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The African species of
Landolphia P. Beauv.
Series of revisions of
Apocynaceae XXXIV

by

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Abstract

Landolphia P. Beauv., an apocynaceous genus distinct by corolla tube usually thickened above the anthers, glabrous fruits and mostly dense inflorescences, has been revised for mainland Africa. The genus now counts 50 species on that continent. It is confined to wet and seasonally dry Africa and Madagascar, where 10-13 endemic species are found. Five new names and four new combinations were necessary: for three new species and the two other new names and the four new combinations for species formerly housed in *Anthoclitandra* and *Aphanostylis*, genera reduced to synonyms of *Landolphia* here. The latter two new names are for species of which the epithets were otherwise occupied. Relationships to the nearest genera are discussed. Keys are given to identify specimens to the genera in *Landolphiinae*, now counting 9 genera, and to the species in *Landolphia*. Illustrations add to the extended descriptions, and maps present the distribution of the species. Vernacular names, often numerous ones for widely distributed species, were gleaned from herbarium labels and literature. *Landolphia* spp. produce latex, used for rubber and bird lime. The fruits of most species are edible.

Introduction

The present publication is a monographic revision of the Continental African species of *Landolphia*, all of which are confined to the area. The study is mainly based on the examination of herbarium material. In addition, the authors have had the opportunity of observing living plants in their natural habitat belonging to 33 of the 50 species maintained here.

It has been possible to trace almost all the type specimens of the names and synonyms discussed in the present revision.

The authorship is shared as follows:

J.G.M. Persoon: Introductory paragraphs (in cooperation with A.J.M. Leeuwenberg), species 1-13, 15-20, 22-26, 28-34, 36, 38, 42-50 and index of exsiccatae.

F.J.H. van Dilst: species 37.

R.P. Kuijpers: species 14, 21, 27, 35, 39 and 41.

G.J.A. Vonk: species 40.

Since Pichon (1953) monographed the genus, many more collections have been made, and some new species have been discovered, especially in Gabon. After Kuijpers had monographed *Anthoclitandra* and *Aphanostylis* again, Persoon concluded that both genera should be united with *Landolphia*. Therefore the latter author is responsible for the new combinations and the new name needed for the purpose. Vonk discovered that *Landolphia reticulata* was erroneously placed in *Ancylobotrys* by Pichon, as he had the opportunity to study the first flowers and fruits ever collected of this species.

General part

Geographical distribution

The genus *Landolphia* is represented in Continental Africa with 50 species. The remaining 10-13 species are endemic in Madagascar.

L. owariensis is the most widespread among them, as it is known from almost all tropical African countries (hence the formidable synonymy). Almost the same area is occupied by *L. incerta*. The third largest area in size is that covered by *L. buchananii* in Central and East Africa. The fourth and fifth places are occupied by *L. kirkii* and *L. parvifolia* respectively. *L. kirkii* even reaches South Africa. *L. foretiana* covers an area from Guinée to Zaire. *L. landolphioides* occurs from Nigeria and São Tomé eastwards to Sudan and Uganda. Several species are found from Nigeria to Zaire; these are *L. robustior*, *L. mannii*, *L. congolensis*, *L. dewevrei*, *L. glabra* and *L. violacea*. *L. ligustrifolia* and *L. villosa* occur from Cameroun to Zaire. *L. camptoloba* is known from Zaire, Angola and Zambia, *L. thollonii* and *L. lanceolata* from Congo, Zaire and Angola, and the last rather widely distributed Central Africa species is *L. rufescens* known from Zaire, Angola and northern Zambia.

Some species have been collected mainly in West Africa, *L. dulcis* from Senegal to Angola and *L. hirsuta* from Senegal to Cameroun. Several species remain west of the Dahomey Gap: *L. heudelotii*, *L. micrantha*, *L. membranacea*, *L. macrantha* and *L. nitidula*. The last occupies the smallest area among them, it is confined to coastal Guinée and Sierra Leone. Two species occur on both sides of the Dahomey Gap, but are restricted to West Africa: *L. calabrica* known from Sierra Leone to Nigeria and *L. togolana* from Côte d'Ivoire to Nigeria. Quite a few species are only known from in and around Gabon: *L. uniflora*, *L. subrepanda*, *L. stenogyna*, *L. maxima*, *L. letestui*, *L. glandulosa*, *L. bruneelii*, *L. jumellei*, *L. lecomtei*, *L. ferrea* and *L. brevifolia*. Four species have been collected only in Gabon, *L. noctiflora*, *L. pyramidata*, *L. axillaris* and *L. reticulata*. A few more species cover small areas: *L. flavidiflora* in Cameroun, *L. gossweileri* in southern Angola and *L. cuneifolia* approximately where Angola, Zaire and Zambia meet. Two species have an eastern distribution: *L. eminiiana* is mainly found in eastern Zaire to Tanzania, and *L. watsoniana* occurs along the coast from Kenya to Mozambique. The three locations of *L. angustisepala*, are as far apart as Gabon and in the east of Zaire, which may either indicate, that this species is still to be discovered in between, or that it may widen the individual variation within the very closely allied *L. parvifolia*.

It is interesting, that sometimes related species tend to vicariance, e.g. the three *L. hirsuta*, *L. jumellei* and *L. villosa*, in western, central and eastern Central Africa respectively. Their areas slightly overlap, as is the case with *L. dulcis* and *L. congolensis* in western and central Africa. The closely allied and geographically separate *L. togolana* and *L. letestui* appear to be true vicariants.

The small areas of distribution known from *Landolphia* species cover more

or less the refugia shown on figure one of Jean Maley (1989). *L. macrantha* may have originated in the West African refugium on the border of Guinée and Liberia, while the other two forest species, *L. membranacea* and *L. micrantha*, may have survived there. Five of Maley's refugia near the coast from Cameroon to Congo are candidates for having protected the eleven species known from Gabon adjacent areas. *L. noctiflora*, *L. pyramidata*, *L. axillaris* and *L. reticulata* probably found a shelter in the refugium in southern Gabon. As we are still discovering species new to science and new localities for known species the latter remarks remain speculative.

Reference

Maley, J. 1989. Late quaternary climatic changes in the African rain forest: forest refugia and the major role of sea surface temperature. In: M. Leinen & M. Sarnthein (eds.), *Paleoclimatology and Paleometereology: Modern and Past Patterns of Global Atmospheric Transport*, p. 585-616. Kluwer Academic Publishers, Dordrecht/Boston/London.

Habit and growth

Most *Landolphia* species are large lianas with large curled terminal tendrils. One of the two axillary branches forms the continuation of the plant rendering its growth sympodial. The two axillary buds side by side of the tendril open simultaneously, soon afterwards one of the two branches grows more slowly and stops after having produced several leaf pairs or after having branched once and often having produced some inflorescences. The other branch shapes the next apical tendril after producing some leaf pairs and the process is repeated. Therefore these plants grow in the model of Koriba (Hallé & Oldeman, 1970). They share this model with almost all other species of the subtribes *Landolphinae* and *Willughbeinae* of the *Carisseae*.

Only a few species are known as rhizomatous pyrophytic shrubs in savannas. They are probably descendants of lianescent species, e.g. the rhizomatous shrub *L. thollonii* is closely allied to the large liana *L. parvifolia*, of which species it even was a variety in Pichon's revision (1953). In several other families woody plants also may survive the yearly bush fire as rhizomatous shrubs which flower on first-year shoots. In several species lianas or trees may survive annual bush fire as geopyrophytic rhizomatous shrubs. These shrubs bear leaves similar to those of sucker shoots of the fully developed plants (e.g. the climber *Strychnos gossweileri* and the trees *S. pungens* and *S. spinosa*).

Relationship to other genera

As can be deduced from the detailed description of the *Landolphiinae* the genera are all closely allied to each other by almost all characters. Therefore their delimitation has been disputed up to the present day. Pichon did an excellent job defining the eleven genera he has distinguished and nine of which are maintained here. Six of them have been revised again recently. After comparison of all species of the *Landolphiinae* Persoon has concluded, that only *Anthoclitandra* and *Aphanostylis* are not distinguishable from *Landolphia* as Pichon indicated. The basal part of the pistil head (clavuncula cf. Pichon), in fact the stigma, has similar shapes in *Anthoclitandra* and several species of *Landolphia*. Relatively long anthers in short corolla tubes, represent the only remaining character to separate *Aphanostylis* from *Landolphia*, as Pichon indicated, but the species he kept in *Aphanostylis* are so different from each other, that they are placed here in two different subgenera of *Landolphia*.

Landolphiinae K. Schum. in Engler & Prantl, Nat. Pflanzenf. 4(2): 127. 1895, partly, as for *Landolphia*, *Clitandra* and *Carpodinus* (= *Landolphia*).

Unarmed large lianas with large curled tendrils in the model of Koriba or small rhizomatous shrubs without tendrils, with much white latex in all parts. Tendrils often with flowers, especially in *Ancylobotrys*, *Dictyophleba*, *Pacouria* and *Vahadenia*. Stipules sometimes present. Leaves opposite, rarely some verticillate or subopposite, without domatia. Inflorescence cymose, terminal and/or axillary. Bracts small; bracteoles similar, present or not. Flowers actinomorphic, 5-merous, but sometimes with only 4 sepals. Sepals free or almost free, mostly clasping the corolla base in fresh flowers, almost always persistent, not enlarged under the fruit, usually without colleters. Corolla tube cylindrical or nearly so, lobes overlapping to the left and not inflexed in bud, spreading, suberect or sometimes recurved. Corona absent. Stamens free from each other and from the pistil head, included or slightly exerted; anthers entirely fertile or with a small sterile acumen. Ovary partly 1- and partly 2-celled or entirely 1- or 2-celled; style cylindrical, not shed with the corolla; pistil head of a globose to cylindrical basal part, the true stigma which is at the same level as the base of the anthers and a cleft stigmoid apex. Fruit an indehiscent berry, variously shaped from depressed-globose to pod-like, 1-100-seeded; wall fleshy or leathery, with or without sclereid cell layer; pulp often sweet and edible. Seed irregularly ellipsoid or nearly so; testa thin, sticking to the pulp; endosperm copious, horny or nearly so; embryo straight.

The tribe comprises 9 genera, of which one is found in America and the others occur in Africa.

Key to the genera of the Landolphiinae

1. Calyx with many colleters in each sepal; inflorescence terminal, large, lax; sepals 3.7-10.5 mm long. Africa **Vahadenia**
 Calyx without colleters; inflorescence various; sepals mostly smaller 2
2. Inflorescences of elongate, branched, terminal panicles 3
 Inflorescence contracted, short and often clustered, terminal or axillary, exceptionally some of them elongate. Africa 5
3. Anthers keeled along the back; ovary and fruit pubescent; stipules absent.
 Africa 8. **Ancylobotrys**
 Anthers not keeled 4
4. Ovary hairy; stipules absent. America 5. **Pacouria**
 Ovary glabrous; stipules interpetiolar, early caducous. Africa 6. **Dictyophleba**
5. Length of anthers almost half or more of the length of the corolla tube; corolla lobes often longer than the tube 1. **Landolphia**
 Length of anthers up to one third of the corolla tube, frequently less 6
6. Wall of the corolla tube thickened above the anthers; anthers not keeled . . 7
 Wall of the corolla tube not thickened above the anthers; anthers keeled or not (see also *L. nitidula* and *L. robustior*) 8
7. Rhizomatous shrub with straight stems; corolla tube 9-13 mm long; stamens inserted 0.18-0.24 of the tube length from the corolla base
 2. **Chamaecлитandra**
 Climber with curled tendrils; if rhizomatous shrub stamens inserted 0.55-0.90 of the tube length from the corolla base (*L. gossweileri*, *L. lanceolata* and *L. thollonii*) 1. **Landolphia**
8. Only terminal inflorescences developed 9. **Saba**
 Inflorescences axillary or axillary and at the same time terminal 9
9. Anthers not keeled, 0.3-0.5 mm long; stamens inserted above the middle of the corolla tube; secondary leaf veins in 6-16 pairs; tertiary venation reticulate 3. **Clitandra**
 Anthers keeled along the back, mostly more than 0.5 mm long; stamens inserted below the middle of the corolla tube; many parallel secondary veins close together 4. **Orthopichonia**

References to the other 8 genera of the Landolphiinae

2. and 3. Leeuwenberg & Berndsen, *Clitandra* Benth. and *Chamaecлитandra* (Stapf) Pichon, Series of revisions of Apocynaceae XXV. Bull. Jard. Bot. Nat. Belg. 58: 159-168. 1988.

4. Vonk, A taxonomic revision of the genus *Orthopichonia*, Series of revisions of Apocynaceae XXX. Wageningen Agric. Univ. Pap. 89-4: 27-50. 1989.

5. *Pacouria* Aubl. Pichon, Monographie des Landolphiées. Classification des Apocynacées, XXXV. Mém. IFAN 35: 245-250. 1953.

6. De Hoogh, *Dictyophleba* Pierre. Series of revisions of Apocynaceae XXVIII. Bull. Jard. Bot. Nat. Belg. 59: 207-226. 1989.

8. *Ancylobotrys* Pierre, Pichon, op. cit. 266-302.

9. Leeuwenberg & van Dilst, *Saba* (Pichon) Pichon, Series of revisions of Apocynaceae XXVII. Bull. Jard. Bot. Nat. Belg. 59: 189-206. 1989.

Taxonomic Part

The genus *Landolphia*

Landolphia P. Beauv., Fl. Owar. Bénin 1(6): 54. 1804, nom. conserv.; Pichon, Mém. IFAN 35: 40. 1953.

Type species: *L. owariensis* P. Beauv.

Heterotypic synonyms: *Vahea* Lam., Tableau Enc. 2: 292. 1792, nom. rejic. Type species: *V. gummifera* Lam. (= *L. gummifera* (Lam.) K. Schum.). Homotypic synonym: *Pacouria* sect. *Vahea* (Lam.) O. Kuntze in Post & O. Kuntze, Lex.: 412. 1904.

Carpodinus R.Br. ex Sabine, Trans Soc. Hort. London 5: 455. 1824, nomen; ex G. Don, Gen. Syst. 4: 101. 1837. Lectotype species: *C. dulcis* Sabine, designated here (= *L. dulcis* (Sabine) Pichon). Homotypic synonym: *Pacouria* sect. *Carpodinus* (R.Br. ex Sabine) O. Kuntze, l.c.

Clitandra sect. *Anthoclitandra* Pierre, Bull. Soc. Linn. Paris sér. 2: 40. 1898. Type species: *C. myriantha* (K. Schum.) K. Schum. ex Pierre (= *L. robustior* (K. Schum.) Persoon). Homotypic synonym: *Anthoclitandra* (Pierre) Pichon, **syn. nov.**

Aphanostylis Pierre, Bull. Soc. Linn. Paris sér. 2: 89. 1898, **syn. nov.** Type species: *A. leptantha* (K. Schum.) Pierre (= *L. leptantha* (K. Schum.) Persoon). Homotypic synonyms: *Clitandra* sect. *Aphanostylis* (Pierre) Hall. f., op. cit. 122. *Pacouria* sect. *Aphanostylis* (Pierre) O. Kuntze, l.c.

Clitandra sect. *Amphiclinis* Hall. f., Hamb. Wiss. Anst. 17. Beibl. 3: 117. 1900. Lectotype species: *C. landolphioides* Hall. f., designated by Pichon, 1953 (= *L. landolphioides* (Hall. f.) Chev.).

Jasminochyla (Stapf) Pichon, Mém. Mus. Nat. Hist. Nat. sér. 2. 24: 145. 1948. Type species: *J. ugandensis* (Stapf) Pichon (= *L. buchananii* (Hall. f.) Stapf).

Clitandra sect. *Clitandrella* Pichon, op. cit. 149. Type *C. mannii* Stapf (= *L. incerta* (K. Schum.) Persoon).

Sepals without colleters, rarely with 5-15 colleters in groups of 1-3 alternating with the sepals. Corolla tube thickened above the anthers except in *L. nitidula* and *L. robustior*. Anthers not keeled. Fruit glabrous. Other characters see *Landolphiinae*.

60-63 species, 50 in Africa and the remaining in Madagascar.

Sectional arrangement

1. Subgenus **Amphiclinis** (Hall. f.) Pichon, Mém. IFAN 35: 45. 1953.

Lectotype species: *L. landolphioides* (Hall. f.) Chev., designated by Pichon.

Basionym: *Clitandra* sect. *Amphiclinis* Hall. f., Jahrb. Hamb. Wiss. Anst. 17. Beibl. 3: 117. 1900.

Heterotypic synonyms: *Landolphia* sect. *Jasminochyla* Stapf in Fl. Trop. Afr. 4(1): 31. 1902. Homotypic synonym: *Jasminochyla* (Stapf) Pichon, Mém. Mus. Nat. Hist. Nat. sér. 2, 24: 145. 1948. Type species: *J. ugandensis* (Stapf) Pichon (= *L. buchananii* (Hall. f.) Stapf).

Carpodinus sect. *Landolphioides* Pichon, op. cit. 152. Type species: *C. landolphioides* (Hall. f.) Stapf (= *L. landolphioides* (Hall. f.) Chev.).

Outer bark not peeling off. Leaf blade not dotted beneath; tertiary venation reticulate. Inflorescences terminal or terminal and at the same time axillary. Corolla tube 3.8-14 mm long; lobes 4.6-15.4 mm long. Stamens 1.2-4.2 mm included. Ovary glabrous; style glabrous. Fruit wall with sclereid cell layer.

Species:

L. axillaris Pichon

L. buchananii (Hall. f.) Stapf

L. landolphioides (Hall. f.) Chev.

2. Subgenus **Carpodinus** (R. Br. ex G. Don) Pichon, Mém. IFAN 35: 145. 1953.

Basionym: *Carpodinus* R. Br. ex G. Don, Gen. Syst. 4: 101. 1837.

Lectotype species: *C. dulcis* Sabine, designated by Pichon (= *L. dulcis* (Sabine) Pichon).

Homotypic synonym: *Pacouria* sect. *Carpodinus* (R. Br. ex G. Don) O. Kuntze in Post & O. Kuntze, Lex.: 412. 1904.

Fruit wall without sclereid cell layer.

2.1. Sect. **Carpodinus** (R. Br. ex G. Don) Persoon, **comb. nov.** Basionym and homotypic synonym as for subgenus.

Heterotypic synonyms: *Carpodinus* sect. *Djeratonia* Pierre, Bull. Soc. Linn. Paris sér. 2: 37. 1898. Lectotype species: *C. flava* Pierre ex Stapf, designated by Pichon, 1953 (= *L. dulcis* (Sabine) Pichon). Homotypic synonyms: *Pacouria* sect. *Carpodinus* subsect. *Djeratonia* (Pierre) O. Kuntze in Post & O. Kuntze, Lex.: 412. 1904. *Landolphia* subg. *Carpodinus* sect. *Djeratonia* (Pierre) Pichon, Mém. IFAN 35: 148. 1953, **syn. nov.**

Carpodinus sect. *Antchinea* Pierre, op. cit. 38. Lectotype species: *C. glabra* Pierre ex Stapf, designated here (= *L. glabra* (Pierre ex Stapf) Pichon). Homotypic synonym: *Pacouria* sect. *Carpodinus* subsect. *Antchinea* (Pierre) O. Kuntze, l.c.

Carpodinus sect. *Commidodia* Pierre, l.c. Lectotype species: *C. foretiana* Pierre ex Jum., designated here (= *L. foretiana* (Pierre ex Jum.) Pichon). Homotypic synonym: *Pacouria* sect. *Carpodinus* subsect. *Commidodia* (Pierre) O. Kuntze, l.c.

Carpodinus sect. *Rhizochyla* Stapf in Fl. Trop. Afr. 4(1): 74. 1902. Type species: *C. lanceolata* K. Schum. (= *L. lanceolata* (K. Schum.) Pichon).

Carpodinus sect. *Stereoneuron* Stapf, l.c. Lectotype species: *C. macrantha* K. Schum., designated by Pichon, 1953 (= *L. macrantha* (K. Schum.) Pichon). Homotypic synonym: *Landolphia* subg. *Carpodinus* sect. *Stereoneuron* (Stapf) Pichon, op. cit. 146, **syn. nov.**

Carpodinus sect. *Carpadenia* Pichon, Mém. Mus. Nat. Hist. Nat. sér. 2. 24: 152. 1948. Type species: *C. glandulosa* Pellegr. (= *L. glandulosa* (Pellegr.) Pichon).

Landolphia subg. *Carpodinus* sect. *Avopsis* Pichon, Mém. IFAN 35: 192. 1953, **syn. nov.**

Outer bark peeling off or not. Leaf blade mostly dotted beneath; tertiary venation often reticulate. Inflorescence usually axillary. Corolla tube mostly long and slender, at least 2.8 mm long. Stamens at least slightly included; anthers up to about 0.3 x as long as the corolla tube, mostly much shorter. Ovary glabrous or hairy.

Species:

- L. membranacea* (Stapf) Pichon
- L. congolensis* (Stapf) Pichon
- L. dulcis* (Sabine) Pichon
- L. uniflora* (Stapf) Pichon
- L. maxima* (K. Schum. ex Hall. f.) Pichon
- L. foretiana* (Pellegr.) Pichon
- L. glandulosa* (Pellegr.) Pichon
- L. hirsuta* (Hua) Pichon
- L. jumellei* (Pierre ex Jum.) Pichon
- L. villosa* Persoon
- L. lanceolata* (K. Schum.) Pichon
- L. gossweileri* (Stapf) Pichon
- L. subrepanda* (K. Schum.) Pichon
- L. rufescens* (De Wild.) Pichon
- L. ferrea* Persoon
- L. glabra* (Pierre ex Stapf) Pichon
- L. cuneifolia* Pichon
- L. macrantha* (K. Schum.) Pichon
- L. violacea* (K. Schum. ex Hall. f.) Pichon
- L. ligustrifolia* (Stapf) Pichon
- L. breviloba* Persoon
- L. bruneelii* (De Wild.) Pichon
- L. stenogyne* Pichon

2.2. Sect *Clitandrella* (Pichon) Persoon, **comb. nov.**

Basionym: *Clitandra* sect. *Clitandrella* Pichon, Mém. Mus. Nat. Hist. Nat. sér. 2. 24: 149. 1948.

Type species: *C. mannii* Stapf (= *L. incerta* (K. Schum.) Persoon).

Homotypic synonym: *Aphanostylis* subg. *Clitandrella* Pichon, Mém. IFAN 35: 241. 1953.

Outer bark not peeling off. Leaf blade not dotted beneath; tertiary venation

reticulate. Inflorescences axillary and at the same time terminal. Corolla tube 1.2-3 mm long. Stamens included or slightly exerted; anthers 0.3-0.8 × as long as the corolla tube. Ovary glabrous or with a few stiff hairs.

Species: *L. incerta* (K. Schum.) Persoon.

3. Subg. **Landolphia** (P. Beauv.) Pichon, Mém. IFAN 35: 55. 1953.

Fruit wall with sclereid cell layer. Inflorescences terminal and often at the same time axillary.

3.1. Sect. **Dinsonia** Pichon, Mém. IFAN 35: 77. 1953.

Type species: *L. camptoloba* (K. Schum.) Pichon.

Outer bark peeling off. Leaf blade not dotted beneath; tertiary venation reticulate. Corolla tube 11.2-19.7 mm long; lobes 10.0-25.4 × 1.9-3.9 mm. Stamens 0.1-1.2 mm included. Ovary glabrous or occasionally with a belt of hairs approximately halfway along its length.

Species:

L. camptoloba (K. Schum.) Pichon

L. noctiflora Persoon

3.2. Sect. **Landolphia** Pierre, Bull. Soc. Linn. sér. 2: 13. 1898 (as *Eulandolphia*).

Type species: *L. owariensis* P. Beauv.

Heterotypic synonyms: *Landolphia* sect. *Eulandolphia* subsect. *Malcommia* Pierre, op. cit. 14. Type species: *L. klainii* Pierre (= *L. mannii* Dyer).

L. sect. Mesandroecia Hall. f., Jahrb. Hamb. Wiss. Anst. 17. Beih. 3: 70. 1900. Lectotype species: *L. eminiiana* Hall. f., designated here.

Plants mostly hairy. Outer bark rarely peeling off. Leaf blade rarely dotted beneath; tertiary venation reticulate. Inflorescences terminal, exceptionally at the same time axillary. Corolla tube 3-22 mm long; lobes 2-15 × 1-8 mm. Stamens barely to deeply included. Ovary densely pubescent or tomentose.

Species:

L. lecomtei Dew.

L. eminiiana Hall. f.

L. calabrica (Stapf) E.A. Bruce

L. mannii Dyer

L. heudelotii A. DC.

L. owariensis P. Beauv.

L. thollonii Dew.

L. parvifolia K. Schum.

L. angustisepala Pichon

L. dewevrei Stapf

L. reticula Hall. f.

3.3. Sect. **Anthoclitandra** (Pierre) Persoon, **comb. nov.**

Basionym: *Clitandra* sect. *Anthoclitandra* Pierre, Bull. Soc. Linn. Paris sér. 2: 40. 1898.

Type species: *C. myriantha* (K. Schum.) K. Schum. ex Pierre (= *L. robustior* (K. Schum.) Persoon).

Homotypic synonym: *Anthoclitandra* (Pierre) Pichon, Mém. IFAN 35: 230. 1953.

Outer bark often peeling off. Leaves not dotted beneath; tertiary venation reticulate. Inflorescences axillary. Corolla tube 3.4-5.6 mm long; lobes 3.8-10.7 × 0.5-0.9 mm. Stamens 1-2 mm included. Ovary pubescent at the apex.

Species:

L. robustior (K. Schum.) Persoon.

3.4 Sect. *Aphanostylis* (Pierre) Persoon, **comb. nov.**

Basionym: *Aphanostylis* Pierre, Bull. Soc. Linn. sér. 2: 89. 1898.

Lectotype species: *A. lephantha* (K. Schum.) Pierre, designated by Pichon (= *L. leptantha* (K. Schum.) Persoon).

Homotypic synonyms: *Clitandra* sect. *Aphanostylis* (Pierre) Hall. f., Jahrb. Hamb. Wiss. Anst. 17. Beibl. 3: 122. 1900. *Pacouria* sect. *Aphanostylis* (Pierre) O. Kuntze, Lex.: 412. 1904.

Aphanostylis sect. *Anthaphanostylis* Pierre, op. cit. 90. Lectotype species: *A. flavidiflora* (K. Schum.) Pierre, designated by Pichon (= *L. flavidiflora* (K. Schum.) Persoon). Homotypic synonyms: *Clitandra* sect. *Aphanostylis* subsect. *Anthaphanostylis* (Pierre) Hall. f., op. cit. 124. *Pacouria* sect. *Anthaphanostylis* (Pierre) O. Kuntze, l.c.

Landolphia sect. *Pseudoclitandra* Pichon, Mém. IFAN 35: 81. 1953, **syn. nov.**
Type species: *L. letestui* (Pellegr.) Pichon.

Outer bark sometimes peeling off. Leaf blade not dotted beneath; tertiary venation reticulate. Inflorescences axillary and/or terminal. Corolla tube 1-4.8 mm long; lobes 1-13 × 0.7-4.5 mm. Ovary mostly glabrous or nearly so.

Species:

L. kirkii Dyer

L. watsoniana Romburgh

L. micrantha (Chev.) Pichon

L. lephantha (K. Schum.) Pichon

L. togolana (Hall. f.) Pichon

L. letestui (Pellegr.) Pichon

L. flavidiflora (K. Schum.) Persoon

L. pyramidata (Pierre) Persoon

L. nitidula Persoon

Discussion of the relationship of the sections and their delimitation

The three subgenera *Amphiclinis*, *Carpodinus* and *Landolphia* founded and/or maintained by Pichon are kept up here. *Amphiclinis* is delimited as before. Except for the new species described here, the major changes are due to the reduction of *Anthoclitandra* and *Aphanostylis* to synonymy. *Aphanostylis mannii*

(= *Landolphia incerta*) is forming here the section *Clitandrella* which moved from the former genus *Aphanostylis* to the subgenus *Carpodinus*. The type species of *Anthoclitandra* is judged to constitute a section in the subgenus *Landolphia* and the other species of *Anthoclitandra* and *Aphanostylis*, among which the type species of *Aphanostylis*, are all housed in the section *Aphanostylis* of the subgenus *Landolphia*.

Pichon (1953) divided subgenus *Carpodinus* into three sections: *Stereoneuron*, *Djeratonia* and *Avopsis*. The difference between those sections, particularly between the first ones, are too small to maintain the sections. The species of section *Avopsis* are much more hairy than those of the other sections, but this one remaining difference is not strong enough. The three former sections together form a natural group, covering *L. macrantha* (earlier in section *Stereoneuron*), *L. hirsuta*, *L. jumellei* and *L. villosa* (earlier in section *Avopsis*) and the remaining species (earlier in section *Djeratonia*).

L. incerta, the type species of section *Clitandrella* herewith moves from the former genus *Aphanostylis* to the subgenus *Carpodinus*, as it does not have a sclereid cell layer in the fruit wall. The small corolla tube and the relatively large anthers are reasons to keep it in a section separate from all other species of subgenus *Carpodinus*.

The most important changes took place in the subgenus *Landolphia*. The first section, *Dinsonia*, includes the new species *L. noctiflora*. The only changes in the second section, *Landolphia*, are the delimitation of the species, *L. deweyrei* and *L. thollonii* were varieties of *L. parvifolia* according to Pichon and have now been recognized as species. A new section, *Anthoclitandra*, was described, and the last section, *Aphanostylis*, received the remaining species placed earlier in *Anthoclitandra* and *Aphanostylis*. None of the species of section *Landolphia* moved to another section.

Key to the species

1. Anthers 0.45-0.8 × as long as the corolla tube; lobes 2.8-6.5 × tube; tube 1.1-3 mm long 2
- Anthers 0.07-0.36 × as long as the corolla tube; lobes 0.24-2.1 × tube; tube 9-13 mm long, when lobes up to 2.5 × as long (17. *L. glandulosa*), see also 22. *L. incerta* with small leaves and many secondary veins . . . 4
2. Leaves with 5-10 pairs of secondary veins; stigmoid apex conical 3
- Leaves with 10-20 pairs of secondary veins; stigmoid apex ovoid 21. *L. incerta*
3. Leaves with 6-10 pairs of secondary veins; corolla in the mature bud 8-15 mm long; ovary rhomboid, glabrous; style 0.5-1.5 mm long 10. *L. flavidiflora*
- Leaves with 5-8 pairs of secondary veins; corolla in the mature bud 5-9 mm long; ovary pyriform, pubescent; style 0-0.1 mm long 27. *L. lepthantha*
4. Ovary glabrous, with some scattered hairs or densely hairy in a ring on some distance of the apex 5

- Ovary densely hairy for a greater part of its surface, often exclusive of the apex, or just only at the apex 18
5. Anthers 1.2-5.9 mm included 6
 Anthers barely exerted to barely included, if up to 1.2 mm included, bark peeling off (*L. camptobola*, *L. noctiflora*) 10
6. Stamens inserted 10.0-21.6 mm from the base of the corolla tube, at 0.65-0.82 of its length; ovary long-attenuate at the apex, gradually narrowed into the style 7
 Stamens inserted 1.8-7.2 mm from the base of the corolla tube, at 0.16-0.71 of its length; ovary not or shortly attenuate at the apex, clearly distinct from the style 8
7. Corolla lobes 1.05-1.25 × as long as the tube, 16.3-20.8 mm long; stamens inserted 10.0-14.5 mm from the corolla base; style glabrous. Guinée and Sierra Leone 30. **L. macrantha**
 Corolla lobes 0.24-0.34 × as long as the tube, 5.1-9.1 mm long; stamens inserted 14.1-21.6 mm from the corolla base. 3. **L. breviloba**
8. Corolla tube densely pubescent or tomentose outside; lobes pubescent outside to the apex 2. **L. axillaris**
 Corolla tube glabrous, sparsely or partly tomentose outside; lobes glabrous outside at least at the apical quarter 9
9. Inflorescences terminal, sometimes at the same time axillary; pedicels glabrous to velutinous; stamens inserted 1.8-3.6 mm from the corolla base; anthers 1.0-2.0 mm long; ovary glabrous, with conical apex 5. **L. buchananii**
 Inflorescences usually axillary and at the same time terminal; pedicels glabrous to tomentose; stamens inserted 5.1-7.2 mm from the base of the corolla tube; anthers 1.9-2.7 mm long; ovary glabrous to tomentose, truncate at the apex 25. **L. landolphioides**
10. Corolla tube 11.2-21.0 mm long; stamens inserted 0.75-0.94 of the length from its base; lobes 10.0-32.2 mm long; anthers 1.6-2.3 mm long; ovary long-attenuate at the apex, gradually narrowed into the style 11
 Corolla tube 2.0-4.8 mm long; stamens inserted 0.34-0.67 of the length from the base of it; lobes 1.5-5.9 mm long; anthers 0.5-1.5 mm long; ovary short-attenuate, clearly distinct from the style 13
11. Branches with bark peeling off; leaf blade not glandular-punctate beneath; style glabrous 12
 Branches with bark not peeling off; leaf blade with small black glandular dots beneath; inflorescence exclusively axillary; style pubescent 43. **L. stenogyna**
12. Inflorescence terminal; leaves 1.4-8.4 cm long. Angola and adjacent parts of Zaire and Zambia 7. **L. camptoloba**
 Inflorescence axillary and at the same time terminal; leaves 5.2-15 cm long. Gabon 36. **L. noctiflora**
13. Branchlets sparsely pubescent to tomentose; inflorescences terminal and often also in upper leaf axils, mostly many-flowered; sepals mostly hairy.

