflorescences* axillary and terminal, reduced to bare flowers, single or fasciculate, perulose in the young state; perules yellowish subconic, apex obtuse, ca. 1 mm long and slightly less wide; sometimes very papillose. *Flowers* with 3 ovate-triangular tepals, *males* campanulate 1.5 to 2 mm long and wide, ca. half of which is for tepals; anthers oblong, ca. 1.3 mm by 0.5, with 15-20 locules; the *female* sessile or pedicellate ± long (*ad* 3 mm), smooth or ± verrucose; receptacle ovoid, ellipsoid or subglobular, ± 1.5 mm long to slightly less wide, smooth or warty; tepals ca. 1.5 mm long; style slightly flared, ca. 2/3 mm long; stigma subglobular-bilobed, ca. 1/3 of a mm in diameter. *False fruit* ca. 5 mm in diameter, smooth or warty, sessile or pedicelled; "seed" with an ovate endosperm up to ca. 2.5 mm long, a little less wide and ca. 1 mm thick; embryos 1 or 2, sub-cylindrical, straight, lateral, ca. 2 mm long, hypocotyl slightly dilated at the top and barely protruding; cotyledons fused together. Fig. XIII, 1-8.

KEY TO VARIETIES

1. Berries pedicellate, with or without warts; leaves ± broadly elliptical .. var. *myriophlebium.*
1'. Berries sessile.
2. Berries smooth or with rare warts irregularly dispersed and slightly protruding; leaves elliptical, oblong or sublosangular. ..... var. *longifolium.*
2'. Berries with large, very tight warts; flabelliform, leaves broadly obovate or suborbicular …. ..... var. *flabellifolium.*

Var. **myriophlebium**. - *Viscum myriophlebium* Baker in *Journ. Linn. Soc.,* XX (1883), 348; H. Lec., *Cat. Pl. Mad.* (1932), 11; S. Balle *in Lejeunia,* Mém. XI (1960), 56 pp. excl. var. *longifolium,* pl II, 18, III, 7 and XXI. - *V. Pervillei* H. Lec., In *Not. Syst.,* Paris, IV (1927), 69.
Unknown flowering and fruiting dates.
WEST: Ambongo, *Pervillé* 515, 555, type of *V. Pervillei,* 577, 616 and 719, type of *V. myriophlebium.*
Endemic.

Var. **longifolium** H. Lec. in *Not. Syst.,* Paris, IV (1927), 77, nom.; in *Cat. Pl. Mad.* (1932), II. - *Viscum myriophlebium* var. *sessilibaccatum* S. Balle in *Lejeunia* (1960), 57. - *V. tetrapterum* S. Balle, *ibid.,* p. 65, pl. II, 10 and XXVIII; S. Ball in *Adansonia,* new. ser., IV (1964), 139. - *V. parvifolium* H. Lec. in *Not. Syst.,* IV (1927), 78 *and Cat.* (1932), 12.

Rain forests on gneiss and silve laterite at Lichens between 500 and 2,000 m. alt. Fl.: January and October; fr.: October.

CENTER (north): Mangindrano, *Humbert* 25129, type of *V. tetrapterum* mixed with *V. apiculatum;* Tsaratanana, *Perrier* 15577, type of var. *longifolium,* 10708 and 10709; top Bemarivo, *Perrier* 10704, type of var. *sessilibaccatum;* Ankaizina, *Perrier* 15174, type of *V. parvifolium.*

WEST: North of Ankarana, *Humbert* 63 / d, 67 / e, 75 / f and 77 / g.

Endemic.

Var. **flabellifolium** S. Balle in *Adansonia,* new. ser., IV (1964), 139. - *Viscum flabellifolium* S. Balle *in Lejeunia,* Mem. XI, (1960), 44, pl. Il, 32 and XIV.

Forest on sand. - Fl.: November.

WEST: Ankarafantsika, *Ramamonjisoa* 2065, type; Ambato-Boeni, *Saboureau* 2564.

Endemic.

25. **Viscum apleulatum** H. Lec. in *Not. Syst.,* Paris, IV (1927), 70 and in *Cat. Pl. Mad.* (1932), 9; S. Balle in *Lejeunia,* Mém. XI (1960), 31 and pl. II, 8 and VI.

Plant dioecious, *haustoria* unknown. *Branches* up to 1.50 m long, very shiny green (COURS), flattened over most of their length (except the main branch); (di-) tri- (poly-) chotomous branching; internodes clearly narrowed towards their base, 1-8.5 cm long by 2-6 mm wide near their top, 1-4 mm at their base and 0.5-2 mm thick, sometimes very similar to leaves, with (5) 7-9 (15) thin longitudinal ribs on each side, ± regularly protruding, diminishing with age. *Leaves* subsessile, oblanceolate or obovate, rarely oblong-linear, with generally rounded apex and apiculate, rarely obtuse or cuneate, gradually narrowed towards the base, 1.2-4.5 cm long by 4-9 mm, rigid and leathery, presenting 12-20 fine subparallel veins regularly distributed and anastomosed at the base; prophylls broadly triangular and rapidly deciduous, around 1/3 of mm long. *Inflorescences* terminal and axillary, reduced to naked flowers, often single, sometimes ternate, sessile, perulate when young; perules bulbous, apiculate, yellowish, ca. 1.5 mm long and 1 wide. *Flowers* with 3 tepals, greenish white (COURS), *males* campanulate, 2-2.5 mm long and wide, including ca. 1.5 mm for the ovate-triangular tepals; anther oblong-elliptic, ca. 1 mm long by 2/3, 12-20 locules; the *females* with receptacle ovoid-subcylindrical, smooth, ca. 2 mm long and with ovate-triangular tepals 1-2 mm long; style subcylindrical ca. 1/2 mm long; stigma globular reaching approximately 1/3 mm in width. *False fruit* green when fresh (COURS), sub-spherical, smooth, ca. 6 mm in diameter, with pedicel ca. 1/2 mm long; “seed” with broad elliptical endosperm, 3-3.5 mm long by a little less wide and ca. 1 mm thick; embryo apical and straight, subcylindrical, hypocotyl barely protruding. - FIG. XII, 7-10.

Rain forests on gneiss and lichen silves between 1,500 and. 2,300 m. Above sea level. F1.: January, May, December; fr.: December.

CENTER and HIGH MOUNTAINS: Marivorahona, *Humbert* 25745; Tsaratanana, *Humbert* 18361, *Perrier de* la *Bâthie* 15578, female type; 15579, male type; Manongarivo, *Perrier* 10661;

Anjanaharibe, *Cours* 3722; *Humbert* 24788; Mangindrano, *Humbert* 25129 *bis,* mixed with *V. myriophlebium* var. *longifolium.*

Endemic.

26. **Viscum trachycarpum** Baker emend. S. Balle in *Lejeunia,* Mém. XI (1960), 68 and pl. III, 6.

Plant dioecious, *haustoria* unknown. *Branches* of observed specimens up to sixty centimeters long, generally sub-cylindrical over most of their length; often slightly flattened at the tip, exceptionally over a long distance, with di- or trichotomous branching; greyish brown or ochraceous when dry; internodes 0.8-7.5 cm by 0.5-7 mm, the extremes sometimes very papillose, with 6-10 longitudinal ribs, regular near the ends, tapering lower. *Leaves* always reduced, sometimes ± fleshy and articulated at the base but quickly deciduous, visible only on the nodes of the ends, elliptical, oblong, ovate, oblanceolate or linear, from 0.3-1.8 cm long by 1-3 mm, the others reduced to scarious cataphylls, ca. 1 mm long, non-articulated and persistent, but drying out, often tearing and sometimes becoming indistinct; prophylls reduced to triangular scales 1/4-1/3 mm long, quickly caducous. *Inflorescences* always reduced to bare flowers, single or fasciculate, axillary or terminal, perulose; subconic perules, with rounded or apiculate apices, yellowish-brown, ca. 1 mm long. *Flowers* with (3?) 4 ovate-triangular tepals; the *male* campanulate and sessile, green or whitish on the outside, pale sulfur yellow on the inside, 2-3 mm long and wide, half of it for tepals; oblong-sub-rhombohedral anther, 1-2 mm long and ca. half wide, 40-50 locules. *Female flowers* sessile or pedicelled, with ovoid-ellipsoid receptacle ca. 1.5 mm long and 1 wide, smooth or ± warty; tepals 2/3-1.5 mm long; style subcylindric, 1/3-1/2 mm. long, sometimes slightly flared downward; stigma globular, ± bilobate, slightly wider than the style; pedicel up to 5 mm long. *False fruit* sub-spherical, rarely ovoid, blackish when dry, sessile or ± long-pedicelled, 3-4 (7) mm long, smooth or warty; “seed” with a subcircular or ± elliptical endosperm, 2-3 mm long and ca. 1 thick, with 1-2 subconical embryos, straight or slightly arched, lateral, hypocotyle little dilated, barely protruding and with indistinct cotyledons. FIG. XIII, 9-20.

Species abundantly widespread, in the whole Island; 1 male specimen has been found in COMOROS.

It is necessary to attach, as a form, to this species, *Viscum Humbertii* Lec. (*Not. Syst.* IV (1927), p. 75), which has particularly well developed leaves (1.2-1.8 cm long by 1.5-3), but is linked to the varieties by numerous intermediate specimens; this form is very common in var. *trachycarpum* (cf. *Humbert* 3010, 3829 type *V. humbertii,* 12101, 12599, 12719, 13852, 19752; *Seyrig* 69a and b and *Herb Tan 6004..*); but it is also found in var. *Douliotii* (*Perrier de la Bâthie* 10664).

KEY TO VARIETIES

1. Berries pedicelled.
   2. Berries smooth. ..... var. *Douliotii*
   2’. Berries warty..... var. *Lecomtei.*
1’. Berries sessile.
   3. Berries smooth ..... var. *laevibaccatum.*
   3’. Berries warty..... var. *trachycarpum.*

Var. **Doullotii** (H. Lec.) S. Balle in Lejeunia, Mém. XI (1960), 70 and pl. I, 1,2 and II. - *Viscum cylindricum* Boiv. last name. in herb. P.; H. Lec. in *Bull. Mus. Par.* XXII (1916), 268; S. Balle, in *Lejeunia,* 40. - *V. debile* H. Lec., In *Not. Syst.* Paris, IV (1927), 68. *V. palleolatum* H. Lec., In *Bull. Mus. By.* XXII (1916), 270; XXXII (1926), 384; in *Not. Syst.* IV (1927), 69; in *Cat. Pl. Mad.* (1932), 11. - *Viscum palleolatum* var. *Douliotii* H. Lec., In *Bull. Mus.* XXII, 271; var. *Perrieri ejusd., Ibid.* - *V. Pervillei* (Van Tiegh.) H. Lec., In *Not Syst.* IV, 69; *V. Rutenbergii* Buchenau, in *Abhandl. Nat. Ver. Bremen* VII (1889), 376; H. Lec. in *Cat.,* 12. - *Viscum Humbertii* H. Lec. in *Not. Syst.,* IV (1927), 75, *pp*

Shady forests, xerophilous bush on gneiss and limestone and mangroves; on *Bruguiera, Ceriops, Ebénacées, Heritiera, Flacourtia, Nerium oleander*,, *Rhizophora, Sonneratia alba,* a Byttnériacé (Sterculiacées), *Adabo* (= *Ficus*) *and* on mangroves and mangroves in general. Fl. and fr. apparently all year round.

Sambirano: Nosy Be, *Boivin* without number., type of *V. cylindricum* and *V. palleolatum and* 2112.

CENTER: Anjenabe, *Humbert* 14112; Ambatondrazaka, *Cours* 742; haute Malio, *Humbert* 19415.

WEST: Fassy, *Rutenberg* without number, type of *V. Rutenbergii;* Maromandia, *Decary* 932 and 1132; Ankarafantsika, *Decary 12832; Serv. For.* 1 and 22; Firingalava, *Perrier de la Bâthie* 784, *type* of var. *Perrieri;* Betsiboka, *Perrier* 10664 *(fa. Humbertii);* Majunga, *Afzelius, Humbert* 61, *Perrier* 17245, type of *V. debile;* Ambongo, *Perville* 547, type of *V. Pervillei;* Manongarivo (Ambongo), *Perrier*10655; Morafenobe, *Decary* 2303; Sakaraha, M. *Keraudren* 1322.

SOUTH: Gorges de la Manombo, *Humbert* 19988; Tulear, *Geay* 15; *Humbert* 2503, 5201, *M. Keraudren* 555 *and Bosser* 14219.

Without locality: *Douliot* without number, type of var. *Douliotii (Velomiato).*

Var. **Lecomtei** S. Balle *in Lejeunia,* 70 and pl. XXXII and XXXIII.

Tropophilic forests on limestone (up to 1,000 m. Above sea level). Fl.: January and December; fr.: January, March, June, August, October and December.