- East Africa 23. *L. kirkii*
 Branchlets glabrous or sometimes sparsely pubescent or pilose and then
 all or almost all inflorescences axillary 14
14. Leaves obtuse or shortly and indistinctly acuminate; corolla lobes 0.47-0.9
 × as long as the tube, 1.5-2.2 mm long; tube inside glabrous above the
 stamens. Côte d'Ivoire-West Nigeria 46. *L. togolana*
 Leaves distinctly acuminate; corolla lobes 0.8-2.1 × as long as the tube,
 mostly more than 2.2 mm long; corolla tube inside hairy or glabrous
 above the stamens 15
15. Corolla glabrous inside above the stamens. Liberia and Côte d'Ivoire . . .
 35. *L. nitidula*
 Corolla pubescent inside above the stamens 16
16. Corolla tube almost cylindrical, 2.6-4.8 mm long; sepals ciliate; pistil 2.4-3.8
 mm long. East Africa 50. *L. watsoniana*
 Corolla tube more or less barrel-shaped, 1.5-3.1 mm long; sepals ciliate or
 not; pistil 1.5-3.1 mm long 17
17. Tertiary leaf venation conspicuous, reticulate. Central Africa 28. *L. letestui*
 Tertiary leaf venation rather inconspicuous. Liberia-Ghana
 34. *L. micrantha*
- 18(4). Inflorescences axillary and sometimes at the same time terminal (see also
L. landolphioides) 19
 Inflorescences terminal 42
19. Rhizomatous shrub with erect shoots, without tendrils 20
 Liana with tendrils 21
20. Inflorescences axillary; peduncles and pedicels pubescent or pilose; pedicels
 up to 5 mm long 18. *L. gossweileri*
 Inflorescences terminal; peduncles and pedicels glabrous or pilose; pedicels
 1-26 mm long 24. *L. lanceolata*
21. Branchlets hirsute or nearly so 22
 Branchlets glabrous or with very short or almost no hairs 24
22. Sepals recurved at the apex, 1.9-4.3 × as long as wide; corolla lobes 1.2-1.9
 × as long as wide, 1.7-3.0 mm wide. Cameroun en Gabon 22. *L. jumellei*
 Sepals erect, 0.6-1.7 × as long as wide 23
23. Corolla lobes 3.0-5.7 × as long as wide, 0.7-1.8 mm wide; sepals 0.8-1.7
 × as long as wide. Senegal-Cameroun 20. *L. hirsuta*
 Corolla lobes 1.8-3.4 × as long as wide, 1.9-2.3 mm wide; sepals 0.6-1.1
 × as long as wide. Central Africa, inclusive of Cameroun, but exclusive
 of Gabon 48. *L. villosa*
24. Corolla throat hairy; anthers often hairy outside, 0.24-0.32 × as long as
 the corolla tube 25
 Corolla throat glabrous; anthers glabrous, 0.075-0.24 × as long as the corolla
 tube 27
25. Corolla tube 1.5-1.9 mm long; lobes ovate, 1.1-1.5 × as long as wide, 1.7-2.6
 mm long. Gabon 39. *L. pyramidata*

- Corolla tube 3.8-10.7 mm long; lobes (narrowly) ovate or linear, 1.7-12 × as long as wide, 2.8-10.7 mm long 26
26. Outer bark peeling off; corolla lobes linear, 7-12 × as long as wide, 3.8-10.7 mm long, 0.8-1.9 × as long as the tube; anthers glabrous 41. **L. robustior**
Outer bark not peeling off; corolla lobes ovate or narrowly ovate, 1.7-5 × as long as wide, 2.8-6.9 mm long, 0.4-0.9 × as long as the tube; anthers pilose outside 44. **L. subrepanda**
27. Inflated part of corolla tube densely pubescent outside 28
Inflated part of corolla tube glabrous or sparsely pubescent outside . . . 29
28. Branchlets sparsely or partly pubescent; inflorescences 1-2-flowered; sepals 2.6-5.0 mm long; corolla tube 12.9-18.0 mm long; lobes 13.5-23.3 mm long 47. **L. uniflora**
Branchlets densely pubescent all over; inflorescences 2-30-flowered; sepals 0.9-2.2 mm long; corolla tube 5.9-14.7 mm; lobes 2.8-10.7 mm long 15. **L. foretiana**
29. Leaf blade 21.5-40 × 9.8-22.5 cm; tertiary venation scalariform 33. **L. maxima**
Leaf blade up to 24.5 × 10.0 cm (see also 49. *L. violacea*) 30
30. Bark of branches peeling off in small scales (see also 41. *L. robustior*) . . . 31
Bark of branches not peeling off 32
31. Leaf blades mostly cuneate at the base; venation prominent beneath; corolla tube 7.4-14.4 × as long as the calyx, 12.0-28.4 mm long. SE Nigeria and Central Africa 8. **L. congolensis**
Leaf blade cordate or sometimes cuneate at the base; venation not prominent beneath; corolla tube 5.2-8.7 × as long as the calyx, 12.0-15.8 mm long. Sierra Leone, Liberia, Côte d'Ivoire 33. **L. membranacea**
32. Ovary itself glabrous, but style pilose 43. **L. stenogyna**
Ovary hairy, at least at the apex 33
33. Room among secondary veins 7-14.9% of the length of the leaf blade . . . 34
Room among secondary veins 15.2-43% of the length of the leaf blade . . . 35
34. Corolla pilose outside at the margin of the lobes and the adjacent part of the tube, rather robust; tube 1.9-3.5 × as long as the calyx; lobes 2.9-6.5 × as long as wide, mostly rounded at the apex. Cameroun and Gabon 17. **L. glandulosa**
Corolla outside partly tomentose, especially on the tube and with short hairs at the margin of the lobes or almost entirely glabrous, slender; tube 2.5-11.5 × as long as the calyx; lobes 3.6-15 × as long as wide, rounded to acuminate at the apex. Senegal-Gabon and Angola 11. **L. dulcis**
35. Corolla tube 12.0-34.0 mm long 36
Corolla tube 5.0-10.8 mm long (see also *L. ferrea*, tube up to 13.0 mm long) 39
36. Corolla lobes 0.24-0.34 × as long as the tube 3. **L. breviloba**
Corolla lobes 0.40-1.7 × as long as the tube 37
37. Stamens inserted at 0.44-0.71 of the length from the base of the corolla tube; anthers 2.3-3.0 mm long 4. **L. bruneelii**

- Stamens inserted at 0.76-0.90 of the length from the base of the corolla tube; anthers 1.5-2.5 mm long 38
38. Leaf blades mostly rounded at the base, not clearly acuminate at the apex; tertiary venation not prominent beneath 29. *L. ligustrifolia*
 Leaf blades mostly cuneate at the base, clearly acuminate at the apex; tertiary venation prominent beneath 49. *L. violacea*
39. Leaves cordate, auriculate or rounded at the base; corolla tube 5.0-6.7 mm long, pubescent outside from 0.8-1.5 mm above the base 42. *L. rufescens*
 Leaves cuneate or rounded at the base; corolla tube 6.0-13.0 mm long, glabrous or hairy outside 40
40. Corolla pilose or pubescent outside from 1.0-1.9 mm above the base, glabrescent towards the apex; tube 6.5-8 mm long 9. *L. cuneifolia*
 Corolla glabrous outside at least on the tube 41
41. Leaves mostly rusty-brown beneath when dried; corolla tube 9.2-13.0 mm long; ovary abruptly narrowed into the style; stamens 0.7-1.2 mm included 13. *L. ferrea*
 Leaves dark greenish-brown beneath when dried; corolla tube 6.0-10.8 mm long; ovary gradually narrowed into the style; stamens 0-0.7 mm included 16. *L. glabra*
- 42(18). Corolla lobes glabrous outside at the apex 43
 Corolla lobes hairy outside at the apex (subgen. *Landolphia*) 44
43. Lianas with tendrils; leaf blades not glandular-punctate 25. *L. landolphioides*
 Rhizomatous shrubs with erect shoots, without tendrils; leaf blades glandular-punctate beneath 24. *L. lanceolata*
44. Corolla tube 11-23.8 mm long 45
 Corolla tube 3-10 mm long 47
45. Sepals erect or with apex slightly recurved; stamens inserted at 0.57-0.74 of the length of the tube from the corolla base. Gabon-Angola 26. *L. lecomtei*
 Sepals all partly or only apically recurved; stamens inserted at 0.44-0.62 of the length from the base of the corolla tube 46
46. Sepals pubescent or tomentose inside; corolla lobes 1.8-4.0 × as long as wide; anthers 2.2-3.3 mm long; ovary villose at the base. Eastern Zaire-Tanzania and Malawi 12. *L. eminiiana*
 Sepals often glabrous inside near the margin; corolla lobes 3.9-8.3 × as long as wide; anthers 1.6-2.1 mm long; ovary glabrous at the base. Sierra Leone-Nigeria 6. *L. calabrica*
47. Corolla throat hairy 48
 Corolla throat glabrous 51
48. Corolla lobes 1.7 × as long as the tube; inflorescence elongate, tendril-like; tube 4.3 mm long. Gabon 40. *L. reticulata*
 Corolla lobes 0.2-1.5 × as long as the tube; inflorescence congested or occasionally tendril-like; tube 3.7-10.0 mm long 49

49. Sepals apically recurved, outside irregularly hairy. Gabon, Zaire 1. *L. angustisepala*
 Sepals erect, with an even indumentum outside or sometimes glabrous . 50
50. Plant glaucous; stamens inserted at 0.40-0.60 of the length from the base
 of the corolla tube. West Africa, mostly in savannas . . . 19. *L. heudelotii*
 Plant with rusty-brown indumentum; stamens inserted at ca 0.65-0.8 of the
 length from the base of the corolla tube. Tropical Africa, mostly in forests
 37. *L. owariensis*
- 51(47). Rhizomatous shrub with erect shoots, without tendrils. Congo-Angola
 45. *L. thollonii*
 Liana with tendrils 52
52. Leaves glaucous, 2.5-25 cm long; anthers 1.5-2.4 mm long; fruit 8.6-26 cm
 long 31. *L. mannii*
 Leaves dark green, up to 12 cm long; anthers 0.8-1.2 mm long; fruit 1.7-7
 cm long 53
53. Leaf blade usually distinctly acuminate at the apex, subcordate to acute
 at the base and always decurrent into the petiole, glabrous beneath or
 pilose on the midrib 10. *L. dewevrei*
 Leaf blade usually indistinctly acuminate to obtuse at the apex, truncate
 to rounded at the base, not decurrent into the petiole, densely pilose be-
 neath, at least on the midrib 38. *L. parvifolia*

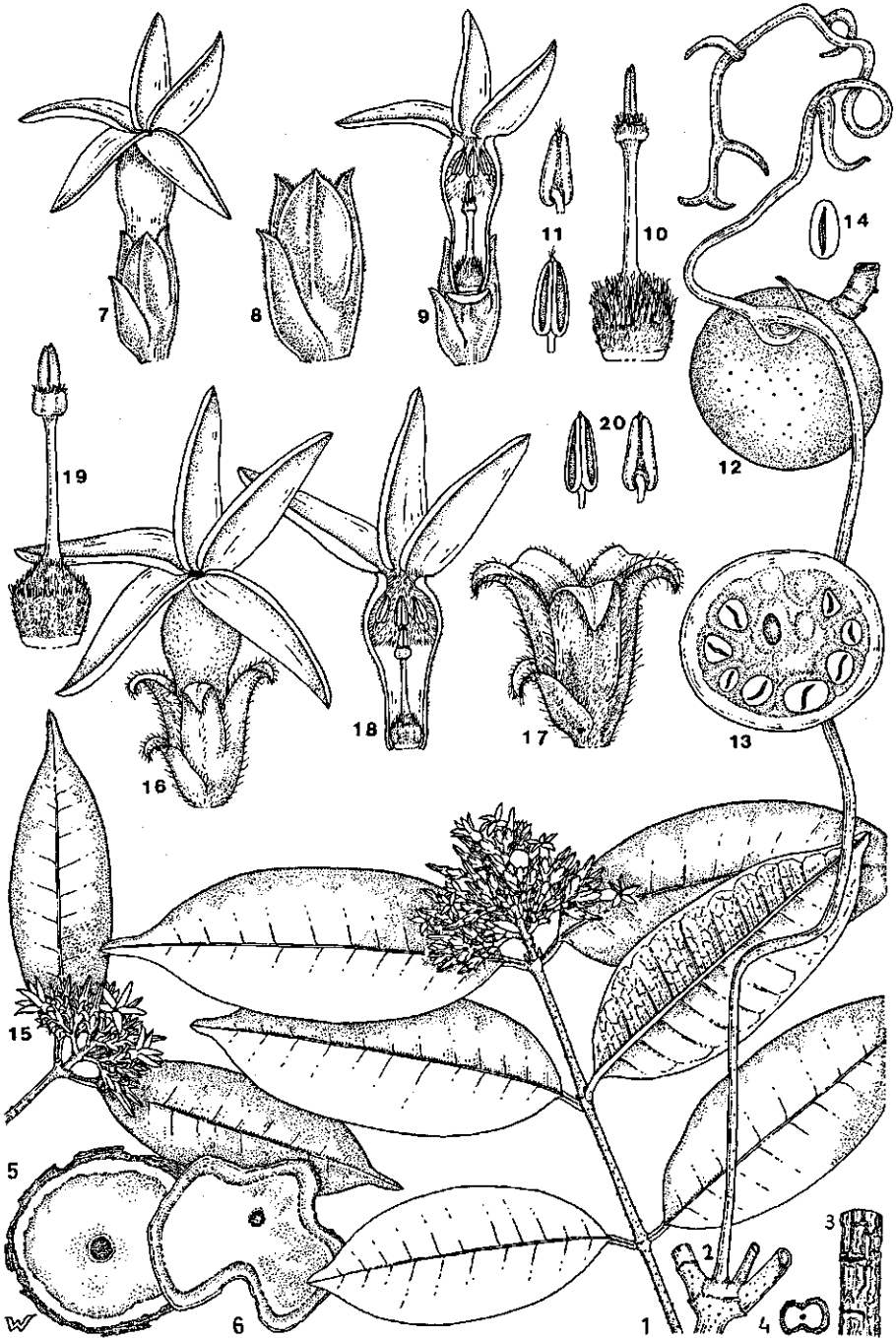
1. *Landolphia angustisepala* Pichon, Mém. IFAN 35: 108. 1953.

Fig. 7, p. 17; map 1, p. 19

Type: Zaire: Uele, near Nala, Seret 779 (BR, holotype).

Large liana with curled tendrils up to 30 cm long, hooks up to 2.5 cm long and 2 mm wide at the base. Branches sparsely to densely lenticellate, reddish or brown; branchlets tomentose to villose. *Leaves*: petiole 3-6 mm long, pilose; blade ovate to obovate or narrowly so, 1.4-3.4 × as long as wide, 1.7-8.4 × 0.8-3.5 cm, papery or coriaceous when dried, at the apex acuminate (acumen 0.1-0.9 mm long), occasionally rounded or obtuse, acute at the base, or rounded or truncate and decurrent into the petiole, subglabrous or very sparsely pilose on limb, slightly denser with curly hairs on midrib and margin and at the apex, less dense towards apex and beneath; secondary veins in 11-16 pairs, straight

Fig. 7. *Landolphia dewevrei*. 1, habit (× 2/3); 2, branch with tendril (× 2/3); 3, branch (× 2/3); 4, transverse section of branch (× 2/3); 5-6, tranverse sections of thick branches (× 2/3); 7, flower (× 4); 8, calyx (× 6); 9, opened flower (× 4); 10, pistil (× 10); 11, anther out- and inside (× 10); 12, fruit (× 2/3); 13, section of fruit (× 2/3); 14, longitudinal section of seed. *Landolphia angustisepala*. 15, habit (× 2/3); 16, flower (× 4); 17, calyx (× 6); 18, opened flower (× 4); 19, pistil (× 10); 20, stamen in- and outside. 1 and 7-11 from Leeuwenberg & Persoon 13574; 2 and 5 from Leeuwenberg & Persoon 13548; 3-4 from Luja 345; 6 from Sapin 11-15 Jan. 1907; 12-13 from Breteler 1585; 14 from Hladick 2033; 15-20 from de Wilde 409/83.



or occasionally slightly curved, in the middle of the leaf 2-7 mm from each other, often with 1-3 less conspicuous secondary veins in between; tertiary venation reticulate, conspicuous on both sides. *Inflorescence*: terminal, a more or less irregular dichasial cyme, 1.1-3.6 × 1.7-4.3 cm, 10-50-flowered, with 1-15 flowers open at a time. Peduncle 2-16 mm long, lanate or densely villose; pedicel 1-2.2 mm long, pilose. Bracts 1 along pedicel, ovate, 1.7-3.2 × 1.0-1.4 mm, obtuse or slightly acuminate, partly pilose outside, partly pubescent or pilose inside, ciliate (cilia 0.1-0.6 mm long), with colleters in the axils. *Flowers*: *Calyx* 3.5-4.5 mm wide and 2.0-5.0 mm high, sepals unequal, obovate or elliptic or narrowly so, obtuse, acute or acuminate at the apex, clearly recurved, 1.8-3.6 × as long as wide, 2.2-4.8 × 0.9-1.4 mm, connate at the base for 0.2-0.6 mm, indumentum as on bracts, only less and shorter, sometimes glabrous, margin ciliate (cilia 0.2-0.4 mm long). *Corolla* creamy, from 0.8-1.0 mm from the base (glabrous or with ridges of short hairs below that level) tomentose or pilose outside, villose inside from 0.6 mm below anthers to the throat and sometimes also on the auricle and at the apex, otherwise pubescent (part not covered in bud) to glabrous (part covered); tube 1.2-2.2 × as long as calyx, 4.0-5.5 mm long, 0.9-1.2 mm wide at the base, around the anthers 2.0-2.3 mm and at the throat 0.9-1.9 mm wide, with the widest part 2.5-3.1 mm from the base; lobes (narrowly) ovate or elliptic, 0.6-1.4 × as long as tube, 2.3-4.0 × as long as wide, 2.6-7.4 × 0.9-2.6 mm, rounded, obtuse or mucronate at the apex. *Stamens* 1.0-1.4 mm long, inserted 2.0-3.0 mm from the base of the corolla tube, at 0.5-0.6 of its length, 0.4-0.8 mm included; filament 0.4-0.6 mm long, glabrous; anthers with the base 2.5-3.5 mm from the base of the corolla tube, at 0.6-0.7 of its length, 2.0-3.8 × as long as wide, 0.5-1.0 × 0.25-0.45 mm, mucronate at the apex and sometimes with a few long hairs. *Pistil* 2.8-3.9 mm long; ovary obovoid or obconical with a rounded or truncate apex, 0.8-1.2 × 0.7-1.3 mm, glabrous at the lowest 0.2-0.4 mm, otherwise pilose or villose, indumentum longer and denser towards apex; ovules 85-110; style cylindrical, 1.0-1.7 × 0.2-0.25 mm, glabrous; pistil head cylindrical or ellipsoid, 0.2-0.4 × 0.3-0.6 mm, more or less ciliate at the upper margin, glabrous; stigmatic apex cylindrical or ellipsoid, 0.5-0.6 × 0.2-0.3 mm, with the lobes at the apex obtuse to acuminate, pubescent, more or less in ridges in spirals toward the apex. Fruit unknown.

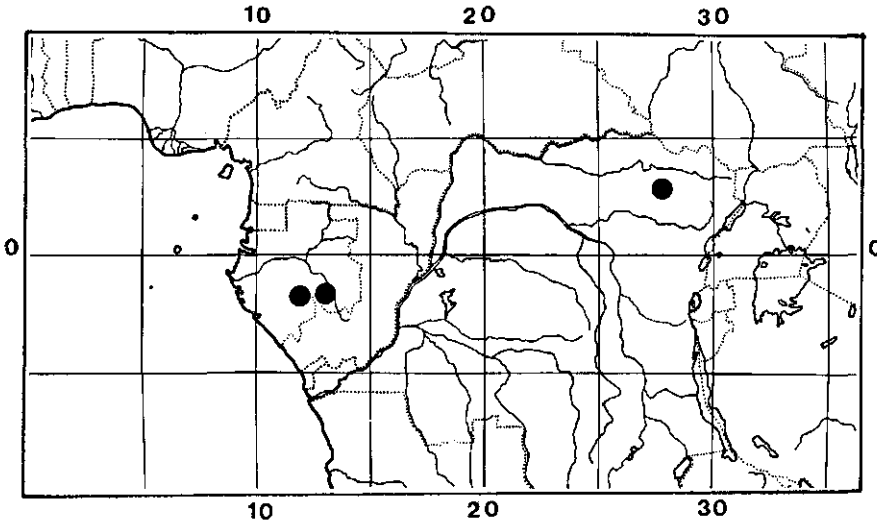
Distribution: Only known from a few localities from Gabon and Zaire.

Ecology: Rain forest. Alt. up to 650 m. In Gabon fl. Oct.-Nov.

Specimens examined:

GABON: km 28 Moanda-Bakoumba Road, Breteler 6997 (WAG); km 25 Mbigou-Mimongo Road., de Wilde et al. 409/83 (WAG).

ZAIRE: VI: near Nala, Seret 779 (BR, type).



MAP 1. *Landolphia angustisepala*

2. *Landolphia axillaris* Pichon in Mém. IFAN 35: 46. 1953.

Fig. 1, p. 20; map 2, p. 21

Type: Gabon: Tchibanga, Le Testu 1847 (P, holotype; isotypes: BM, BR, LISC, P, WAG).

Large liana. Trunk up to 3 cm in diameter. Branches light brown to yellowish-grey, densely lenticellate with orange-brown lenticels; bark narrowly fissured; branchlets glabrous or more or less sparsely pilose. *Leaves*: petiole 3.5-10 mm long, glabrous or sparsely pubescent; blade elliptic or obovate or narrowly so, 1.6-3.0 × as long as wide, 4.5-15.0 × 2.6-5.7 cm, papyraceous to coriaceous when dried, acuminate at the apex, with acumen obtuse and 0.5-1.0 cm long, acute, rounded or truncate at the base and decurrent into the petiole, glabrous or with some hairs at the base of the midrib or on the margin; secondary veins in 9-15 pairs, more or less straight, with distance in the middle of the leaf: 0.6-1.6 cm; between 2 secondary veins 1-3 less clear ones; tertiary venation reticulate; all veins impressed above. *Inflorescence* terminal and axillary, a more or less compound dichasial cyme, 1.0-4.5 × 1.5-2.5 cm, 1-25-flowered. Peduncle up to 12 mm long, glabrous or pubescent; pedicels 0.6-2.8 mm long, glabrous or pubescent. Bracts ovate or triangular or broadly so, 1.1-1.3 × 1.0-1.6 mm, rounded at the apex, ciliate, shortly pilose outside, sometimes nearly only at the somewhat thickened centre, otherwise glabrous, glabrous inside. *Flowers*: *Calyx* 2.5-3 mm wide; sepals broadly ovate, subequal, 0.7-1.0 × as long as wide, 1.5-2.7 × 1.6-2.3 mm, connate at the base for 0.3-0.5 mm, rounded at the apex, ciliate, sparsely pubescent outside, mainly in the middle, otherwise glabrous,

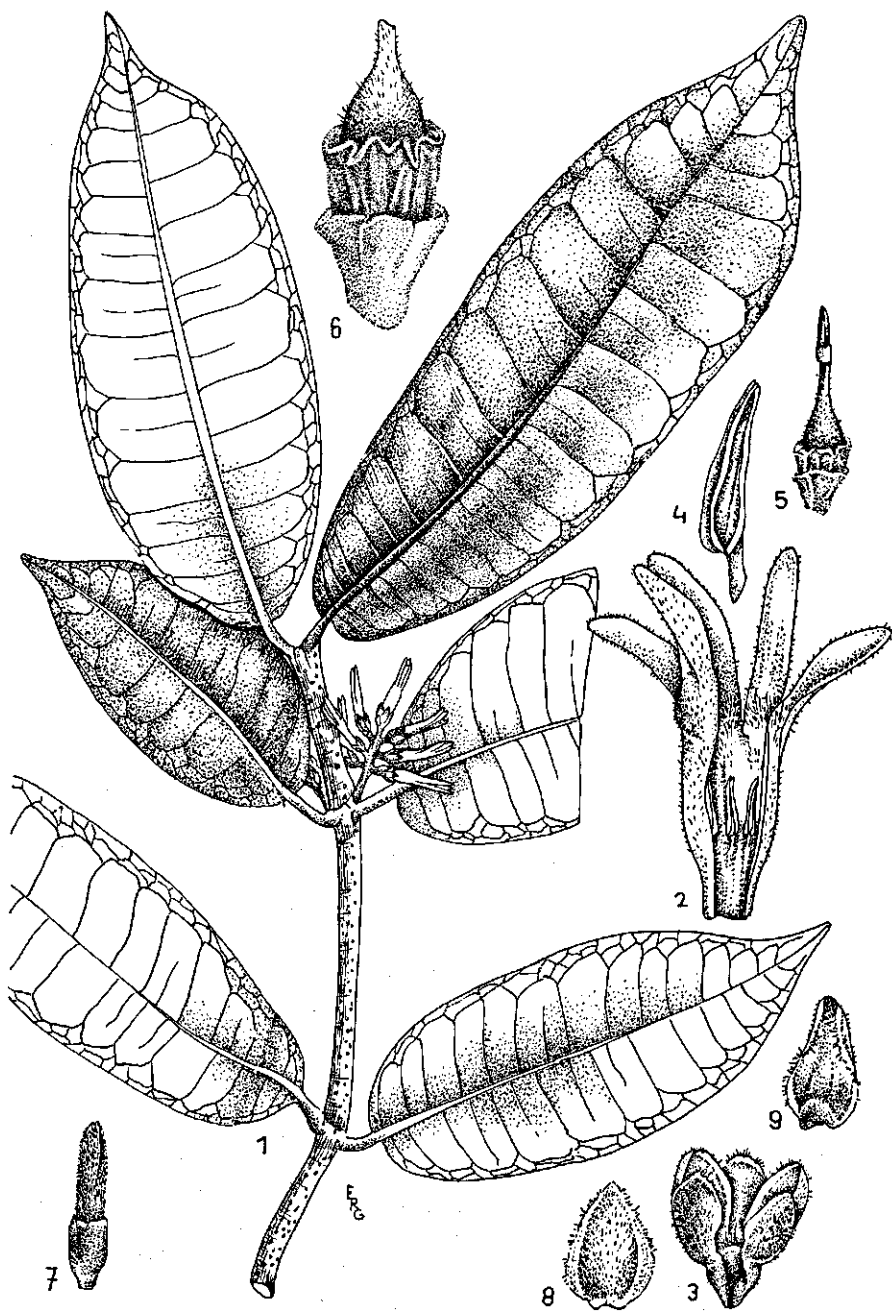
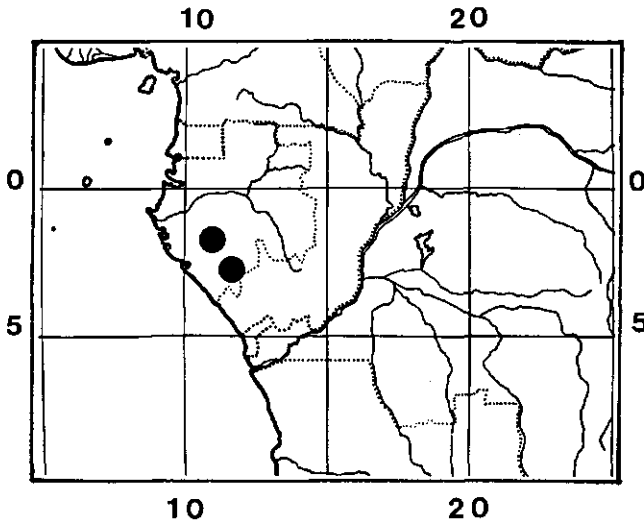


Fig. 1. *Landolphia axillaris*. 1, habit ($\times 2/3$); 2, opened corolla ($\times 4$); 3, calyx ($\times 4$); 4, stamen ($\times 12$); 5, pistil ($\times 6$); 6, ovary ($\times 14$); 7, pistil head ($\times 20$); 8 and 9, sepal outside and inside ($\times 8$). 1-9 from Le Testu 1847.

glabrous inside or with some scattered hairs in the middle. *Corolla* creamy, from glabrous (lowest 1.0 mm) to tomentose or densely pubescent in the higher 2/3 of the tube and on the lobes outside with indumentum less dense on part of lobes covered in bud, basal 1.5 mm glabrous, up to insertion anthers villose inside, behind anthers glabrous or with some hairs, from 1.0 mm above anthers villose, often in stripes on auricle for about 2-3 x 1 mm pilose, otherwise glabrescent to almost glabrous; tube 1.6-4.2 x as long as the calyx, 3.8-6.8 mm long, at the throat 1.8-2.2 mm, around the anthers 2.3-2.7 mm and at the base 1.6-2.0 mm wide, wall thickened above anthers; lobes subequal, narrowly ovate, 0.8-1.2 x as long as tube, 3.3-4.6 x as long as wide, 4.6-7.8 x 1.3-1.8 mm, rounded at the apex. *Stamens* inserted 2.5-3.3 mm from the base of the tube, at 0.4-0.6 x the length of the corolla tube, 1.9-2.0 mm included, 1.7-2.0 mm long; filaments 0.4-0.6 mm long, sparsely pilose inside; anthers 5.0-5.5 x as long as wide, 1.5-1.8 x 0.3-0.4 mm. *Pistil* 2.9-3.3 mm long; ovary glabrous at the lower 0.5-0.6 mm, otherwise shortly pilose, 0.9-1.0 x 0.9-1.0 mm, lower 0.5-0.6 mm cylindrical or obconical and disk-like thickened, upper part 0.4 mm wide and rounded; ovules 140-150; style cylindrical, 1.1-1.2 x 0.15 mm, glabrous or sparsely pilose; pistil head cylindrical 0.25-0.3 x 0.25-0.3 mm; stigmoid apex cylindrical or ovoid on a cylindrical base, 0.7-0.8 x 0.2 mm, with the lobes rounded or acute at the apex.



MAP 2. *Landolphia axillaris*

Distribution: Gabon.

Ecology: Forests. Alt 0-200 m. Flowering in the beginning of the rainy season.

Specimens examined:

GABON: Tchibanga, Le Testu 1847 (BM, BR, LISC, P, WAG, type); Apinji For., between St. Martin and Yombo, Le Testu 5027 (BM, BR, LISC, WAG).

3. *Landolphia breviloba* Persoon sp. nov.

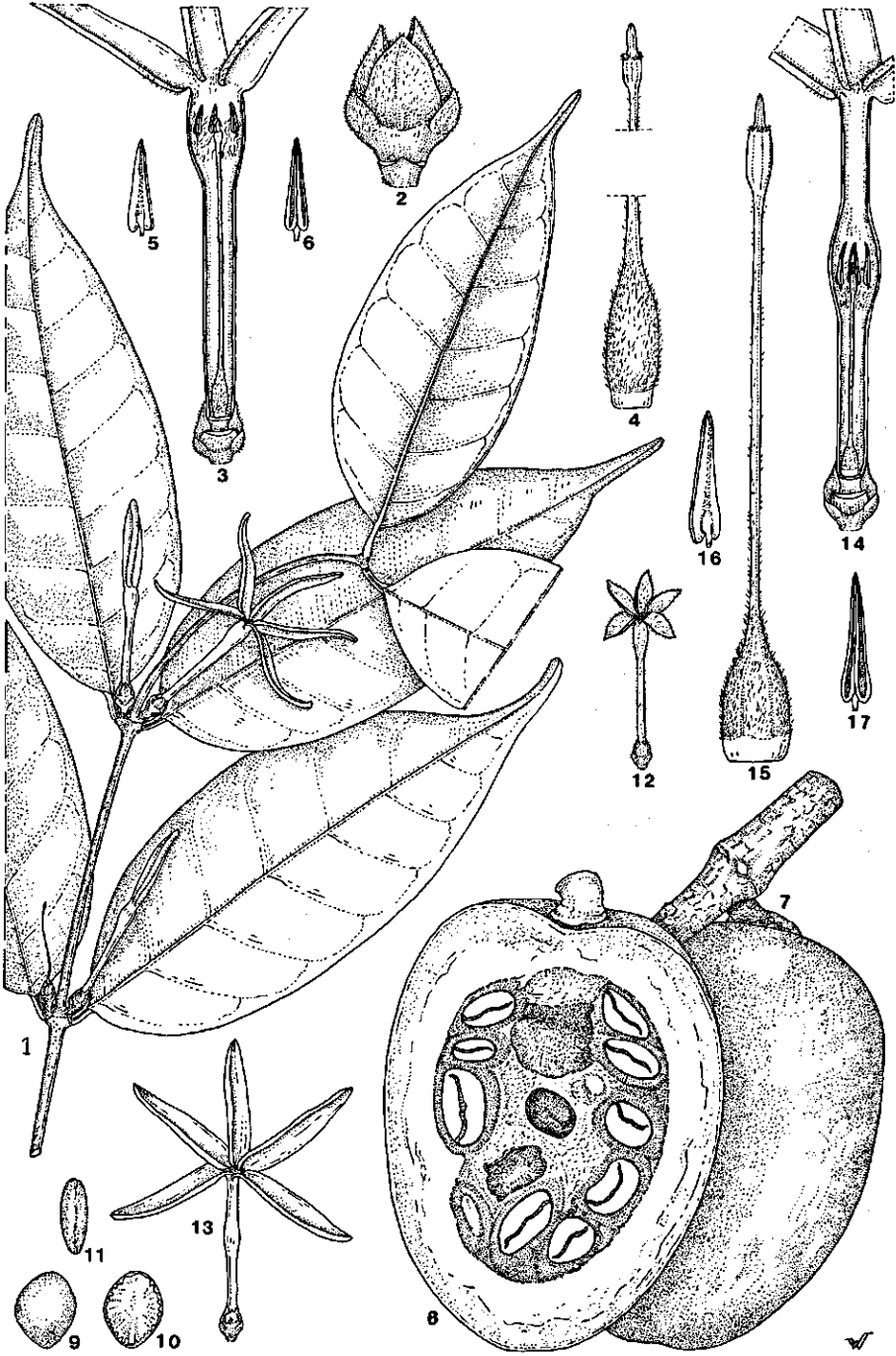
Fig. 24, p. 23; map 3, p. 24

Liana ramis lenticellatis. Folia petiolata laminis anguste ovatis coriaceis apice acuminatis basi rotundatis vel subcordatis, glabris. Inflorescentia axillaris pauciflora pedicellis brevibus. Flores odorantes. Sepala late ovata vel triangularia extus pilosa vel pubescentia. Corolla pallide purpurea, alba vel flavescens, tubo longo angusto lobis multo longiore. Stamina prope faucum corollae inserta. Pistillum gracile ovario anguste ovoideo vel elliptico.

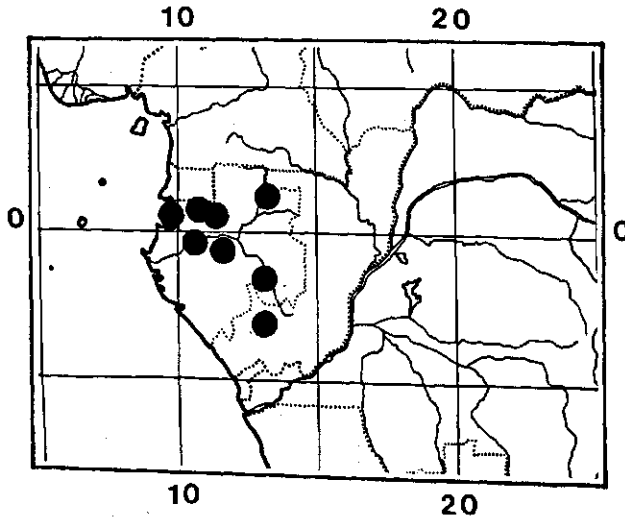
Type: Gabon: Oveng, forestry camp Rougier-Ocean, Reitsma et al. 869 (WAG, holotype).

Liana, up to 15 m high or more. Branches light or dark brown, blackish or grey, smooth or slightly rough, with light lenticels. Branchlets glabrous or pilose. *Leaves*: petiole 3-10 mm long, with 1 or several small triangular glands on each node, glabrous or pilose; blade narrowly ovate to obovate, 2.1-4.7(-8) × as long as wide, 2.8-11.5 × (0.35)1.0-4.8 cm, coriaceous when fresh, acuminate at the apex with rounded acumen, 0.6-2.0 cm long, acute to subcordate at the base, (almost) glabrous; with 9-14 pairs of straight or curved secondary veins, 0.3-1.4 cm from each other in the middle of the leaf; between 2 secondary veins 1 or 2 less clear ones, often with a slightly different angle; tertiary venation reticulate and mostly inconspicuous beneath; venation often dark reddish or brown beneath. *Inflorescence* axillary, a more or less irregular dichasial cyme, 1-4-flowered, 1.9-3.0 × 1.3-2.5 cm. Pedicels up to 2.3 mm long, pilose or pubescent. Bracts 2-6 along pedicel, broadly or depressed ovate to obovate, or triangular, 0.3-1.5 × 0.6-2.0 mm, rounded or truncate at the apex, sometimes with 1 or several small triangular glands at the base of the ciliate margin, pilose or pubescent or almost glabrous outside, glabrous or pilose inside, often with 1-several small triangular glands at the base. *Flowers* fragrant. *Calyx* 2.1-2.5 mm wide; sepals broadly ovate or triangular, 0.6-1.2 × as long as wide, 1.6-2.2 × 1.8-3.2 mm, connate at the base for 0.1-0.4 mm, rounded, truncate or mucronate at the apex, with a ciliate and sometimes membranaceous margin, pilose or pubescent outside, often glabrescent towards the margin, glabrous inside. *Corolla* pale purple or (greenish-or yellowish-) white, the tube often somewhat darker, pilose inside

Fig. 24. *Landolphia ligustrifolia*. 1, habit (× 2/3); 2, calyx (× 4); 3, opened flower (× 2); 4, ovary (× 6); 5-6, stamen out- and inside (× 6); 7, fruit (× 2/3); 8, section of fruit (× 2/3); 9, seed (× 2/3); 10, section of seed (× 2/3); 11, seed laterally (× 2/3). *Landolphia breviloba*. 12, flower (× 2/3). *Landolphia bruneellii*. 13, flower (× 2/3); 14, opened flower (× 2); 15, pistil (× 6); 16-17, stamen out- and inside (× 6). 1 from Ghesquière 3363; 2-6 from Breteler & de Wilde 232; 7-8 from Leeuwenberg & Persoon 13553; 9-11 from de Kruif 1039; 12 from Reitsma 869; 13-17 from de Wilde et al. 236.



behind and up to 3.0 mm below the anthers and at the base and/or auricle and adjacent part of the lobes, otherwise (almost) glabrous, pilose or pubescent outside, less dense or glabrous towards base and apex and/or in bud covered part of the lobes, less often also on the in bud not covered part, often more densely around anthers, at the throat and at the base, central part and auricle of the lobes, margin ciliate, less on in bud not covered margin and towards apex; tube $8.5-15.8 \times$ as long as calyx, 18.8-27.0 mm long, 1.0-2.1 mm, in the middle 1.0-2.4 mm, around the anthers 1.8-3.1 mm and at the throat 1.7-2.4 mm wide, with the widest part 15.0-23.2 mm from the base; lobes (narrowly) ovate, $0.24-0.34 \times$ as long as tube, $1.7-2.5 \times$ as long as wide, $5.1-9.1 \times 2.7-4.5$ mm, truncate to acuminate at the apex with an acute acumen. *Stamens* 1.9-2.4 mm long, inserted 14.1-21.6 mm from the base of the corolla tube, at 0.73-0.80 of its length, 2.8-3.2 mm included; filaments 0.7-1.0 mm long, glabrous; anthers with their bases 14.8-21.9 mm from the base of the corolla tube, at 0.74-0.81 of its length, $3-3.5 \times$ as long as wide, $1.2-2.1 \times 0.4-0.6$ mm, acute or acuminate at the apex, glabrous. *Pistil* 16.6-20.8 mm long; ovary narrowly ovoid or ellipsoid on a glabrous, cylindrical or slightly widened base 0.3-0.6 mm long and 0.6-1.0 mm wide, $2.1-4.0 \times 0.8-1.1$ mm, gradually narrowed towards the apex, pilose with longer hairs at the centre; ovules 70-160; style cylindrical, gradually widened towards the base and often also towards the apex, $10.6-17.1 \times 0.15-0.5$ mm, (densely) pilose, less dense towards apex; pistil head cylindrical or ellipsoid, $0.35-0.9 \times 0.35-0.4$ mm, ciliate at the upper margin, otherwise glabrous; stig-moid apex cylindrical or conical, $0.6-1.1 \times 0.15-0.3$ mm, puberulent, rounded or obtuse at the apex. *Fruit*: mature fruits unknown, young fruits subglobose, (up to 2 cm in diameter), much resembling those of *Landolphia ligustrifolia*.



MAP 3. *Landolphia brevifolia*

Distribution: Gabon and adjacent parts of Congo.

Ecology: Forests. Alt. 0-700 m. Flowering mainly in the rainy season.

Vernacular name:

GABON: Ndam Koukoi (Akélé).

Paratypes:

GABON: ca. 60 km SSW of Moanda, Breteler 6953 (WAG); ca. 15 km along Asok-Tchimbélé R. power station Rd., Breteler & de Wilde 230/78 (LBV, WAG); near Ebimanghá, along Ayem Lake, Chevalier 26433 (P); Bélinga, Hallé 3367 (P); along Komo R., near Mbel, Hallé & Villiers 4343 (P); ca 7 km E of SEF forestry camp, Leeuwenberg & Persoon 13593 (WAG); ca. 17 km W of forestry camp Waka, Leeuwenberg & Persoon 13605, 13636 and 13699 (WAG); ca 7 km NE of forestry camp Waka, ca 32 km SE of Sindara, A.M. Louis et al. 1390 (WAG); Seka-Seka, 7 km along Mimongo-Lébamba Rd., J.J. de Wilde et al. 426/83 (LBV, WAG).

CONGO: between Moutsoumoukoudi and Kuyi, Sita 3873 (P).

Note. *Landolphia breviloba* is closely allied to *L. bruneelii* by the axillary inflorescences, the leaves, the slender corolla tube and pistil, and the hairy ovary. It differs from it mainly by the very short corolla lobes, 0.24-0.34 instead of 0.56-1.5 × as long as the tube.

4. *Landolphia bruneelii* (De Wild.) Pichon, Mém. IFAN 35: 153. 1953.

Fig. 24, p. 23; map 4, p. 27

Basionym: *Carpodinus bruneelii* De Wild. in Miss. E. Laurent 1: 504. 1907.

Type: Zaire: VI: Iala near Baringa, Bruneel 36 (BR, holotype).

Liana, up to 15 m long or more. Branches dark reddish-brown, blackish or grey, mostly smooth or slightly rough, sometimes narrowly and shallowly fissured, or with bark transversally fissured, with light lenticels. Branchlets as branches, glabrous or pilose, especially when young. *Leaves*: petiole 2-8 mm long, with 1 or several small triangular glands on each node, glabrous or pilose or pubescent; blade ovate, less often elliptic, occasionally obovate, 1.7-3.3 × as long as wide, 2.3-13.0 × 1.2-6.7 cm, (thickly) coriaceous when fresh, attenuate or acuminate at the apex with a more or less clear rounded acumen, 0.5-2.0 cm long, acute or rounded at the base, less often cordate, glabrous or sparsely pilose, especially when young; with 8-13 pairs of straight or curved secondary veins, in the middle of the leaf 0.6-1.3 cm from each other; between 2 secondary veins often 1 or 2 inconspicuous ones; tertiary venation reticulate and more or less conspicuous beneath. *Inflorescence* axillary, a reduced more or less irregular dichasial cyme, 1-3-flowered, 3.0- 6.6 × 2.5-6.0 cm. Pedicels 1.0-5.0 mm long, to densely pilose. Bracts 4-6 along pedicel, the higher sepal-like, broadly or depressed-ovate or triangular, 0.2-2.2 × 0.5-3.0 mm, acute to emarginate at the apex, occasionally with 1 or 2 small triangular glands at the base of the ciliate margin, sparsely to densely pilose or pubescent outside, glabrous inside or pilose at apex and/or base, often with 1-several glands at the base. *Calyx* 3.0-4.5 mm wide; sepals sometimes 4, (broadly) ovate to obovate, 0.6-1.3 ×

as long as wide, 2.2-3.7 × 2.0-3.6 mm, connate at the base for 0.2-0.5 mm, acute to emarginate, or mucronate at the apex with a rounded acumen, with a ciliate and sometimes for up to 0.5 mm membranaceous margin, glabrous or pilose or pubescent outside, glabrous inside, occasionally with 1 or 2 glands at the base. *Corolla* white, the tube sometimes greenish or pink, pilose inside (in stripes) and up to 1.5-4.0 mm below anthers and on the auricle and often also on an adjacent part, mostly glabrescent towards the apex and the opposite margin, otherwise glabrous, glabrous outside at the basal 8 mm, otherwise glabrous or pilose or pubescent, especially in stripes below the auricles, and at the margins of the lobes, occasionally some hairs at the apex; tube 5.2-12.5 × as long as calyx, 19.5-34.0 mm long, at the base 1.6-2.9 mm, in the middle 1.4-2.8 mm, around the anthers 2.5-3.7 mm and at the throat 1.9-3.0 mm wide, with the widest part 10.5-20.0 mm from the base; lobes narrowly ovate or elliptic, 0.56-1.5 × as long as tube, 2.3-9.0 × as long as wide, 18.5-36.0 × 4.0-9.1 mm, rounded, obtuse, mucronate or slightly acuminate at the apex with a rounded or truncate acumen. Stamens 2.7-3.4 mm long, inserted 9.7-20.4 mm from the base of the corolla tube, at 0.44-0.71 of its length, 5.3-8.9 mm included; filaments 0.5-1.0 mm long, glabrous; anthers with their base 10.1-20.9 mm from the base of the corolla tube, at 0.46-0.73 of its length, 3.2-7.5 × as long as wide, 2.3-3.0 × 0.4-0.9 mm, obtuse, acute or mucronate at the apex, glabrous. *Pistil* 12.6-21.7 mm long; ovary ovoid or conical on a glabrous cylindrical base, 0.3-0.9 mm long and 0.9-1.8 mm wide, 2.0-4.4 × 1.0-1.8 mm, more or less gradually narrowed towards the apex, pilose; ovules 100-200; style cylindrical, more or less gradually widened towards the base, 7.6-16.2 × 0.2-0.6 mm, to densely pilose or pubescent, glabrescent towards the apex; pistil head cylindrical (on an ellipsoid base), slightly widened or ellipsoid, 0.6-1.2 × 0.35-0.6 mm, mostly ciliate at the upper margin, otherwise glabrous; stigmatic apex cylindrical, conical or obovoid on a cylindrical base, 0.7-1.2 × 0.1-0.35 mm, puberulent, acute to rounded at the apex. Fruit probably much resembling that of *Landolphia ligustrifolia*.

Distribution: Western Central Africa.

Ecology: Forests, often in swamps. Alt 0-900 m. Flowering in the second half of the rainy season and in the dry season.

Use: *Landolphia bruneelii* is said to give a poor rubber.

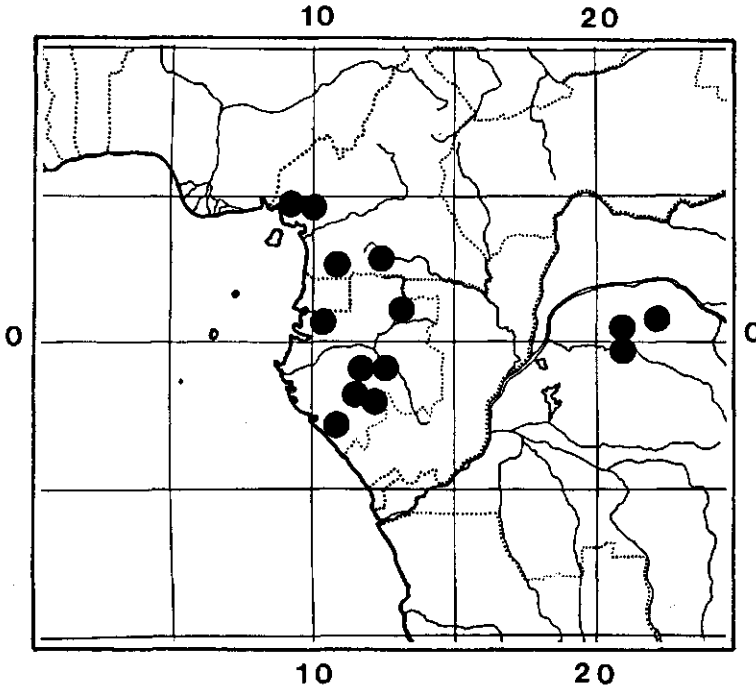
Vernacular names:

CAMEROUN: Mfum (near Bitye R.).

ZAIRE: Idongoselele (near Bongoy).

Specimens examined:

CAMEROUN: km 11 Nkongsamba-Douala Rd., Bamps 1520 (BR); Bitye R., Bates 1174 (BM, MO, Z); Bitya, near Dja R., Bates 1882 (BR, K, P); Bakaka For., 3 km E of Eboné, a village on km 11 of Nkongsamba-Loum Rd., Leeuwenberg 8906 (WAG); Rumpi Mts., near Lokando, 30 km



MAP 4. *Landolphia bruneelii*

SSW of Kumba, Letouzey 14519 (BR, K, P, WAG); km 56 Ebolowa-Kribi Rd., J.J. de Wilde 7778 (WAG).

GABON: Bélinga, Hallé 3826 (P); Moughyama Mts., near Kembélé, Le Testu 5231 (BM, BR, LISC); Loubagny, Le Testu 6464 (BM, BR, LISC); Mandji Batchangui, Le Testu 6528 (BM, BR, LISC); Lastoursville, Le Testu 7963 (BM, BR, WAG); Mouila-Yeno Rd., Thomas & Wilks 6576 (WAG); ca. 20 km NW of Asok, J.J. de Wilde et al. 236/83 (LBV, WAG).

ZAIRE: VI: Iala, near Balinga, Bruneel 36 (BR, type); Bongoy, Evrard 3201 (BR); near Boende, along Tshuapa R., Evrard 3897 (BR); Befale, Evrard 4193 (BR).

5. *Landolphia buchananii* (Hall. f.) Stapf in Fl. Trop. Afr. 4 (1): 35. 1902; Pichon, Mém. IFAN 35: 48. 1953; F.K. Kupicha in Fl. Zamb. 7 (2): 409. 1985.

Fig. 2, p. 28; map 5, p. 31

Basionym: *Clitandra buchananii* Hall. f., Jahrb. Hamb. Wiss. Anst. 17, Beih 3: 119. 1900.

Types: Angola: sin. loc., Möller s.n. (B, paratype, n.v., destroyed). Malawi: Shire Highlands, Buchanan 220 p.p. (B, syntype, n.v., destroyed; lectotype: BM).

Heterotypic synonyms: *Clitandra kilimanjarica* Warb. in Tropenpfl. 4: 614. 1900. Type: Tanzania: Kilimanjaro, Moshi, Merker 224 (K, lectotype, desig-

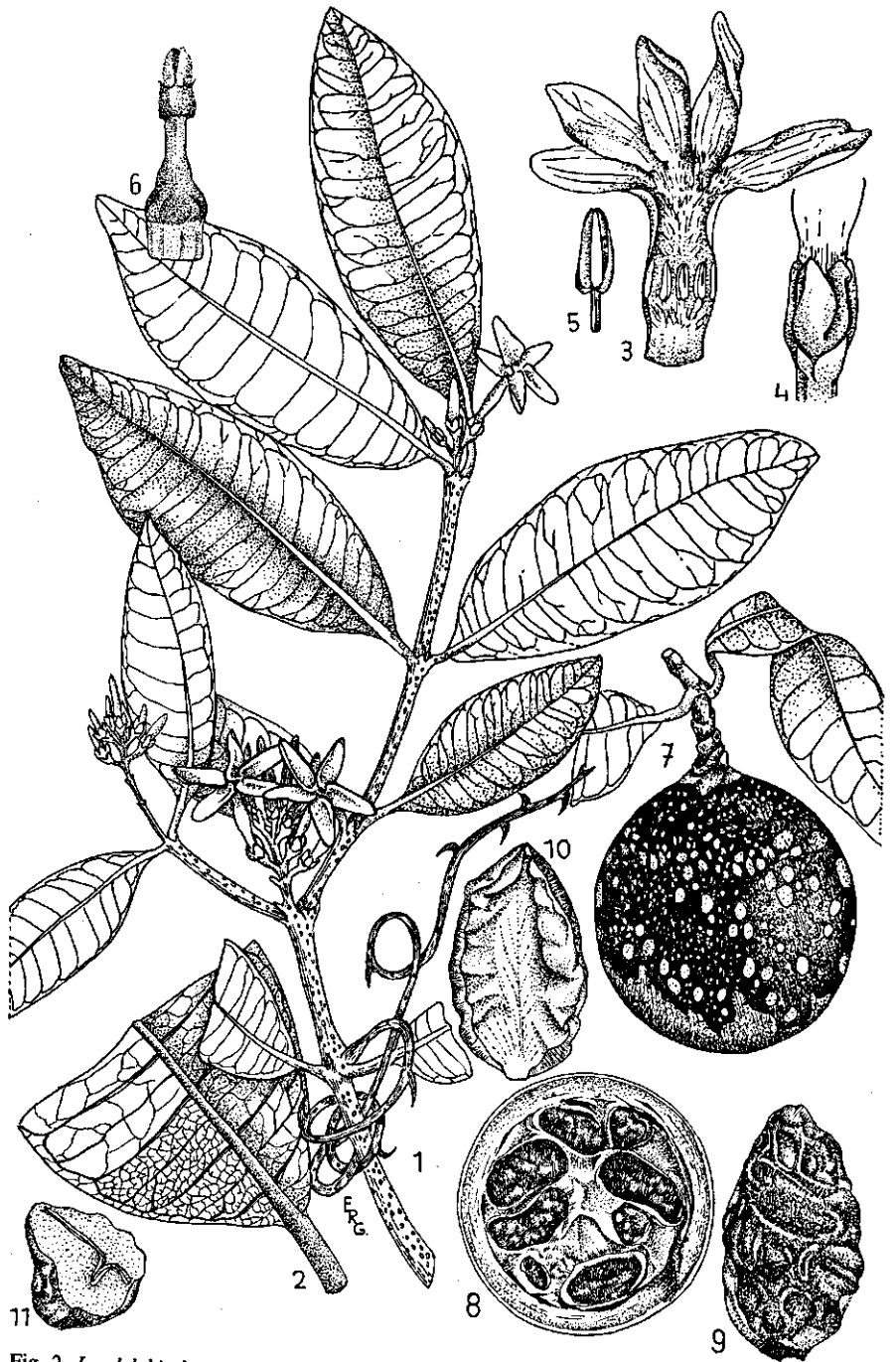


Fig. 2. *Landolphia buchananii*. 1, habit ($\times 2/3$); 2, leaf beneath ($\times 1$); 3, opened corolla ($\times 4$); 4, calyx ($\times 4$); 5, stamen ($\times 10$); 6, pistil ($\times 8$); 7, fruit ($\times 2/3$); 8, transverse section of fruit ($\times 2/3$); 9, seed ($\times 2$); 10-11, longitudinal and transverse section of seed ($\times 2$). 1-2 and 4 from Corner 14.9.1952; 3 and 5 from Robson 588; 6 from de Wilde 6355; 7-11 from Vuyk 426.

nated by Pichon). Homotypic synonym: *L. kilimanjarica* (Warb.) Stapf in op. cit. 34.

L. cameronis Stapf in op. cit. 35. Types: Malawi: Namasi, Cameron 1 (K, lectotype, designated here), 11 (K, paratype).

L. ugandensis Stapf in op. cit. 589. 1904. Type: Uganda: Dumu For., Buddu, Dawe 23 (K, holotype). Homotypic synonym: *Jasminochyla ugandensis* (Stapf) Pichon, Bull. Nat. Hist. Nat., sér. 2, 20: 551. 1949.

L. swynnertonii S. Moore, Journ. Linn. Soc. Bot. 40: 136. 1911. Type: Zimbabwe: Chirinda For., Swynnerton 82 (BM, holotype; isotypes: K, SRGH, Z).

L. rogersii Stapf, Kew Bull. 1912: 360. 1912. Type: Zaire: Lubumbashi, Rogers 10078 (K, holotype).

Clitandra semlikiensis Robyns & Boutique, Bull. Jard. Bot. Etat Brux. 18: 259. 1947. Type: Zaire: Djalele R., W of Katuka, de Wilde 2 (BR, holotype).

Sarmentose shrub, 0.90-7 m high or, more frequently, a liana, 3-40 m tall. Trunk 0.5-23 cm in diameter, terete, sometimes fluted, bark verrucose or smooth. Branches lenticellate, smooth; branchlets dark purplish-brown, reddish or light-grey, glabrous or pilose. *Leaves*: petiole 1.5-8 mm long, glabrous or pilose, on each node 4-8 glands, triangular, 0.1-0.5 mm long, often empty bracts in between; blade ovate to obovate or narrowly so, 1.6-4.1 × as long as wide, 1.9-14.5 × 0.8-5.4 cm, herbaceous or coriaceous when fresh, more or less coriaceous when dried, dull or glossy above, paler beneath and with pale or reddish venation, obtuse to acuminate at the apex, with acumen obtuse and up to 1 cm long, rounded at the base or slightly decurrent into the petiole, occasionally slightly ciliate, sometimes somewhat undulate, glabrous above, glabrous beneath or at the base of the midrib and occasionally also at the base of the lower secondary veins sparsely pilose; secondary veins in 7-19 pairs, nearly straight to slightly curved, with distance in the middle of the leaf: 0.2-1.1 cm; between two secondary veins often an inconspicuous one; tertiary venation reticulate, labyrinth-like, more or less conspicuous and dark beneath; all veins impressed above. *Inflorescence* terminal, sometimes at the same time axillary, a more or less compound dichasial cyme, 1.6-5.5 × 0.6-4.0 cm, 2-20-flowered. Peduncle 1.4-33 mm long, sometimes tendril-like, elongate and curled, glabrous to velutinous, often with empty bracteoles; pedicels 1.2-6.5 mm long, glabrous to velutinous. Bracts ovate to triangular or narrowly so, 1-2.5 × 0.6-1.4 mm, acute at the apex, membranaceous, ciliate or not, glabrous to velutinous outside, glabrous inside. *Flowers* fragrant. *Calyx* 23-33 mm wide; *sepals* ovate to broadly ovate, subequal, 0.7-1.7 × as long as wide, 1.2-3.1 × 1.2-2.7 mm, connate at the base for 0.1-0.4 mm, rounded at the apex, occasionally mucronate, membranaceous at the margin, ciliate or not, glabrous to pilose outside, glabrous inside. *Corolla* white, creamy or yellow, with an often greenish tube and occasionally tinged pink or reddish, glabrous outside or occasionally pilose, especially on the tube, sparsely to densely pilose inside from 2.5 cm above the base of the tube to the insertion of the stamens, occasionally up to 0.3 mm below that level; tube 2.1-4.8 × as long as the calyx, 4.5-12.0 mm long, 1.3-3.2 mm wide at the

throat, 1.9-3.2 mm around the anthers and 1.0-2.4 mm wide at the base; lobes equal or subequal, narrowly ovate or narrowly elliptic, 0.7-2.0 × as long as tube, 2.0-6.5 × as long as wide, 5.3-15.4 × 1.9-4.0 mm, rounded at the apex. *Stamens* inserted 1.8-3.6 mm from the base of the corolla tube, at 0.16-0.50 of the length of the corolla tube, 1.3-5.9 mm included, 1.2-2.3 mm long; filaments 0.15-0.7 mm long, often pilose inside; anthers 2.0-3.3 × as long as wide, 1.0-2.0 × 0.4-0.6 mm, rounded or occasionally acuminate at the apex (acumen up to 0.1 mm long). *Pistil* 2.5-4.0 mm long; ovary glabrous or occasionally with some hairs, ovoid (on a short cylindrical base), 0.75-1.7 × 0.6-1.3 mm (cylindrical part 0.3-0.7 × 0.6-1.1 mm); style cylindrical, 0.3-0.8 × 0.2-0.3 mm, glabrous; pistil head cylindrical, 0.3-0.6 × 0.3-0.6 mm (sometimes ciliate on upper margin); stigmatic apex 0.4-0.9 × 0.2-0.6 mm, with the lobes rounded or obtuse at the apex. *Fruit* brown, orange, green or yellow-green, with grey or light brown verrucose spots, 1-50 mm in diameter, occasionally occupying the whole surface, (each spot near the margin with a narrow, non verrucose belt), globose or pyriform, 2.5-6.0 cm long, 2-20 seeded; wall 5-6.5 mm thick; pulp fleshy, white, turning yellow when exposed. *Seed* 7.0-17 × 5.0-10.5 × 3.0-8.5 mm, irregularly ovoid, laterally compressed, scrobiculate, (depressions 1-2 mm in diameter, circular or elliptic). Embryo curved; cotyledons irregularly and broadly ovate, 6.5-13.7 × 4.5-9.5 mm, undulate; rootlet 0.4-0.8 × 1.1-1.4 mm.

Distribution: East Africa from Ethiopia and Sudan to southern Mozambique including eastern and south-eastern Zaire and adjoining parts of Zambia, also in Angola, Cameroun, and south-eastern Nigeria.

Ecology: In dense or light lowland or montane forests, in savanna woodland, gallery forests and occasionally in savannas, often on or near rocks. Alt. 0-2500 m. Flowering throughout the year with a peak towards the end of the dry season, especially in the northern and southernmost areas.

Uses: The stem is used as a rope by the Kipsigis in Kenya. Fruits edible, in Zimbabwe a conserve is made of it. Commonly latex is gathered, and rubber is made of it, mostly as a village industry, occasionally commercially (Malawi). In Zaire the rubber is used for plastering drums.

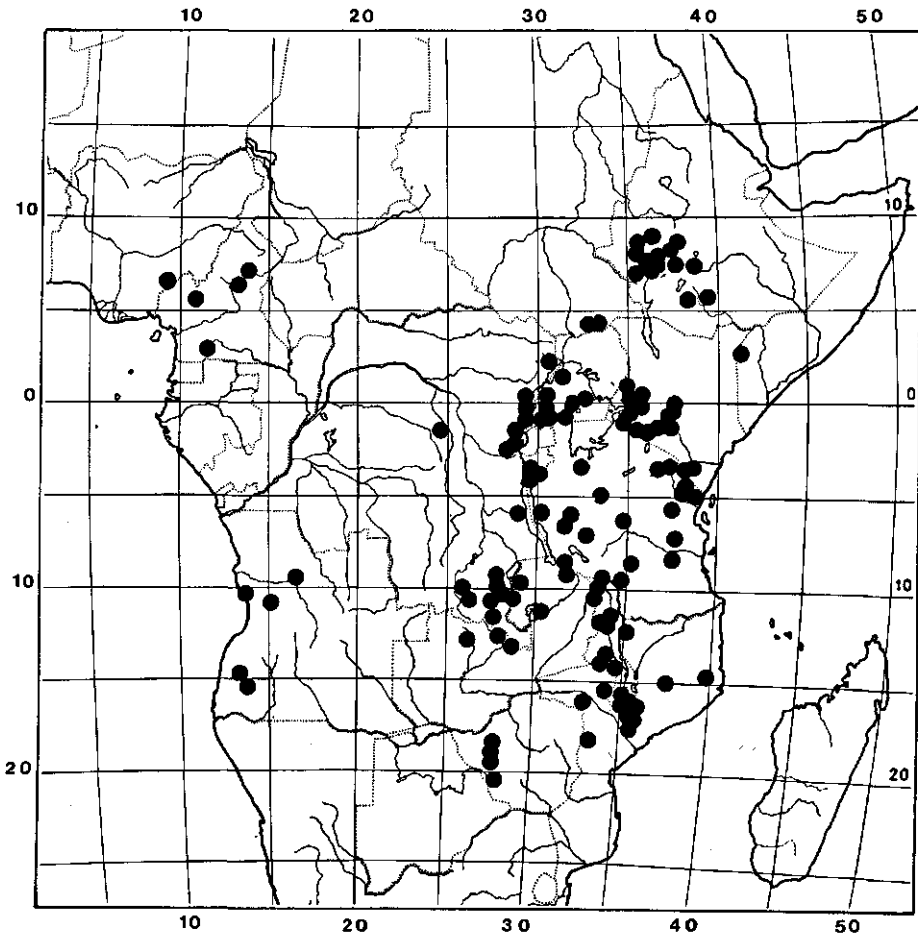
Vernacular names:

SUDAN: Magi (Latuka).

ETHIOPIA: Gebo (Gallinia), Ghebó (near Gidami, and Humbi For.), Hebo (Gallinia), Hobi (Gallinia), Jemo (near Bonga), Titita (Gallinia), Yebo (near Beleada), Yemo (near Bonga).

ZAIRE: Abeli (region of Kalume), Ele (Kirega), Ere (Kirega), Karibumba (region of Ruwenzori), Kasangbabungo (Kiluba), Mubungo (Kinya-Ruanda), Mulundu (Shankadi, Tschibiba), Mupila (Kitabwa), Mupila ya may (Kitabwa), Mupira (Kingwana), Nyanguku (near Kabare).

UGANDA: Kigoyegoye (sin.loc.), Kakopa (near Buddu), Labongo (near



MAP 5. *Landolphia buchananii*

Entebbe), Lubungo (near Masaka), Omusanika (Ankole).

KENYA: Entiangenge (Masai), Mogogowa, Mokuwa (near Kamasia), Mpiangish (Masai), Mugu (Kikuyu), Nakamwe (Kikuyu), Nandi Rubber (English), Ndia Ngingish (Masai), Ngenyeito (Kinandi), Ngiangichet (near Nandi), Ngingichet (Kipsigis), Ngungyet (Nandi), Ningiget (Kony), Ninichet (Kipsigis), Ntapajit (near Mathew's range), Nyingiget (Nandi), Rikikini (Kavirondo).

TANZANIA: Ikonjogolo (near Mahali Mts), Kipembabwe (in Distr. Kiyimbila), Kiwiro (near Moshi), Mbudaa, Mbudia (Kilimba), Mbungo (Kiganda, Kiha), Mtoroja (Zigua), Nguji (near Muhensabantu), Nyam Nyam (Mpila).

ZAMBIA: Mubungo (near Solwesi).

MOZAMBIQUE: Hurraita (near Mocuburi), Mombe (Tacuane), Utenguele (Ronga).

MALAWI: Mhira (Shire Highlands), Mpira (Chinyanya, Chiyao, Yao and near Nchisi For.).

ZIMBABWE: Mubingu, Munngu (Chirindas).

A selection of the ca. 270 specimens examined:

NIGERIA: Cross River State: Obudu Plateau, Hall 2299 (K); Obudu Cattle Ranch, van Meer 1770 (WAG).

CAMEROON: Biteye R., Bates 1297 (BM), 1581 (MO, Z); Massif of Nkogam, 26 km W of Foumban, Satabie 216 (P, WAG); Massif of Ngaou Ndal, 70 km E of Tibati, Satabie 564 (P, YA); Tello R., ca. 47 km E of Ngaoundéré, de Wilde & de Wilde-Duyfjes 4708 (BR, MO, P, WAG).

ETHIOPIA: Welega: Canto Mt., ca 5 km E of Lekemti, de Wilde & de Wilde-Duyfjes 6337 (BR, MO, WAG). Shoa: Jibat, Alemayehu et al. 680 (K). Illubabor: Gore, Ambjörn 295 (UPS); km 20 Gore-Moccha track, Friis et al. 1777 (BR, C, K); km 10 Mettu-Bedelle Rd., Friis et al. 1964 (C, K); km 15 Gera-Afallo trail, Meyer 8866 (K, WAG); km 10 Gore-Bure Rd., de Wilde 6355 (BR, MO, WAG). Kaffa: Bonga, Ash 1499 (K, MO, WAG), Jansen 2165 (WAG), 5540 (WAG), de Wilde & de Wilde-Duyfjes 10234 (WAG); Beletta For. 65 km W of Gimma, Bally 3115 (G, K), H25/44 (NY), Mooney 6731 (K); near Beleada, 20 km N of Gimma, Burger 3636 (FI, G, K); Beletta For., km 40 Gimma-Bonga Rd., Friis et al. 223 (BR, C, K); Wush-Wush area, Jansen 5455 (WAG); 49 km N of Gimma, Meyer 8830 (K, P, WAG); 2.5 km SW of Ainamba, Meyer 8996 (K, WAG); km 65 Gimma-Bonga Rd., de Wilde & de Wilde-Duyfjes 7867 (BR, MO, WAG). Arussi: Soyuma, 25 km S of Shashamanné, Mooney 5720 (FI, K). Sidamo: Anfillo For., Capuano 2442 (FI); km 68 Neghelli-Kebré Mengist Rd., de Wilde 6039 (BR, M, MO, WAG).

SOMALIA: Ola Uager, Senni 39 (FI).

ZAIRE: V: Kamende-Kabanga Rd., Risopoulos 920 (BR, WAG). VI: Kisanga, Shabumda Terr., A. Léonard 3918 (BR). VIII: Denge R., Bamps 255 (BR); Nioka, Craene 124 bis (BR, K). IX: Rumangabo, Nat. Park Albert II, Germain 3798 (BR, K); Kabare, Hendrickx 3922 (BR, EA); between Kasindi and Lubango, Lebrun 4699 (BR, K); Kikoma, A. Léonard 3093 (BR, WAG); Tchigoma, A. Léonard 3277 (BR, WAG); Bingi, A. Léonard 5405 (BR, WAG); km 25 Bukavu-Goma Rd., Pierlot 2739 (BR), 7993 (WAG); Djalele R., W of Katuka, de Wilde 2 (BR, type of *Clitandra semlikiensis*), 6 (BR, C, K); Kanguri, Kikura sector of Nat. Park Albert II, de Wilde 447 (BR, WAG). XI: Kundelungu Plateau, Lisowski et al. 4052 (POZG); 23 km WSW of Lualala, Lisowski et al. 9203 (POZG); near Lubudi, Lisowski 60260 (BR); 15 km S of Kaniapa, Lisowsky 60262 (POZG); near Mt. Kuyla, Lisowski 60788 (POZG); 4 km W of Kabiashia, Malaisse 4556 (BR, K); Kalemie Highlands, Matsui 1715 (EA); Lubumbashi, Rogers 10078 (K, type of *Landolphia rogersii*); km 27 between NE and NNE of Tenke, Kulamba R., Bianco Plateau, Schaijes 1992 (BR); Keyberg, 8 km S of Lubumbashi, Schmitz 3652 (BR); Kansenia Mission, Pande R., Schmitz 7782 (BR); km 576 of railroad between Kasinga and Kalule, Wechuysen 708 (BR).

BURUNDI: Kitaba, Becquet s.n. (BR, K); Siguvyaye valley, Lewalle 3915 (BR, WAG); Mulembwe Burambi Bridge, Reekmans 5117 (BR, C, MO, WAG); Nyengwe, Munini valley, Reekmans 6361 (BR, WAG).

ANGOLA: Malanje: Malanje, Almeida s.n. (LISCJ). Cuanza Sul: Mussuanda, Quibala, Murta 363 (LISC, LISJC). Huila: near Lubango, Jau-Hunguéria Rd., Santos 815 (LISC). Moçâmedes: Serra da Chela, Gossweiler 13076 (LISC); between Bruco and Tchivinguiero, Mendes 938 (LISC); Serra de Stella, Welwitsch 1341 (BM, COI, K).

SUDAN: Equatoria: Matong Mts., Andrews 2005 (K); Gilo, Jackson 598 (FHO).

UGANDA: U2: near Hoima, Bunyoro, Bagshawe 1513 (BM); Bugoma For., Brasnett 1315 (K); Ruizi R., Jarrett 105 (EA), 315 (K); Kyahi For. Res., Kakoba Falls in Ruizi R., near Mbarara, Synnot 331 (EA), 407 (EA). U4: Entebbe, Brown 357 (K), Maitland 305 (FHO, K); Dumu For., Buddu, Dawe 23 (K, type of *Landolphia ugandensis*); Malibigambo For., 6 km SSW of Katera, Drummond & Hemsley 5474 (BR, K); Namalala For., Fyffe 91 bis (FHO, K); 1 km SW of Bunado, Lye 6944 (K); Masaka, Thomas 4096 (EA, K).

KENYA: K1: Mathew's Range, Ichikawa 841 (EA). K3: Leseru, W of Eldoret, Birch 66/146 (EA); Bogdan 430 (UC), Mungai 151 (WAG); Katimok For., Kamasia, Dale 2432 (BM, K, MO, NY); Nandi, Linton 119 (K); Kaimosi, Williams 603 (FHO, K); K4: Nairobi Falls, Agnew et al. 8799 (EA); Rueru R., Fort Hall Rd., Battiscombe 12 (K); Thika, near Chania Falls, Faden 67/852 (EA, K); Mt. Kenya (fl) Hutchins 438 (K); Karura For., Nairobi, Perdue & Kibuwa 8090 (K, MO, UPS); Nairobi, X 15 (K). K5: Bomet-Kericho Rd., bridge over Kipsanai R., Agnew et al. 7917 (MO); Mt. Elgon, Andersen 373 (S); Lumbwa, Baker 303 (K); Sambret, SW of Mau, Kerfoot 2746 (K); Kericho, Linton 120 (K); Tinderet For. Res., Maas Geesteranus 5318 (BR, COI, G, K, L, S, UC, Z); Tiniki For., Kakamega, Nyanza basin, Moon 580 (K); Kabegon R., Mt. Elgon, Tweedie 3253 (BR, FL, K, P); Between Iriganga and Vuyk 426 (WAG). K6: Endama Mr., Narok Distr. Glover et al. 1939 (EA). K7: Taita Hills, Ngangao For., Beentje 2192 (EA, K, WAG).