CENTER: Mont Vohipolaka, *Humbert* 11639 (fa. Robustum.)

WEST: Diego-Suarez, M. *Keraudren* 1645; Ankarana, *Humbert* 18939, 19033, 83 / i and 85 / d.

SUD Betioky, on the Onilahy, *Humbert* 5268; Tongobory, *Humbert* 20205; Mahafaly country, *Humbert* 29483; Ambovombe, *Decary* 3507; medium Mandrare, *Humbert* 12523, 12782, type of var. *Lecomtei,* and 12847.

Var. **laevibaccatum** S. Balle *in Lejeunia,* 69 and pl. XXX and XXXI.

Rainforests and lichen silves on gneiss and quartzite; on *Medinilla, Philippia* and *Schismatoclada.* Fl.: January to March and October to December; Fr.: December.

CENTER *and* HIGH MOUNTAINS: Marivorahona, *Humbert* 25746; Tsaratanana, *Humbert* 18232, 18493, *type* of var. *laevibaccatum; Perrier de laBâthie* 15575; Marojejy, *Humbert* 22482, 23654, 23763 and 84 / k; Mangindrano, *Humbert* 25229; Anajanaharibe, *Humbert* 24703; Ambatosoratra, *Humbert* 22882; Morahariva, *Humbert* 13135; Mont Apiky, *Humbert* 13852.

Var. **trachycarpum**. - *Viscum trachycarpum* Baker, in *Journ.Linn. Soc.,* XXI (1885), 439; H. Lec. in *Not. Syst.* Paris, IV (1927), 70; *Cat. Pl. Mad.* (1932), 12; S. Balle in *Lejeunia,* 68 etpl. II, 38 and 40.

Tropophilic forests on silica and basalt; transition forests to the xerophilic bush, between 500 and 1,300 m. alt., on *Acalypha and Croton.* Fl.: October and November; fr.: January, March, October and December.

CENTER: Manambato, *Court* 2824; Andrangovalo, *Humbert* 17640; Imerina, *Baron* 2408, type of *V. trachycarpum,* K; Analavelona, *Humbert* 19752; tributary of Mangoky, *Humbert* 3010; Ihosy, *Humbert* 28584; Kalambatitra, *Humbert* 12101; Ampandrandava, *Seyrig* 69 and *Herb. Tan.* 6004; Anadabolava, *Humbert* 12599 and 12719; Andohahela, *Humbert* 13852.

SOUTH: Ambovombe, *Decary* 3496 and 8323.

Male samples, which it is not currently possible to assign more specifically to any variety (designated by the synonyms they have been assigned).

Viscum granarium H. Lec., In *Not. Syst.* Paris, IV (1927) 69 and *Cat.pl. Mad.* (1932), 10.

V. Humbertii H. Lec., *Loc. cit.* 75, pp

V. sexangulatum H. Lec., *Loc. cit.* 70.

Ixogenia sexangulata Van Tiegh. *nom.* in Herb. P.

CENTER and HIGH MOUNTAINS: Ambatondrazaka, *Cours* 1201, *Saboureau* 562; Andringitra *Humbert* 3829, type *V. Humbertii;* Manambolo, *Humbert* 12991.

WEST: Maromandia, on *Flacourtia, Decary* 1253; Majunga, on *Ceriops, Perrier de la Bâthie* 10675; Beria, on *Bruguiera gymnorhiza, Perrier* 10641; Soalala, *Decary* 15803; Bombetoka, on mangroves, *Perrier* 1232; Beroroha, *Humbert* 11307; Analamarina, *Humbert* 19643.

SOUTH: Lake Tsimanampetsotsa, *Perrier de la Bâthie* 4433*;* Linta *Delta*, *Humbert* 5387 and 5435; Ambovombe, on *Dalbergia, Decary* 3198 *and* 2918, type of *V. granarium;* top Mandrare, Manambolo, *Humbert* 6807.

COMOROS: *Humblot* 365, type of *V. sexangulatum.*

27. **Viscum rhipsaloides** Baker *in Journ. Linn. Soc.,* XXII (1886), 516; H. Lec. in *Cat. Pl. Mad.* (1932), 12; S. Balle in *Lejeunia* (1960), 62, pl. II, 39 and XXV. - V. *anceps* H. Lec. in *Cat.* 9, *not* E. Mey. - *V. erectum* H. Lec. in *Not. Syst.* Paris, IV (1927), 68 and *Cat.* 10; S. Balle in *Lejeunia,* pl. XXVI.

Species apparently dioecious, *haustoria* up to ca. 5 mm diameter at insertion level. *Branches* of observed specimens up to 40 cm long, flattened over most of their length; main branch cylindrical ca. 3 cm long and 3.5 mm in diameter, olive-brown, transversely wrinkled; branching (di-) trichotomous, very spreading; internodes sublinear with narrow trapeziform, of 1.5-10 cm long by 1-4 mm wide and 0.5-2 thick, with 2 marginal ribs and 5-7 ± regular and prominent ribs on each side. *Leaves* reduced to small fleshy appendages ± elliptical or obovate, articulated at the base, with obtuse or rounded apex, of 1-3 mm long, slightly less wide, quickly caducous, visible only on the last nodes. No prophylls observed. *Inflorescences* axillary, reduced to single flowers, perulose in the young state; conical perules, yellowish white, apiculate apex, ca. 1 mm long and wide. Only *male flowers* known, sessile, campanulate, whitish, ca. 3.5 mm long and wide, with (3) 4 ovate-triangular tepals, ca. 1 3/4 mm long; anther ± oblong, ca. 1.5 mm long and ca. half wide, 30-50 locules. *False fruit* sub-spherical, smooth, ca. 3.5 mm diameter, with pedicel of ± 1 mm long and 1/2 in diameter; style subcylindrical of ca. 1/2 mm long; stigma globular ca. 1/2

mm wide; “seed” with reniform endosperm ca. 2 mm long, 2.5 wide and 1 thick; embryo ca. 1 mm, subcylindrical, long, lateral and straight, with non-dilated hypocotyle at the top and fused cotyledons. - FIG. XIV, 1-5.

Lichen silves between 1,600 and 1,700 m. alt. Fl.: September; fr.: March.

CENTER: Manongarivo, *Perrier de Bâhhie* 10659; Ankazobé, *Perrier* 10691, type of *V. erectum; without* locality, *Baron* 4892, type of *V. rhipsaloides,* K.

Endemic.

28. **Viscum calcaratum** S. Balle in *Lejeunia, Mém.* XI (1960) 33, pl. I, 4, 5, 6, 7, 10 and VII; H. Lec., Nom. in Herb. P. - *V. articulatum* H. Lec. *in Not. Syst.,* Paris, IV (1927), 68; *Cat. Pl. Mad.* (1932), 9, non Burm. - *V. dichotomum* H. Lec., *Cat.* (1932), 10, non Don.

Plant apparently dioecious, *haustoria* up to ca. 12 mm in diameter at insertion level. Main *branch* sub-cylindrical, ca. 9 mm in diameter and a few centimeters long. *Branches* up to 50 cm long, flattened over most of their length, branching di- or trichomous; internodes sub-trapeziform to sub-white, gradually narrowing towards the base, from 0.5-9.5 cm long, 2-8 mm wide near the top, 1-5 at the base and 1-3 thick, with 2 marginal ribs ± winged and 5-13 longitudinal ribs ± regular and protruding on each side. *Leaves* reduced to small fleshy appendages articulated at their base, ovate or elliptical, with obtuse or rounded apex, 3/4-3 mm long by 0.5-2 wide, rapidly caducous, visible only on the nodes of the extremities, or with scarious cataphylls not exceeding 1/2-3/4 mm long, obtuse or acute apex, becoming indistinct with age. Prophylls ovate-triangular not exceeding 2/3 mm long and quickly caducous. *Inflorescences* axillary and terminal, reduced to single flowers isolated or ternate, perulose in the young state; perules ovoid-globular, yellowish with apiculate apex, 1.5-2 mm long and wide, nested, the external being able to contain 3 smaller ones, each containing a flower. All sessile *flowers*, only *males* known and only in globular buds, ca. 1 2/3 mm long, of which ca. half for the ovate-triangular tepals that are 4 in number; anthers not observed (probably 40-70 locules, according to PERRIER DE LA BÂTHIE, note in herb.). *False fruit* sub-spherical, almost smooth or ± strongly warty, sessile or almost, 3.5-4.5 mm in diameter; pedicel not exceeding 1 mm long and almost as wide as long; style slightly flared towards the base, ca. 1/2 mm long; stigma subconic or globose of ca. 1/2 mm wide; “seed” ovate-elliptic of ca. 2 mm long, slightly less wide and 1 thick; embryo straight and lateral, subcylindrical, ca. 1.5 mm long, with hypocotyle little dilated at the top and with cotyledons fused. - FIG. X IV, 6-10.

Deciduous forests on limestone, from 100-1.500 m. alt. Fl. Not observed; fr.: February, March, October and December.

CENTER: Betsiboka-Ikopa, *Perrier de la Balaie* 16772 and 16772 *bis,* type; Tampoketsa d'Ankazobé, *Decary* 19317 (sterile).

WEST: Ambongo, Ikao, *Perrier* 10674; Namoroka, *Decary* 15776 and *Perrier* 1690; Bemaraha, *Leandri* 1011 *and Perrier* 10639; Bekodoka, *Decary* 8101? (Ster.).

Endemic.

29. **Viscum Coursii** S. Balle in *Lejeunia Mém.* XI (1960), 36 and pl. VIII.

Plant apparently dioecious, *haustorium* up to ca. 7 mm diameter at insertion level. Main *branch* reaching approximately 5 cm long and 5 mm in diameter. *Branches* of observed specimens up to 40 cm long, drying blackish, flattened over most of its length, branching di-

trichotomous. Internodes oblanceolate to sublinear, usually sharply narrowed at the base, 0.5-4.5 cm by 1.5-5 mm long, wider at the top, 1-3.5 at the base and 0.5-2 mm thick, with 3 (5) fairly regular longitudinal ribs on each side. *Leaves* absent; only cataphylls ± scarious at the edge, 1/2-2/3 mm long, generally not very distinct and only on the youngest nodes. Prophylls triangular, 1/3-1/2 mm long, with ± acute apex, rapidly caducous. *Inflorescences* reduced to isolated, axillary, sessile, bare *flowers*; the *male* campanulate, ca. 1.5 mm long, with 3 ovate-triangular tepals of ca. 3/4 mm long; anther suborbicular, 3-5 locules; *female* flowers with oblong receptacle, 1 2/3-2 mm long and ca. 1 in diameter; tepals of ca. 2/3 mm long; style and stigma together reaching ca. 1/2 mm long; stigma globular, slightly wider than the style. *False fruit* sub-spherical, brilliant green when fresh (COURS), blackish when dry, smooth but finely papillate, sessile, ca. 5 mm in diameter; "seed" elliptical, ca. 3.5 mm long, 3 wide and 1 thick; embryo ca. 2 mm long, subcylindrical, straight, vertical or oblique, hypocotyl a little dilated at the top, barely protruding and with cotyledons fused. FIG. XIV, 11-13.

Lichen silves on gneiss and quartzite between 1,000 and 2,137 m. alt., on *Philippia and Vernonia.* Fl.: November; fr.: March.

CENTER: Marojejy, *Humbert* 23519, 23815, type, 23817, 26 / b and c; *Cours* 3460.

Endemic.

30. **Viscum fastigiatum** S. Balle in *Lejeunia,* Mem. XI (1960), 44 and pl. XIII.

Plant apparently dioecious, *haustorium* unknown. *Branches* of the observed specimen up to forty centimeters long, robust and stiff, flattened over most of their length, branched (di-) trichotomous, fastigate; internodes sublinear or a trapeziform, slightly narrowed downwards, 0.7-5.5 cm long by 2-6 mm wide at the top, 1.5-5 mm at the base and 1.5-4 thick, glaucous and pruinose, pinkish brown when dry, with 2-3 (5) longitudinal ribs ± regular on each side; lower internodes subcylindric, up to 6 mm in diameter. *Leaves* all reduced to cataphylls 1/2-3/4 mm long, with subacute apices, distinct only near the top of the twigs; prophylls triangular, ca. 1/4 mm long, quickly caducous. *Inflorescences* only female known, reduced to bare axillary flowers, single, perulose in the young state; perules subconic, apex apiculate, brownish, ca. 1 mm long and wide. *Female flowers* subsessile, with oblong-obovoid receptacle ca. 2.5 mm long by 1 in diameter, ± tightly covered with subconic or rounded warts; tepals 4, ovate-triangular, ca. 1.3 mm long; style slightly flared downward, reaching ca. 1/2 mm long; stigma globular sub-bilobed of ca. 1/2 mm wide. *False fruit* broadly ellipsoid or somewhat obovoid, glaucous brown, pruinose, ca. 4.5 mm long by ca. 3.5, with ± irregularly dispersed warts; pedicel 0.5-1.5 mm long and ca. 1 wide; "seed" not observed. - FIG. X IV, 14-16.