TANZANIA: T1: Minziro For., Willan 37 (K). T2: Lake Manyara Nat. Park, Harera Gorge, Dingle 367 (EA, K); Moshi, Rai For., Lewis 228 (K); Moshi, Kilimanjaro Station, Merker 224 (K, type of *Clitandra kilimanjarica*). T3: Mazamba, near Amani, Braun 2195 (EA, K); Shagai For., near Sanga, West Usambaras, Drummond & Hemsley 2590 (B, BR, K, S); Amani, Furuya 253 (K), Harris 1039 (EA); Lushoto Arboretum, Magogo 376 (K, M); Jaegertal, Mbailwa 24 (EA); Derema, Peter 56983 (B, WAG); Wanguwe R., Shabani 321 (BR, K). T4: Kabwe R., just S of Pasagulu, Harley 9195 (B, BR, K). T5: Mpwapwa, Hornby 507 (K); T7: Mbeya, Herring 57/42 (EA); Njombe, Lynes 14 (K); Bueni, S Uhehe, Prittowitzii 176 (E); Nyassa Highlands, Kyimbila Station, Kalalanunika, Stolz 176 (BM, G, GH, K, L, M, MO, US, W, WAG, Z), *ibid.* Bundali Mts., Stolz 177 (B, BM, G, HBG, K, L, MO, S, W, WAG, Z); Kyimbila, Stolz 299 (K), 300 (BM, G, GH, HBG, K, L, M, MO, S, W, WAG, Z).

ZAMBIA: W Prov.: Chichele For. Res., near Ndola, Angus 388 (BR, FHO, K, MO); Mufulira For. Res., Holmes 637 (FHO); 16 km W of Kakoma, Holmes 932 (FHO, K, SRGH); km 25 Chingola-Solwesi Rd., Miller 347 (FHO); Ndola, Trapnell & Miller 1863 (K). N Prov.: Kawambwa Distr., Fanshawe 3534 (K); Chisau R. gorge, Saisi valley, Abercorn Distr., Richards 11786 (K); Vomo gap, Fwambo side, Richards 13273 (BR, K, SRGH). E Prov.: Makutus, Fanshawe 11605 (K, WAG).

MALAWI: N Prov.: 7 km E of Mzuzu, Pawek 5931 (MO, SRGH, UC), Pawek 9676 (MO, PRE, WAG), Phillips 2430 (WAG, Z); 18 km N Chikangawa, Phillips 4160 (K); Misuku Hills, Walindi For., Robson & Fanshawe 588 (BM, BR, K, LISC, MO, PRE, SRGH). C Prov.: Kota-Kota, Nchisi Mt., Brass 16965 (K, MO, NY, PRE, SRGH); Mpungi Cross Roads, near Dedja, Buritt-Davy 21616 (FHO); Nchisi For., Chapman 1289 (SRGH), Salubeni 616 (K, LISC, PRE, SRGH); Dzolanyama, Chapman 1722 (SRGH). S Prov.: Cholo Mt., Adamson 167 (E, K); Soche Mt., Benson 485 (K, PRE); Mulanje Mt., Brown s.n. (K); Shire Highlands, Buchanan 44 (DBN, K), 95 (E); Mt. Direndi, Buchanan 138 (E, K); *sin. loc.*, Buchanan 220 (BM, lectotype, 286 (BM, E, paratype), s.n. (K); Blantyre, Buchanan s.n. (K, SRGH); Namasi, Cameron 1 (K, lectotype of *Landolphia cameronis*), 11 (K, paratype of *Landolphia cameronis*); Ntondwe, Cameron 108 (K); Zomba-Naisi Rd., 1 km upstream Mlunguzi R. bridge, Chapman 6443 (BR); Mpita, Tobacco Estate, Thondwe, Zomba, Chapman & Tawakali 6173 (BR, K); Bangwe Hill For., Dowsett-Lemaire 987 (K).

MOZAMBIQUE: Niassa: Mocuburi, Distr. Nampula, Andrada 567 (LISU); km 40 Entre-Rios-Ribáuê Rd., Murrupa Mt., Torre & Correia 16529 (LISC). Zambesia: Tumbine Mt., near Vila Maseti, Correia 445 (LISC); Chiperone Mt., Correia & Marques 2411 (LMU, WAG), 2500 (BR, LMU, WAG); Morrumbala For., Luja 419 (BR), 443 (BR), (fl., 477 (BR, K), Torre 4510 (LISC). Tete: Zóbuê Mt., Mendonça 583 (LISC). Manica & Sofala: Espungabera, Dawe 482 (K); Choa Mt., 17 km of Vila Gouveia (= Catandica), Torre & Correia 13610 (LISC).

ZIMBABWE: E Prov: Umtali, Chetora Farm, Armitage 52/54 (BR, PRE, SRGH); SW edge of Chirinda For., Chase 497 (BM, SRGH); Chirinda For., Swynnerton 82 (BM, K, SRGH, Z, type of *Landolphia swynnertonii*), Wild 2168 (BR, K, S, SRGH), 2221 (BR, COI, K, S, SRGH); Umtali Town, Chase 1512 (BM, K, LISC, SRGH), Fisher 1275 (NY, PRE); Vumba Mts, Chase 4594 (BM, MO, PRE, SRGH), *ibid.*, ravine E of Charleswood, Corner s.n. (E); Chipinga area, main Rd. from Mt. Selinda, Goldsmith 78/66 (BR, K, LISC, PRE, SRGH); Inyanga, Mtarazi Nat. Park, Müller & Biegel 1285 (COI, FHO, K, LISC, PRE, SRGH); Stapleford For. Res., Mullin 109/63 (BR, K, LISC, SRGH).

CULT.: Cameroun: Victoria (= Limbe), Winkler 1137 (G, Z); Tanzania: Amani, Greenway 2341 (FHO, K), 2794 (FHO, K), 6662 (BR, FHO, K); Zambia: Kitwe, Fanshawe 7561 (K), 7562 (K).

6. *Landolphia calabarica* (Stapf) E.A. Bruce, Kew Bull. 1947: 28. 1947; Pichon, Mém. IFAN 35: 138. 1953. Fig. 3, p. 35; map 6, p. 37

Basionym: *Carpodinus calabarica* Stapf, Kew. Bull. 1894: 19. 1894.

Type: Nigeria: Cross River State: Old Calabar R., Mann 2242 (K, holotype; isotypes: BR, GH, P).

Homotypic synonym: *L. ? bracteata* Dew., Ann. Soc. Sci. Brux. 19. 2: 123. 1895.

Liana or scandent shrub, up to 20 m high. Branches dark (reddish) brown or greyish, shallowly and narrowly fissured and/or slightly rough, with light lenticels. Branchlets greenish, light or dark (reddish) brown or greyish, villose, pilose or hirsute with orange-brown indumentum. *Leaves*: petiole 2-7 mm long, villose, hirsute or pilose, often with 1-several small triangular glands on each node; blade ovate to obovate or broadly so, 1.0-3.7 × as long as wide, 1.6-16.5 × 0.8-5.3 cm, coriaceous when fresh, acuminate or mucronate at the apex with an acumen 0.2-1.5 cm long, less often rounded to acute, cordate at the base, less often truncate to acute, villose, hirsute or pilose at midrib and secondary veins to pilose or glabrous towards apex and margin, and at remainder of leaf surface, indumentum orange-brown or reddish, denser and longer beneath, margin ciliate; with 5-11 pairs of straight or curved secondary veins 0.2-2.8 cm from each other in the middle of the leaf, often forming different angles with the midrib, between 2 secondary veins often less conspicuous ones, tertiary venation reticulate, more or less conspicuous beneath. *Inflorescence* terminal, sometimes tendril-like, a dense, compound, more or less irregular dichasial cyme, when tendril-like, cymes at the end of the hooks of the tendrils, as a whole 2.5-6.0 × 2.0-6.0 cm, 2-20-flowered. Peduncle up to 13 cm long, tendril hooks up to 3 cm long, villose or pilose. Pedicels up to 3.5 mm long, villose, pilose or pubescent, sometimes 5 ridges with longer indumentum below sepals. Bracts 1-3 along pedicel, the higher often more or less sepal-like, occasionally leaf-like bracts at the base of the inflorescence, (broadly) ovate to obovate or triangular, 2.4-7.0 × 1.3-4.2 mm, emarginate to acuminate or mucronate at the apex, villose or hirsute and pubescent outside, pubescent inside, sometimes with glands at the base of the ciliate margin. *Flowers* sweet-scented. *Calyx* 4.0-7.5 mm wide at the apex and 1.7-2.5 mm at the base; *sepals* (narrowly) ovate to obovate 1.7-4.4 × as long as wide, 3.8-7.5 × 1.2-3.3 mm, connate at the base for 0.2-0.4 mm, acute, rounded, mucronate or acuminate at the apex with a rounded or acute acumen, villose or pubescent outside, often glabrous near the margin, pubescent inside, often with some long hairs at the apex, occasionally glabrous or hirtopilose at the base, occasionally with 1 or 2 triangular glands at the base of the ciliate and/or membranaceous margin. *Corolla* white, pale yellow or cream, the tube mostly somewhat darker, tomentose or pilose towards throat, glabrous, pubescent or pilose at the in bud not covered part and the apex, pilose inside from up to 1.0 mm above to up to 6.0 mm below the anthers, otherwise glabrous, but sometimes pilose at the auricle, with a ciliate margin; tube 1.6-3.9 × as long

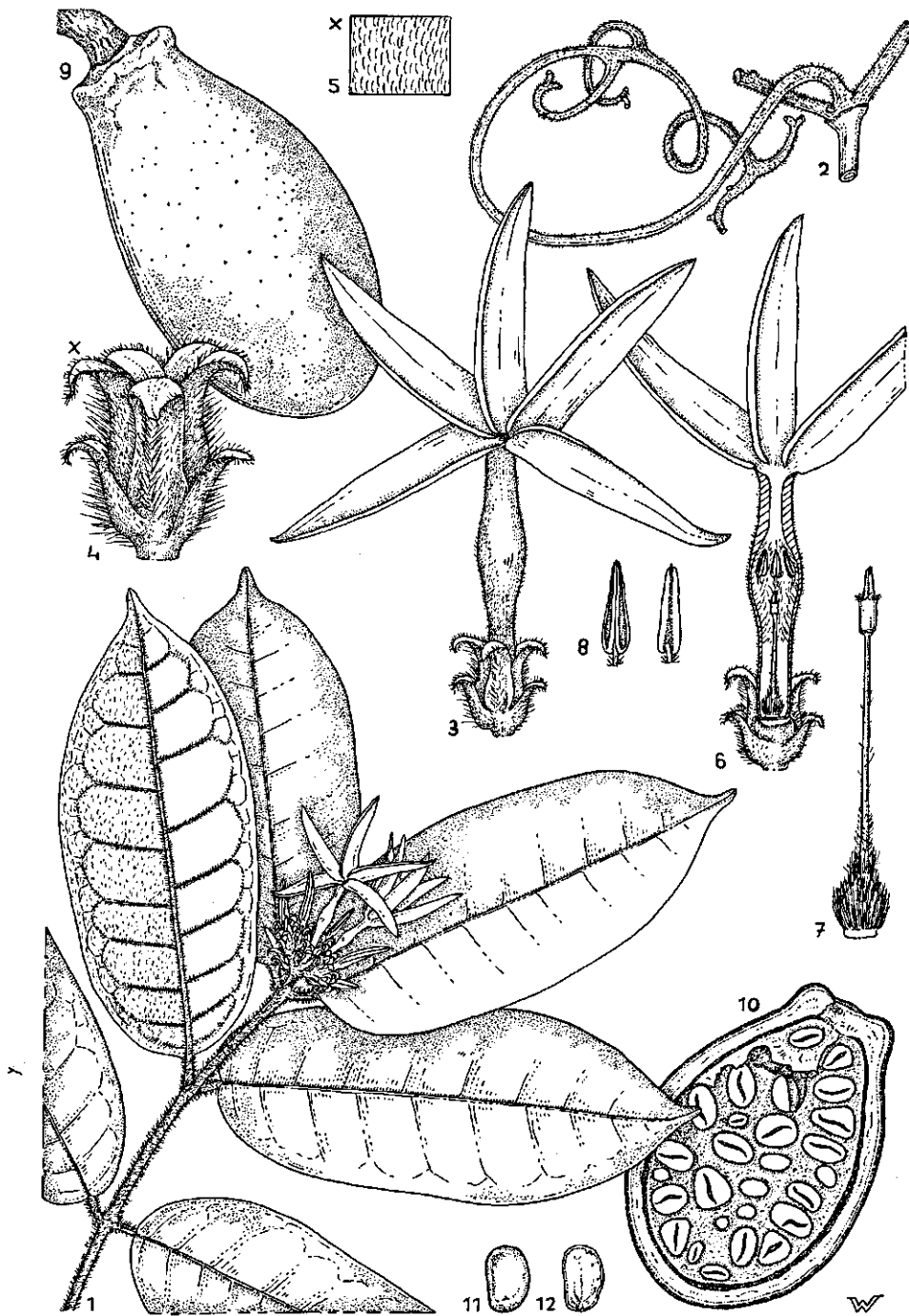


Fig. 3. *Landolphia calabrica*. 1, habit ($\times 2/3$); 2, tendril ($\times 2/3$); 3, flower ($\times 2$); 4, calyx, ($\times 4$); 5, part of sepal inside ($\times 26$); 6, opened flower ($\times 2$); 7, pistil ($\times 6$); 8, stamen in- and outside ($\times 6$); 9, fruit ($\times 2/3$); 10, longitudinal section of fruit ($\times 2/3$). 1 from Latilo FHI 67660; 2 from Latilo FHI 67673; 3-8 from van Meer 1206; 9 and 11-12 from Meikle 1396; 10 from Deighton 6153.

as calyx, 11.0-19.4 mm long, 0.7-1.7 mm wide at the base, 0.7-1.8 mm in the middle, 1.8-3.0 mm around the anthers and 0.9-2.1 mm wide at the throat, the widest part 5.5-13.0 mm from the base, wall thickened between the anthers and in the throat; lobes narrowly ovate, $0.64-1.44 \times$ as long as tube, $3.9-8.3 \times$ as long as wide, $7.5-24.2 \times 2.3-5.0$ mm, acute to rounded at the apex. *Stamens* 2.0-2.4 mm long, inserted 5.5-11.4 mm from the base of the corolla tube, at 0.44-0.59 of its length, 2.9-6.3 mm included; filaments 0.3-1.0 mm long, pilose (at the base) inside; anthers with their base 5.7-11.8 mm from the base of the corolla tube, at 0.46-0.61 of its length, $3.5-6.3 \times$ as long as wide, $1.6-2.1 \times 0.3-0.6$ mm, rounded, obtuse or mucronate at the apex with a rounded acumen, glabrous. *Pistil* 4.9-10.3 mm long; ovary ellipsoid or ovoid $1.0-1.7 \times 0.8-1.3$ mm, on a cylindrical or slightly widened, glabrous base $0.15-0.3 \times 0.6-0.8$ mm, truncate to acute at the apex, villose; ovules 50-100; style cylindrical, sometimes widened towards base and/or apex, $3.0-7.3 \times 0.1-0.3$ mm, pilose at the base for 0-2.8 mm, otherwise (almost) glabrous; pistil head ovoid, ellipsoid, cylindrical, (ob)conical or cylindrical on an ellipsoid base, $0.4-0.8 \times 0.2-0.4$ mm, mostly ciliate at the upper and occasionally also at the lower margin; stigmatic apex cylindrical, conical, slightly diaboloid-shaped or ovoid or ellipsoid on a cylindrical or slightly narrowed base, $0.3-0.9 \times 0.15-0.2$ mm, puberulent, often in ridges, acute to rounded at the apex. *Fruit* orange or yellow, when young glaucous, more or less smooth, with small lenticels, obovoid, ellipsoid or pyriform, often with a slightly widened base, $3.2-9.6 \times 1.5-5.5 \times 1.5-5.5$ mm, rounded at the apex, truncate at the base, 10-60-seeded; wall 1.1-7.5 mm thick; sclereid cell layer 0.15-1.0 mm thick. *Seed* irregularly ovoid or ellipsoid, laterally compressed and sometimes with 1 or 2 flattened sides, $8-13.2 \times 6-10 \times 4-7$ mm. Embryo more or less curved or almost straight; cotyledons more or less irregularly ovate or elliptic, $6.0-12.2 \times 5.0-9.1$ mm, undulate; rootlet $0.5-0.9 \times 0.7-1.2$ mm.

Distribution: West Africa from Sierra Leone to Nigeria.

Ecology: Forests and woodlands. Alt. 0-500 m. Flowering throughout the year with a peak in the rainy season. Mature fruits mainly in the dry season.

Vernacular names:

SIERRA LEONE: Bonjema (near Kori), Holei (Mende).

GHANA: Abontera (near Aquapim), Hamah (near Aquapim), Keyah Keyah (near Protoc).

NIGERIA: Autopoi (near Asaba).

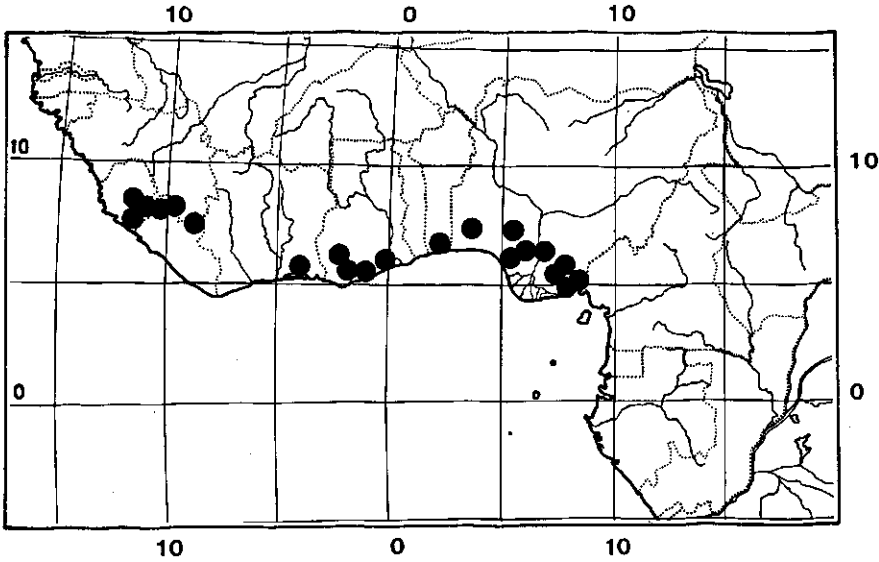
A selection of the ca. 70 specimens examined:

SIERRA LEONE: *sin. loc.*, Afzelius s.n. (UPS); Wiima, Deighton 3947 (K); Kori, Deighton 6153 (BR, K, P); W of Panguma, Smythe 76 (K); Matotaka, Thomas 1236 (K).

LIBERIA: Nimba Mt., Grassfield, Adam 20710 (K, MO, UPS); Vahon, Baldwin 10252 (K, MO, US); Busi, Harley 1255 (K).

CÔTE D'IVOIRE: Armitioro For., Aké Assi 22-4-1958 (WAG); Abidjan, Chevalier 15189 (P).

GHANA: Sefwi Bekwai, Akpabla 905 (K); Assuantsi, Baldwin 13622 (K, MO), Baldwin 14026



MAP 6. *Landolphia calabrica*

(K, MO); Aburi, Brown 391 (K), Chevalier 13870, 14129bis and 14132 (P); Bimpany For. Res., Foso, Enti SP584 (BR, MO); Akotokyir, Cape Mt. For., Hall 2318 (K); Kamanda For. Res., Hall GC42363 (MO); km 6 Adukrom-Koforidua Rd., Leeuwenberg 11199 (WAG); Akwapim and Protoc Mts, Ramsey IV (K); sin. loc., Scholes 244 (K); Ateiku, Vigne 2001 (BR, FHO, K, P).

BÉNIN: Bokoutou, near Sakété, Chevalier 22867 (P); between Tchitopa and Koussi, Chevalier 23230bis (P); Koussi, Chevalier 23231 (P); Niaouli, Chevalier 23406 (BR, K, P, WAG); Allada, Poisson s.n. (P).

NIGERIA: Oyo State: Lokomedji, Chevalier 13944 (P); near Ibadan, Meikle 1396 (BR, K, P). Lagos State: km 3 Ikorodu round-about-Lagos Rd., FHI 38338 (FHO, K, P, WAG); near Araromi, Hos-sain & Opayemi 1367 (MO). Ondo State: between Ago and Ogbesse, FHI 33359 (K); Ngwuwu valley, 10 km from Umudike, FHI 57615 (FHO, WAG). Bendel State: Benin City, Chevalier 15137 (P), Chevalier 15151 (P); between Ughoton and Ikpako, FHI 32771 (K); Uhi For. Res., FHI 69938 (K); Nikrowa, FHI 70243 (K, P); near Asaba, Unwin 12 (K). Cross River State: Cross River N For. Res., along Ikom-Mamfe Rd., FHI 67660 (K, WAG); New Ajasso, along Ikom-Mamfe Rd., FHI 67673 (K, WAG); Idanre, Foster 200 (K); km 2 Ebom-Ndibi beach track, Jones 1433 (FHO); Old Calabar R., Mann 2242 (BR, GH, K, P, type); km 9.5 Oron-Uyo Rd., van Meer 1203 (WAG); km 21 Oron-Uyo Rd., van Meer 1206 (WAG); Eket Distr., Talbot 3055 (BM, K, Z), Talbot 3126 (BM, K, Z).

7. *Landolphia camptoloba* (K. Schum.) Pichon, Mém. IFAN 35: 78. 1953; F. K. Kupicha in Fl. Zamb. 7 (2): 410. 1985.

Fig. 4, p. 38; map 7, p. 41

Basionym: *Carpodinus camptoloba* K. Schum. in Engler & Prantl, Nat. Pflanz. 4 (2): 132. 1895.

Type: Zaire: IV: Muene Putu Kassongo, Büttner 480 (K, lectotype, designated by Pichon).

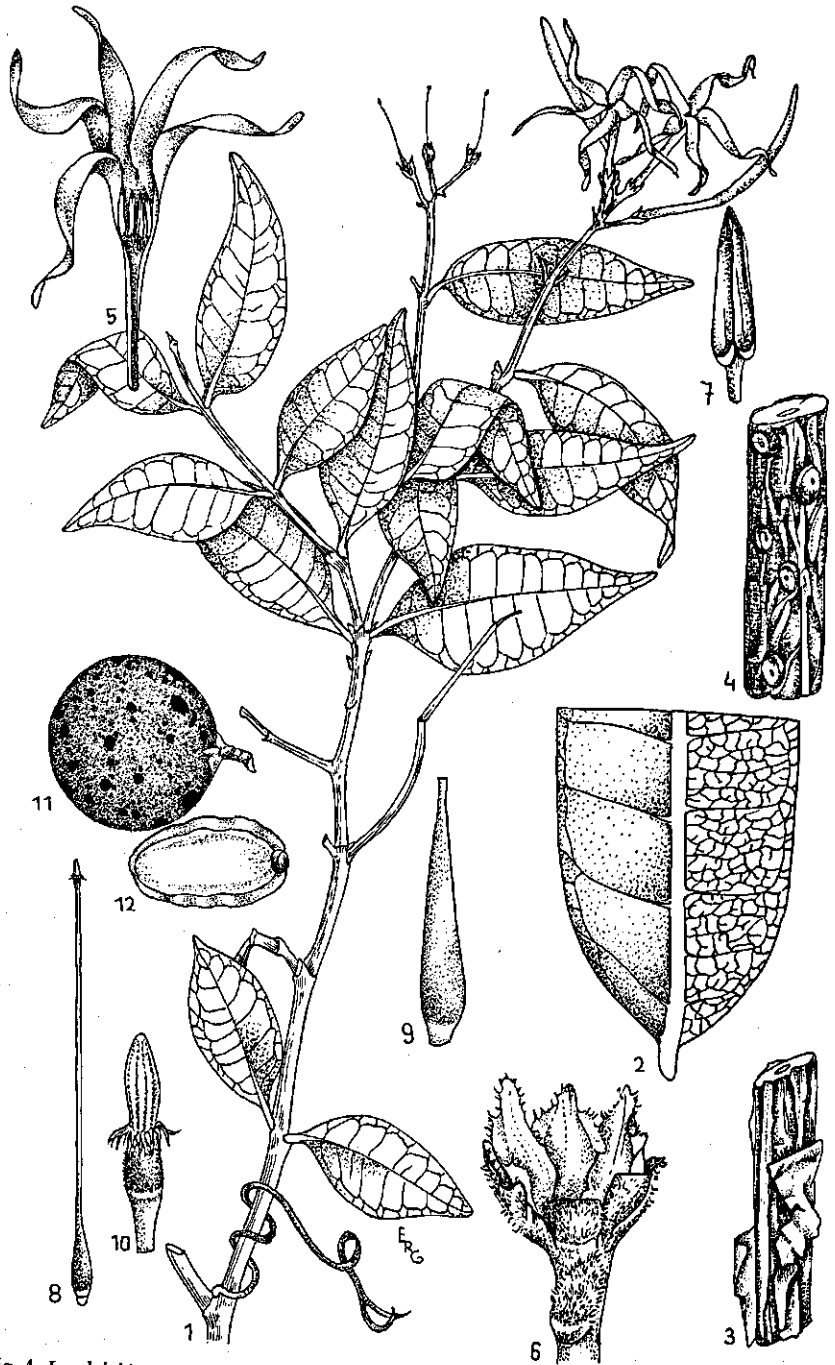


Fig. 4. *Landolphia camptoloba*. 1, habit ($\times 2/3$); 2, leaf beneath ($\times 4$); 3, branch with bark peeling off ($\times 4$); 4, lenticellate branch ($\times 8$); 5, opened corolla ($\times 2$); 6, calyx ($\times 8$); 7, stamen ($\times 8$); 8, pistil ($\times 4$); 9, ovary ($\times 10$); 10, pistil head ($\times 20$); 11, fruit ($\times 2/3$); 12, longitudinal section of seed with embryo ($\times 2$). 1 from Drummond & Cookson 6241; 2, 6 and 11 from Teixeira 198; 3 from Schayes 1592; 4, from E. & M. Laurent s.n.; 5 and 7-10 from Gilges 237; 12 from Barbosa & Moreno 9078.

Heterotypic synonyms: *Carpodinus gracilis* Stapf, Kew Bull. 1898: 303. 1898. Type: Zaire: III: between Kimuensa and Kinshasa, E. Laurent 1-11-1895 (BR, lectotype). Homotypic synonym: *Clitandra gracilis* (Stapf) Hall. f., Jahrb. Hamb. Wiss. Anst. 17, Beih. 3: 117. 1900.

Carpodinus leucantha K. Schum. in Warburg, Kunene-Sambesi Exped.: 338. 1903. (Litt. n.v.). Type: Angola: Kuando-Kubango: along Longa R. SW of Lazingua and Quiriri Rs., Baum 669 (holotype not seen, destroyed at B; W, lectotype; isotype: G).

Liana or erect or sarmentose shrub, 0.30-8 m high. Trunk 0.6-10.0 cm in diameter. Branches with orange or grey lenticels, dark or light (yellowish-)brown or greyish, somewhat rough with transverse cracks, or smooth. Branchlets brown, more or less densely pilose or hirsute or glabrous, with the bark peeling off. *Leaves* occasionally alternated by 1 or several pairs of bracts; petiole 2-7 mm long, pilose, hirsute or glabrous; blade ovate or elliptic or narrowly so, occasionally obovate, 1.7-5.3 × as long as wide, 1.4-8.4 × 0.6-3.6 cm, thinly coriaceous and glossy on both sides when fresh, more or less coriaceous when dried, acuminate or caudate at the apex, occasionally obtuse, with a sometimes spatulate 0.1-1.7 mm long rounded or retuse acumen, acute to truncate at the base, glabrous or pilose, especially towards the base beneath, occasionally also on entire midrib and secondary veins, with a ciliate base or not; 8-20 pairs of more or less straight secondary veins, 0.2-1.0 cm from each other in the middle of the leaf; between two secondary veins often one or two less conspicuous ones which often form a less sharp angle with the midrib; tertiary venation reticulate, labyrinth-like and more or less conspicuous and dark beneath; all veins impressed above. *Inflorescence* terminal, occasionally also axillary, a lax cyme, 4-11 × 1.5-9 cm, 1-13-flowered. Peduncle 3-170 mm long, sometimes tendril-like, elongate and curled, pilose, hirsute or glabrous, often with 1 or several (pairs of) bracts; pedicels 3-23 mm long, pilose, hirsute or glabrous. Bracts ovate, triangular or broadly so, 0.8-1.8(-2.3) × 0.6-1.1 mm, rounded or obtuse at the apex, with or without small triangular glands at the base of the mostly ciliate margin, entirely pilose outside, partly so, or glabrous, glabrous inside. *Flowers* fragrant. *Calyx* 1.8-2.4 mm wide, sepals ovate, occasionally narrowly or broadly so, unequal, 1.1-2.3(-2.8) × as long as wide, 1.5-2.5(2.9) × 1.1-1.5 mm, connate at the base for 0.1-0.7 mm, acute or obtuse at the apex, occasionally mucronate, at the often (for up to 0.2 mm) membranaceous margin more or less densely ciliate and mostly with small triangular glands at the base, pilose outside, especially in the middle or glabrous, glabrous inside. *Corolla* white, yellow or cream or greenish, or in a combination of these colours with an often somewhat darker tube, villose inside behind and up to 2.5 mm below anthers, otherwise glabrous on both sides, except for the apex and the upper part of the margin of the lobes which is sometimes sparsely ciliate; tube 5.4-12.3 × as long as the calyx, 11.2-19.7 mm long, 0.8-1.2 mm wide at the base, 1.9-2.5 mm around the anthers and 1.6- 2.1 mm wide at the throat; lobes equal or subequal, spirally curled, 5.3-13.3 × as long as wide, 0.67-1.3 × as long as tube, 10.0-25.4 × 1.9-2.8

mm, obtuse or rounded at the apex. *Stamens* inserted 10.5-15.7 mm from the base of the corolla tube, at 0.75-0.94 of its length, 0.1-1.1 mm included, 1.8-2.6 mm long; filaments 0.25-1.0 mm long, glabrous; anthers with the base (7.5)12.2-15.9 mm from the base of the corolla tube, at 0.76-0.95 of its length, 2.8-4.6 × as long as wide, 1.6-2.3 × 0.5-0.7 mm, acute, obtuse or slightly mucronate at the apex. *Pistil* 11.6-19.2 mm long; ovary glabrous or occasionally with a belt of hairs approximately half-way along its length, narrowly ovoid or almost conical on a 0.4-0.8 mm high cylindrical base and gradually narrowed into the style, 1.7-2.8 × 0.5-0.8 mm; ovules 15-40; style cylindrical, often somewhat narrowed towards the apex, 7.3-15.2 × 0.15-0.3 mm, glabrous; pistil head cylindrical or slightly ovoid, 0.35-0.7 × 0.25-0.6 mm, with an often ciliate upper margin, otherwise glabrous; stigmatic apex cylindrical, 0.35-0.8 × 0.2-0.35 mm, with an often rhomboid apex, and with obtuse or rounded lobes, more or less pubescent or puberulent, in stripes or not. *Fruit* yellow, orange or greenish so, covered with red or brown more or less circular, verrucose spots with a diameter of 1-40 mm and with an often slightly raised margin, globose, obovoid, ellipsoid or pyriform, 1.0-5.0 × 0.9-4.5 cm, 4-20-seeded; wall 0.3-1.5 mm, sclereid cell layer 0.1-0.3 mm thick. Seed 6-11 × 4.5-8.0 × 3.3-6.0 mm, irregularly ovoid, laterally compressed and sometimes with flattened sides. Embryo slightly curved; cotyledons irregularly and sometimes broadly ovate, 5.2-9.2 × 4.1-6.4 mm, slightly undulate or not rooted; 0.4-0.8 × 0.6-1.5 mm.

Distribution: Angola and adjacent parts of Zaire and Zambia.

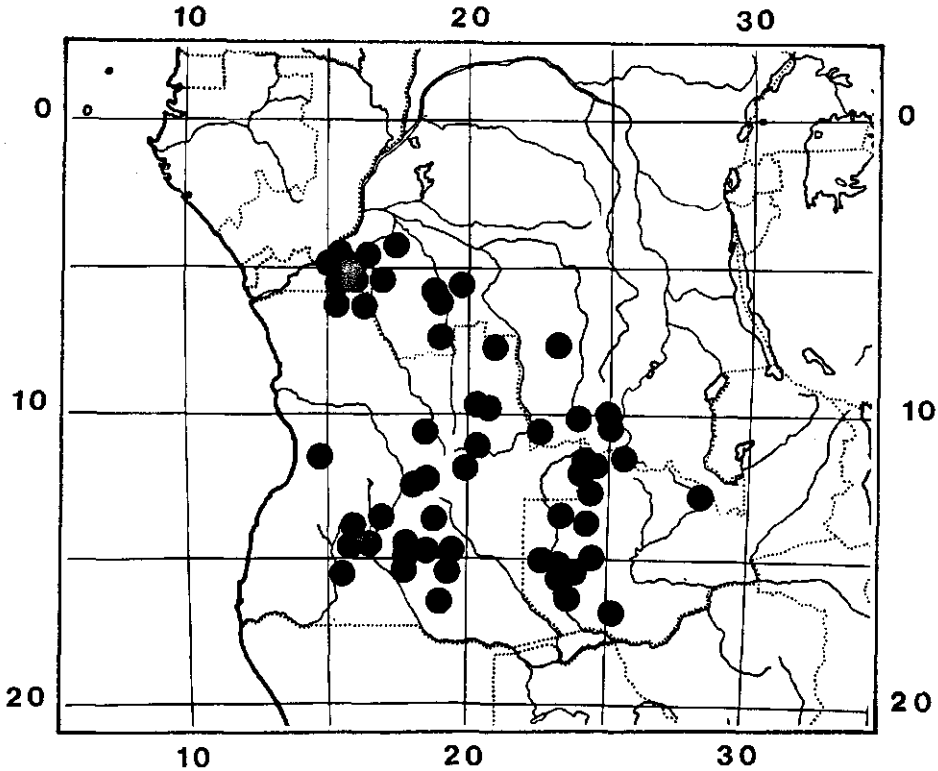
Ecology: In dry forests, woodlands or savannas, on sand and sometimes near granite boulders. Alt. 100-1800 m. Flowering throughout the year with a peak at the end of the dry season, especially in the easternmost areas. Mature fruits throughout the year.

Use: Locally rubber is gained from the roots; fruits edible.

Vernacular names:

ANGOLA: Ai-Nhe-Kòã (Vassequele), Gingue ganéne (Cahungula territory, Kambungu (Amboela and near Dundo), Moui jebemba (near Vila da Ponte), Mubanga (Ganguela), Mumbungu (Ganguela and near Coemba), Munbungo(n) (near Coemba), Muxi jibemba (Ganguela territory), Root rubber (English), Nkwezo wa Londe (Kongo) (means: Hill rubber), Tua (near Lunuango), Tchionjio (Ganguela), Vivungo (Ganguela), Viwungo (near Vila da Ponte), Wiwungo or Wiwungo (Cunene-Cubango area).

ZAIRE: Bungu(-)Bungu (Kiyaka and near Kisantu), Dinsania or Dinsonia (near Kisantu), Kabongon vraï (near Dilolo), Mbungo sanana (near Mikondo-Kakemba) Mbungu-Mbungu (Kiyaka), Mbungu(-)nunu or Mbungununa (Popokabaka territory), Mongonbongonbon (near Dilolo), Mongonkongonbon (near Biendo), Mongonkongonkan (near Bondo), Mungonbongonbon (near Lutshima).



MAP 7. *Landolphia camptoloba*

ZAMBIA: Bwengenena (Chilunda), Mwengelela (Lunda), Mumbungo (Balovale Distr.).

A selection of the ca. 170 specimens examined:

ZAIRE: III: Kinshasa, Bequaert 7405 (BR); Kisantu, Callens July 1958 (MO), Gillet 71 (BR, K); Kimuenza-Lovanium, Carlier 159 (BR), Carrington 29 (BR), Dewèvre 516 p.p. (BR, K, paratype of *Carpodinus gracilis*), Mildbraed 3611 (HBG, P, UPS), Robyns 4175 (BR, K, MO); 30 km SW of Kinshasa, Croockewit 733 (WAG); Mabida, Compère 2009 (BR); Zomfi, Compère 1437 (BR, K); Lula-Lunene region, Hendrickx 3093 (BR); between Kimuenza and Kinshasa, E. Laurent 1-11-1895 (BR, lectotype of *Carpodinus gracilis*); Sabuka, E. & M. Laurent 18-10-1903 (BR); Mungata, Vué R., Lejoly 82/791 (BR); Kikuya, Nsimundele 604 (BR, WAG); Kilenga, Pauwels 341 (BR); Masengi, Pauwels 6420 (WAG); Sanda, Vanderyst 14653 (BR); Kikasi near Kimpako, Vanderyst 31564 (BR, K); Mpese, Vanderyst 34738 (BR); Mayidi, Vanderyst 35467 (BR); Selo, Vanderyst 36062 (BR). IV: Muene Putu, Kassongo, Büttner 480 (K, lectotype); Mikondo-Kahemba, Devred 1425 (BR, K), Robyns 3718 (BR, MO); Dinga-Kwango, Devred 2525 (BR, K, M); Ikusama, along Kwango-Wamba Rd., Germain 2464 (BR, K); Nyabi valley, between Kwango and Wamba, Germain 2579 (BR,P); Lutshima, Sapin 9-8-1907 (BR, L); Bondo, Sapin s.n. (BR). V: Tshibalaka, Kapanga Terr., Liben 3765 (BR, MO, WAG); Lomami Kiabukwa Mission, near Kamina, Risopoulos 877 (BR, MO, WAG). XI: Lubilash, Kamika-Sanda Rd., Desenfans 1950 (BR); km 63 Kolwezi-Nasondoye-Kasofu Rd., Malaisse & Robbrecht 2314 (BR); Dilolo, Sapin June 1908 (BR, L); 40

km S of Sakabinda, Schayes 1592 (BR); km 35 Nasondoye-Kolwezi Rd., Schmitz 5363 (BR).

ANGOLA: Zaire: Lunuango, Dawe 37 (K). Uíge: Maquela do Zombo, Dawe 151 (K), Raimundo et al. 472 (BR, LISC). Malange: Cahungula Territory, Marques 240 (COI, paratype). Lunda: Luma Kasai Mission, Carisso & Mendonça 322 (COI); Saurimo, Carisso & Mendonça 552 (COI), Young 1178 (A, BM, NY, S, Z); Xa-Sengue, Exell & Mendonça 248 (BM, COI), Young 1059 (BM); Portugalia, Gossweiler 13634 (BM, K); Dala, Gossweiler Apr. 1937 (COI, K, US); km 5 Saurimo-Luso Rd., Mendes dos Santos 1656 (COI, LISC); Cundueji R., Sanjinje (Ang. Veg. 190) (LISC). Mexico: km 12 Luso-Saurimo Rd., Barbosa 11086 (COI, LISC); Luso, Exell. & Mendonça 1508 (COI), Gossweiler 13079 (LISC); Alto Cuito, Xa-Muchito R., Machado 18 (LISC). Benguela: Luassibi R., de Andrade s.n. (BR). Bié: Munhango, Andrada 88 (LISC, LISU), Monteiro & Murta 1709 (COI, LISC); Cuemba, Mendes dos Santos 1693 (LISC), Monteiro & Murta 1523 (BR, LISJC, LISC); km 9 Munhango-Cuemba Rd., Mendes dos Santos 1878 (LISC). Huíla: between Oxe R. and Maria-Pia Fort, Gossweiler 1813 (BM, COI, K, LISJC); between Cunene and Cubango Rs., Gossweiler 1813a (BM, COI); Dango, Cutato and Cubango Rs., Gossweiler 1813c (BM, COI, K, LISJC); Artur de Paiva, Gossweiler 1895 (BM, K, LISJC, P); near Sabado-Cadungo, Gossweiler 2143 (BM, COI, K); Amaral Mt., Dongo, Gossweiler 2875 (COI, LISC); Cunene, Cuvelai, Menezes 3892 (LISC). Cuando-Cubango: Chitembo, Barbosa & Moreno 9878 (K, LISC); Longa R., Baum 669 (G, W, type of *Carpodinus leucantha*); Samacaca, Cuito R., Gossweiler 2568 (BM, COI, K); Domba, Cuanaval and Cuito Rs., Gossweiler 2568 (BM, LISJC); Cassuango, Gossweiler 3702 (BM, COI, K, LISJC); km 35 Menongue-Caiundo Rd., Mendes dos Santos 2088 (LISC); near Baixo-Longa, Mendes dos Santos 2129 (LISC); km 70 Menongue-Caiundo Rd., Mendes 2194 (LISC); km 10 Cuito-Cuanavale-Longa R. Rd., Mendes 2973 (LISC); Cuchi R., Pocock 439 (A); Menongue, Teixeira 6 (COI); Cuito Cuanavale, Teixeira 198 (LISC).

ZAMBIA: W. Prov.: 1.5 km S of Shingi, along Zambesi R., Angus 643 (BM, BR, FHO, K, MO); 15 km S of Namushakende, Angus 3030 (FHO, K, SRGH); km 43 Mankoya-Mongu Rd., Drummond & Cookson 6241 (K, LISC, PRE, SRGH); 1.5 km SW of Kabompo R. along Kabompo-Chizera Rd., Drummond & Rutherford-Smith 7226 (K, LISC, PRE, SRGH); between Mwinilunga and Matonchi, Drummond & Williamson 9362 (K, SRGH); km 96 Mwinilunga-Kabompo Rd., Drummond & Williamson 9577 (SRGH), Edwards 565 (K, LISC, SRGH); Mavinda, Duff 33 (FHO); Balovale Distr., Gilges 193 (PRE, SRGH); Mongu, Gilges 932 (SRGH); Mwinilunga, Holmes 1364 (FHO); near Senanga, Lodd 7277 (BM, K, PRE, SRGH); near source of Matonchi R., Milne-Redhead 2619 (BM, BR, K, PRE); ca. 6 km SE of Angola border and ca. 6 km SW of Mujileshi R., Richards 16932A (K); 56 km N of Mwinilunga, Robinson 5890 (SRGH); km 70 Mongu-Kaoma Rd., Strid 2366 (C, LD, MO); Kalabo Boma, White 2066 (BR, FHO, K), White 2072 (FHO, K); 6 km N of Kalene Hill Mission, White 3368 (BR, FHO, K, WAG). S Prov.: Machili, Fanshawe 5891 (FHO, K), Fanshawe 6330 (FHO).

CULT.: Zambia: Kitwe (seedlings) Fanshawe 8260, 8626 and 9061 (K). Zaire: Eala, M. Laurent 1110 and 1892 (BR), Pynaert 648 (BR,P).

8. *Landolphia congolensis* (Stapf) Pichon, Mém. IFAN 35: 171. 1953.

Fig. 5, p. 43; map 8, p. 45

Basionym: *Carpodinus congolensis* Stapf, Kew. Bull. 1898: 303. 1898.

Type: Zaire: II: Bingila, Dupuis s.n. (K, holotype; isotypes: BR, HBG).

Heterotypic synonyms: *Carpodinus turbinata* Stapf, tom. cit. 304.

Type: Zaire: Lower Zaire, along Kinshasa-Equator Rd., Dewèvre 540 (BR, holotype; isotype: HBG).

Carpodinus schlechteri K. Schum. ex Stapf in Fl. Trop. Afr. (4) 1: 75. 1902.

Type: Zaire: III: Kinshasa, Schlechter 12084 (BR, holotype).

Carpodinus oxyanthoides Wernham, Cat. Pl. Talb. Oban Distr. S. Nig.: 61. 1913. Type: Nigeria: Cross River State: near Oban, Talbot 1443 (BM, holotype; isotype: K).

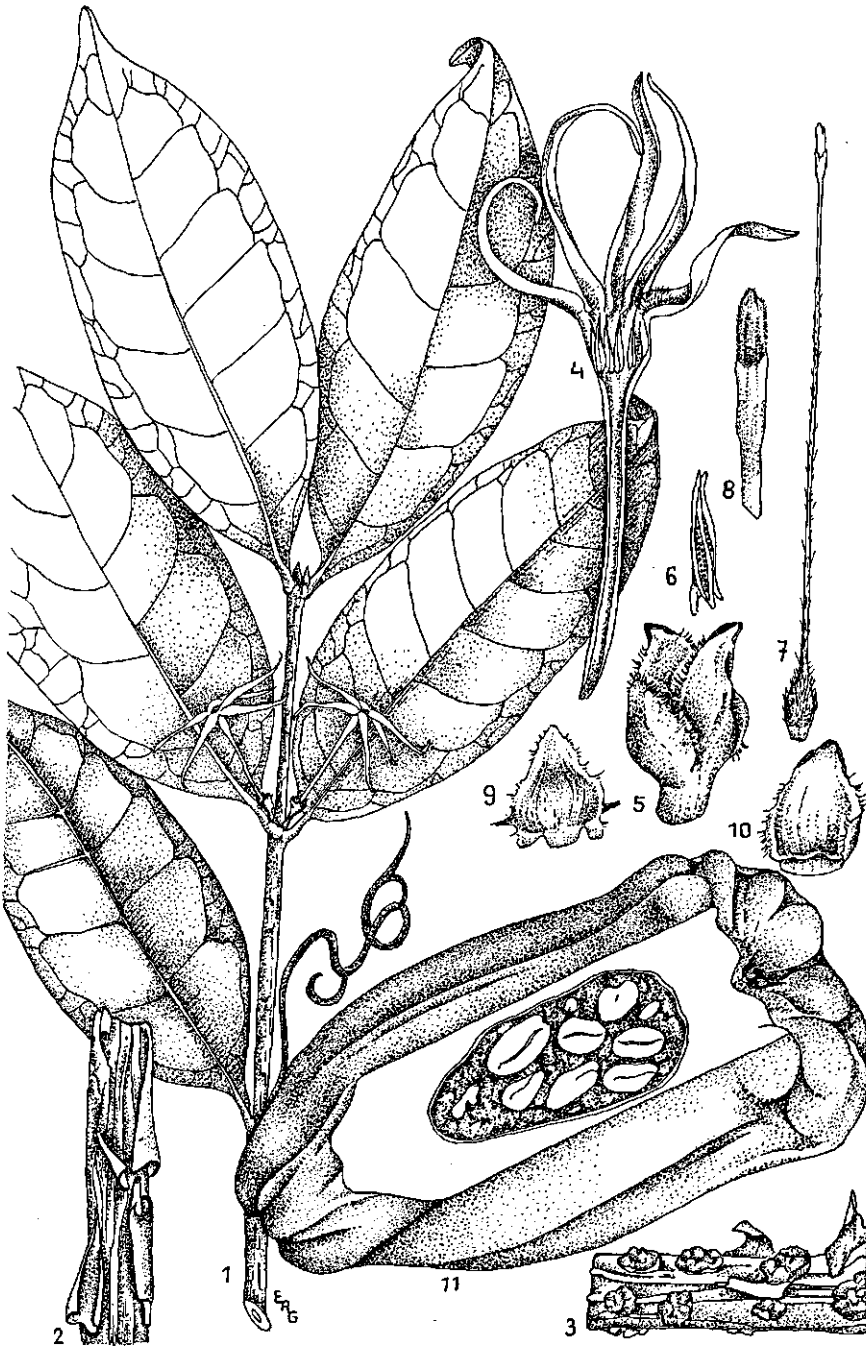
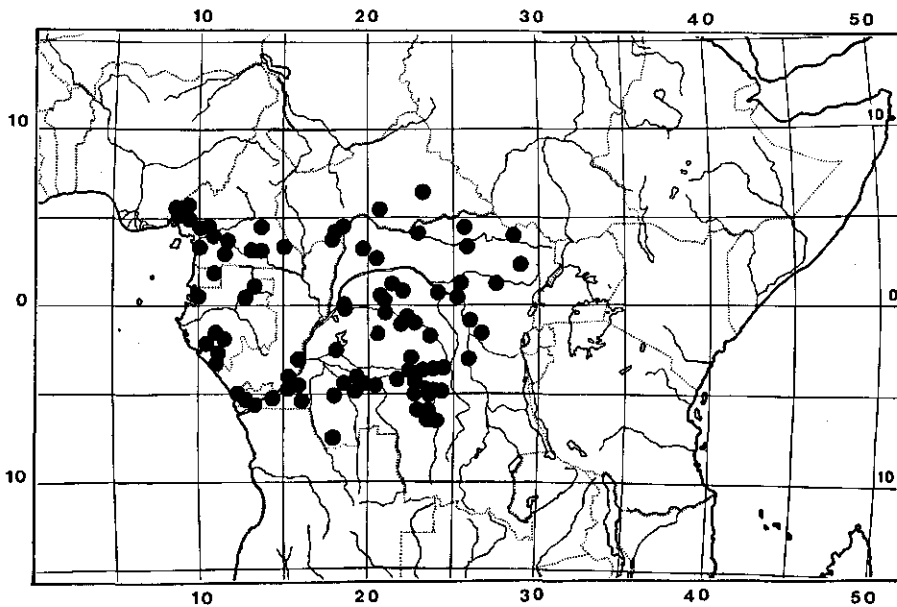


Fig. 5. *Landolphia congolensis*. 1, habit ($\times 2/3$); 2, branch, bark peeling off ($\times 2$); idem with lenticels ($\times 2$); 4, opened corolla ($\times 4$); 5, calyx ($\times 6$); 6, stamen ($\times 8$); 7, pistil ($\times 8$); 8, pistil head ($\times 20$); 9-10, sepal out- and inside ($\times 6$); 11, fruit with tangential section ($\times 2/3$). 1-2 from Le Testu 4125; 3 from Bokdam 4221; 4 from Leeuwenberg 6712 and Gentil 41; 5-10 from Gentil 41; 11 from Breteleur 1800, preserved in alcohol.

Liana 2-40 m long or more and 2-30 m high or more, or occasionally a sarmentose shrub. Trunk 1-35 cm in diameter; bark deeply fissured, sometimes slightly corky. Branches with fissured bark peeling off, orange-brown, or creamy or yellow-brown, with small or large lenticels (0.1-2.0 mm in diameter). Branchlets glabrous. *Leaves*: petiole 3-13 mm, glabrous; blade ovate to obovate or narrowly so, 1.7-4.1 × as long as wide, 2.3-23 × 1.2-9.0 cm, coriaceous or more or less membranaceous when fresh, often with glandular dots beneath, apex acuminate or sometimes obtuse, retuse or emarginate, with rounded or retuse acumen (up to 2 cm long), cuneate at the base, glabrous; with 5-11 pairs of straight or curved secondary veins, 0.5-4.9 cm from each other in the middle of the leaf; between (2) secondary veins 1-4 less distinct ones and up to 12 almost indistinct ones; tertiary venation reticulate, more or less prominent beneath. *Inflorescence* 1-2-flowered, axillary; pedicels 0.2-2.7 mm, glabrous or sparsely pubescent. Bracts 4-8 along pedicel, mostly in pairs, the higher sepal-like, triangular or ovate or broadly so, 0.4-1.9 × 0.7-1.9 mm, rounded or obtuse at the apex, often with 1 or 2 glands at the base of the mostly ciliate margin, or somewhat lower than that level, occasionally also towards the apex, glabrous outside or more or less densely pubescent. *Flowers* fragrant. *Calyx* 1.9-3.5 mm wide; sepals usually 4, ovate, oblong or elliptic, unequal, (0.6)0.8-2.0 × as long as wide, 1.4-3.0 × 1.1-2.8 mm, acute, obtuse or rounded at the apex, with or without glands at the base or towards the apex of the usually ciliate margin, glabrous or sparsely pubescent outside, glabrous inside. *Corolla* white, greenish, (pale) yellow, violet or (pale) reddish or in a combination of these colours, with the tube often greenish or darker than the lobes and with different colours inside and outside, glabrous outside, or pubescent on the lobes (especially at the exposed basal part in bud), pilose inside behind and up to 2.0 mm below anthers and on the auricle, otherwise (almost) glabrous; tube 7.4-14.4 × as long as calyx, 12.0-28.4 mm long, 0.9-2.5 mm wide at the base, 0.7-1.6 mm in the middle, 1.7-2.8 mm around the anthers and 1.4-2.3 mm wide at the throat; lobes 4.0-15 × as long as wide, 0.33-1.18 × as long as tube, 6.0-22.3(25.0) × 1.4-2.9 mm, acute, obtuse or rounded at the apex. *Stamens* 1.7-2.6 mm long, inserted 13.0-26.0 mm from the base of the corolla tube, at 0.77-0.92 of its height, 0-1.9 mm included; filaments 0.2-1.5 mm long; anthers with the base 12.9-26.0 mm from the base of the corolla tube, at 0.78-0.93 its length, 2.5-4.4(6.7) × as long as wide, 1.5-2.4 × (0.3)0.5-0.7 mm, obtuse or acute at the apex, glabrous. *Pistil* 13.5-22 mm long; ovary ovoid, ellipsoid or cylindrical with a conical upper half on a glabrous, 0.3-0.6 mm high cylindrical base, pubescent, 1.2-2.9 × 0.6-1.1 mm, ovules 40-140; style cylindrical, gradually widened towards the base, 11.5-18.7 × 0.1-0.3 mm, pubescent at the base, glabrescent towards the apex (there for 1.0-3.0 mm glabrous); pistil head cylindrical, somewhat tapering or slightly diaboloid-shaped, 0.3-0.6 × 0.2-0.5 mm, glabrous and ciliate at the upper margin; stigmatic apex cylindrical, ellipsoid or narrowly ovoid, 0.3-0.8 × 0.15-0.35 mm, puberulent, with obtuse or rounded lobes at the apex. *Fruit* yellow, orange, reddish or greenish, occasionally blueish or glaucous, smooth or bumpy, sometimes with white or yellow lenticels, conical, with or without a

cylindrical base, ovoid or occasionally globose or pyriform and often with 4 to 6 broad longitudinal ridges and a flattened or rounded base, rounded, retuse or obtuse at the apex, sometimes acute, 5-18 × 3.0-12 × 3.0-12 cm, 10-100-seeded; wall 0.3-2.0 cm thick. *Seed* more or less irregularly ovoid or ellipsoid, mostly laterally compressed and/or with 1 or 2 flattened sides, 9-16(21) × 5-12(16) × 5-8.5 mm. Embryo curved or sometimes straight; cotyledons more or less irregularly ovate or elliptic, 8.0-13 × 4.4-1.0 mm, undulate; rootlet 0.8-1.1 × 1.1-1.5 mm.

Distribution: Central Africa inclusive of south-eastern Nigeria and République Centrafricaine.



MAP 8. *Landolphia congolensis*

Ecology: Primary, secondary or riverine forests. Alt. 0-700 m. Flowering throughout the year with a peak in the rainy season in the drier areas. Mature fruits throughout the year.

Use: Latex of *Landolphia congolensis* occasionally used for rubber although it also is often mentioned to be of poor quality, and the fruits are said to be edible. In Cameroun the bark is eaten as a aphrodisiac by the Balas.

Vernacular names:

CAMEROUN: Koldamba (Boumba).

RÉPUBLIQUE CENTRAFRICAINE: Malomboma (Lissongo), Malombomo (Lissongo), Masensa (Lissongo for the fruit), Molo Malokete (Lissongo), Mondembo (Lissongo).

MBINI: Wey n Oki (near Bebai).

GABON: Manguila (near Tchibanga).

ZAIRE: Bantake (Ntoma), Basele (Bangala), Basele Motandi (Bangala), Bonsele (Lokundu and near Bokuma and Eale), Bosekoli (near Bongoy), Bosele (Bangala and near Dikila), Bosele Motani (near Ikenge, Mondombe and Lukuni), Bosole (Mango), Bossele or Bossere (near Ikenge), Bouisere montano (near Eala), Boto (near Dundusana), Boyoboyo (Lulua), Bumba (Kwilu), Dekuli (near Likimi), Dimangulé (Azande), Disukula (near Luki), Engbete or Engbete Motani (Babua), Giligaga (Zande), Goki di Mfinda, Ikân le Sikema (Kisakata for scrotum of monkey (shape of fruit)), Inaolo a Bonama (Turumbu), Iutcho (near Busanga), Libetebete (Turumbu), Lòkâmbwa (near Ngoli), Masele (Bangala), Maka Menkianu (near Mai Ndombe), Mbungu-Mbungu (near Kimvula), Momomo (near Katako-Kombé, name for fruit), Mosele (Bangala, Kwilu and near Befale), Mosere (Limongo and Bangala), Mosere Mutoke (Bangala), Mosere (Bangala), Motandi (near Illongonga), Munzenzila (near Luki), Ndagi (near Inéac Boketa), Ndimangere (Azande), Nyakadenga (Ngwaka), Nzelenzele (near Luki), Otongu (near Bena-Dibele), Palenkisna (near Tua), Sukula meno (near Luki).

A selection of the ca. 170 specimens examined:

NIGERIA: Cross River State: Calabar, Krukoff anno 1949 (MO); Oban, Talbot 1441 (BM), Talbot 1443 (BM, K, type of *Carpodinus oxyanthoides*).

CAMEROUN: Alèn, 23 km N of mouth of R. Benito, Bates 584 (G, L, P); Bitye, Bates 1952 (BM); 9 km SW of Yaoundé, Breteler 903 (BR, K, LISC, M, P, WAG); km 6 Bertoua-Batouri Rd., Breteler 1800 (WAG); 2 km W of Kondotiti-Mundemba Rd., 4 km N of Ilor R. bridge, Gentry & Thomas 52779 (WAG); Yokadouma, Hedin 775 (BR, P), Leeuwenberg 6269 (BR, K, MO, P, WAG); Diboum, Jacques-Félix 2921 (P, WAG); km 15 Lomié-Eschienbot Rd., Leeuwenberg 6712 (B, BR, C, K, LISC, MO, P, WAG); near Nonn, along Ndom Rd., Letouzey 10729 (P); 17 km NNW of Nguti, Letouzey 13831 (P, YA); 2 km NNE of Mamfe, Letouzey 14149 (BR, K, P, WAG); near Lomié, Mildbraed 5106 (HBG); near Dikolo, 34 km NW of Kumba, Satabie 275 (BR, K, P, WAG).

RÉPUBLIQUE CENTRAFRICAINE: Maboké R., Badré 161 (P, WAG); Bangui, Chevalier 5225 (P); 100 km NW of Yalinda, Le Testu 4125 (BM, BR, LISC, P); Boukoko, Tisserant 59 (P); near Mbaiki and Boukoko, Tisserant 321 (BM, BR, P); Gbondo R., 60 km SE Bambari, Tisserant 264 (BM, BR, LISC, P).

EQUATORIAL GUINEA: Bebai, Tessmann 593 (K).

GABON: Bélinga, Hallé & Le Thomas 662 (P); near Libreville, Klaine 21 (P), Klaine 2818 (P), Klaine 3166 (P); 21 km SW of Waka Timber Exploitation, Leeuwenberg & Persoon 13662 (WAG); Tchibanga, Le Testu 2058 (BM, BR, K, LISC, P, WAG); Manguélé, Le Testu 2351 (BM); km 45 Ndendé-Tchibanga Rd., A.M. Louis et al. 1180 (WAG); near Ekobakoba, Reitsma 3114 (WAG); near Kembele, along Mouila-Yeno Rd., Thomas & Wilkins 6553 (WAG); Doudo Mts., 60 km NW Doussala, J.J. de Wilde et al. 8980 (WAG).

CONGO: along Zaire and Mpouya Rs., Chevalier 5041 (BR, K, P); 22 km N of Brazzaville, Makany 1076 p.p. (P).

ANGOLA: Cabinda: between Sera and Pango Mungo, Gossweiler 6146 (BM, COI, LISJC, LISU); Pango Mungo, Gossweiler 6456 (BM, COI, LISJC, LISU).

ZAIRE: II: Chimbété, Dewèvre 311 (BR); Luki, Donis 2159 (BR), Donis 4228 (BR); Bingila, Dupuis s.n. (BR, HBG, K, type); Kizu, (BR). III: Timansi-Dunga Rd., Compère 1695 (BR); along Kinshasa-Equator Rd., Dewèvre 540 (BR, HBG, type of *Carpodinus turbinatus*); Sanda, Gillet 3701 (BR); Kimvula, Pauwels 3592 (BR); Kinshasa, Schlechter 12804 (BR, type of *Carpodinus schlechteri*). IV: km 2 Bita-Inkiene Rd., Breyne 979 (BR); Muetsi, 70 km WNW of Lusambo, Casier 295 (BR); Bena Diblele, Cranshoff 33 (BR), Flamigni 300 (BR); Lukuni, Gentil 41 (BR); Bokoro, Jans 598 (BR), Jans 598 bis (BR); Mangai, Laurent 4-11-1903 (BR); Bulongula, Laurent 843 (BR); Badi-banga, Liben 1749 (BR); between Lubi and Bushimaie Rs., along Tusule-Tshimbao Rd., Liben 2920 (BR, WAG); Sankuru, Luja 144 (BR); Dundusana, Mortejan 777 (BR); near Bambesa, Pittery 172 and 174 (BR); Madibi, Sapin Sept. 1910 (BR, G); Munugu For., Sapin Sept. 1906 (BR); Kasongo-Batetela, Sapin 20-10-1906 (BR); Tshitadi, Sapin s.n. (BR); Ilongonga, Sapin Dec. 1907 (BR); Panzi, Vanderyst 16912 (BR); Tua, Anonym. 15-3-1907 (BR). V: Kafumba, Liben 2169 (BR, WAG); Merode, Vanderyst 23543 (BR). VI: Ngoli, Ankei 79/1097 (BR); Avakubi, Bequaert 1819 (BR); Lubutu and Kirundu, Bequaert 6784 (BR); 10 km NE of Kisangani, Bokdam 4220 and 4221 (WAG); Bengamisa, Bokdam 4527 (WAG); Mai Ndombe, Vandenbroeck anno 1909 (BR); Bolombo R., near Dikila, Bruneel s.n. (BR); Djilingi, near Likote, Collart 2 (BR), Collart 14 (BR); Monkoto, Dubois 77 (BR); Inéac Boketa Station, Evrard 1184 (BR); Likako, Evrard 3041 (BR, K); Bongoy, Evrard 3271 (BR); Befale, Evrard 3534 (BR, K); Baringa, Evrard 5129 (BR); Yalikungu, Evrard 5533 (BR); Ikenge-Kuki, Gentil 4 (BR); Bambesa, Gerard 2925 (BR), Gerard 3236 (BR), Gerard 5329 (BR, WAG); Likimi, de Giorgi (BR); Busanga, Gorbatoff 62 (BR), Gorbatoff 298 (BR); Bokuma, Hulstaert 625 (BR); Mondombe, Jespersen Mar. 1907 (BR); Isangi, Laurent 13-1-1904 (BR); Eala, Laurent 1874 and 1899 bis (BR), J. Léonard 853 (BR, K), Pynaert 1573 (BR); Injolo, Laurent 1875 (BR); near Coquilhatville (= Mbandaka), Lebrun 1256 (BR, C, K, MO, NY, UC); between Wamba and Gombaré, Lebrun 3333 (BR); between Katako Kombe and Lodja, Lebrun 6173 (BR, K); Kole, Lebrun 6309 (BR, K); Yangambi, J. Léonard 738 (BR), J. Léonard 870 (BR), Louis 5692 (BR, C, MO, S), Louis 6819 (BM, BR, C, FI, K, NY, P), Louis 11318 (BR, C, K); Kisangani, Lisowski 17030 (POZG); km 25 Kisangani-Opala Rd., Lisowski 18419 (BR, WAG); near Liferia, Lisowski 43373 (BR); km 32 Kisangani-Benjamisa Rd., Lisowski 43457 (BR); Banalia, Lisowski 46921 (BR); Lolifa-Equator, Louis 2111 (C, FI, NY); Ekoli, Louis 3727 (BR, C, K); Tukutu Island, Louis 7452 (BR, FHO, K), Louis 13949 (BR, C, K, NY), Louis 15872 (BM, BR, C, FI, K); Yambuya, Louis 7672 (BR, C, K, NY); Yalibwa, Louis (BR, C, K); km 24 Punia-Yumbi Rd., Szafranski 1251 (BR). VII: Lower Uele, Dewulf 367 (BR); Tukpwo, Gerard 1866 (BR, MO, WAG), Gilbert 421 (BR).

9. *Landolphia cuneifolia* Pichon, Mém. IFAN 35: 163. 1953.

Fig. 6, p. 48; map 9, p. 50

Type: Zaire: XI: Katentania, Homblé 740 (BR, holotype; isototype: P).

Slender liana or scrambling shrub, 0.3-1.5 m high. Branches dark brown, shallowly fissured or almost smooth, often slightly rough with many small orange lenticels. Branchlets as branches, pilose or tomentose, more densely so when young. *Leaves*: petiole 2-10 mm long, tomentose or pubescent, with 1 or several small triangular glands on each node; blade (narrowly) obovate, oblong or elliptic, 1.8-4.8 × as long as wide, 2.0-9.7 × 0.8-4.0 cm, coriaceous when fresh, obtuse, acute, mucronate or acuminate at the apex with an obtuse or acute acumen 0.1-0.9 cm long acute to rounded at the base, pilose on the midrib, otherwise very sparsely pilose, especially towards apex or glabrous, very sparsely ciliate; with 5-9 pairs of nearly straight or curved secondary veins 0.4-1.9 cm from each other in the middle of the leaf, often between 2 secondary veins an inconspicuous one; tertiary venation reticulate, not conspicuous beneath; venation impressed above. *Inflorescence* axillary, a more or less irregular dichasial cyme, 1.0-2.5

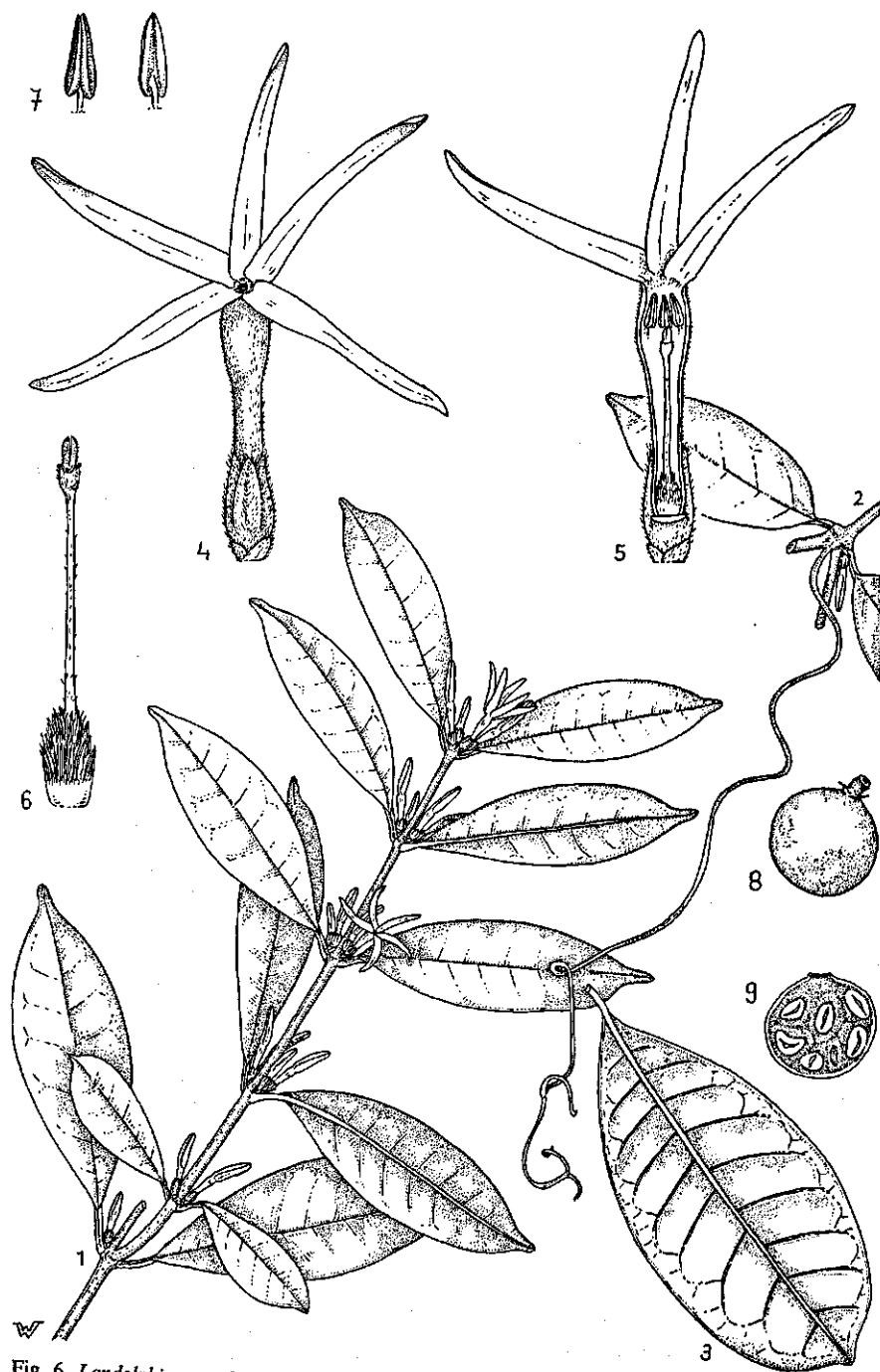
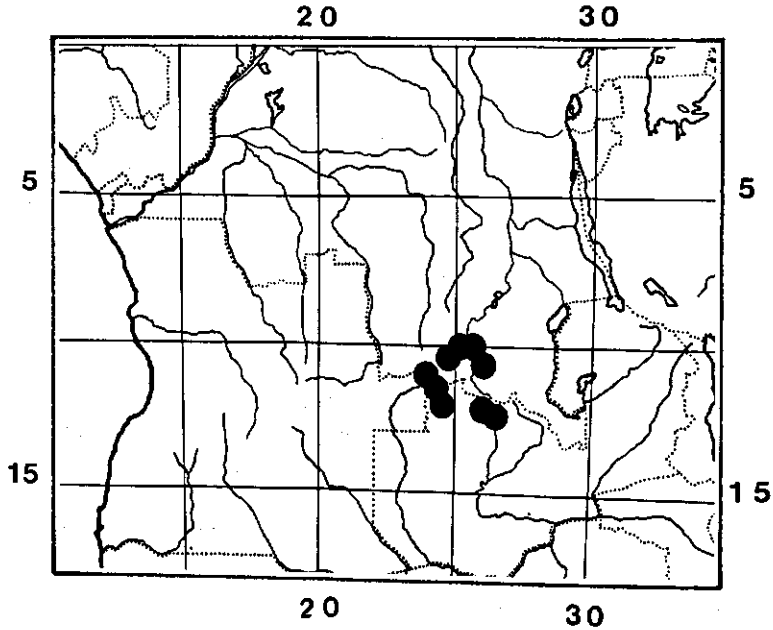


Fig. 6. *Landolphia cuneifolia*. 1, habit ($\times 2/3$); 2, branch with tendril ($\times 2/3$); 4, flower ($\times 4$); 5, opened flower ($\times 4$); 6, pistil ($\times 8$); 7, stamen in- and outside ($\times 8$); 8, fruit ($\times 1$); 9, section of fruit ($\times 2/3$). 1 from Hooper & Townsend 287; 2 from Drummond 8299; 3 from White 3347A; 4-7 from Schayes 2281; 8-9 from Homblé anno 1912.