Around 1,000 m. alt., on *Leptolaena diospyroides.* Fl. and fr.: November.

CENTER SOUTH: Mont Vohipolaka, *Humbert* 1610, type.

Endemic.

4. **KORTHALSELLA** Van Tiegh. in, *Bull. Soc. Bot. Fr.,* XIIII, (1896) 83 and 163; Danser, in *Rec. Trav. Bot. Néerl.* XXXI (1934), 236 and 758-60; Krause in Engl. and Prantl; *Nat. Pflanzenfam.* ed. 2, 16b, (1935) 185.

Monoecious shrub or herbaceous plant reaching a few dm. in height, entirely glabrous (except possibly the hairs surrounding the base of the flowers), with a single *haustorium*, parasitizing woody dicotyledons, rarely conifers. Main *branch* very short, branching 2-3, rarely

several times little above its base, usually cylindrical or sub-cylindrical; branches articulated at the nodes, cylindrical or ± flattened, those of first order carrying simple ramifications or themselves branched, similar to the underlying axes; flowering parts generally located at the ends, differentiated or not; internodes all similar or different in shape and size depending on the place they occupy on the branch, cylindrical or flattened, with the same diameter at the top as at the base or widened upwards; the compression plan can be the same for several consecutive internodes (superimposed internodes forming a phylloclade) or successively at right angles from one internode to another (decussate arrangement); internodes with 1 or more longitudinal ribs, all similar or the median thicker. *Leaves* always reduced to small nodal, sessile, opposite-thorned scales, with laterally protruding apex or not, in the hollow of which the flowers are lodged. *Inflorescences* axillary, in glomeruli of flowers of both sexes mixed, arranged in rows, longitudinally, in the axis of the leaves, where they appear chronologically, in a centripetal manner, surrounded by uniseriate, articulated, brown or whitish hairs, sometimes + fused in pseudoparenchyma surrounding small locules. *Flowers* unisexual, 3-merous, sessile or subsessile, with preflowering valves, 1/5-1 mm long, the subglobose buds, campanulate at maturity, with perianth splitting, in its upper half, into 3 fleshy subtriangular lobes; stamens with a very short filament and suborbicular, 2-celled anther, introrse, remaining coherent with its neighbors and forming, at anthesis, a synandrium surrounding a pore in which the pollen grains accumulate. *Female* flowers clavate, almost entirely formed by the receptacle which the inferior ovary fills and crowned by the 3 small lobes of the perianth, surrounding a large sessile stigma; ovary unilocular occupied entirely by a central placenta, containing, near its top, 2 embryo sacs opposite the carpels, which will increase longitudinally to the base of the placenta and then rise each on their side, in the parenchyma of the carpels, taking thus the shape of a U. *False fruit* sessile or almost, of the same shape as the female flower or sometimes ± reniform, reaching 1-2 mm long, with a smooth surface, and surmounted by persistent tepals. “Seed” single, located in the upper region of the fruit, flattened, with endosperm; 1 (2) cylindrical or flattened embryos, with unequal membranous cotyledons.

Africa (from Ethiopia to Cape Town); South Asia (from Afghanistan to China and Japan); oceania (Australia and a large number of Pacific islands).

1. Sub-cylindrical or slightly flattened branches; internodes arranged all in a stripped fashion (or only a few superimposed, near the base of the plant)..... Sect. EUKORTHALSELLA Engl. Leaf tips not or barely protruding laterally; floral glomeruli not emerging from leaf axils; internodes non-ribbed (at most wrinkled) longitudinally, the means not exceeding 12 mm long and 2 mm of diameter ..... 1. *K. madagascarica.*

1’. Branches with internodes distinctly flattened and united by phylloclades Sect. BIFARIA (Van Tiegh.) Engl.

2. All the internodes of each branch forming a phylloclade, oriented perpendicular to the branch which carries it; branches with internodes more distinct from each other than the phylloclades between them; internodes rapidly increasing in width from the base to the middle of the branches, then decreasing towards their end, the largest being the most flattened 2. *K. opuntia.*

2’. Unique compression plan for the whole plant; spatulas phylloclades, with rounded top, better distinct between them than the internodes between them..... 3. *K. Commersonii.*

1. **Korthalsella madagascarica** Danser in *Bull. Jard. Bot. Buit.,* Ser. III, XIV, 2 (1937), 125-6; fig. 3.

Main branch with non-dilated base, reaching 3-4 mm in diameter and 12 cm long, branching di- or more rarely trichotomous, 3-7 times; ramifications generally divaricate, often slightly curved, cylindrical at the base and flattened at their ends, with 7-12 internodes, becoming shorter and shorter but barely narrowing, all decussate or only a few superimposed near the base of the plant; internodes with a sub-circular or elliptical-oblong section, 1-12 mm long, 1.5-2.5 wide and 1-2 thick, wrinkled but not regularly ribbed longitudinally. *Leaves* membranous, very distinct everywhere, with slightly wavy edge and obtuse or acute apex, reaching ca. 1/2 mm long. *Inflorescences* localized at the ends of the branches, in axillary fascicles that don't emerge, in the flowering state, leaf cupules, then merging into whorls surrounding the nodes. *Flowers* surrounded brownish hairs that are a little shorter than them, the *females* of approximately 3/4 mm, the *males* of approximately 1/2 mm in length. *False fruit* ellipsoid, whitish, ca. 1.5 mm long and slightly less wide, projecting strongly out of the leaf cup; "seed" discoid, ca. 3/4 mm in diameter, straight apical embryo ca. 1/2 mm long. FIG XIV, 16.

Forests on gneiss and quartzite between 1,600 and 2,137 m. alt., on *Diospyros* and? *Philippia* and sclerophyllous forests of the western slopes around 950 m. alt. on *Leptolaena.* Fl. And fr.: February, March and October.

CENTER and HIGH MOUNTAINS: Marojejy, *Humbert* 23741; Antsirabe, *Perrier de la Bâthie* 10693; Ambositra, *Perrier* 12363, type; Vatavo, *Humbert* 14060.

Endemic.

2. **Korthalsella opuntia** (Thunb.) Merrill in *Bot. Mag.* Tokyo, XXX, (1916), 68; Danser, *loc. cit.,* 133; in *Rec. Tr. Bot. Néel.* 31 (1934), 236.

Woody or herbaceous plant generally reaching ten, rarely fifteen centimeters long; main subcylindrical *branch*, sometimes a little flattened at the top, with ca. fifteen internodes, each of which can bear, at its summit, 1 or 2 phylloclades, simple or themselves branched (di) -tri- (quadri) - chotomously; *phylloclades with* a compression plane perpendicular to that of the axis which carries it, always a little narrower than it, generally wider in the middle than at the ends, those of last order often at ± 5 internodes. *Internodes* ± narrowly spatulate, oblong or linear-spatulate, sometimes obovate or oblanceolate, up to 1-3 cm long, 4-8 mm wide and 1/2-2 mm thick, with biconvex section, the largest being the most flattened; generally having 1 thick midrib, sometimes accompanied by 2-4 lateral, similar or finer, all of which may be slightly distinct. *Leaves* visible on both sides of each node, 0.5-mm long, contracted at the base, initially slightly protruding laterally, then truncated, almost all flowering (except all at the base). *Inflorescences* axillary, gradually emerging from the leaf axils, first pauci-multiflorous (up to 30 flowers per glomerule), increasing more in length than in width; opposite glomerules joining at the end, with narrow nodes only, but without forming true nodal whorls. *Flowers* yellow (BLAKELY), blackening on drying, short pedicel, surrounded by brownish hairs; the *male* turbinate or clavate ± 1/2 mm long, half of which for fleshy tepals; the *female* obovoid or ellipsoidal 3/4-1 mm long. *False fruit* obovoid or ellipsoid, smooth, up to ± 2 mm long, with pedicel ca. 1/4 mm long; endosperm reniform ca. 1 mm in diameter; embryo generally single (rarely 2), subcylindrical, ca. 1 mm long with a barely protruding hypocotyle. Sometimes germinated on the mother plant (in a herbarium). FIG. XIV, 18-19.

The species is distributed from East Africa to the Pacific Islands; in Madagascar, only var. *Richardii* and *Gaudichaudii;* in addition to these, we encountered another in the neighboring Archipelagos.

KEY TO VARIETIES

1. Internodes average 1-2 mm. wide, with 1-3 longitudinal ribs on each side. …….. ..... ……var. *Richardii*
1'. Internodes average 3-4 mm. wide, with (3) 5 (7) longitudinal ribs on each side ……..……. ..... var. *Gaudichaudii.*

Var. **Richardii** (Van Tiegh.) Danser in *Bull. Jard. Bot. Buit.* ser. III, vol. XIV (1937), 141. - *Bifaria Richardii* Van Tiegh. in *Bull. Soc. Bot. Fr.,* XLIII (1896), 176-7. - *Korthalsella Richardii* Krause in *Nat. Pflanzenfam.* 16b (1935), 186. - *K. taenioides* H. Lec. in *Bull. Mus. Par.* XXII (1916), 226, *pp – Viscum capense* Baker, *Fl. Maur. and Seych.* (1877), 134, *p.p.,* non L. f. – *V. glomeratum* Baker in *Journ. Linn. Soc.,* XXII (1886), 515; H. Lec. in *Cat. Pl. Mad.* (1932), 10; S. Balle in *Lejeunia,* Mém. XI, (1960), 107.

Sur *Prockia* (*Aphloia) cf. theiformis* and *Eugenia.* Fl. and fr.: period to be determined.

SAMBIRANO: Nossi-Faly, *Pervillé* 719; and *Boivin* without nº.

Without locality: *Baron* 3757, type of *Viscum glomeratum,* K and P.

Maurice and Réunion.

Var. **Gaudichaudii** (Van Tiegh.) Danser in *Bull. Jard. Buit.* ser. III, vol. XIV (1937), 138. – *Bifaria capensis* Van Tiegh. in *Bull. Soc. Bot. Fr.,* XLIII (1896), 176. – *B. Gaudichaudi* Van Tiegh., *ibid. – B. Humblotii* Van Tiegh., *ibid. Korthalsella Gaudichaudi* H. Lec. in *Bull. Mus. P.* XXII, (1916), 267. – *K. Humblotii* Engl., *Nachtr. Nat. Pflanzenf.,* (1897), 138. – *K. platycaulis* H. Lec., *loc. cit.,* 267. – *K. taenioides* Engl., *loc. cit.,* 138. –*Viscum capense* Baker, *Fl. Maur.* and *Seych.* (1877), 134, *p.p., non* L. f. - *V. taenioides* Commers. ex Petit-Thouars, *Obs. Pl. Afr.* in *Mél.* (1811) 43.

Low sclerophyllous forests on western slopes, around 950 m. Fl. February.

CENTER (SOUTH): Mt Vatavo, *Humbert* 14061.

COMOROS (without locality): *Humblot* 331, type of *K. Humblotii.* P and K. —South Africa; Mascarenes; Seychelles.

3. **Korthalsella Commersonii** (Van Tiegh.) Danser, *loc. cit.,* 152-153 and fig. 14. – *Bifaria Commersoni* Van Tiegh. in *Bull. Soc. Bot. Fr.,* XLIII (1896), 177. – *Loranthus Commersoni* H. Lec. in *Cat. Pl. Madag.* (1932), 7.

Main *branch* 1-3 mm in diameter, appearing, apparently, as a branching, at the level of a bifurcation of the stems of the host; twigs up to 6 cm long, forming 2-3 flabelliform bundles of ramifications, all located in the same plane and each constituted by a main phylloclade, carrying 3-4 stages of ramifications. *Phylloclades* elliptical or oblong, narrowly subcylindrical at the base, over 1-2 mm long and then strongly flattened, widening in their lower half, then narrowing in the upper half or third, comprising a dozen shorter and shorter internodes, each inserting by a base wider and wider than the previous one, with edges extending from one to the other, and with a slightly concave top in the lower ones, plane in the middle and convex in the upper ones;

ramifications emerging bilaterally, without regularity, at the top of certain internodes, next to the base of the next one. *Internodes* thick and leathery, 0.2-1.7 cm long by 1-14 mm wide and 2 thick, with edges superficially toothed towards the base and crenellated towards the top, presenting on each face, 3 fine longitudinal ribs, sometimes not very distinct; terminal internode subsemicircular. *Leaves* generally barely distinct, reduced to opposite teeth, ca. 1/2 mm long, visible only at the top of the lower internodes, reduced above to wavy membranous edges, of ca. 1/2 mm up, from where the flowers emerge. *Inflorescences* axillary, in narrow fascicles, 1-2.5 mm long, consisting of 3 rows of flowers, the upper ones protruding from the leaf cupules; fascicles located bilaterally, on either side of the base of the middle and upper internodes, forming a continuous band at the top of the last internode; flowers housed in excavations with membranous-fimbriate margins. *Flowers* globose, ca. 1/4 mm in diameter. *False fruit* 1 mm in diameter. - FIG. XIV, 17.

Forest around 1,200 m. altitude on *Leptolaena multiflora.* Fl.: April.

CENTER Tsaratanana, *Perrier de la Bâthie* 16157. It is unknown where the type comes from, *Commerson* without number.

Endemic.

Footnotes

(1) Incl. Viscaceae (JOHRI and BHATNAGAR, Proc. Nat. Inst. Sc. India Biol. Sc., XXVI (1960), 199.
(2) In Africa.
(3) That is to say fused ventrally to the pedicel over its entire length and exceeding it ± long, sometimes forming a cup, almost always oblique and generally persistent on the fruit, around the base of the receptacle.
(4) There are also 2 in the male flowers of *Viscum articulatum* Burm., an Indo-Malaysian species whose western limit of dispersal reaches Pile Maurice.
(5) Conductive strands have been observed in the calyx of certain Loranthoids from other continents.
(6) False warts were found on the fruits of a *B. Perrieri*, which showed the same warts on the twigs and certain leaves.
(7) Sometimes septate perhaps in some *B. clavata* and *Viguieri*.
(8) Sometimes reduced to a base of 1/2 - 1 mm. long, with 2-4 cells where the pedicels are articulated.
(9) Synonyms for var. *clavata*, which includes type, are cited with this variety, page 20.
(10) Sometimes appearing transversely partitioned in the young buds.
(11) It is undoubtedly the Tsirindra or Vontsirindra (*Sorindeia madagascariensis*, according to M. R. CAPURON).
(12) Synonyms for var. *Viguieri*, which includes type, are cited with this variety, p. 28.
(13) Sometimes compartmentalized transversely in young buds?
(14) The plant sometimes has irregularly dispersed warts on some of its organs (twigs, leaves, fruits), apparently of pathological origin.
(15) See next page.
(16) Often becoming bilobed when the plant is attacked by a parasitic fungus (cf. Adansonia, p. 135); it also seems that the leaves of the long branches are insufficiently known and that they can reach much larger dimensions.
(17) In reality hairless, these hairs probably coming from the corolla, with explosive dehiscence.
(18) With age, monoecious species may appear dioecious when all the male flowers have fallen.
(19) See also *V. vohimavoense* with insufficiently known inflorescences.
(20) Male flowers of the following species are not yet known: 6. *V. Boivinii*;
22. *V. ceibarum*; 18. *V. itrafanaombense*; 4. V. *multipedunculatum*; 5. *V. pentanthum* and 20. *V. semialatum*.
(23) Carrying evergreen leaves at all nodes.
(24) Sometimes bearing, at the nodes of the ends of the branches, rapidly deciduous reduced leaves, generally not exceeding a few millimeters in length (up to 18 mm. in *V. trachycarpum* fa. *Humbertii*).
(25) Female flowers of the following species are not yet known: 11. *V. longipetiolatum*; 17. *V. Roncartii* and 13. *V. Tieghemii*.
(26) Carrying evergreen leaves on all nodes.
(27) See also, possibly, *V. vohimavoense* with inflorescences still insufficiently known.
(28) The perulas being deciduous, some species where they have not yet been observed could carry them.

(29) Sometimes bearing, at the nodes of the ends of the twigs, rapidly deciduous reduced leaves, generally not exceeding a few millimeters in length (up to 18 in *V. trachycarpum* fa. *Humbertii*).
(30) Abnormal male flowers.
(31) The lateral flowers of the cymule can be (exceptionally) replaced by 2 leaves.
(32) We find seeds containing up to 9 flowers, the 2 external triads themselves being perished.
(33) It does not seem impossible that one of the 2 numbers of BOIVIN is wrong (probably 2250) and that all the duplicates of this collector come from the same place, probably Port Leven.
(34) The species seems to flower for a long time: we sometimes find, on the same specimen, buds of all ages accompanying fruits; everywhere the female flowers are much more numerous than the males.
(35) Synonyms of the type are cited with var. *cuneifolium* (p. next).
(36) The surface is irregularly folded and the contents poorly developed.
(37) The lateral flowers being too small to be able to determine the sex.
(38) See references and synonymy under var. *myriophlebium*, p. 97.

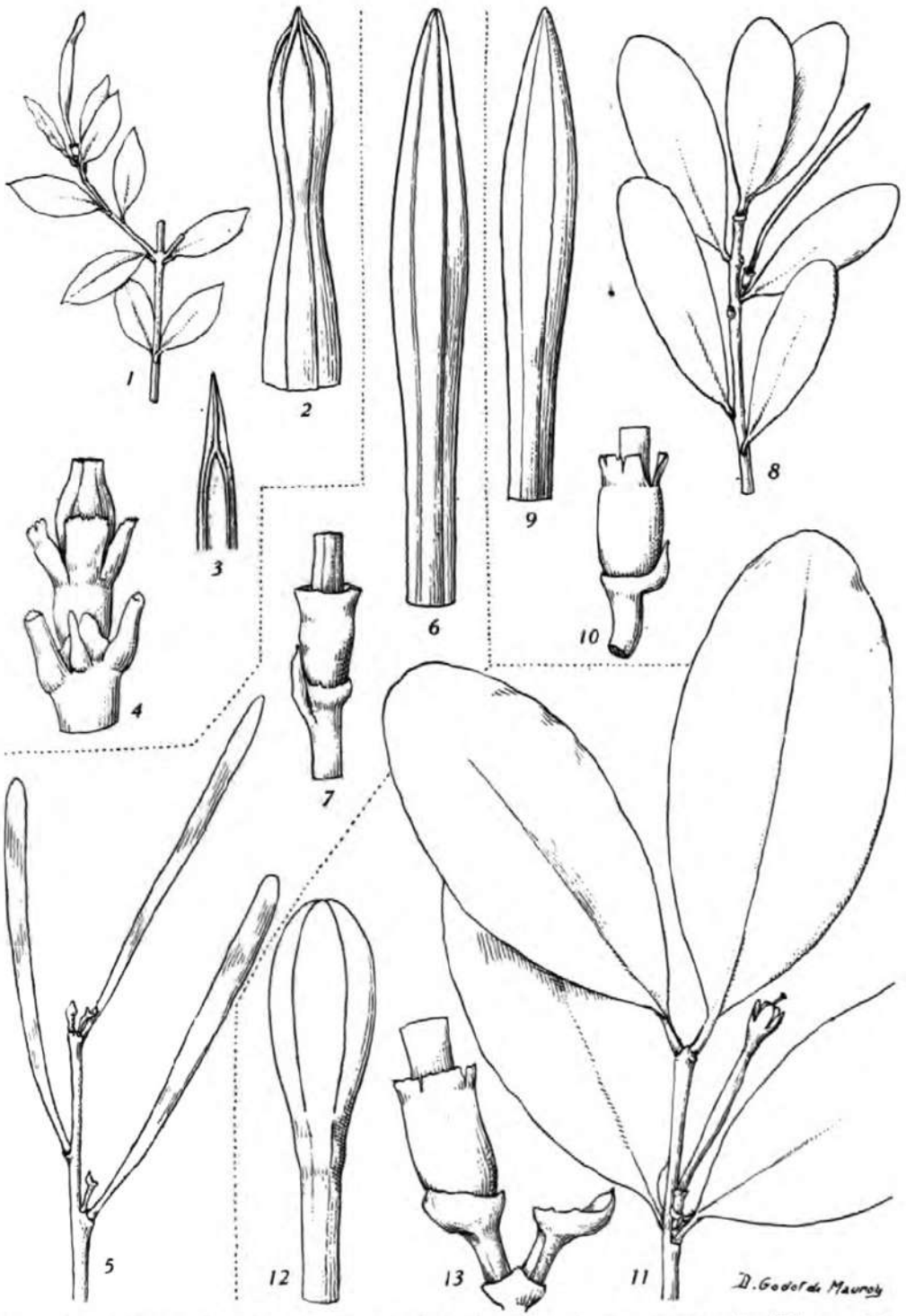

Fig. I. – **Bakerella microcuspis**: 1, flowering end of a leafy twig; × 2/3; 2, apical bulge of the bud × 4; 3, winged apex of a petal × 8; 4, linker base × 4. – **B. belohensis**: 5, leafy branch with pedicels × 2/3; 6, apical bulge of the bud × 4; 7, flower base × 4. – **B. analamerensis**: 8, twig with axillary inflorescence × 2/3; 9, apical bulge of the bud × 4; 10, flower base × 4. – **B. clavata** var. **alavata**: 11, flowering branch at the beginning of the anthesis × 2/3; 12, apical bulge of the bud × 4; 13, inflorescence base × 4.

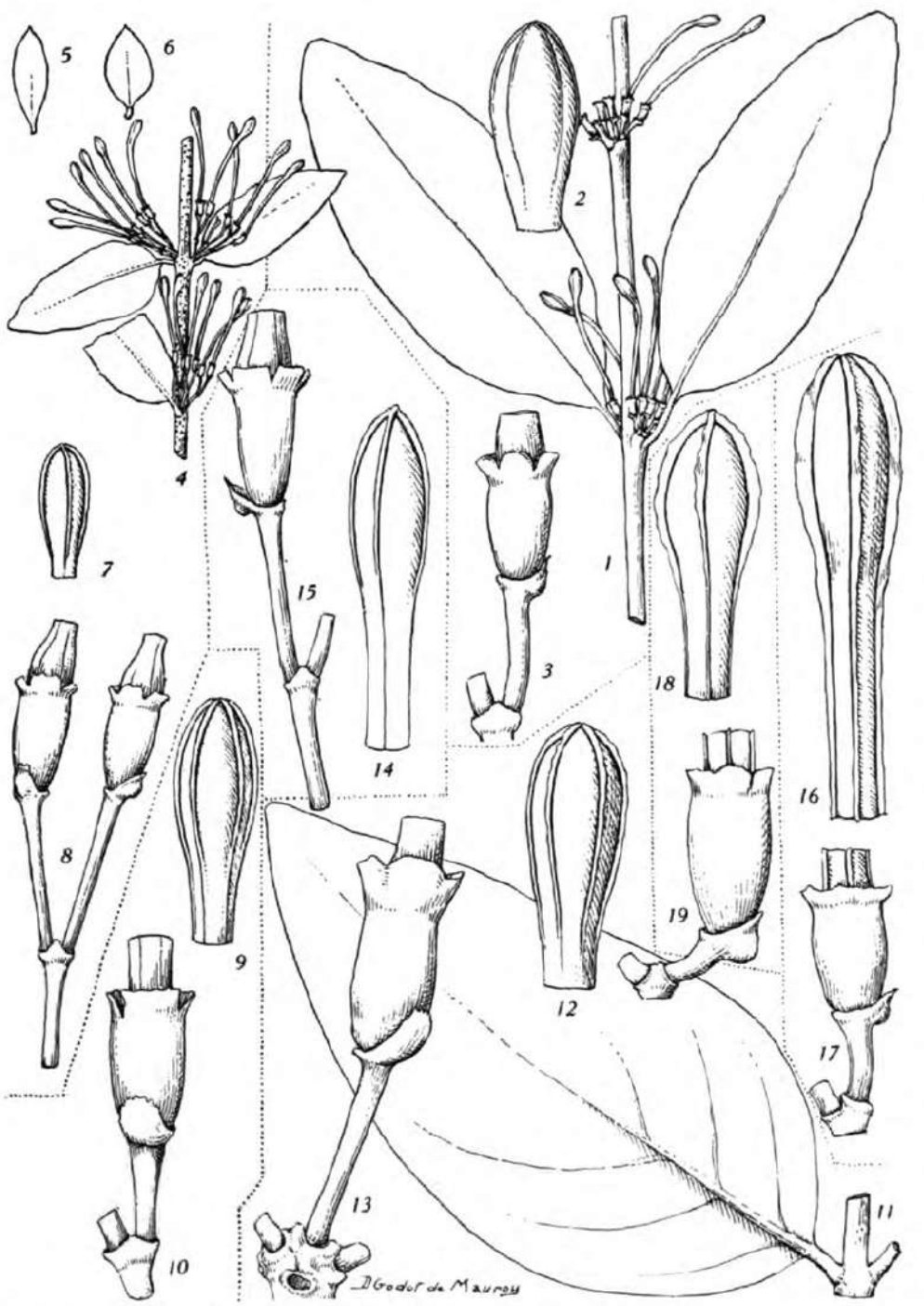

FIG. II. – **Bakerella clavata** var. **Baronii**: 1, flowering branch × 2/3; 2, apical bulge of the bud × 4; 3, inflorescence base × 4. – Var. **lenticellata**: 4, flowering branch with large leaves × 2/3; 5-6, small leaves × 2/3; 7, apical bulge of the bud × 4; 8, inflorescence base × 4. – Var. **aldabrensis**: 9, apical bulge of the bud × 4; 10, inflorescence base × 4. – Var. **amplifolia**: 11, leaf × 2/3; 12, apical bulge of the bud × 4; 13, inflorescence base × 4; – Var. **elongalata**: 14, apical bulge of the bud × 15, inflorescence base × 4. – Var. **peralata**: 16, apical bulge of the bud × 4; 17, base of inflorescence × 4. – Var. **tsaratananensis**: 18, apical bulge of the bud × 4; 19, inflorescence base × 4.