× 1.2- 2.7 mm. Pedicels up to 2 mm long, pilose. Bracts 2-5 along pedicel, the upper ones sepal-like, in pairs or not, (broadly) triangular, oblong or ovate, 0.4-1.4 × 0.5-1.4 mm, rounded to emarginate at the apex, mostly with 1 or 2 small triangular glands at the base of the ciliate sometimes membranaceous margin, pilose outside, glabrous inside, often with some hairs at the apex, often with 2-4 small triangular glands at the base. *Flowers*: *Calyx* 1.8-2.3 mm wide; sepals (broadly) ovate, oblong or elliptic, subequal, 0.7-2.2 × as long as wide, 1.1-1.9 × 0.8-1.8 mm, connate at the base for 0.1-0.3 mm, truncate to acute, partly pilose outside, glabrous inside, often with some hairs at the apex, margin often membranaceous, ciliate, often more densely so and with longer hairs towards the apex. *Corolla* yellow, cream, white or orange, pilose inside behind and/or up to 2.0 mm below the anthers and on the auricles, glabrous outside at the basal 1.0-1.6 mm, above pilose or pubescent, and glabrescent towards the apex; tube 3.4-6.3 × as long as calyx, 6.5-8.0 mm long, 0.8-1.2 mm wide at the base, 1.1-1.5 mm in the middle, 1.3-2.0 mm around the anthers and 1.0-1.6 mm wide at the throat, with the widest part 5.0-6.0 mm from the base; lobes narrowly ovate or elliptic, 0.9-1.5 × as long as the tube, 2.9-5.5 × as long as wide, 6.4-11.0 × 1.3-2.3 mm, rounded or obtuse at the apex. *Stamens* 1.4-2.0 mm long, inserted 4.7-5.4 mm from the base of the corolla tube, at 0.68-0.72 of its length, 0.5-0.7 mm included; filaments 0.5-0.8 mm long, glabrous; anthers with their base 4.9-5.7 mm from the base of the corolla tube, at 0.72-0.76 of its length, 2.6-3.1 × as long as wide, 1.2-1.5 × 0.4-0.5 mm, rounded or shortly acuminate at the apex, glabrous. *Pistil* 5.4-6.0 mm long; ovary ovoid or conical on a glabrous cylindrical base, 0.2-0.3 mm high and 0.7-0.9 mm wide, 1.2-1.4 × 0.7-0.9 mm, pilose or villose, glabrescent towards the base; ovules 40-65; style cylindrical, 3.1-4.0 × 0.15-0.2 mm, pubescent; pistil head cylindrical, diaboloid-shaped or ellipsoid, 0.25-0.3 × 0.25-0.4 mm, often ciliate at the upper margin; stigmatic apex cylindrical, slightly widened towards the apex or ellipsoid or ovoid on a cylindrical or conical base, 0.5-0.8 × 0.2-0.3 mm, puberulent, the lobes rounded or obtuse at the apex. *Fruit* (immature) green with or without purple markings at the base, more or less smooth, sparsely lenticellate or not, (sub)globose or broadly ellipsoid, 1.7-2.5 × 1.8-3.0 × 1.8-3.0 cm, 5-15-seeded; wall 0.3-0.7 cm thick. Seed more or less irregularly ovoid or ellipsoid, mostly laterally compressed and/or with 1 or 2 flattened sides, 6-9.5 × 3-6 × 2.5-6 mm. Embryo curved or almost straight; cotyledons more or less irregularly ovate or elliptic, 5.2-8.5 × 2.4-5.2 mm, (hardly) undulate; rootlet 0.7-0.9 × 0.6-0.8 mm.

Distribution: Northwestern Zambia and adjacent parts of Zaire.

Ecology: Forests, woodlands and occasionally grasslands on Kalahari sand, sometimes on rocky soils. Alt. 800-1600 m. Flowering at the end of the rainy and the beginning of the dry season. Mature fruits probably at the end of the dry and the beginning of the rainy season.



MAP 9. *Landolphia cuneifolia*

Specimens examined:

ZAIRE: XI: Katentania, Homblé 740 (BR, P, type); 4 km N of Wakipinji, ca. km 112 Kolwesi-Luena Rd., Malaisse 14152 (BR, WAG); between Tenke and Kando, about 500 m N of Likasi-Kolwesi Rd., Schajes 2287 (BR); km 75 Kolwesi-Kamina Rd., Schmitz 1787 (BR).

ZAMBIA: W Prov.: Lisombo R. ca. 15 km SW of Kalene Hill Mission, Drummond 8299 (SRGH); ca. 19 km W of Solwezi, Drummond & Rutherford-Smith 7025 (K, LISC, PRE, SRGH); Solwezi, Fanshawe 8852 (K); near Zambesi R. ca. 6 km NW of Kalana Hill Mission, Holmes 904 (FHO), Hooper & Townsend 287 (C, K, SRGH), White 3372 (BR, FHO, K, WAG); Mwinilunga, Holmes 1254 (K); km 11 Kalene Hill Mission-Congo border Rd., Richards 17174 (BR, SRGH); Kanuewi, Trapnell (K); Zambezi-Zaire divide, White 3347A (FHO); ca. 23 km N of Kalene Hill Mission, White 3357 (FHO, K).

10. *Landolphia dewevrei* Stapf in Fl. Trop. Afr. 4(1): 52. 1902.

Fig. 7, p. 17; map 10, p. 52

Type: Zaire: sin. loc., Dewèvre 888 (BR, holotype; isotypes: K, P).

Heterotypic synonyms: *L. subterranea* var. *johnstonii* Chev., Mém. Soc. Bot. Fr. 8: 1908. Type: Cameroun: Rio del Rey District, Johnston 1 (K, holotype).
Homotypic synonym: *L. parvifolia* var. *johnstonii* (Chev.) Pichon, Mém. IFAN 35: 96. 1953 (both as *johnstoni*).

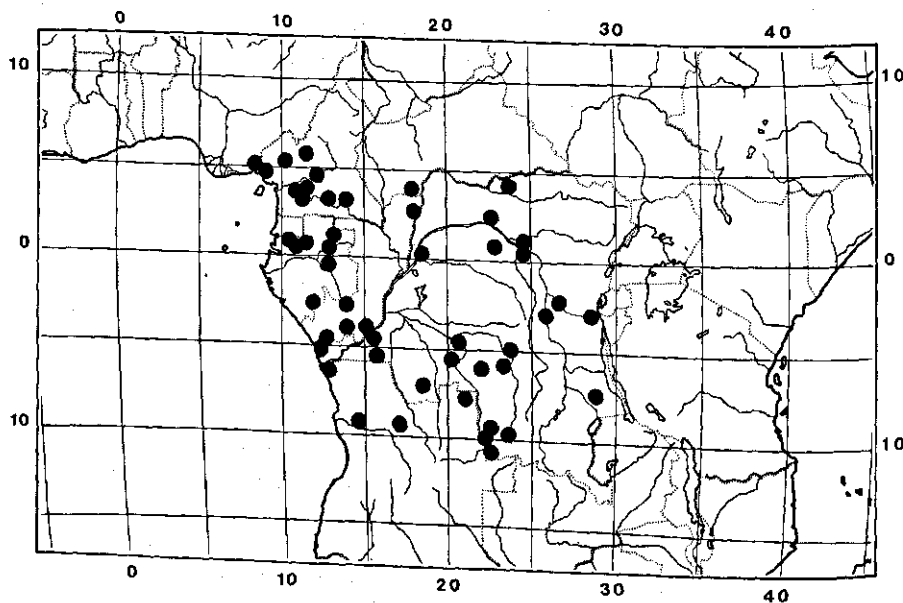
L. talbotii Wernh., Cat. Pl. Talbot S. Nigeria: 60. 1913.

Type: Nigeria: Cross River State, Oban District, Talbot 1038 (BM, holotype; isotype: K).

Liana up to 35 m high climbing, with curled tendrils up to 35 cm long with up to 2 cm long hooks. Trunk up to 8 cm in diameter or probably more, often reddish on cross-section, with a rough, fissured, sometimes corky bark with large lenticels, up to 2 mm in diameter. Branches cylindrical or fluted, with reddish or light lenticels of various sizes, branchlets villose or lanate to glabrous, often more hairy when young. *Leaves*: petiole 3-9 mm long, pilose or glabrous; blade ovate to obovate or narrowly so, 1.2-4.2 × as long as wide, 0.8-12.3 × 0.4-4.3 cm, acuminate or sometimes acute or obtuse at the apex, acumen obtuse or rounded, sometimes emarginate and mucronate or acute, 0.2-1.7 mm long, subcordate to acute at the base, always decurrent into the petiole, glabrous, pilose on midrib and sometimes also on margin beneath; secondary veins in 8-19 pairs, straight or occasionally slightly curved, in the middle of the leaf 3-10 mm from each other, with 1-5 less conspicuous secondary veins in between; often more conspicuous above, tertiary venation reticulate, sometimes labyrinth-like, young leaves yellowish with bright-red midrib, older leaves with lighter venation. *Inflorescence* terminal, a more or less irregular dichasial cyme, 1.2-5.5(7.0) × 1.0-4.0(5.0) cm, 15-100 or more-flowered, with 1-20 or more flowers open at a time. Peduncle 0.3-2.3 cm long, occasionally tendril-like and then up to 14 cm long, and with hooks up to 3 cm long, pilose to glabrous; pedicel 0.1-2.0 mm long, pilose. Bracts 1-4 along pedicel, ovate to obovate or broadly so, sometimes depressed, occasionally triangular, 1.1-2.3(3.9) × 1.2-2.2(2.5) mm, at the apex acuminate to emarginate, mucronate, glabrous or partly pilose or pubescent, sometimes ciliate on an often (up to 0.2 mm wide) membranaceous margin and keeled. *Flowers* fragrant. *Calyx* 0.6-2.0(2.5-3.5) mm wide; sepals sometimes 4, unequal (up to 1.2 mm difference in length between inner and outer sepals), ovate to obovate or narrowly so, emarginate to mucronate at the apex, 1.0-2.1(2.6) × as long as wide, 1.6-3.4(4.0) × 0.9-2.5 mm, connate at the base for 0.2-0.4 mm, indumentum as on bracts, often with a broad membranaceous margin and keeled, occasionally with colleters in the axils. *Corolla* (green-)white, (partly i.e. tube) pale red or creamy, from 0.3-2.8 mm from the base tomentose, pilose or pubescent outside, sometimes glabrous or less hairy on part of the lobes not covered in bud, villose inside behind and up to 1.6 mm below anthers, otherwise glabrous in tube and glabrous to sparsely pubescent; tube 1.1-2.8 × as long as calyx, 3.6-6.0 mm long, 0.6-1.4 mm wide at the base, around the anthers 1.0-2.3 mm and at the throat 0.7-1.8 mm wide, with the widest part 2.9-4.6 mm from the base, throat with a thickened wall for 4-7 mm; lobes (narrowly) ovate, elliptic or oblong, 0.6-1.1(1.3) × as long as tube, 1.7-4.4 × as long as wide, 2.7-5.0(6.5) × 1.0-2.3 mm, rounded to acute at the apex, ciliate or not. *Stamens* 1.0-1.7 mm long, inserted 2.4-3.8 mm from the base of the corolla tube, at 0.54-0.71 of its length, 0.2-1.1 mm included; filament 0.3-0.9 mm long, glabrous or with a few long hairs at the inside, often curved with the widening of the tube; anthers with the base 2.5-4.4 mm from the base of the corolla tube, at 0.63-0.80 of its length, 1.4-4.0 × as long as wide, 0.8-1.2 × 0.20-0.60 mm, rounded to acuminate at the apex, often with a few long hairs. *Pistil* 2.8-4.3 mm long; ovary ellipsoid, cylindrical, ovoid or obovoid or obconical with a

rounded, obtuse or truncate apex, sometimes on a cylindrical or slightly widened base 0.2-0.3 mm high, 1.0-1.9 × 0.55-2.0 mm, glabrous at the lowest 0.2-0.7 mm, in this glabrous area sometimes a sharply divided light (lower) and dark (upper) area, otherwise pilose or villose, often in ridges on the basal part, indumentum longer and denser towards apex; ovules 60-150; style cylindrical, often with a gradually widened base and/or apex, 0.4-1.9 × 0.15-0.5 mm, glabrous, often villose or pilose towards the base and into the ovary; pistil head cylindrical, ovoid to obovoid, 0.1-0.35 × 0.2-0.3 mm, ciliate at the upper margin (cilia up to 0.3 mm long, glabrous; stigmoid apex cylindrical, triangular, ovoid to obovoid, 0.5-1.1 × 0.15-0.4 mm, with the lobes rounded to acute at the apex, sometimes unequal, pubescent, pilose or glabrous. *Fruit* dull greyish-green, turning violet or brown when mature, rather smooth, often with rusty-brown or lighter circular spots (0.1-1.0 mm in diameter) often fusing to irregular spots or areas of 1 mm to several cms in diameter, (depressed-) globose or almost ellipsoid, 2.6-7.0 × 2.4-7.0 × 2.4-7.0 cm, rounded at the apex and at the base; 15-35-seeded; wall 1.0-6.5(10.3) mm thick; sclereid cell layer 0.3-0.6 mm thick. *Seed* irregularly (ob)ovoid or ellipsoid, laterally compressed and often with 1 or 2 flattened sides, 8-15 × 5-8 × (2)4-7 mm; embryo curved or straight; cotyledons irregularly ovate or elliptic, 8-13 × 4-8 mm, more or less undulate; rootlet 0.5-1.2 × 0.7-1.2 mm.

Distribution: Nigeria to Angola.



MAP 10. *Landolphia dewevrei*

Ecology: Rain forests and gallery forests. Alt. 0-700 m. Flowering and fruiting probably throughout the year.

Geographical selection of the ca. 85 specimens examined:

- NIGERIA: Cross River State: Oban District, Talbot 1038 (BM, K, type of *L. talbotii*).
- CAMEROON: 9 km SW of Yaoundé, Breteler 1585 (BR, K, LISC, M, P, WAG); Dschang, Jacques-Félix 5210 (P); Rio del Rey District, Johnston 1 (K, type of *L. subterranea* var. *johnstonii*); near Eschienbot, Letouzey 3681 (P); 16 km S of Djouo, Letouzey 4393 (P).
- RÉPUBLIQUE CENTRAFRICAINE: Boukoko, Tisserant 26 (BM, P), 170 (BM, P).
- GABON: NE of Asok, Breteler & de Wilde 79/78 (WAG); km 7 Lalare-Ndjole Rd., Breteler & de Wilde 474/78 (LBV, WAG); Bélinga, Caballé 194 (WAG); Ipesse, Makokou, Hladik 2345 (P, US); Mayombe Bayaka, Mobila-Mwiri, Le Testu 2035 (B, BM, BR, K, MO, P, WAG); Nzec, Le Testu 9589 (BM, BR, P, WAG); 24 km NE of Abanga, Leeuwenberg & Persoon 13548 (WAG), 13567 (WAG); 40 km NE of Abanga, along forest exploitation road, Leeuwenberg & Persoon 13574 (WAG); W of Waka forest exploitation, E of Sindara, Leeuwenberg & Persoon 13606 (WAG); km 30 Mimongo-Mbigou Road, A.M. Louis 147 (LBV, WAG); Oveng, Reitsma et al. 909 (WAG); Ngounie Region, between Mouila and Yeno, D.W. Thomas & Wilks 6575 (WAG); near Lastoursville, Wilks 821 (LBV).
- CONGO: Brazzaville, Chevalier 11077 (P); near Tsinguidi, Sita 3576 (WAG); Ibenga R., near Bolomo, Sita 3794 (P); Moussanda Steppe, Sita 4122 (WAG).
- ANGOLA: Golungo Alto, Calunga, Gossweiler 4955 (BM); Cabinda, Belize, Gossweiler 7795 (BM, COI, LISJC, MO); Maoimbe, Mbaku, Gossweiler 9013 (BM, K, LISJC); Dundo, Luachimo R., Gossweiler 13701 (B, US); Sumba, Gossweiler s.n. (P); Malanje, Quela, von Nolde 622 (BM).
- ZAIRE: Kinshasa, Achten 142a (BR); Luebo Region, Achten 235b (BR); Kinkasi, Compère 1571 (BR); sin loc., Dewèvre 888 (BR, K, P, type); Ruzizi, Lemera Road, Germain 7190 (BR, C, MO, P, WAG); Tshuapa, Jespersen 69 (BR); Eala, Laurent 1871 (BR); Sankuru, Batempa, Laurent 27-11-1903 (BR); between Kindu and Katoko-Kombe, Lebrun 6091 (BR, K); Lower Uélé R., Mt Kundugu, Lejoly 4135 (BR); Mwenga, J. Léonard 4954 (BR, WAG); Yangambi, J. Louis 6164 (BR, U, UC), 7251 (BR, C, K, MO, P); near Yambuya, Pynaert 52 (BR); Bumba, Pynaert 92 (BR); Tchimbumbang, Sapin 15-1-1907 (BR); Lac Twa, Sankuru, Sapin anno 1907 (BR); Katola, Lomani, Sapin Apr. 1908 (BR); Dilolo, Lualaba, Sapin JUne 1908 (BR); Kimpuki, Sapin anno 1908 (BR); Lac Leopold, Serv. Agr. 162 (BR).

11. *Landolphia dulcis* (Sabine) Pichon, Mém. IFAN 35: 163. 1953. Berhaut in Fl. Ill. Senegal 1: 393. 1971. **Fig. 8, p. 54; map 11, p. 57**

Basionym: *Carpodinus dulcis* Sabine, Trans. Soc. Hort. London 5: 455. 1824.

Type: Sierra Leone: sin. loc., G. Don s.n. (BM, holotype).

Homotypic synonyms: *Pacouria dulcis* (Sabine) Roberty, Bull. IFAN 15 (4): 1427. 1953.

Heterotypic synonyms: *Carpodinus acida* Sabine, tom. cit. 456.

Type: Sierra Leone: sine loc., G. Don s.n., (BM, holotype).

Carpodinus barteri Stapf, Kew Bull. 1894: 19. 1894. Type: Nigeria: Lagos: Lagos, Barter 2138 (K, lectotype, designated by Pichon). Homotypic synonym: *Landolphia dulcis* var. *barteri* (Stapf) Pichon, tom. cit. 166.

Carpodinus parviflora Stapf, l.c. Type: Gabon: Sibang, near Libreville, Soyaux 219 (K, lectotype, designated here; isolectotypes: BP, P, Z).

Carpodinus pauciflora K. Schum. in Engler & Prantl, Nat. Pflanzenf. 4 (2): 131. 1895. Type: Togo: Djégo R., Kling 57 (K, lectotype, designated here).

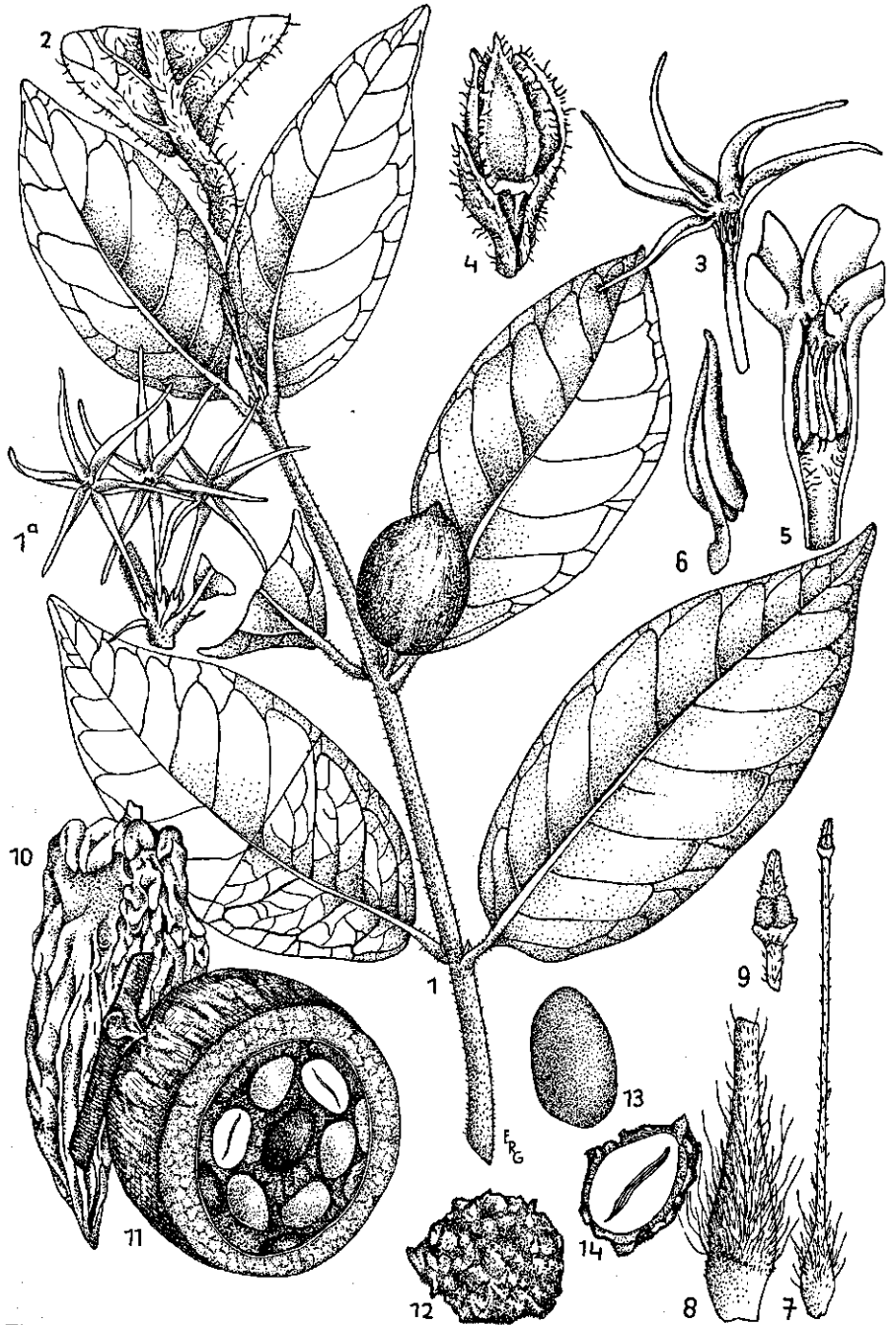


Fig. 8. *Landolphia dulcis*. 1, habit ($\times 2/3$); 1a, inflorescence ($\times 2/3$); 2, leaf base beneath (1×2); 3, opened corolla ($\times 1$); 4, calyx ($\times 6$); 5, part of opened corolla ($\times 4$); 6, stamen ($\times 6$); 7, pistil ($\times 4$); 8, ovary ($\times 10$); 9, pistil head ($\times 10$); 10, fruit ($\times 2/3$); 11, transverse section of fruit ($\times 2/3$); 12, seed with pulp ($\times 2$); 13, seed without testa ($\times 2$); 14, section of seed ($\times 2$). 1 and 3 from Espirito Santo 1827; 1a, 3 and 5-6 from Bretelet 7339; 7-9 from de Koning 5687; 10 from Leeuwenberg & Persoon 13704; 11 from de Koning; 12-14 from Leeuwenberg 12053.

Carpodinus tenuifolia Pierre ex Stapf in Fl. Trop. Afr. 4 (1): 78. 1902. Type: Gabon: near Libreville, Klaine 1103 (K, holotype; isotypes: BR, P). Homotypic synonym: *Landolphia tenuifolia* (Pierre ex Stapf) Pichon, tom. cit. 169.

Carpodinus oocarpa Stapf, tom. cit. 598. Type: Liberia: Sinoe Basin, Belamba, Whyte 9 (K, lectotype, designated here; isolectotype: BM).

Carpodinus baumannii Hutch. & Dalz. in Fl. W. Trop. Afr. 2: 35. 1931. Type: Togo: Misahöhe, Baumann 304 (K, holotype; isotype: E).

Sarmentose shrub, 1-5 m high or, more frequently, a liana, 2-10 m high and 2-20 m long. Trunk 0.5-10 cm in diameter; bark shallowly fissured or more or less smooth. Branches brown or green and then with bark mostly peeling off, especially at tendrils, with pale brown or whitish lenticels or not. Branchlets pilose, tomentose or lanate, especially the young shoots. *Leaves*: petiole 2-17 mm long, often with several small triangular glands on each node, glabrous or pilose; blade ovate to obovate or narrowly so, 1.5-3.9 × as long as wide, (1.7)4.3-22 × (0.7)1.8-11 cm, pergamentaceous to thickly coriaceous when fresh, papyraceous to coriaceous when dried, often with glandular dots beneath, emarginate to acuminate at the apex with an acute or rounded acumen up to 2.5 mm long, cuneate to cordate or auriculate at the base, more or less ciliate or not, glabrous to densely pilose above, especially on costa and secondary veins and on the young leaves, with indumentum beneath denser than above, glabrous to densely pilose also between the veins; with (3)4-7(-10) nearly straight to strongly curved secondary veins on each side of the midrib, 0.5-3.5 cm from each other in the middle of the leaf, between 2 secondary veins 1 to 3 more or less straight less conspicuous ones; tertiary venation reticulate or sometimes more or less scalariform, more or less conspicuous beneath, venation often reddish or violet and/or raised beneath; young leaves often reddish. *Inflorescences* axillary, 1-3 together in an axil, a more or less compound dichasial cyme, 1-7-flowered, at least 1.5 × 1.5 cm; peduncle 0-5.5 mm long, glabrous to densely pilose or lanate; pedicels 0.1-3.1 mm long, glabrous to densely pilose or lanate. Bracts 1-6 along the pedicel, in pairs or not, the higher sepal-like, broadly to narrowly ovate or broadly to narrowly triangular, 0.9-3.0 × 0.6-1.1 mm, acute to rounded or occasionally emarginate at the apex, often with 1 or 2 glands at the base of the margin, more or less densely ciliate, glabrous outside or with a short or long, sparse or dense indumentum, often mainly on keel and margin, (almost) glabrous inside. *Flowers* fragrant. *Calyx* green, brown or violet, 2.0-2.9 mm wide; sepals 4 or 5, unequal, narrowly to broadly ovate, oblong or elliptic, 0.8-2.75 × as long as wide, 1.1-4.1 × 0.9-2.1 mm, connate at the base for 0.2-0.5 mm, obtuse or acuminate at the apex, often with glands at the base of the ciliate margin, indumentum outside as on bracts but somewhat less, (almost) glabrous inside. *Corolla* pale or dark green, yellow, violet, white, cream or reddish, or in a combination of these colours, often tube and lobes and inside and outside differ in colour, glabrous outside or from glabrous at the lowest 1-6 mm to tomentose around the anthers and from that level again glabrescent to glabrous or pubescent, especially at centre and towards the apex, margin

of lobes more or less ciliate, pilose inside, often in ridges among and up to 2.5 mm below the anthers, (almost glabrous to tomentose at the auricle and lower part of the lobes, with indumentum reduced towards the apex, otherwise glabrous; tube 2.5-11.5 × as long as the calyx, 7.1-20.8 mm long, 0.9-2.1 mm wide at the base, 0.7-1.6 mm in the middle, 1.8-2.5 mm around the anthers and 1.7-2.2 mm wide at the throat; lobes 3.6-15 × as long as wide, 0.6-1.4 × as long as tube, 5.2-22.5 × 1.3-3.9 mm, rounded to acuminate at the apex. *Stamens* 1.7-3.0 mm long, inserted 0.71-0.8 of the length from the base of the corolla, at 5.5-15.5 mm, 0-1.7 mm included; filaments 0.15-1.0 mm long; anthers with their base 5.2-16.7 mm from the base of the corolla tube, at 0.69-0.86 of their length, 2.3-7.3 × as long as wide, 1.5-2.6 × 0.3-0.7 mm, obtuse or acute at the apex, glabrous. *Pistil* 7.9-17.8 mm long, ovary obovoid to ovoid on a cylindrical base, from glabrous (lower 0.2-0.8 mm) via puberulent or pubescent (middle 0.2-1.3 mm) to villose (apical 0.5-1.6 mm), (1.1-1.6-3.0 × 0.4-0.9 mm; ovules 30-200; style cylindrical, gradually widened towards the base, 5.3-13.3 × 0.15-0.25 mm, from villose at the lower 1.0-6.5 mm to pubescent, or (almost) glabrous at the apex; pistil head cylindrical, diabolo-shaped or tapering towards base or apex, 0.2-0.5 × 0.2-0.4 mm, occasionally more or less ciliate at the upper and/or lower margin; stigmatic apex cylindrical, ovoid or tapering, 0.25-0.9 × 0.2-0.3 mm, pubescent, in stripes or not and with lobes obtuse or rounded at the apex. *Fruit* greenish, orange, reddish or yellowish, turning blackish, reddish or brown, often with white or variously coloured lenticellate spots or with dark longitudinal lines, smooth, bumpy or somewhat verrucose, globose, pyriform, or ovoid to obovoid, truncate to acuminate at the apex with acumen up to 2.1 cm long, cuneate to cordate at the base, 2.0-10.0 × 1.8-6.6 × 1.8-6.6 cm, 5-50-seeded; wall 0.1-0.6 cm thick; pulp orange, cream or pinkish. *Seed* more or less irregularly ovoid or ellipsoid, often laterally compressed and/or with one or two flattened sides, 0.6-1.6 × 4.0-12.0 × 3.0-9.0 mm. Embryo curved or straight; cotyledons more or less irregularly ovate or elliptic or broadly so, 5.1-14 × 3.5-10.8 mm, undulate; rootlet 0.7-1.0 × 0.7-1.3 mm.

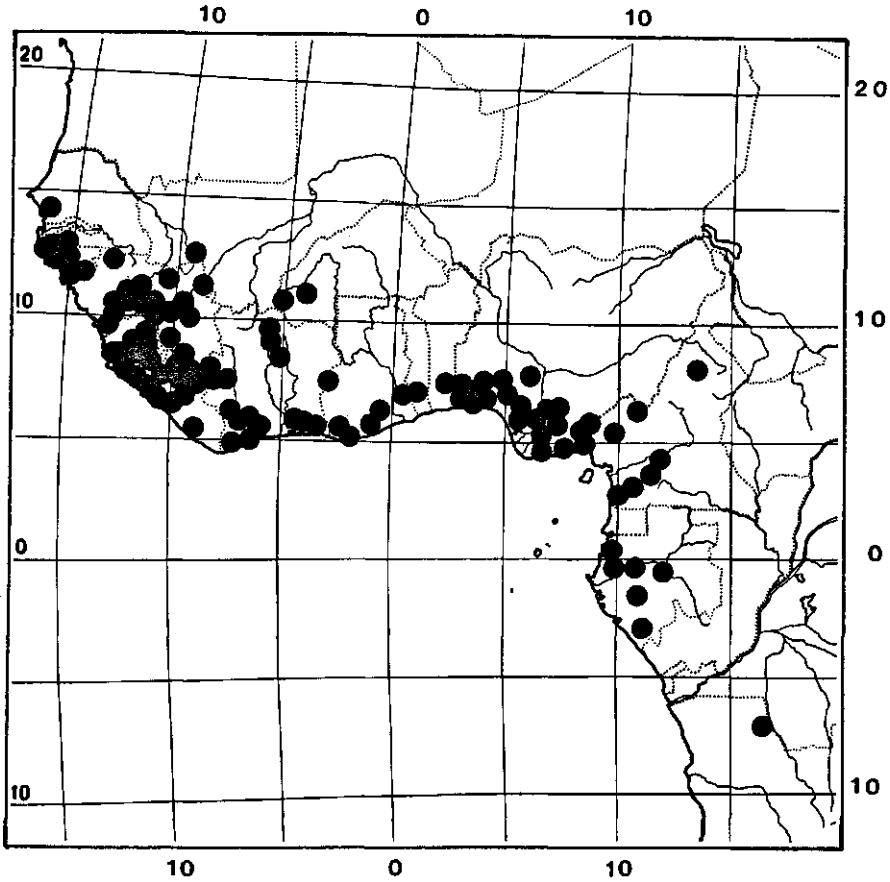
Distribution: West and western Central Africa from Senegal to Gabon; once collected in Angola.

Ecology: Forests, woodlands and shrubby savanna vegetations. Alt. 0-1800 m. Flowering throughout the year, with a peak in the rainy season, especially in the dry areas. Mature fruits throughout the year.

Use: Fruits of *Landolphia dulcis* are eaten and latex tapped for use on small scale, for example as bird-lime (Sierra Leone and Guinée). In Sierra Leone the roots are medicinally used. In Ivory Coast a decoction of the leaves is applied against fever.

Vernacular names:

MALI: Katimini (near Kita), Kodoudou (near Kita).



MAP 11. *Landolphia dulcis*

GUINÉ BISSAU: Ubimba (Pepel).

GUINÉE: Ovengi (without exact locality).

SIERRA LEONE: An-lonk (Temne, also name for other plants with edible fruits), Binbesigiri (near Binkolo), Cushumnt (Creole), Dalonk (Temne), Dobogibine (Mende), E(-)lonk (Temne), Eyontoni (Temne), Gondii (Mende), Gondwi (Mende), Kalonk (Temne), Khonkiskao (Temne), Kondoo (Kono), Kpuwi (Mende), Kushument (Creole), Logi (Mende), Log-le (Sherbro), Manowa (East Pije), Ndunuuwe (near Maybile), Stemiti (S, near Mungeru), Sweet Pishamin (without exact locality), Weinyi (Soussou), Weyenkame (Soussou), Xore (S, near Roruks).

BÉNIN: Agbotro (near Porto Novo).

NIGERIA: Akwerri (near Asaba), Aro (Yomba), Ibo (near Ilaro).

CAMEROUN: Ongam (Yaounde), Ongoem (Yaounde).

GABON: D'jeraton (Pahouin), Miogne miogne (Loango), N'djeraton or N'geraton (Pahouin), Orende (Pahouin), Orende N'chigo (without exact locality).

A selection of the ca. 370 specimens examined:

SÉNÉGAL: sin. loc., Heudelot 698 (K); Tendouk, Adam 13579 (MO, P); Niokolo Koba, Adam 17431 (MO); Efok, Adam & Kerkaw 1306 (MO); Kaème, Berhaut 5864 (BR, P); near Bignona, Berhaut 7359 (BR, P); Loudia, Berhaut 6888 (M, P); Tanguème, Berhaut 7359 (BR, M, P).

MALI: Kangala, Chevalier 860 (K); Soulou R., near Kita, Dubois 40 (13 2-1934) (P); Sirakoro R., near Kita, Dubois 40 (7-6-1934) (P); between Niagassola and Kita, Paroisse 31 (P).

GUINÉE-BISSAU: Cacine, Espirito Santo 631 (LISJC); Mansoa-Nhaira, Espirito Santo 742 (LISJC); Prabis, Espirito Santo 1827 (K, LISC, LISJC); Farim-Mansaba, Pereira 1007 (LISC); Fulacunda-Contabane, Perreira 1683 (LISC); Bagine, Raimundo & Guerra 285 (LISC).

GUINÉE: sin. loc., Farmar 194 (BM, K); Tenemadrou, Adam 3391 (MO, P); Nzo, Adam 4887 (MO); Madina-Tossoxere, Adam 11692 (MO); Youkounkoun, Berhaut 1472 (BR, P, Z); Moussaia, Chevalier 458 (BR, G, P); Kindia, Chevalier 12745 (P), Lisowski 60268 (POZG); Farana, Chevalier 13171 (P); between Diaguissa and Timbo, Chevalier 13433 (P); Kollangui, Chevalier 13502 (P); Kissidougou, Chevalier 20704 (P); between Moussadougou and Lola, Chevalier 20967 (P); between Lola and Nzo, Chevalier 20982 (P); Friguiabé, Chillou 144 (BR, P); N'gebela, Collette 32 (K); Fouta Djallon Heudelot 624 (A, BM, BR, FHO, G, K, P, S, UC); km 13 Labé-Leloumba Rd., Lisowski 51647 (POZG); 5 km N of Kankan, Lisowski 55140 (K, POZG); Karifamoriya, near Kankan, Lisowski 55141 (BR, POZG); Timbo, Pobéguin 92 (P); Kouroussa, Pobéguin 703 (K, P); between Farana and Dabola, Roberty 7196 (G); near Télimélé, Roberty 17660 (G); near Nzérékoré, Schnell 2771 (P).

SIERRA LEONE: sin. loc., Afzelius s.n. (BM, UPS), G. Don s.n. (BM, holotype); Sinekoro, Adam 23404 (MO); Kondembaya, Adam 23568 (MO); between Gbangbama and Kwelu, Cole and Jarr 101 (K); Batkanu, Deighton 2842 (K); Musaia, Deighton 5483 (K, P); Njala, Fairchild 21-1-1927 (US); Sanfon Lake, N side, Gledhill 291 (K, WAG); Domo, Jaeger 9910 (K); Bunce Island, Kirk 37 (K); Kissy Brook, Melville & Hooker 207 (K); Wallia, Scott Elliot 4249 (K); near Buyabuya, Scarcies, Scott Elliot 4274a (K); Tombia, Scott Elliot 4294 (BM, K); Kassi, Scott Elliot 5091 (BM, MO); Limba, Scott Elliot 5586 (BM); Pendembu, Thomas 770 (K); Matotaka, Thomas 1224 (K); Binkolo, Thomas 1834 (K); Roruks, Thomas 5172 (K).