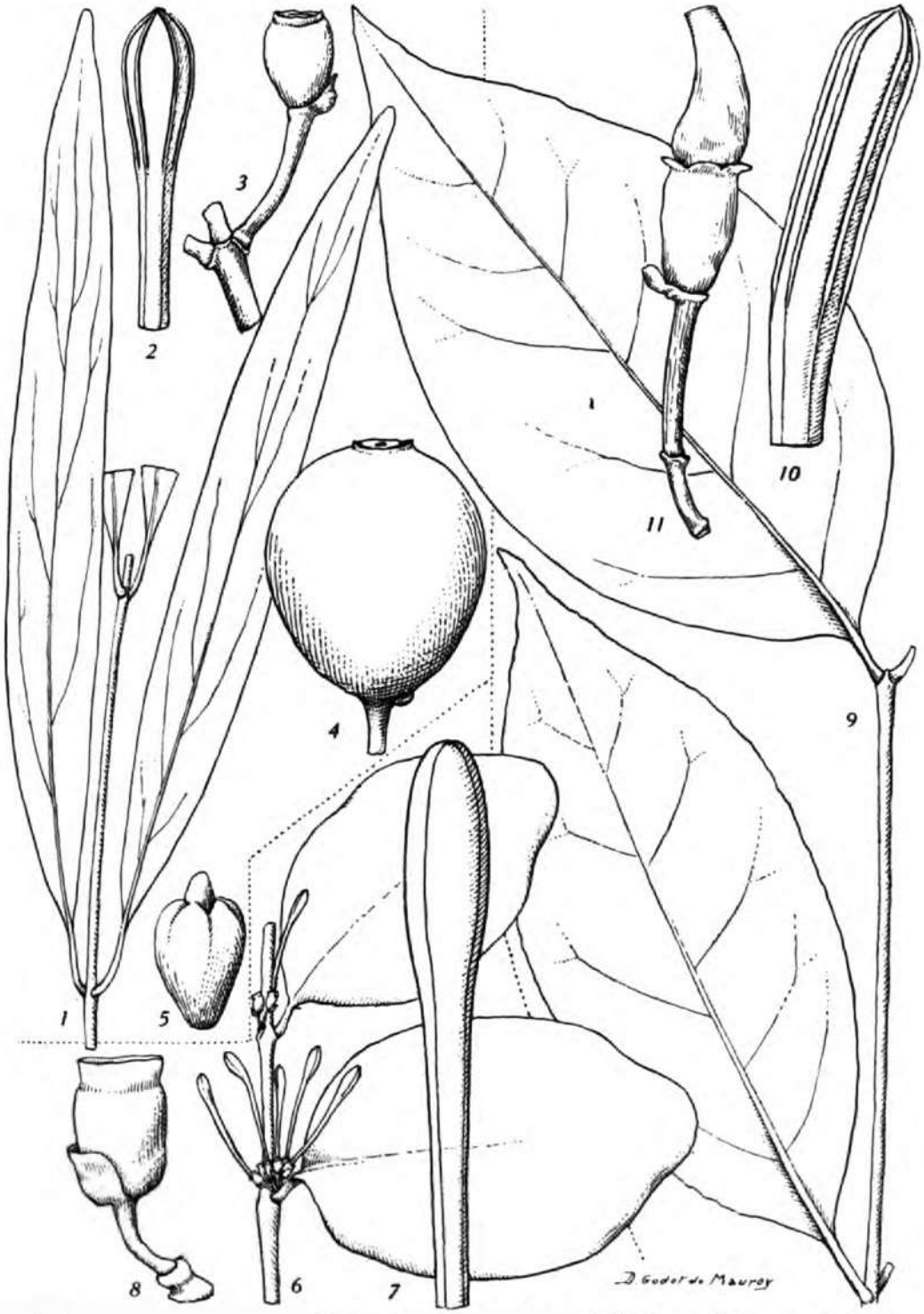

FIG. III. – **Bakerella collapsa**: 1, leafy branch × 2/3; 2, apical bulge of the bud × 4; 3, inflorescence base × 4; 4, false fruit × 4; 5, a "seed" × 4. **B. Viguieri** var. **Viguieri**: 6, branch bearing young buds × 2/3; apical bulge of the bud × 4; 8, inflorescence base × 4. – Var. **marojejensis**: 9, leafy branch × 2/3; 10, apical bulge of the bud × 4; 11, inflorescence base × 4.

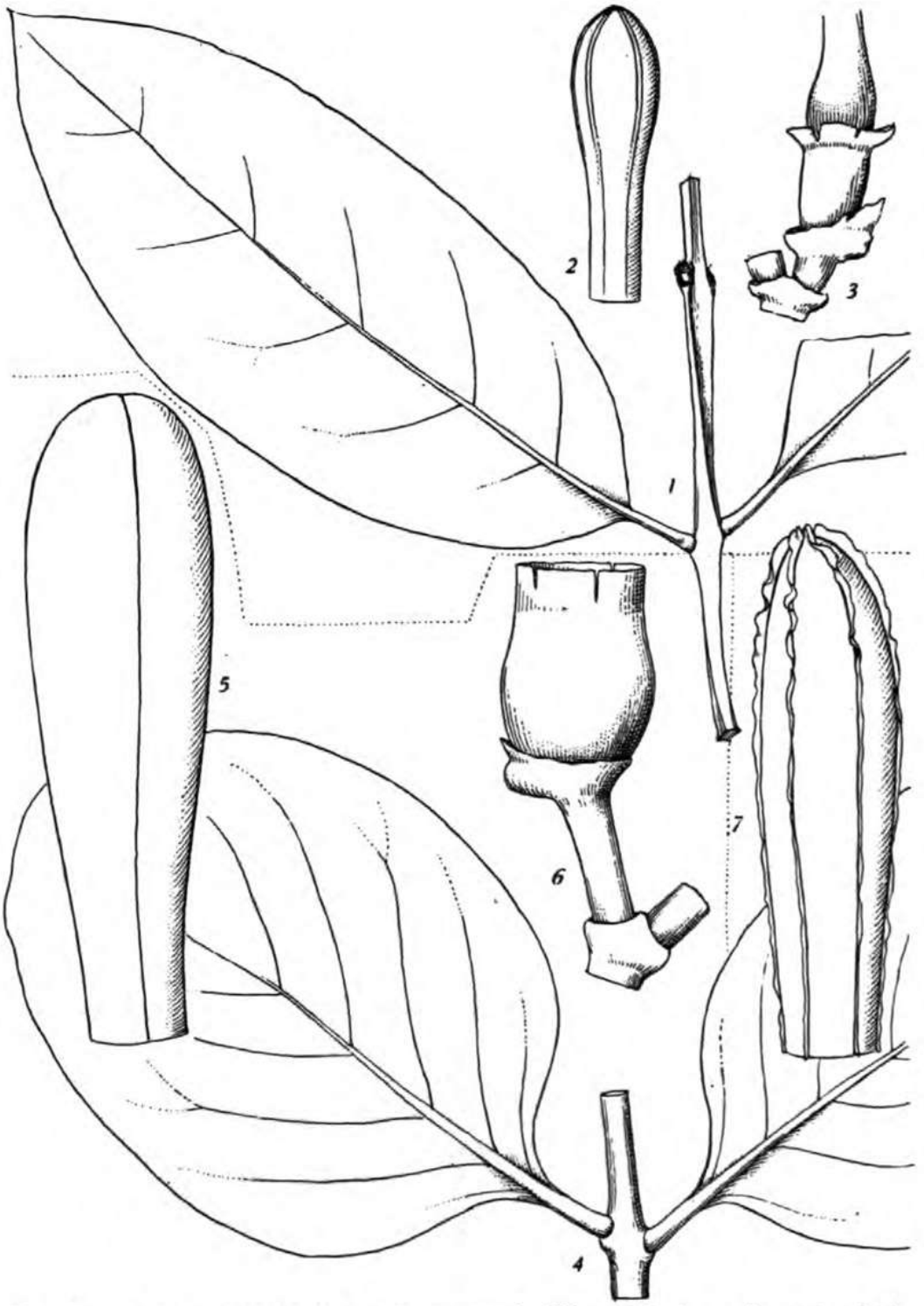

FIG. IV. – **Bakerella gonoclada**: 1, leafy branch × 2/3: 2, apical bulge of the bud × 4; 3, inflorescence base × 4. – **B. grisea** var. **grisea**: 4, leafy branch × 2/3; 5, apical bulge of the bud × 4; 6, inflorescence base × 4. – Var. **alata**: 7, apical bulge of the bud × 4.

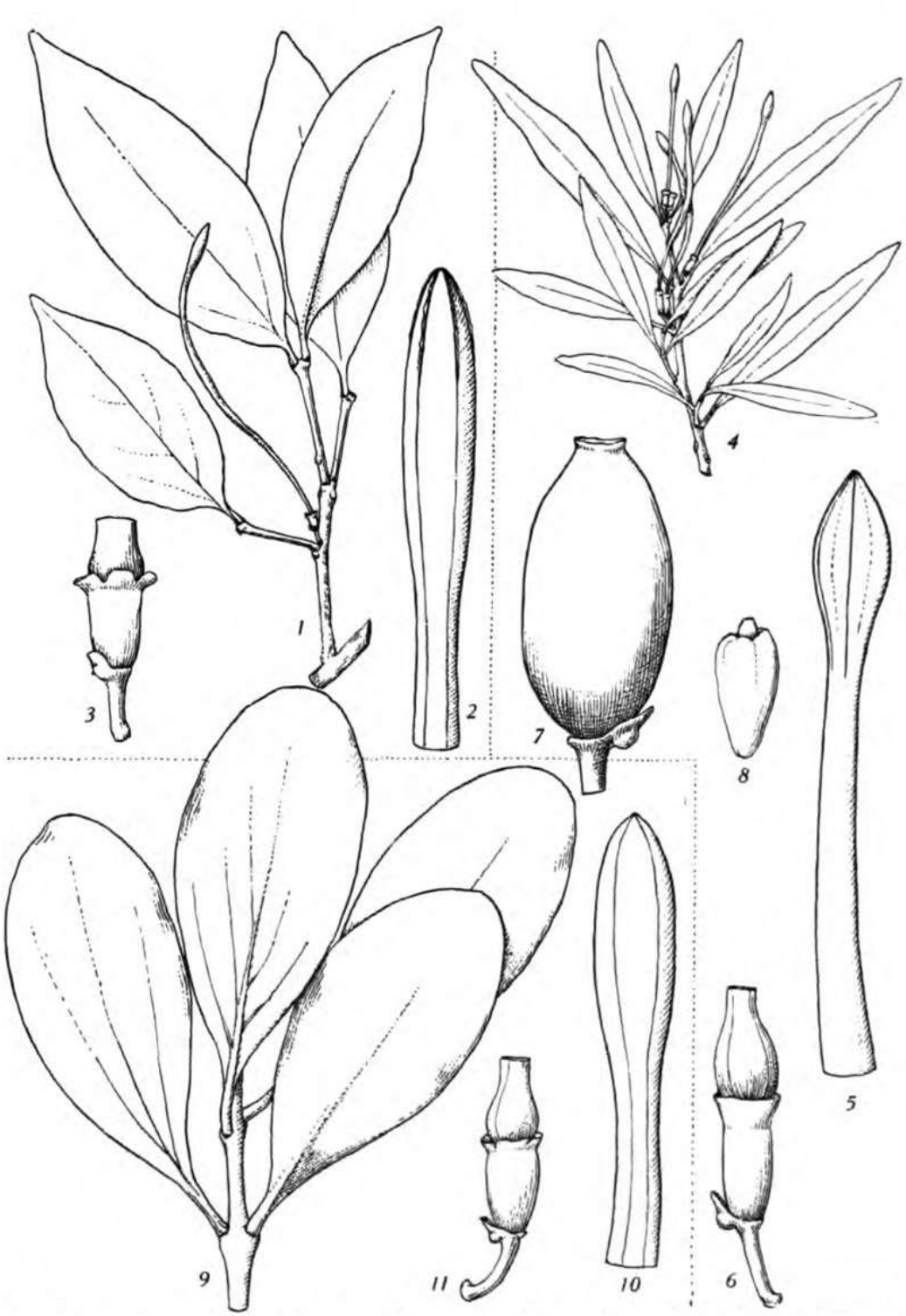

FIG. V. – **Bakerella tandrokensis**: 1, flowering creeper × 2/3; 2, apical bulge of the bud × 4; 3, flower base x 4. – **B. Perrieri**: 4, flowering branch × 2/3; 5, upper part of the bud × 4; 6, flower base × 4; 7, false fruit × 4; 8, "seed" × 4. – **B. ambongoensis**: 9, leafy twig × 2/3; 10, upper part of the bud × 4; 11, flower base × 4.

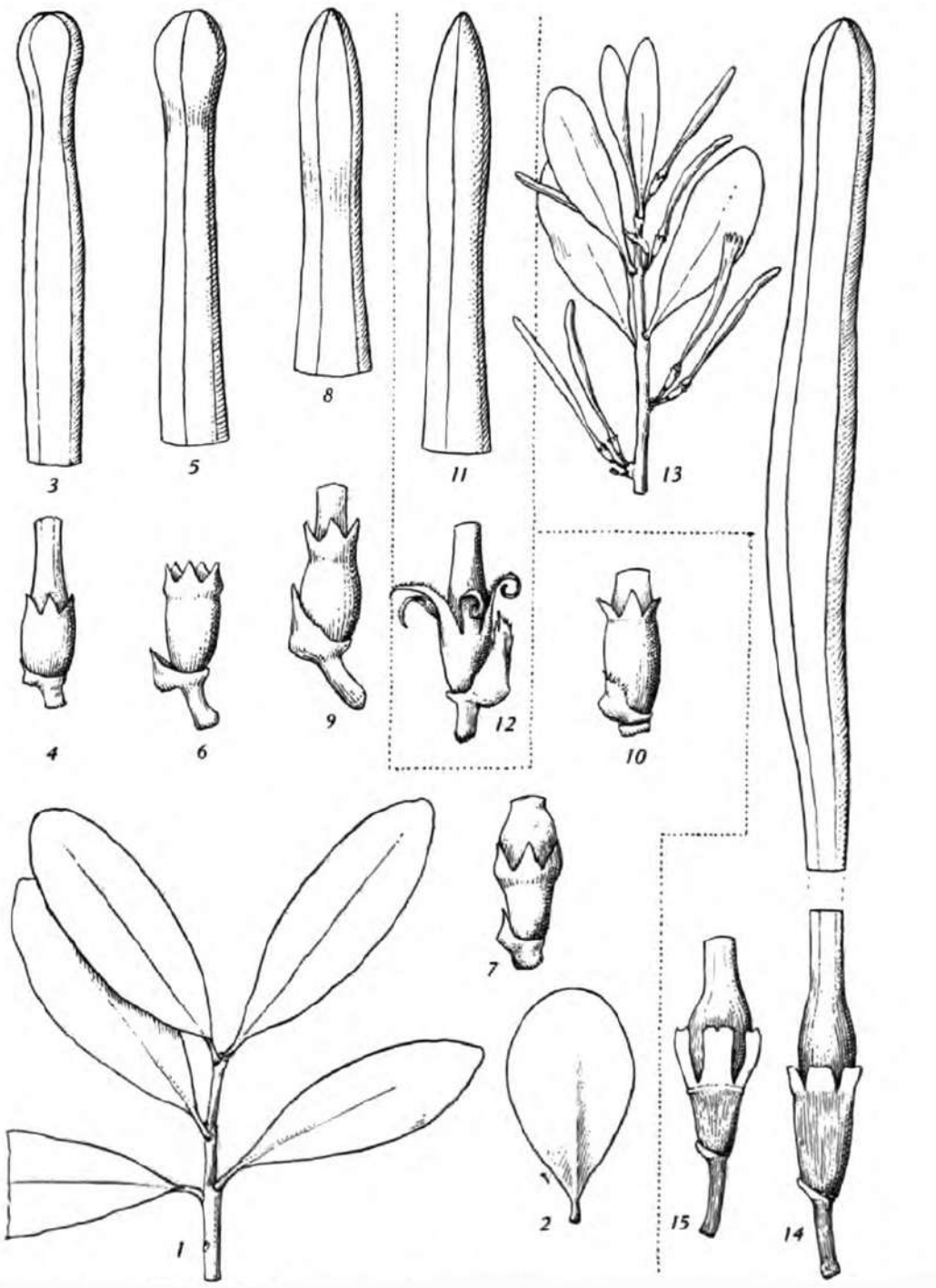

Fig. VI. – **Bakerella hoyifolla**, var. **hoyifolia**: 1, leafy branch × 2/3; 2, other leaf form × 2/3; 3, upper part of the bud × 4; 4, flower base × 4. – Var. **Parkeri**: 5, upper part of the bud × 4; 6, flower base × 4. Var. **basiinflata**: 7, flower base × 4. – Var. **Itrafanaombensis**: 8, upper part of the bud × 4; 9, flower base × 4. – Ssp. **boïnensis**: 10, flower base × 4. – **B. mangindranensis**: 11, upper part of the bud × 4; 12, flower base × 4. – **B. Poissonii**, var. **Poissonii**: 13, flowering branch × 2/3; 14, adult bud × 4. – Var. **parvibracteata**: 15, flower base × 4.

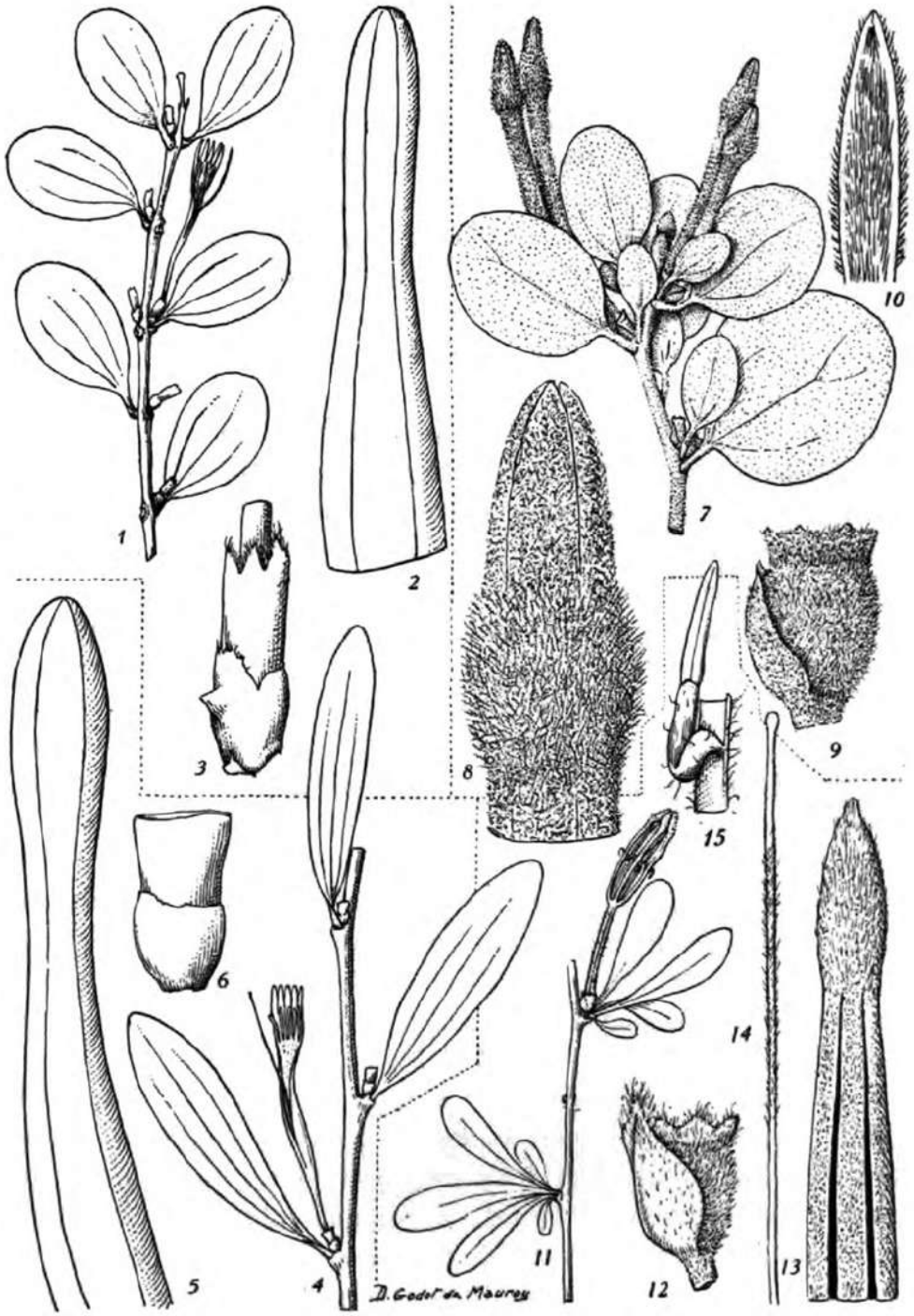

FIG. VII. – **Bakerella diplocrater**: 1, flowering branch × 2/3; 2, upper part of the bud × 4; 3, flower base × 4. – **B**. **tricostata**: 4, flowering branch × 2/3; 5, upper part of bud × 4; .6, flower base × 4. – **Socratina bemarivensis**: 7, flowering branch × 2/3; 8, apical bulge of the bud × 4; 9, flower base × 4; 10, hairy internal surface of the top of a petal × 4. – **S. Keraudreniana**: 11, flowering branch × 2/3; 12, flower base × 4; 13, upper part of the bud × 4; 14, hairy style × 2: 15, stamen × 4.

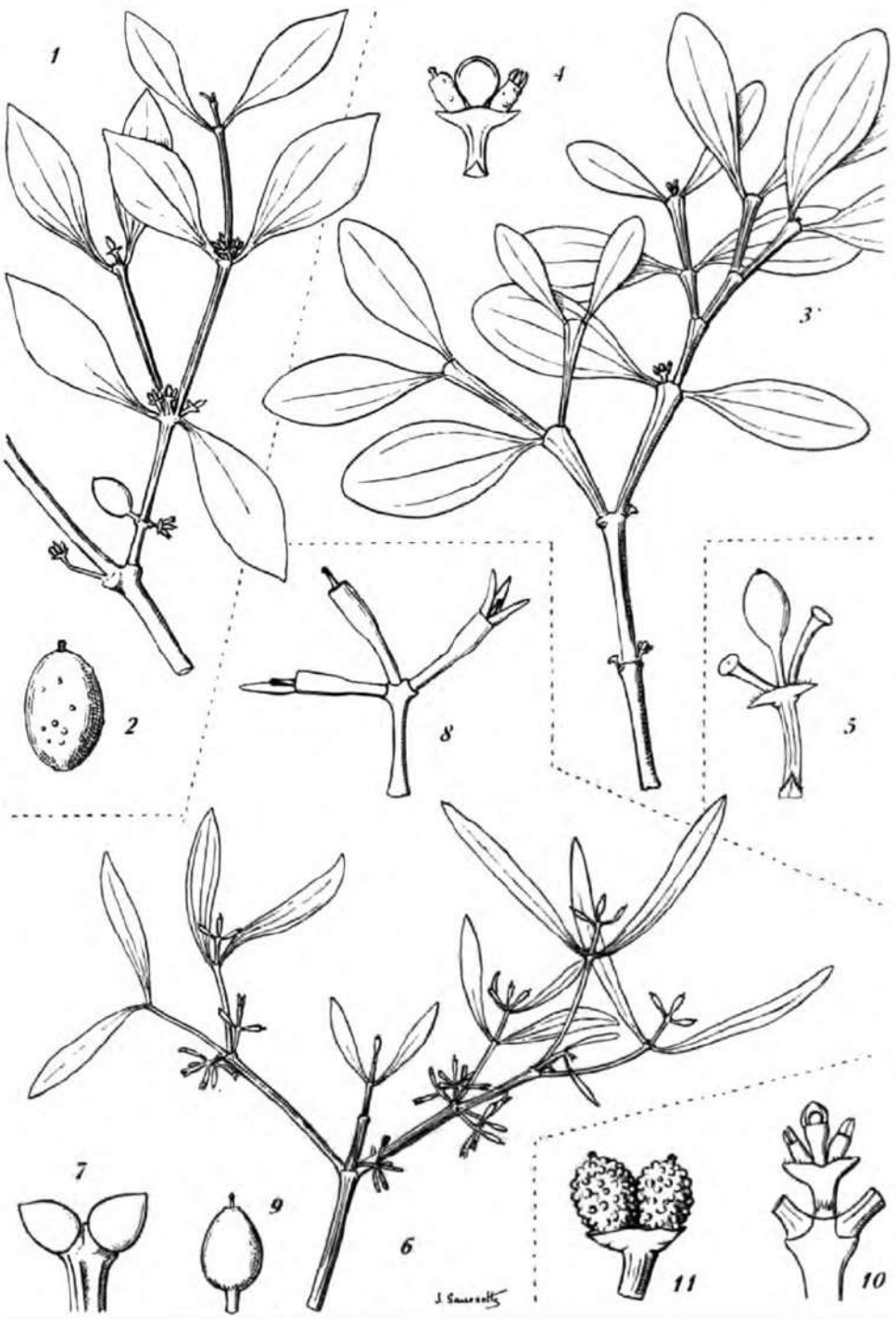

FIG. VIII. **Viscum tstafajavonense**: 1, flowering branch – and fruiting × 2/3; 2, berry × 2. – **V. ambongoense**: 3, flowering branch × 2/3; 4, bisexual cymule × 3. – **V. multipedunculatum**: 5, cymule with young fruit × 3. – **V. Boivinii**: 6 female flowering branch X 2/3; 7, perulate [covered in scales] axillary inflorescences x 3; 8, female cymule × 3; 9, young berry × 4. – **V. tsaratananense**: 10, terminal cymule bisexual with abnormal male flower (detached anterior tepal) X 3; 11, fruiting cymule × 3.