LIBERIA: Grassfield, Adam 20216 (K, MO), Adam 25532 (MO); Bélé Mt., Adam 24207 (MO); Gangra Mt., Adam 24472 (MO); Saniquellie, Adam 27749 (MO); Palala, Baldwin 9156 (K); Gbau, Baldwin 9453 (K); Vonjama, Baldwin 9911 (K); Zigida, Baldwin 10012 (K, MO); Kolahun, Baldwin 10122 (K); Piatah, Baldwin 10602 (K); Genna Tanyehun, Baldwin 10750 (K, MO); Brewerville, Baldwin 10980 (K); Robertsfield, Baldwin 11059 (K); Barclaysville, Baldwin 11109 (K); Bomi Hills, Baldwin 14074 (MO); White Plains, Dinklage 2693 (A, Z); Ganta, Harley 13a (K); near Salala, J.W.A. Jansen 1743 (WAG); 33 km N of Buchanan, J.W.A. Jansen 1849 (WAG); 11 km N of Harper, J.W.A. Jansen 2402 (WAG); Péatah, Linder 963 (K, WAG); Greenville, Sim 7 (BM, K, paratype of *Carpodinus oocarpa*), Sim 27 (K, paratype of *Carpodinus oocarpa*); Firestone Plantations, S of Kakata, Stoop van de Kastele 228 (WAG); Sinoe Basin, Whyte 3 (K, paratype of *Carpodinus oocarpa*); Sinoe Basin, Belamba town, Whyte 9 (BM, K, lectotype of *Carpodinus oocarpa*); within 30 km of Karka town, N of Monrovia Whyte anno 1904 (K, P, paratype of *Carpodinus oocarpa*).

CÔTE D'IVOIRE: near Bécédi-Brignan, Aké Assi 8913 (WAG); Tonkoui Mt., Aké Assi 10093 (WAG); Bamps 2201 (BR); Danané, Bamps 2344 (BR); km 57 Tabou-Grabo Rd., Breteler 7339 (WAG); Bingerville-Abidjan-Dabou Region, Chevalier 15573 (P); Guidéko, Chevalier 16386 (K, P); Bouroukrou, Chevalier 16922 (P); Attéou, Chevalier 17036 (P); Alépé, Chevalier 17374 (P); Aboisso, Chevalier 17852 (P); Niakaramandougou-Toutiya Rd., 22 km before Bandama R., Dekker 200 (WAG); Airport Sassandra-Sassandra Rd., de Koning 1487 (WAG); Banco For. Res., de Koning 1880 (WAG), 2867 (WAG), 5687 (WAG); along Tabou-Pata-idié Rd., de Koning 2448 (WAG); Yapo For., de Koning 3104 (WAG); 5 km E of km 56 Sassandra-Gagnoa Rd., Leeuwenberg 12053 (WAG); km 7 Yakassé Mé-Abidjan Rd., Leeuwenberg 12102 (WAG); km 7 Soubre-Niamagui Rd., Leeuwenberg 12137 (WAG); km 19 Agboville-Abidjan Rd., Leeuwenberg 12165 (WAG); near Taï, along Cavalry R., Leeuwenberg 12345 (WAG); between Korhogo and Badikaka, Mangenot 2125

(P); Adiopodoumé, Mangenot 2126 (P); Bakré Lake, Miede 20-5-1965 (G); Tai For., de Namur 1427a (WAG); near Man, Schnell 4057 (K); Bécédi-Bakama, Thijssen 385 (WAG); near Taouara, Versteeg & den Outer 444 (U, WAG).

BURKINA FASO: between Kangala and Kindali, Chevalier 860 (P); Farako R., along Bobo-Banfora Rd., Lejoly 83/190 (BR).

GHANA: Fum headwaters For. Res., Abbiw GC43882 (MO, WAG); Axim, Chevalier 13817 (P); Aburi, Chevalier 13873 (P); Pra-Suhien For. Res., Deaw Sp385 (F, MO); Dixcove Rd., Enti R1096 (K, MO, WAG); along Agona-Dixcove Rd., Enti & Aionah R1125 (MO); Kadi A.R.S., Hall & Enti GC38285 (FHO, K); Atewa For. Res., Hall & Lock GC43665 (MO, WAG); Kumasi, S.J. Jackson jr. May 1930 (BR, K, P); 7 km inland from Dixcove, Morton A455 (K); Kwadaso Agricultural Station, Darko 5093 (BR, K, WAG).

TOGO: Misahöhe, Baumann 304 (E, K, type of *Carpodinus baumannii*), Mildbraed 7392 (K); Djégo R., Kling 57 (K, lectotype of *Carpodinus pauciflorus*).

BÉNIN: Tohoué, Chevalier 22770 (P); Porto Novo, van Eijnatten 2249 (WAG), Le Testu 99 (BM); Pahou, Poisson s.n. (P).

NIGERIA: Kwara State: between Olle and Ajegunle; Kabba, FHI 38420 (FHO, K, P, WAG). Oyo State: Ibadan, Chevalier 13931 (P), Head 54 (K), Meikle 1252 (K); Oke Elejele, FHI 42333 (FHO, K, WAG). Ogun State: km 2 Ijebu-Ode-Epe Rd., FHI 40273 (FHO, K, WAG); Agege, Foster 217 (K); km 30 Lagos-Abeokuta Rd., Hossain & Opayemi 1298 (E); Ilaro, MacGregor 340 (FHO), van Meer 767 (WAG); Atigere, Millen 155 (K). Lagos State: Lagos, Barter 2138 (K, lectotype), Millen 169 (K, Z), Moloney XI (K, paratype), Rowland s.n. (K, paratype); Lagos Island, Dalziel 992 (BM, BR, C, E, K, MO, NY); 12 km from Ikorodu, Killick 262 (K); Isolo, Leeuwenberg 11212 (WAG). Ondo State: Idanre, Brenan 8707 (BM, FHO, K, P), Pilz 2137 (F, MO, WAG); km 16 Akure-Ondo Rd., FHI 35268 (BR); between Iba and Igbede, FHI 90132 (K, WAG); Owena, Pilz 2133 (MO). Bendel State: Benin City, Chevalier 15147, (P), 15149 (P); between Gilli-Gilli and Ikpakwo, FHI 32768 (K, WAG); km 9 Warri-Sapele Rd., Leeuwenberg 11309 (WAG); Aiwai R., Unwin 8 (K, P). Anambra State: between Amabo and Echonga, near Odah R., FHI 648 (K); Akpaka For. Res., FHI 43871 (BR, K); Nsukka Distr., Iye-Ohe pond, FHI 73032 (K, MO); Milleken Hill, 16 km from Enugu, Hepper 2216 (K); Udi Plateau, Kennedy A85/38 (FHO). Imo State: Umudike For. Res., Ariwaodo ARS1275 (K), Tuley & Redhead 964 (K, P); Umuduru, FHI 761 (FHO, K). Rivers State: Degema, New Calabar, Holland 148 (K); Omoko, Unwin 5 (K, P). Cross River State: along Calabar-Marina Rd., FHI 55230 (K); Ogoi-Ibami, FHI 88644 (MO, WAG); Old Calabar River, Mann 2261 (GH, K, P, paratype); Oban Group For. Res., van Meer (WAG); near Awi, van Meer 1620 (WAG); North For. Res., van Meer 1683 (WAG); Oban, Talbot 297 (BM, K, Z); Eket distr., Talbot 3195 (BM), Talbot s.n. (BM, BR, K); km 42 Oron-Eket Rd., Talbot s.n. (BM).

CAMEROON: Batanga, Bates 202 (BM, E, G, K, MO, Z); Lobé R. 10 km S of Kribi, Bos 4248 (WAG); Kienke R., E of Kribi, Bos 4501 (WAG); Mujuka, Hedin 12 (BR, P); Kickot pond, 45 km S of Ndikinimeki, Letouzey 10729 (WAG); between Babi and Mbiofong, 50 km SW of Mamfe, Letouzey 13611 (K, P, WAG); 12 km NE Akwaya, Letouzey 14060 (BR, K, P, WAG); along Munaya R., near Akwa, Letouzey 14135 (P, WAG); Tissongo, McKey 9 (P); near Lomié, Mildbraed 5367 (HBG); Nkuambe, Zenker 376 (BR, C, G, GH, LD, MO, NY, P, UC, US, WAG); Bipindi, Zenker 3449 (BM, BR, G, HBG, K, L, M, P, S, US, W), 4645 (BM, BR, G, HBG, K, L, M, MO, S, U, W, Z).

GABON: Mondah For., about 30 km NNW Libreville, Arends et al. 714 (WAG), Breteler & Lemmens 8411 (WAG), Farron 7473 (P), Leeuwenberg & Persoon 13704 (WAG); near Kango, Chevalier 26845 (P); Akondjo, along Ramboué R., Chevalier 27041 (P); Sibang, Hallé 0915 (P), Soyaux 184 (K, paratype of *Carpodinus parviflora*), Soyaux 219 (BP, K, P, Z, lectotype of *Carpodinus parviflora*); near Libreville, Klaine 291 (K, P), Klaine 1103 (BR, K, P, type of *Carpodinus tenuifolia*), Klaine 1155 (BR, K, P), Klaine 2524 (P); Booué, Florence 1797 (P); km 7 Ndjolé-Bifoun Rd., Leeuwenberg 12466 (LBV, WAG); about 21 km from Waka Forestry Camp and about 32 km SE of Sindara, Leeuwenberg & Persoon 13678 (WAG), A.M. Louis et al. 1291 (WAG); Tchibanga, Le Testu 2008 (BM, BR, K, P).

ANGOLA: Uíge: between Macocola and Santa Cruz, Raimundo et al. 899 (LJSC).

CULT: Nigeria: Old Calabar, Chevalier 13627 (BR, K, P). Côte d'Ivoire: Adiopodoumé (seedling) de Koning 6698 (WAG), Cremers 522 (BR, P), Toilliez 354 (BR, P). Netherlands: Greenhouse Wageningen (seedlings) van Setten 473 (WAG), van Veldhuizen 558 (WAG).

12. *Landolphia emini* Hall. f., Jahrb. Hamb. Wiss. Anst. 17, Beih. 3: 88. 1900; Pichon, Mém. IFAN 35: 137. 1953. Fig. 9, p. 61; map 12, p. 63

Type: Tanzania: T1: Itolio, Stuhlmann 930 (B, syntype, destroyed, n.v., K, lectotype, designated by Pichon; isolectotype: P).

Liana or sarmentose shrub, 3-20 m high. Branches brown, shallowly and/or narrowly fissured or slightly rough, with light lenticels. Branchlets light or dark greyish, blackish or reddish brown, pubescent or lanate with orange or brown indumentum, otherwise as branches. *Leaves*: petiole 3-10 mm long, sparsely to densely pubescent; blade (narrowly) ovate to obovate, 1.4-4.2 × as long as wide, 2.1-15 × 0.8-4.8 cm, coriaceous when fresh, often pale, glaucous green when dried, acuminate or mucronate at the apex with a rounded or acute acumen up to 1.5 mm long, less often rounded or obtuse, cuneate to rounded at the base, densely pilose or lanate on the midrib and otherwise pilose, indumentum above less dense than beneath; with 8-18 pairs of straight or slightly curved secondary veins, 0.3-1.2 cm from each other in the middle of the leaf, tertiary venation reticulate, mostly conspicuous beneath. *Inflorescence* terminal, sometimes tendril-like, a dense, compound, more or less irregular dichasial cyme, when tendril-like, cymes at the end of the hooks of the tendrils, 3.5-6.0 × 2.0-6.0 cm, when tendril-like up to 15.0 × 10.0 cm, 1-40-flowered, 1-10 open at a time. Peduncle up to 8.0 cm long, tendril hooks up to 4.3 cm long, pubescent or (almost) glabrous. Pedicels up to 0.6 cm long, pubescent or tomentose. Bracts 1-3 along pedicel, the lower more or less leaf-like, the higher sepal-like, ovate to obovate, 2.3-7.5 × 1.7-4.5 mm, rounded, obtuse or mucronate at the apex, pilose or pubescent outside, pubescent inside, with a ciliate margin. *Flowers* fragrant. *Calyx* 3.5-8.0 mm wide at the apex and 2.5-3.5 mm wide at the base; sepals (narrowly) ovate to obovate, 1.1-3.8 × as long as wide, 2.3-7.0 × 1.4-4.1 mm, connate at the base for 0.3-0.7 mm, slightly emarginate to acuminate or mucronate at the apex with a rounded or obtuse acumen, truncate, cuneate or auriculate at the base, pilose, pubescent or lanate outside, pubescent or tomentose inside, often pilose at the centre and/or the base, often with a line of rigid hairs along entire inner base of calyx, with a ciliate margin. *Corolla* (greyish-)white, less often orange or pale yellow, the tube sometimes darker than the lobes, glabrous outside at the basal 0.3-1.0 mm, from there gradually changing to pubescent, tomentose or lanate at the widest part, more or less abruptly glabrescent to glabrous or sparsely pubescent at the in bud exposed part of the lobes, pilose inside behind and up to 4.3-7.0 mm below the anthers and at the auricles, sometimes also at the base of the lobes, with a ciliate margin; tube 2.2-8.4 × as long as calyx, 13.0-23.8 mm long, 1.3-1.7 mm wide at the base, 1.0-1.5 mm in the middle, 1.8-2.9 mm around the anthers and 1.1-2.7 mm wide at the throat, with the widest part 8.5-13.0 mm from the base; lobes (irregularly and/or narrowly) ovate or elliptic, 0.5-0.9 × as long as tube, 1.8-4.0 × as long as wide, 8.4-14.9 × 3.0-7.8 mm, obtuse or shortly acuminate or mucronate at the apex. *Stamens* 2.6-3.6 mm long, inserted 0.48-0.62 of the tube length from the base of the corolla, at 8-12.1 mm, 3.5-7.4 mm included; filaments 0.9-1.1

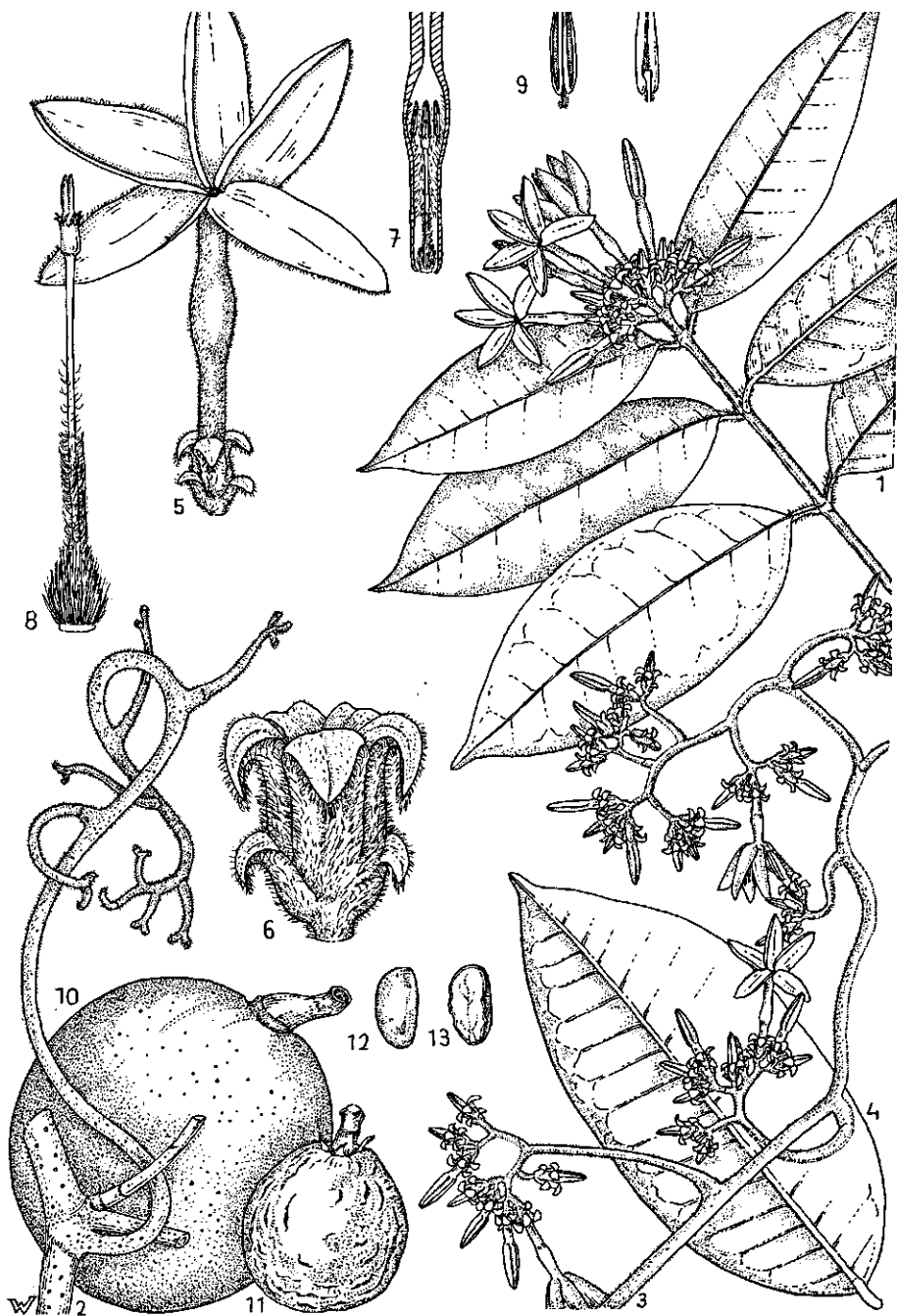


Fig. 9. *Landolphia eminiana*. 1, habit ($\times 2/3$); 2, branch with tendril ($\times 2/3$); 3, tendril-like inflorescence ($\times 2/3$); 4, leaf ($\times 2/3$); 5, flower ($\times 2$); 6, calyx ($\times 4$); 7, opened flower ($\times 2$); 8, pistil ($\times 6$); 9, stamen in- and outside ($\times 6$); 10-11, dried fruits ($\times 2/3$); 12, seed ($\times 2/3$); 13, longitudinal section of seed with embryo ($\times 2/3$). 1 from Richards 13274; 2 from Lewalle 6117; 3 from Auquier 4323; 4, from Richards 6776; 5-9 from Guignonis 633; 10 and 12-13 from Michel 3862; 11 from Troupin 16171.

mm long, pilose inside; anthers with their base 8.5-12.5 mm from the base of the corolla tube, at 0.50-0.65 of its length, 3.6-6.0 x as long as wide, 2.2-3.3 x 0.5-0.7 mm, acute, obtuse or shortly acuminate at the apex with an obtuse or acute acumen, glabrous. Pistil 8.4-11.4 mm long; ovary ovoid, ellipsoid or obconical on a glabrous, cylindrical or slightly widened base 0.1-0.2 mm high and 0.9-1.3 mm wide, 1.2-2.0 x 1.3-1.7 mm, villose; ovules 60-120; style cylindrical, sometimes widened towards the apex, 5.2-8.0 x 0.15-0.35 mm, for 2.6-4.5 mm villose at the base, with indumentum forming a more or less closed cylinder around the style, otherwise pilose and the upper 0.7-3.4 mm glabrous; pistil head ovate, cylindrical or conical (on an ellipsoid base) or diabolo-shaped, 0.6-0.9 x 0.2-0.5 mm, mostly ciliate at the upper margin, otherwise glabrous; stigmatic apex cylindrical, conical, ovoid or ellipsoid on a cylindrical, or slightly widened or narrowed base, 0.5-1.3 x 0.15-0.35 mm, puberulent, occasionally with several long hairs at the apex, rounded, obtuse or acute at the apex. Fruit orange, often glaucous when dried, more or less smooth, with light or dark lenticels, (sub)globose or pyriform, 3.1-10.0 x 3.2-10.0 x 3.2-10.0 cm, rounded or truncate at the apex; 5-15-seeded; wall 1.5-5.0 mm thick; sclereid cell layer 0.3-0.5 mm thick. Seed irregularly ovoid or ellipsoid, laterally compressed and sometimes with 1 or 2 flattened sides, 9-17 x 7-10 x 4-9 mm. Embryo curved or almost straight; cotyledons more or less irregularly ovate or elliptic, 7.5-16 x 5.5-9.0 mm, undulate; rootlet 0.6-0.9 x 1.0-1.3 mm.

Distribution: Central East Africa.

Ecology: Dry montane forests, often in galleries, woodlands and savanna thickets, often on rocky soils. Alt. 1000-2000 m. Flowering mainly at the end of the dry and the beginning of the rainy season. Mature fruits mainly in the dry season.

Use: The fruits of *Landolphia eminiiana* are eaten in Rwanda, Burundi and Malawi and latex used for rubber in Tanzania.

Vernacular names:

ZAIRE: Malophi (near Muhila R.), Mupila (Kitabwa).

RWANDA: Umabungo (near Mbuye).

BURUNDI: Amabungu (name of fr., Kirundi), Ibungu (Kirundi).

KENYA: Mpira (Ki-Jibana).

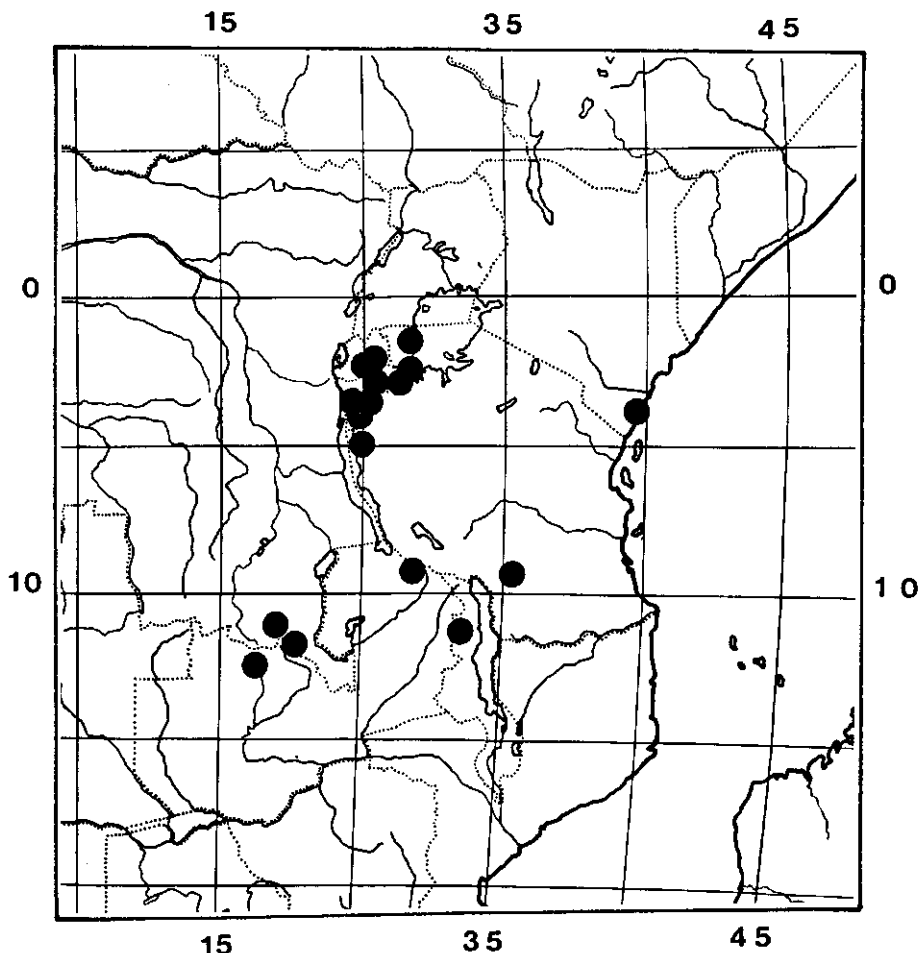
TANZANIA: Ibungu (near Lugufu), Mbungo (Maya), Rikaro (Tongwe).

A selection of the ca. 40 specimens examined:

ZAIRE: XI: km 68 L'Shi-Likasi Rd., Malaisse 9938 p.p. (BR, WAG); along Muhila R., Quarré 7049 (BR); Salésienne, Salésiens 934 (BR); Lubumbashi, Schmitz 2290 (BR).

RWANDA: Rusumo, Lambinon 74/1627 (BR), Raynal 20677 (P, WAG); Nyakisosi, Liben 1349 (BR, K, M, P); Bugesera, Michelson 1325 (C, P, UPS, WAG); Mbuye, Troupin 16171 (BR, K).

BURUNDI: Kigamba, Auquier 4323 (BR); Kihinga, van der Ben 1716 (BR), 2392 (BR, K); Bweru, van der Ben 2143 (BR), 2280 (BR, K, WAG); Kitete, Elskens 22 (BR); Namabuye R., Guignonis



MAP 12. *Landolphia eminiiana*

633 (P), Reekmans 2670 (BR, MO); Kumuyange, Lewalle 6117 (BR, MO, WAG); Kikikya, Michel 3862 (BR, P); Muyange, Reekmans 1031 (BR); Ngozi, Reekmans 3070 (BR, MO); Kinazi, Reekmans 3786 (BR, K, MO); Kwitaba Bururi, Reekmans 6533 (BR, MO, P, WAG); Muremera, Reekmans 7247 (BR).

KENYA: K7: Kaya Jibana, Lap 307 (WAG).

TANZANIA: T1: Rubondo Island, Fitzgibbon & Barcock 26 (K), Ludanga MRC1780 (K); 5 km N of Lukaya, Fitzgibbon & Barcock 98 (K); Ruiga Bay, Ford 808 (K); near Lusahunga, Procter 79 (BR, K); near Rubare R., 85 km S of Buboka, Procter 1032 (K); Itolio, Stuhlmann 930 (K, P, lectotype). T3: Usambara Mts., Keil 167 (K). T4: near Kasakati R., S of Kigoma, Itani & Izawa 20 (EA); Lugufu R., Parry H61/42 (K). T7: Lupembe area, upper Ruhudje R., Schlieben 34 (BR, G), 59 (BR, P, Z). Sin. loc., Pitt 510 (FHO).

ZAMBIA: W Prov.: Mufulira For. Res., Kitwe, Fanshawe 10932 (K). N Prov.: Kawa R., Richards 6976 (K); Vomo Gap, Fwambo side, Richards 13274 (K, SRGH).

MALAWI: N Prov.: S. Viphya, near Chamambo Hill, Dowset-Lemaire 412 (FHO); 8 km W of Mzuzu, Phillips 410 (MO); 8 km E of Mzuzu, Phillips 3149 (MO, WAG).

13. *Landolphia ferrea* Persoon, sp. nov.

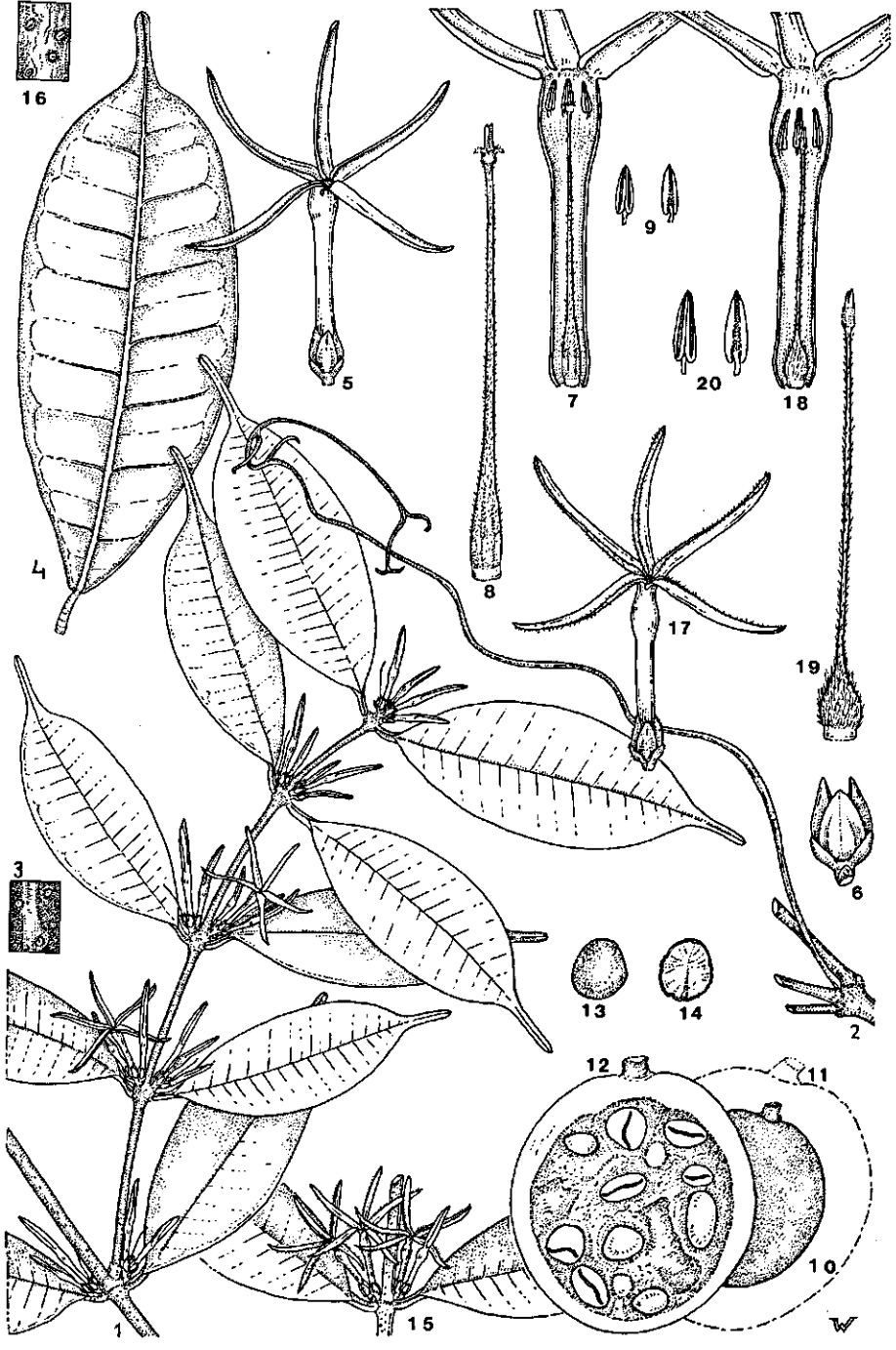
Fig. 12, p. 65; map 13, p. 66

Planta scandens lignosa. Folia sicco ferruginea. Inflorescentia axillaris, pauciflora, pedicellis brevibus bracteis paucis sulfultis. Flores odorantes. Sepala ovata vel triangularia, inaequalia. Corolla alba vel fere alba, tubo calycem longitudine multo superante, lobis tubo brevioribus. Stamina inclusa. Ovarium densiter pilosum; stylus pilosus. Fructus luteus vel aurantiacus subglobosus vel ellipsoideus.

Type: Gabon: 25 km NNW of Ovang and 25 km SW of Mitsic, Reitsma 1589 (WAG, holotype).

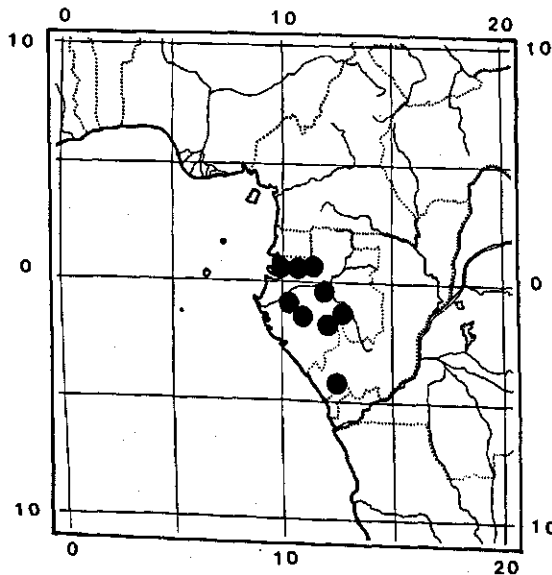
Liana, up to 30 m high. Branches dull, light orange-brown or sometimes greyish, narrowly fissured, slightly rough with light-orange lenticels. Branchlets as branches, glabrous, occasionally pubescent or pilose, especially at the often thickened nodes and when young. *Leaves*: petiole 3-11 mm long, blackish, glabrous or occasionally pubescent or pilose, clearly separate from the blade; blade (narrowly) ovate to obovate, 2.0-3.9 × as long as wide, 3.1-14.5 × 0.8-4.7 cm, (sub)coriaceous and often dull greyish green beneath when fresh, mostly rusty-brown beneath when dried, (inconspicuously) acuminate at the apex with a rounded or obtuse acumen, 0.3-2.1 mm long, cuneate to rounded at the base, glabrous or occasionally sparsely pilose at the lower part of the margin and midrib beneath; with 8-17(27) pairs of straight or slightly curved secondary veins, 0.3-1.4 cm from each other in the middle of the leaf and sometimes forming different angles with the midrib; tertiary venation reticulate, conspicuous and, as well as secondary veins, darker beneath when fresh. *Inflorescence* axillary, a more or less irregular dichasial cyme, 1-4-flowered, 1.3-2.9 × 2.2-3.5 cm. Pedicels to 2.7 mm long, pilose or glabrous. Bracts 1-3 along pedicel, (broadly) triangular or ovate, 0.7-1.4 × 0.6-0.9 mm, acute, obtuse or rounded at the apex, sometimes with 1-2 small triangular glands at the base of the ciliate margin, pilose outside, sometimes only at the centre and otherwise glabrous, glabrous inside. *Flowers* fragrant. *Calyx* 1.6-2.1 mm wide, sepals (broadly) ovate or triangular, unequal, 0.7-1.4 × as long as wide, 0.9-1.7 × 0.9-1.4 mm, connate at the base for 0.2-0.4 mm, obtuse or slightly acuminate at the apex with a rounded acumen, sometimes with glands at the base of the ciliate, often membranaceous margin, glabrous inside and outside. *Corolla* (creamy- or greenish-) white, pilose with long hairs inside behind and up to 1.0-2.0 mm below the anthers and on the auricle and the in bud exposed margin and otherwise glabrous, sometimes pilose outside at the margin of the auricle and otherwise glabrous or entirely

Fig. 12. *Landolphia glabra*. 1, habit (× 2/3); 2, tendril (× 2/3); 3, part of branch (× 2); 4, leaf beneath (× 2/3); 5, flower (× 2); 6, calyx (× 4); 7, opened flower (× 4); 8, pistil (× 6); 9, stamen in- and outside (× 6); 10-11, fruits (× 2/3); 12, section of fruit (× 2/3); 13, seed (× 2/3); 14, section of seed with embryo (× 2/3). *Landolphia ferrea*. 15, habit (× 2/3); 16, part of branch (× 2); 17, flower (× 2); 18, opened flower (× 4); 19, pistil (× 6); 20, stamen, in and outside (× 6). 1 and 3 from Bos 6114; 2 from W. de Wilde 2762; 4 from Klaine 995; 5-12 from de Wilde 283; 13-14 from Breteler 1861; 15-20 from Reitsma 1589.



glabrous; tube 7.6-12.5 × as long as calyx, 9.2-13.0 mm, at the base 0.8-1.3 mm, in the middle 0.8-1.1 mm, around the anthers 1.7-2.2 mm and at the throat 1.5-2.0 mm wide, with the widest part 7.0-10.5 mm from the base; lobes narrowly ovate or elliptic, 0.53-0.89 × as long as the tube, 5.4-7.9 × as long as wide, 4.9-11.1 × 0.9-1.5 mm, rounded or obtuse at the apex. *Stamens* 1.7-2.1 mm long, inserted 7.2-10.5 mm from the base of the corolla tube, at 0.72-0.80 of its length, 0.7-1.2 mm included; filaments 0.5-0.7 mm long, glabrous; anthers with the base 7.5-10.9 mm from the base of the corolla tube, at 0.76-0.84 of its length, 2.5-4.6 × as long as wide, 1.3-1.6 × 0.35-0.6 mm, obtuse or acute at the apex, glabrous. *Pistil* 7.4-11.9 mm long; ovary (broadly) ovoid to obovoid on a glabrous, 0.2-0.4 mm high and 0.5-0.8 mm wide cylindrical base, 1.2-1.3 × 0.7-0.9 mm, abruptly narrowed towards the apex, densely pilose; ovules 30-50; style cylindrical, 5.5-9.7 × 0.15-0.25 mm, sparsely to densely pilose, sometimes with a glabrous apex; pistil head cylindrical (with an ellipsoid base) or slightly tapering towards the apex, 0.4-0.6 × 0.25-0.4 mm, ciliate at the upper margin; stigmatic apex conical or cylindrical, 0.25-0.35 × 0.15-0.3 mm, obtuse, acute or rounded at the apex, puberulent. *Fruit* yellow or pale orange, more or less smooth, (depressed-) globose, slightly ovoid or ellipsoid, 2.4-6.0 × 2.4-6.0 cm, 5-25-seeded; wall 1-6 mm thick; pulp orange. *Seed* more or less irregularly ovoid or ellipsoid, mostly laterally compressed and/or with 1 or 2 flattened sides, 8-17 × 6-14 × 4-11 mm. Embryo curved or almost straight; cotyledons more or less irregularly ovate or elliptic, 6.8-15.0 × 5.0 × 12.0 mm, undulate; rootlet 0.8-1.1 × 0.9-1.5 mm.