FIG. IX. **Viscum pentanthum**: 1, female flowering branch × 2/3; 2, female cymule × 4. – **V. cuneifolium** var. **cuneifolium**: 3, fruiting branch × 2/3; 4, longitudinal section of the fruit tangent to the endocarp, showing the ribs of the carpels and the viscin filaments of the mesocarp × 4; 5, male flower × 4; 6, anthers of small and large tepal × 6. – Var. **cryptophlebium**: 7, leaf × 2/3. – Var. **demissum**: 8, leaf × 2/3. – Var. **grandifolium**: 9, leaf × 2/3. – Var. **lanceolatum**: 10, leaf × 2/3. – **V. radula** var. **radula**: 11, female flowering branch × 2/3; 12. female flower × 4. – Var. **vaccinifolium**: 13, berry × 3; 14, female flower × 4. – **V. lophiocladum** var. **Lophiocladum**: 15, leafy branch × 2/3. – Var. **Conicum**: 16, leaf × 2/3; 17, berry × 4.Var. **Papillosum**: 18, leaf 2/3; 19, berry × 4.

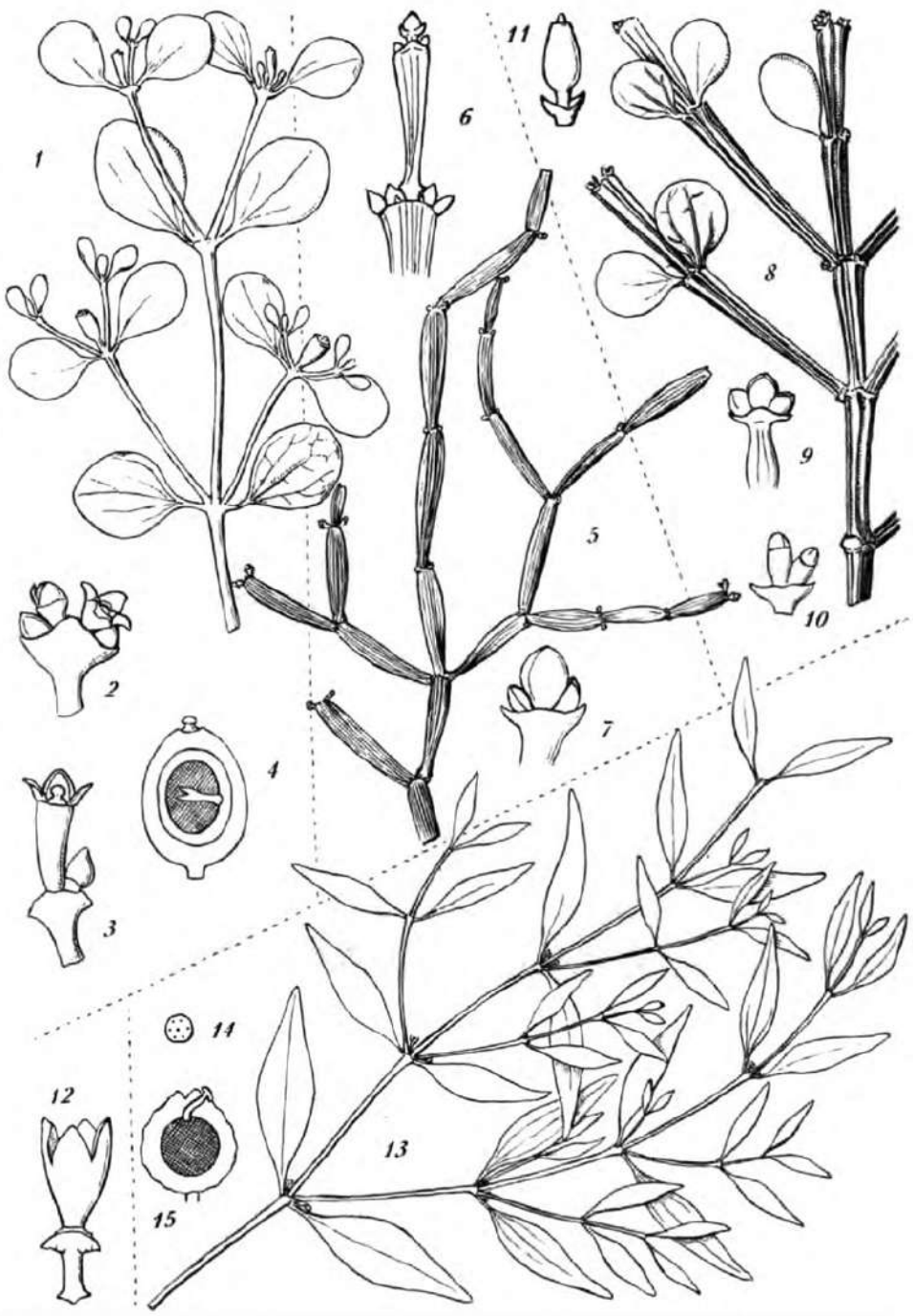

FIG. X. – **Viscum multiflorum**: 1, female flowering branch × 2/3; 2, male cymule × 2; 3, terminal female flower with anterior sepal removed and perulose bud × 2; 4, median longitudinal section of the “seed” in situ × 3. **V. Tieghemii**: 5, male flowering branch × 2/3; 6, cymules and small leaves × 2; 7, male cymule X 3. **V. hexapterum**: 8, flowering branch × 2/3; 9, male cymule × 3; 10, female cymule × 3; 11, cymule with young fruit × 3. – **V. longipetiolatum**: 12, male cymule containing only its central flower × 2. – **V. Perrieri**: 13, flowering branch × 2/3; 14, anther × 6; 15, median longitudinal section of the "seed" having started to germinate × 2.

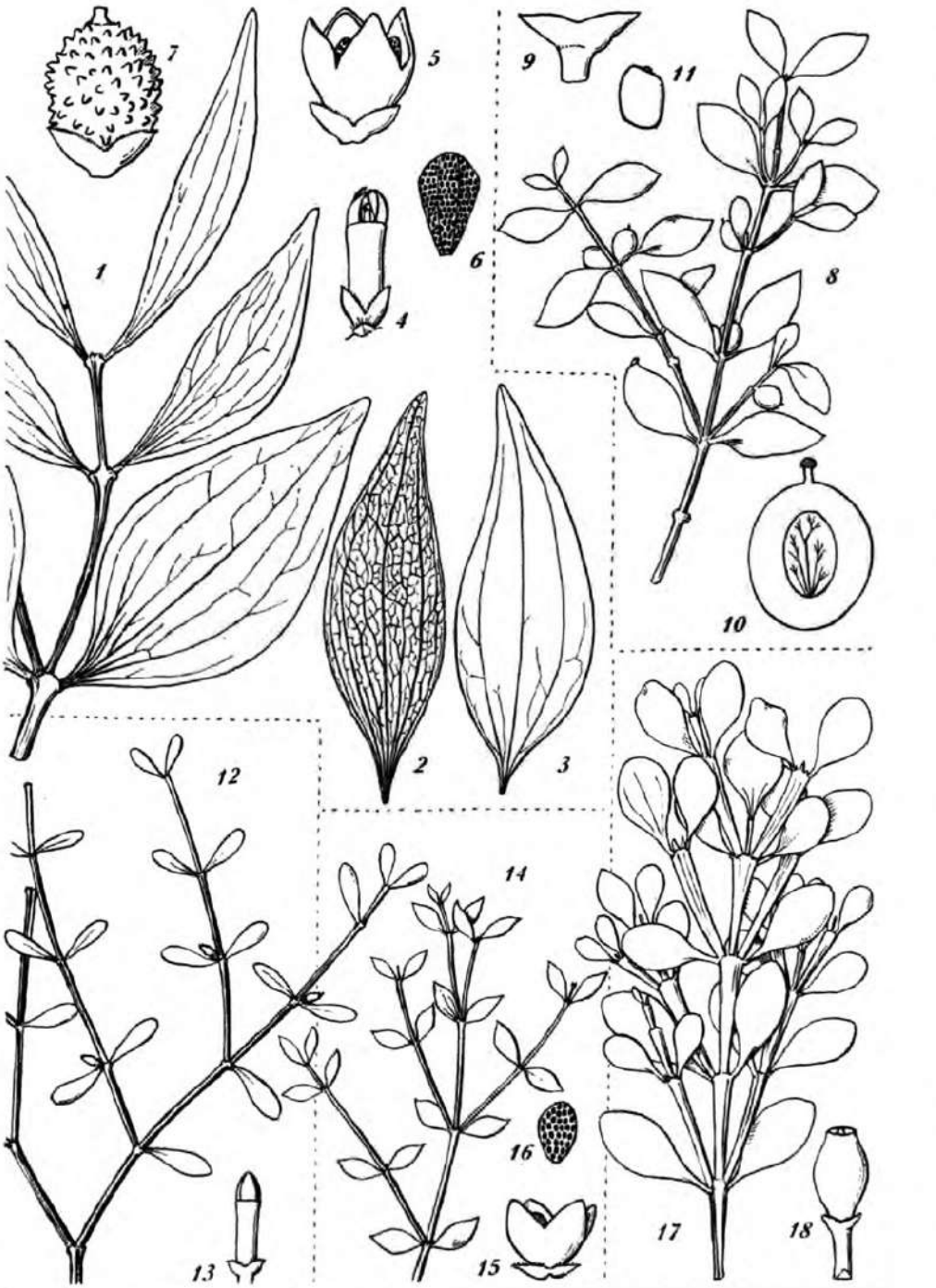

FIG. XI – **Viscum multicostatum**: 1, leafy twig X 2/3; 2-3, leaf reservation × 2/3; 4, female cymule × 3; 5, male cymule × 3; 6, anther × 4; 7, fruiting cymule × 3. – **V. itratanaombense**: 8, fruiting branch × 2/3; 9, emptied cupule x 3; 10, longitudinal section of the berry, tangent to the endocarp, × 3; 11, "seed" × 3. – **V. vohimavoense**: 12, fruiting branch × 2/3; 13, female flowering cymule × 3. – **V. Roncartii**: 14, leafy branch × 2/3; 15, male flowering cymule × 3; 16, anther × 6. **V. semialatum**: 17, leafy branch × 2/3; 18, cymule with young fruit × 3.

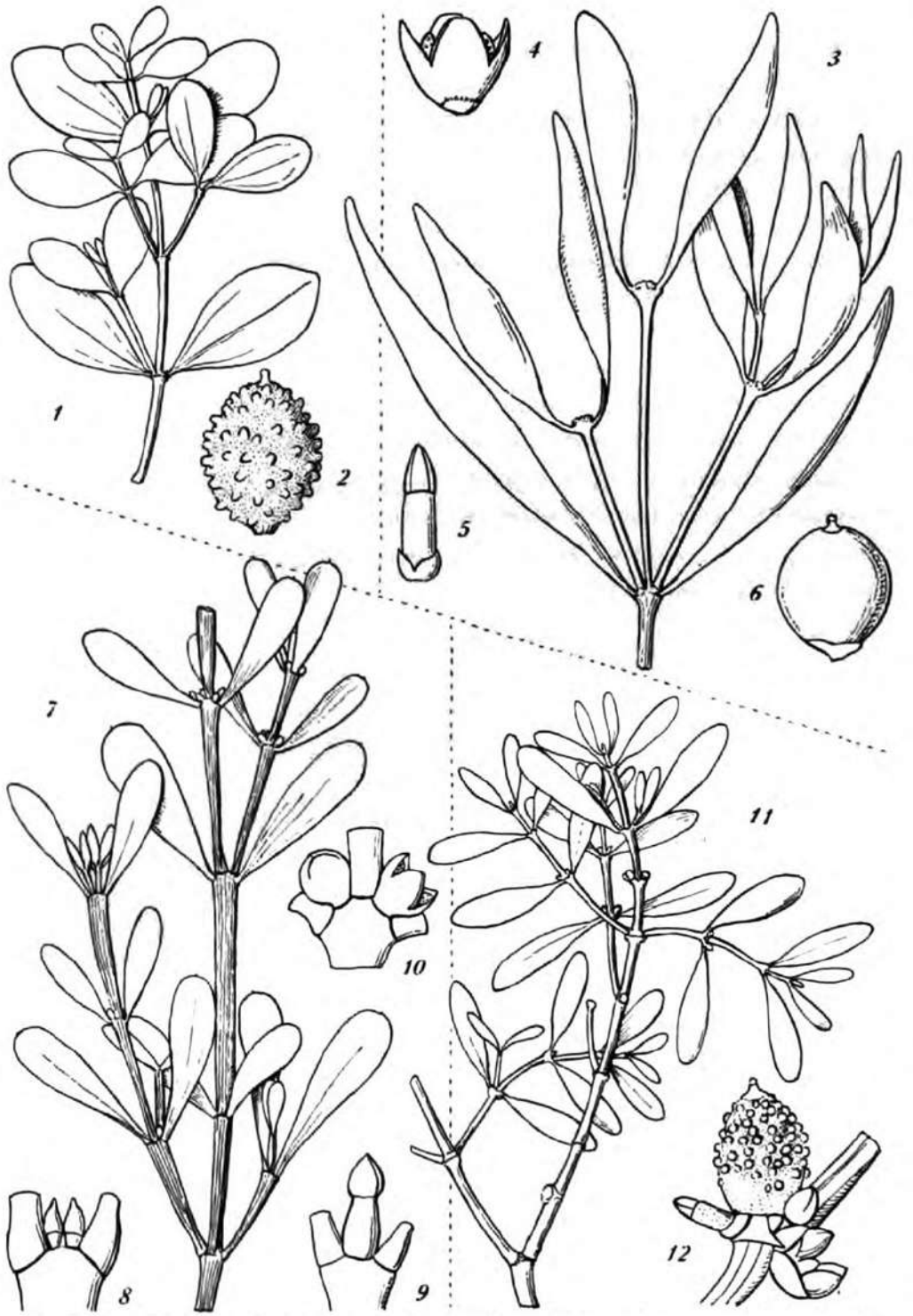

FIG. XII. – **Viscum ceibarum**: 1, leafy branch × 2/3; 2, berry × 3. – **V. Decaryi**: 3, leafy branch × 2/3; 4, male cymule × 3; 5, female cymule × 3; 6, fruiting cymule × 3. – **V. apiculatum**: 7, flowering branch with perulas × 2/3; 8, perineal axillary inflorescences × 3; 9, Terminal female ileur × 3; 10, axillary male flowers × 3. – **V. echinocarpum**: 11, flowering branch × 2/3; 12, knot with flowers of both sexes and fruit × 3.

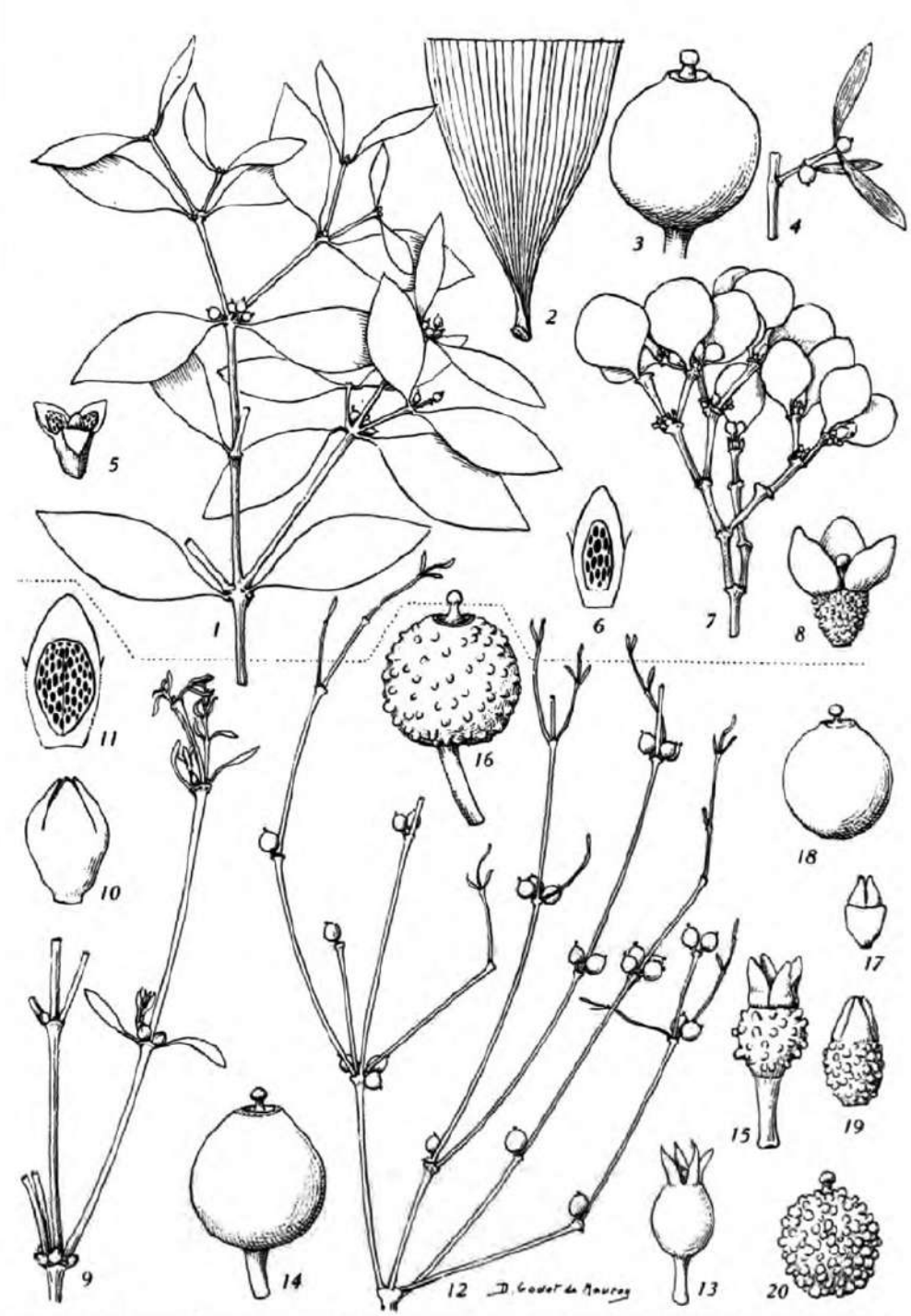

FIG. XIII. – **Viscum myriophlebium** var. **myriophlebium**: 1, fruiting branch × 2/3; 2, venation × 2; 3, fruit. × 4. – Var. **longifolium**: 4, leaves and fruit × 2/3; 5, male flower × 4; 6, anther × 6. – Var. **flabellifolium**: 7, flowering branch × 2/3; 8, female flower × 4. – **V. trachycarpum**: fa. **Humbertii**: 9, twig with relatively well-developed leaves and male buds × 2/3; 10, male flower × 4; 11, anther × 6. – Var. **Douliotii**: 12, fruiting branch with small leaves × 2/3; 13, flower × 4; 14, fruit × 4. – Var. **Lecomte**: 15, flower × 4; 16, fruit × 4. – Var. **laevibaccatum**: 17, flower × 4; 18. fruit × 4. – Var. **trachycarpum**: 19, flower × 4. 20, fruit × 4.

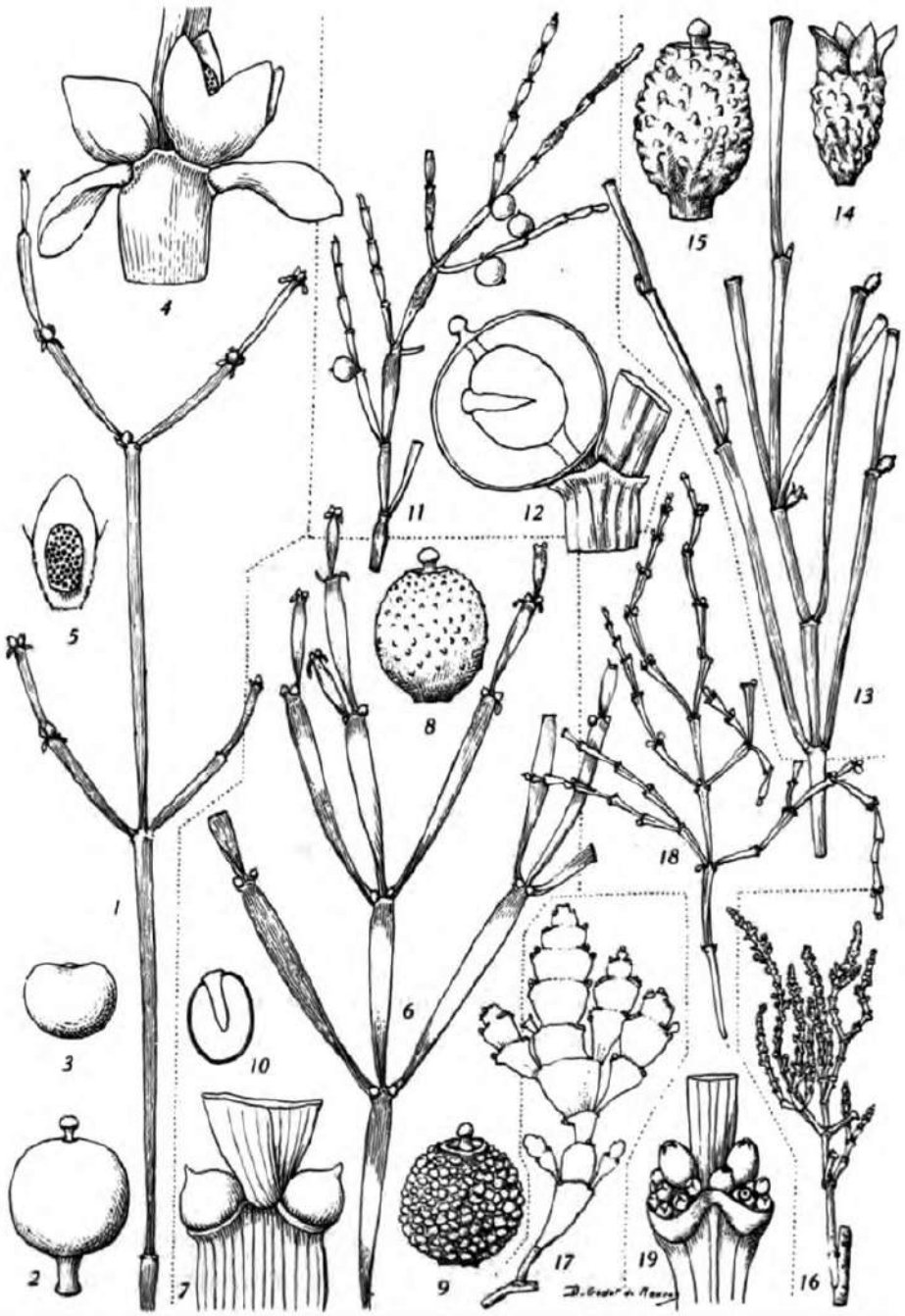

FIG. XIV. – **Viscum rhipsaloides**: 1, male flowering branch × 2/3; 2, berry × 4; 3, "seed" × 4, axillary male flowers and deciduous leaves × 4; 5, anther × 4. – **V. calcaratum**: 6, branch with deciduous leaves and aborted inflorescences × 2/3; 7, aborted axillary inflorescences × 4; 8-9, berries with warts ± developed × 4; 10, median longitudinal section of the "seed" × 4. **V. Coursii**: 11, fruiting branch × 2/3; 12, median longitudinal section of the "seed" in situ × 4. – **V. fastigiatum**: 13, flowering branch × 2/3; 14, female flower × 4; 15, berry × 4. – **Korthalsella madagascarica**: 16, flowering and fruiting branch × 2/3. – **K. Commersonii**: 17, flowering branch × 2/3. – **K. opuntia** var. **Richardii**: 18, flowering branch × 2/3; 19, flowering and fruiting node x 4: on the left: male buds and fruit; on the right, in the middle, an open male flower showing the synandrium.

ALPHABETICAL INDEX OF LORANTHACEAE

(The synonyms are in italics)

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