Distribution: Gabon and Congo.



MAP 13. *Landolphia ferrea*

Ecology: Forests. Alt. 0-500 m. Flowering in the rainy season or perhaps throughout the year. Mature fruits in the rainy season.

Use: The fruits of *Landolphia ferrea* are edible. The rubber is said to be of low utility.

Paratypes:

GABON: near Libreville, Klaine 970 (P), 1391 (P), Klaine 1728 (P), 3229 (P), 3266 (P); 40 km E of SEF Camp, along forest exploitation Rd., Leeuwenberg & Persoon 13524 and 13582 (WAG); 33 km NE of Abanga, along forest exploitation Rd., Leeuwenberg & Persoon 13560 (WAG); 17 km W of Waka Camp, along forest exploitation Rd., Leeuwenberg & Persoon 13615 (WAG), Leeuwenberg & Persoon 13639 (WAG); 21 km SW of Waka Camp, along forest exploitation Rd., Leeuwenberg & Persoon 13661 (WAG); between 30 and 40 km SE of Achouka along forest exploitation Rd., A.M. Louis et al. 693 (WAG); Micouma, Le Testu 8026 (BM, BR, P, WAG); Moueouagnou, Le Testu 8730 (BM, BR, LISC, P); 25 km NNW of Oveng and 25 km S of Mitzi, Reitsma 841 (WAG), Reitsma 1976 (WAG); Lambaréné, Thollon 150 (P).

CONGO: Dimonika, Moutsambouté 100 (WAG).

14. *Landolphia flavidiflora* (K. Schum.) Persoon, comb. nov.

Fig. 10, p. 68; map 14, p. 69

Basionym: *Carpodinus flavidiflora* K. Schum. in Engler, Bot. Jahrb. 23: 220. 1896.

Type: Cameroun: Yaoundé, Zenker 804 (holotype not seen, destroyed in B; lectotype: K, designated here; isotypes: A, BM, COI, G, P, Z).

Homotypic synonyms: *Aphanostylis flavidiflora* (K. Schum.) Pierre, Bull. Soc. Linn. Paris sér. 2.11: 90. 1898; Pichon, Mém. IFAN 35: 235. 1953. *Clitandra flavidiflora* (K. Schum.) Hall. f., Jahrb. Hamb. Wiss. Anst. 17. Beibl. 3: 124. 1900.

Liana up to 35 m high climbing in trees, with curled tendrils up to 20 cm long. Branches brownish-red to greyish-green, lenticellate; branchlets dark brown, glabrous. *Leaves* petiolate; petiole glabrous, 3-9 mm long; blade coriaceous when dried, shiny, elliptic, ovate or obovate, 1.8-2.8 × as long as wide, 6.5-14.5 × 3-6.6 cm, caudate at the apex, cuneate at the base, glabrous on both sides, with 6-10 pairs of secondary veins; tertiary venation reticulate. *Inflorescence* axillary or terminal, lax or congested, 1-7 cm long, 1-8-flowered; also exceptionally tendril-like and up to 10 cm long. Peduncle 2-27 mm long, glabrous or sparsely pubescent. Bracts sepal-like, 0.4-1 × 0.4-0.6 mm, acute at apex, ciliate, without colleters. *Sepals* subequal, connate at the base, triangular or ovate, 1-1.5 × as long as wide, 1.4-2 × 1.3-1.6 mm, acute at the apex, erect, glabrous or sparsely pubescent outside, glabrous inside, without colleters, ciliate. *Corolla* pale to dark creamy, in mature bud 8-15 mm long; tube obconical, 1.1-1.8 × as long as the sepals, 1.4-2.6 mm long, at base 0.7-1.2 mm and at mouth 1.1-2.3 mm wide, glabrous outside, pubescent inside near the insertion of the stamens, inflated at the insertion of the stamens; lobes 3.7-6.5 × as long as the tube, narrowly ovate to oblong, 2.9-5.5 × as long as wide, 9.5-13.2 × 2.4-4.5 mm, acute at apex, entire, spreading, glabrous or sparsely pubescent

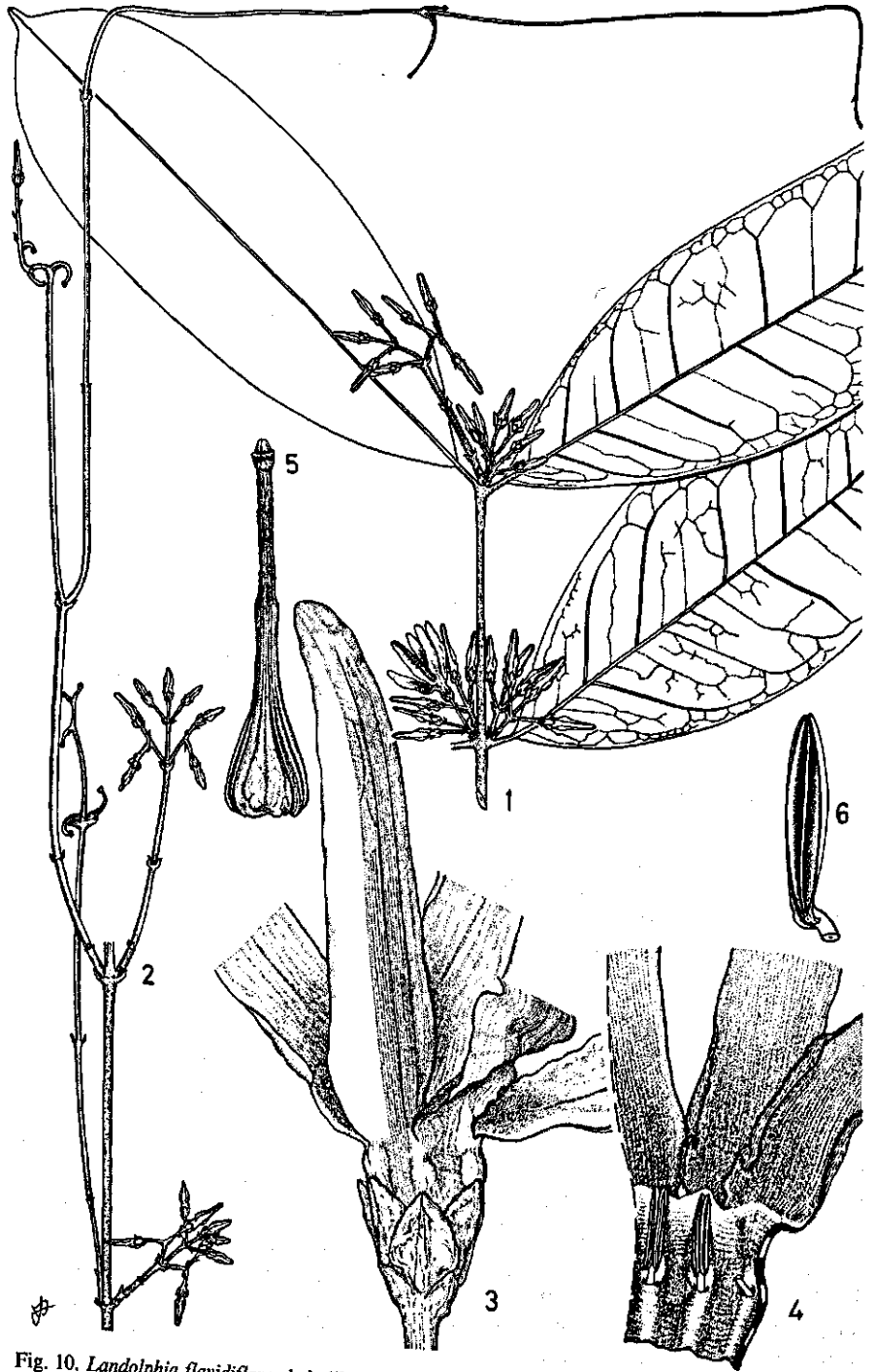
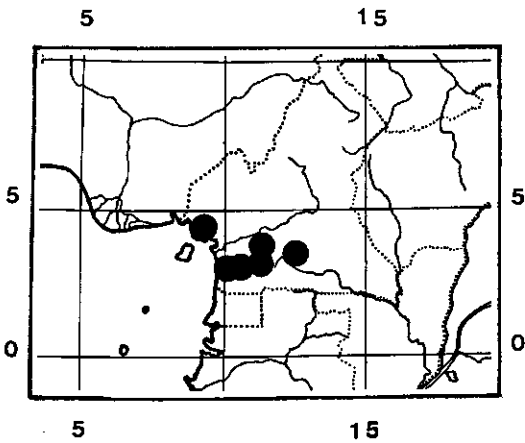


Fig. 10. *Landolphia flavidiflora*. 1, habit ($\times 2/3$); 2, branch with tendril ($\times 2/3$); 3, flower ($\times 6$); 4, opened corolla ($\times 6.7$); 5, pistil ($\times 16$); 6, stamen ($\times 20$). 1-6 from W. de Wilde et al. 2230.

outside, pubescent inside, less dense near the apex, ciliate, especially at base. *Stamens* barely included or slightly exerted, inserted 0.45-0.85 of the tube length from the base of the corolla; filaments, 0.2-0.6 mm long, curved, glabrous or sparsely pubescent; anthers narrowly oblong, 0.55-0.8 of the length of the tube, 4.5-7.5 × as long as wide, 1.2-1.5 × 0.2-0.4 × 0.15-0.3 mm, obtuse at the apex, rounded at the base, glabrous. *Pistil* 2-3 mm long; ovary rhomboid, 1.4-2 as long as wide, 1-1.5 × 0.6-1 mm, glabrous; style glabrous, 0.5-1.4 mm long; pistil head 0.25-0.35 mm long, with basal part annular, 0.05-0.15 × 0.15-0.3 mm, with conical or acuminate-conical stigmatic apex, 0.7-1.4 × as long as wide, 0.15-0.2 × 0.15-0.2 mm, cleft at apex for 0.3-0.5 of its length; 50-100 ovules on two parietal placentas. *Fruits and seeds* unknown.

Distribution: Cameroun.



MAP 14. *Landolphia flavidiflora*

Ecology: rain forests, primary and secondary. Flowering March-April. Altitude: 0-1000 m.

Specimens examined:

CAMEROON: Lolodorf Road, 20 km from Kribi, Bos 4205 (BR, K, P, WAG); Victoria, Brenan 9322 (BM, BR, K, P); Kumba, Daramola FHI 29806 (K, P); Yaoundé, Preuss 804 (E); 50 km S of Yaoundé, W. de Wilde 1854 (BR, K, MO, P, WAG, Z); Makak, W. de Wilde 2230 (BR, K, MO, P, WAG, Z); Yaoundé, Zenker 804 (A, BM, COI, G, K, P, Z, type); Bipinde, Zenker 1750 (A, BM, BP, BR, COI, E, G, HBG, K, L, M, MO, P, S, W, WAG, Z), 2934 (BM, K, WU); sin loc., Zenker s.n. (A, F, LD, MICH, UC).

15. *Landolphia foretiana* (Pierre ex Jumelle) Pichon, Mém. IFAN 35: 179. 1953.

Fig. 11, p. 71; map 15, p. 73

Basionym: *Carpodinus foretiana* Pierre ex Jumelle, Assoc. Fr. Avanc. Sci., Compt.-Rend., Sess. 26, Saint-Etienne 2: 439. 1898.

Type: Gabon: Fernan-Vaz, Foret 21-8-1897 (P, holotype).

Heterotypic synonyms: *Carpodinus rufinervis* Pierre ex Stapf in Fl. Trop. Afr. 4 (1): 79. 1902. Type: Gabon: near Libreville, (fl.fr.Jan.) Klaine 400 (K, lectotype; isoelectotype: P, designated here).

Carpodinus klainei Pierre ex Stapf, l.c. Type: Gabon: near Libreville, Klaine 728 (K, lectotype; isoelectotype: P, designated by Pichon).

Carpodinus eetveldeana De Wild. & Gentil in Lianes Caoutch. Et. Ind. Cong.: 107. 1904. Type: Zaire: IV: near Luebo, Gentil 60 (BR, holotype).

Carpodinus verticillata De Wild., Miss. E. Laurent 1: 515. 1907. Type: Zaire: VII: Niangara, Seret 675 (BR, lectotype, designated by Pichon).

Large liana, 9-40 m high and up to 80 m long. Trunk 5-30 cm in diameter, bark coarsely fissured and with horizontal and longitudinal crests, somewhat corky, red on section when exposed. Branches narrowly fissured, with whitish or pale brown or green lenticels up to 1.5 mm in diameter, bright or pale brown or greyish; branchlets shallowly and narrowly fissured or rather smooth, brown, orange-brown-pubescent or -tomentose. *Leaves* of a pair sometimes not exactly opposite, alternate or 3 together; petiole 0.7-4.0 mm long, with several glands on each node, narrowly fissured, pubescent, tomentose or glabrous; blade elliptic, obovate or ovate or narrowly so, 1.4-3.2 × as long as wide, 5.0-33.5 × 2.4-18.0 cm, (sub)coriaceous and green when fresh, (thinly) coriaceous and orange-brown when dried, rounded to acuminate with the acumen rounded or acute and up to 3.0 cm long, rounded to attenuate or auriculate at the base, sparsely pilose above at the base of midrib and margin and otherwise glabrous or entirely glabrous, pubescent beneath or sparsely so at the base of the midrib only, sometimes covered with black dots beneath, young leaves light yellow; with 5-13 curved secondary veins, in the middle of the leaf 1.3-5 cm from each other; between 2 secondary veins often 1 or several less clear ones with a less sharp angle; tertiary venation scalariform; smaller veinlets rather conspicuous beneath. *Inflorescence* 2-30-flowered, axillary, a dense, more or less compound dichasial cyme; peduncle 0-3.5 mm long, pubescent or tomentose; pedicel 0.5-3.5 mm long, pubescent, pilose or tomentose. Bracts 1-3, triangular or oblong, or broadly so, 1.5-2.0 × 1.2-1.6 mm, rounded, obtuse or acute at the apex, mostly with 1 or 2 glands at the base of the ciliate margin, tomentose outside, glabrous to densely pubescent or partly pilose inside. *Flowers* sweet-scented. *Calyx* 2.1-2.8 mm wide; sepals 4 or 5, triangular or ovate or broadly so, 0.5-1.9 × as long as wide, 0.9-2.2 × 0.8-2.2 mm, connate at the base for 0.3-0.7 mm, rounded to apiculate at the apex, often with 1 or several glands in the axil at the base of the shortly and curly ciliate margin, tomentose outside, with a sometimes (almost) glabrous, more or less membranaceous 0.1-0.2 mm broad margin, glabrous inside and with often a pilose ridge or pilose parts in the axil. *Corolla*

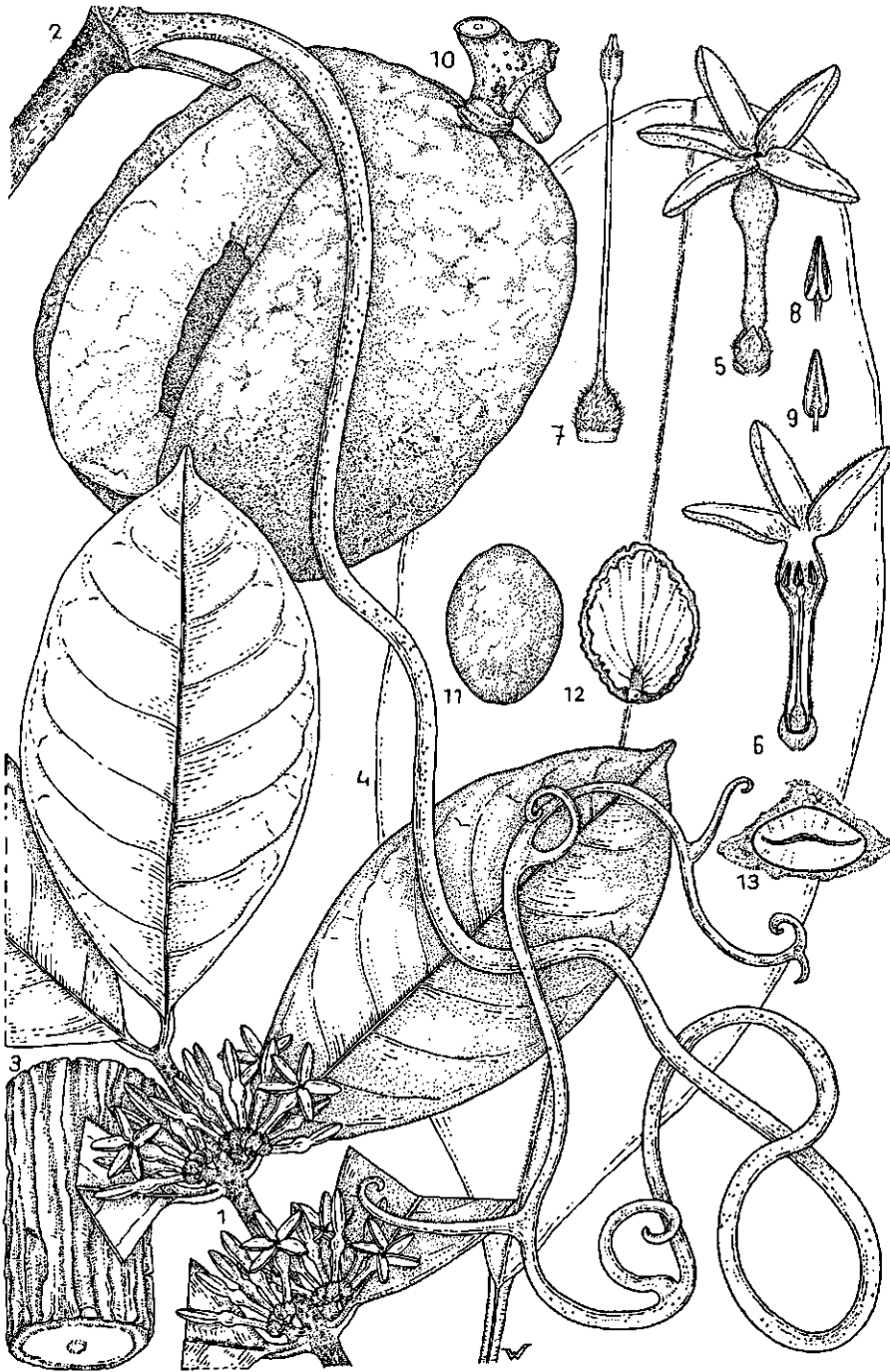


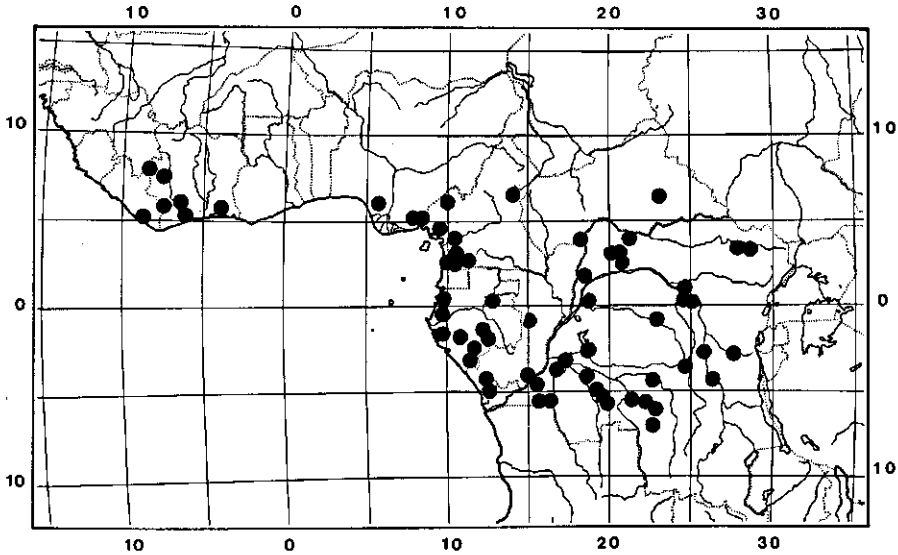
Fig. 11. *Landolphia foretiana*. 1, habit ($\times 2/3$); 2, branch with tendril ($\times 2/3$); 3, thick branch ($\times 2/3$); 4, leaf ($\times 2/3$); 5, flower ($\times 2$); 6, opened flower ($\times 2$); 7, pistil ($\times 6$); 8-9, stamen in- and outside ($\times 6$); 10, fruit ($\times 2/3$); 11, seed ($\times 2/3$); 12, section of seed with embryo ($\times 2/3$); transverse section of seed in pulp ($\times 2/3$). 1 from Bos 7125; 2 from Ake Assi 7680; 3 from Lettre 807 (BR); 4 from Letouzey 14171; 5-9 from de Wilde 835; 10-13 from de Wilde 7974.

white, cream or green-, brown- or light-yellow, the lobes often lighter than the tube, glabrous outside at the base for 0.9-3.5 mm and from that level gradually changing to tomentose or pubescent, indumentum often longer and/or less dense to absent at the lobes, especially at the in bud covered half and towards the apex, pilose inside between and up to 0.7-2.0 mm below the anthers, otherwise glabrous or pilose at the auricle or the lower half of the lobes; tube 4.4-11.8 × as long as calyx, 5.9-14.7 mm long, at the base 1.2-2 mm, in the middle 1.0-1.5 mm, around the anthers 1.6-2.8 mm and at the throat 1.4-2.1 mm wide; lobes 1.8-5.5 × as long as wide, 0.3-1.0 × as long as tube, 2.8-10.7 × 1.4-3.8 mm, ciliate at the margin, rounded or obtuse at the apex. *Stamens* 1.3-2.3 mm long, inserted 5.2-12.3 mm from the base of the corolla tube, at 0.69-0.85 of its length, 0.1-1.0 mm included; filaments 0.1-0.8 mm long; anthers with their base 5.7-12.6 mm from the base of the corolla tube, at 0.72-0.88 of its length, 2.5-4.3 × as long as wide, 1.1-1.7 × 0.4-0.6 mm, obtuse to apiculate at the apex, glabrous. *Pistil* 6.0-12.4 mm long; ovary ovoid, oblong or ellipsoid with a rounded or acuminate apex or cylindrical and gradually widened with a truncate apex, on a (almost) glabrous, 0.2-0.5 mm high cylindrical base, 1.0-1.9 × 0.8-1.3 mm, densely pilose, villose or lanate; ovules 30-80(150); style cylindrical, gradually widened towards the base or not, 4.0-9.7 × 0.15-0.35 mm, glabrous, only indumentum at the base, or from pilose to glabrous towards the apex; pistil head ellipsoid, oblong, or tapering towards base or apex, 0.35-0.7 × 0.25-0.55 mm, more or less ciliate at the apex; stigmatic apex cylindrical or tapering towards the apex, with ridges or not, 0.15-0.7 × 0.2-0.5 mm, sparsely pubescent or not, the lobes at the apex rounded or obtuse. *Fruit* (reddish- or pale) yellow, orange or purplish, occasionally with pale green lenticellate dots, 0.1-1.0 mm in diameter, smooth or more or less bumpy, (sub)globose, (irregularly) ellipsoid, ovoid or conical, sometimes slightly tetra- or pentagonal, retuse to obtuse at the apex, 4.3-21 × 4.0-19 × 4.0-19 cm, 5-50-seeded, wall 1.0-3.0 cm thick, orange or (pale pinkish-) yellow, pulp (pale) yellow or orange. *Seed* irregularly ovoid or ellipsoid, often laterally compressed and/or with 1 or 2 flattened sides, 13-40 × 9-25 × 8-16 mm. Embryo more or less curved, cotyledons (irregularly) ovate or elliptic, 0.9-3.7 × 0.6-2.3 mm, often strongly undulate; rootlet 1.1-3.3 × 1-3.5 mm.

Distribution: Liberia, Côte d'Ivoire and Central Africa inclusive of southern and south-eastern Nigeria and République Centrafricaine.

Ecology: Primary, secondary or gallery forests, on sandy or rocky soils. Alt. 0-800 m. Flowering mainly in the rainy season. Mature fruits throughout the year.

Use: The pulp of the fruits and the seeds of *Landolphia foretiana* are said to be eaten. Contradictory reports exist concerning the usefulness of the latex as a rubber, but it is not exploited commercially.



MAP 15. *Landolphia foretiana*

Vernacular names:

NIGERIA: Ugbo Nikwa (Otto).

CAMEROUN: Avom (Ewondo).

RÉPUBLIQUE CENTRAFRICAINE: Molo-Mboka or Mboka (Lissongo).

GABON: Antchymé, Antijimé, Antyimé, Atchiné or Atokiné (near Libreville), Commidodia (near Libreville), Epoüa or Ipoua (near Libreville), Mouroghi (near Ibanga), Odiave (Ekélé of Lac Ayem), Okouende (near Fernan-Vaz), Olambo (without exact locality), Oloma N'Damu (Pahouin).

ANGOLA: N'Lombo (near Belize).

ZAIRE: Abutadjamba (near Bena-Dibele), Ajumindimindi (without exact locality) Akutchu-Aramba (near Katakò-Kombe), Bavolinde (Kombe), Boloma (near Mondombe), Bolondo Mabé (near Imese), Bolundu (near Mondjoka), Bongabila (Ngwaka), Depa (near Likimi), Chibulu (Lulua), Empwara (near Bokala), Epondo-Dombo (name of fruit, near Luebo), Gbangabila (Ngwaka), Inaolo a Bolende (Turumbu), Kalombo-lombo (near Niangwe), Kèkòbè (near Ngoli), Kwoku (Mayogas), Mabota (Tshiluba), Makaki (Kiyaka), Magòki (near Kimvula), Matakù (Tshiluba), Matulu (near Popokabaka), Mokwa (near Banzyville), Mùlùndà (near Ngoli), Mumbalankubé (Kwilu), Munzamiga (Bangala), Olende (Turumbu), Olende Bo Lowe (Turumbu), N'Dembo (without exact locality), Thibulu (Baluka and Lulua), Tsentse (near Mai Ndombe).

A selection of the ca. 140 specimens examined:

LIBERIA: Nimba Mt., Adam 20997 (K, UPS); Yéképa, Adam 21714 (MO); Greenville, Sim 31 bis (K).

CÔTE D'IVOIRE: Man, Aké Assi 7680 (WAG); between Guidéko and Zouro, Chevalier 19019 (P); between Grabo and Taté, Chevalier 19767 (P, WAG); Banco For. Res., de Koning 5271 (WAG), 6905 (WAG); 11 km along Rd. from Sassandra-San Pedro Rd. to Monogaga, Leeuwenberg 12292 (WAG); 20 km SE of Tai, Leeuwenberg 12337 (WAG).

NIGERIA: Bendel State: Benin City, Chevalier 15117 (P); Sapoba, H.N. Thompson 19 (K). Cross River State: Uwet Distr., Duden Dunlop Estate, FHI 41398 (K); Oban Group For. Res., van Meer 1635 (WAG); Oban, Talbot 299 (BM), Talbot 2030 (BM, K).

CAMEROON: ca. 20 km S of Kribi, Bos 7125 (BR, K, LD, M, P, WAG); Batanga, Dinklage 1060 and 1457 (HBG, paratypes of *Carpodinus maxima*); between Meiganga and Bétééré, Jacques-Félix 4513 (P); Kumba, Krukoff 060 (MO); Mamfe, Krukoff 070 (NY); 1 km W of Masok, Leeuwenberg 5333 (BR, K, MO, P, WAG); near Benakuma, 15 km W of Wum, Letouzey 14171 (P, YA); near Meyontem, along Ntem R., Letouzey 15238 (P, WAG); Idenau, Struhsaber 28-3-1968 (K); along Nyong R. ca. 65 km SSW of Eséka, de Wilde & de Wilde-Duyfjes 2861 (P, WAG); km 14 Ebolowa-Amkam Rd., J.J. de Wilde 7974 (WAG); 2 km W of km 30 of Ebolowa-Minkok Rd., J.J. de Wilde 8275A (WAG).

RÉPUBLIQUE CENTRAFRICAINE: near Yalinga, Le Testu 4211 (BM, BR, P, WAG), Le Testu 4290 (BM, BR, P); Boukoko, Tisserant 190 (BM, P, WAG), Tisserant 2576 (BM, BR, P).

GABON: near Ebimanghá, near Lac Ayem, Chevalier 26437 (P); near Setté-Kama, Dybowski 71 (P); Fernan-Vaz, Foret 21-8-1897 (P, type); near Libreville, Klaine 333 (P), 400 (K, P, lectotype of *Carpodinus rufinervis*), Klaine 728 (K, P, lectotype of *Carpodinus klainei*), Klaine 1100 (BR, P, paratype of *Carpodinus rufinervis*); 13 km SSW of Makokou, Leeuwenberg 11539 (WAG); Mobila-Mwirri, Le Testu 2037 (BM, BR, K, P); along Ngounyé R., between Mouila and Bavoumbo, Le Testu 5156 (BM, BR, LISC, P, WAG); Pougou-Matsima, Le Testu 8683 (B, BM, BR, LISC, P, WAG); Ndanda, Le Testu 8857 (B, BM, BR, LISC, MO, P, WAG); Ibanga, Le Testu s.n. (BM, BR); Woredoubu, Périquet 57 (P); E part of Presidential Reserve Wonga-Wongué, J.J. de Wilde 835/83 (LBV, WAG).

CONGO: Okoulou, Ekoumba, Bouquet 1456 (P); Brazzaville, Chevalier 4279 (P); between Brazzaville and St. Joseph-du-Nkoué, Chevalier 27332 (P); Dimonika, Moutsamboté 222 (WAG).

ANGOLA: Cabinda: Marro do Cucantanda, Belize, Gossweiler 6987 (BM, COI, LISJC, LISU).

ZAIRE: sin. loc., Anonym. s.n. (BR, paratype of *Carpodinus verticillata*). III: near Kinshasa, Gillet Aug 1902 (BR, paratype of *Carpodinus verticillata*); Kimvula, Pauwels 1403 (BR); Pangu, Pauwels 1792 (BR); Kingemba-Kinga, Pauwels 3790 (BR); Kingoma, Pauwels 3911 (BR). IV: Bena-Dibele, Flamigni 119/8 (BR), 121/8 (BR), Flamigni 124/8 (BR); Dungi-Monene, near Luebo R., Gentil 60 (BR, type of *Carpodinus eetveldeana*); Wusi valley, between Kwango and Wamba Rs., Germain 2557 (BR, K); Bokoro, Jans 610 (BR); Nsadi, Liben 2353 (BR, MO, WAG); Elkasai, Liben 2581 (BR, WAG); Lubefu, lettre 161 (BR); Madibi, Sapin 28-6-1906 (BR, paratype of *Carpodinus verticillata*); Bienge, Sapin Oct. 1907 (BR); Atene, Sapin Nov. 1907 (BR, K); Illongonga, Sapin Dec. 1907 (BR); Demba, Sapin Jan. 1910 (BR); Tua Anonym. 10-1-1907 (BR, paratype of *Carpodinus verticillata*); Bokala, Anonym. 15-1-1907 (BR). V: Niangwe, Anonym. s.n. (BR, paratype of *Carpodinus verticillata*). VI: Ngoli, Ankei 79/1150 (BR); Mai Ndombe, Body 3 (BR, paratype of *Carpodinus verticillata*); between Mayogos and Nala, Boone 90 (BR); Boyakoko, Evrard 1648 (BR); Mbongo, Evrard 1770 (BR); Yangambi, Gilbert 8798 (BR), Louis 4244 (BM, BR, NY, S), Louis 6255 (BR, MO), Louis 10724 (BR, FHO, UC), Louis 13107 (BR, K), Louis 15844 (BR, C); Mondombe, Jespersen 25-5-1907 (BR); Imese, Laurent 23-12-1903 (BR, paratype of *Carpodinus verticillata*); Eala, Leemans 466 p.p. (BR); Likimi, Lemaire 166 (BR), Malchair 393 (BR); 7 km E of Kisangani, Lisowski 47233 (POZG); Yaosuka, Louis 3812 (BR); between Ngasi and Yambuya, Louis 12394 (BR, K, P); Katak-Kombe, Sermeus 8 (BR). VII: near Dungu, Seret 11 (BR); Niangara, Seret 675 (BR, lectotype of *Carpodinus verticillata*); 5 km S of Banzyville, Anonym. 15-10-1901 (BR, paratype of *Carpodinus verticillata*).

CULT.: Nigeria: Old Calabar, Chevalier 13630 (P).

16. *Landolphia glabra* (Pierre ex Stapf) Pichon, Mém. IFAN 35: 158. 1953.

Fig. 12, p. 65; map 16, p. 76

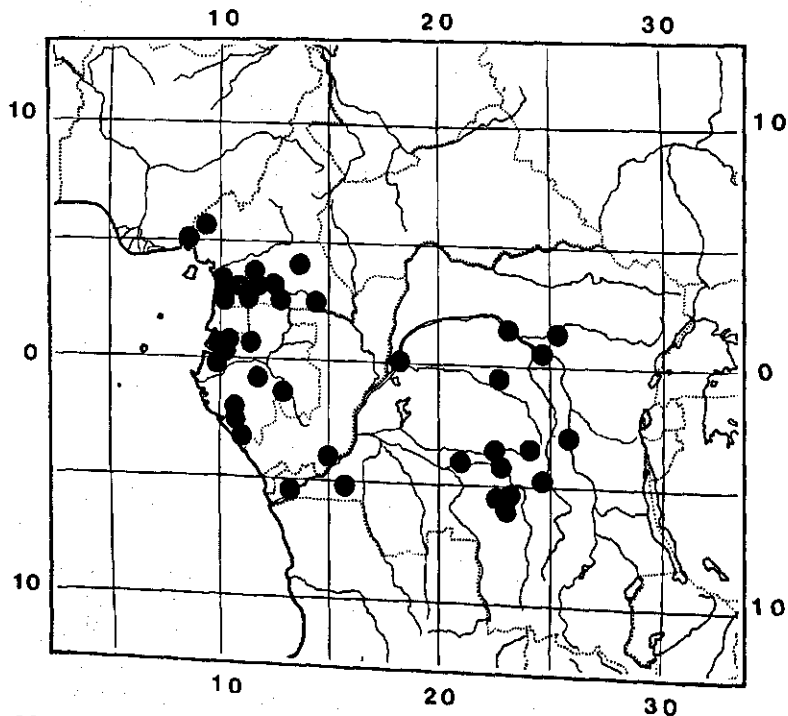
Basionym: *Carpodinus glabra* Pierre ex Stapf in Fl. Trop. Afr. 4 (1): 81. 1902.
Type: Gabon: near Libreville, Klaine 650 (K, lectotype; isolectotype: P, designated here).

Liana, up to 30 m high or probably more. Trunk 1.5-3(-7) cm in diameter. Branches dark brown or grey, occasionally lighter or in a pattern of lighter and darker parts, narrowly fissured or rather smooth, with pale-brown lenticels. Branches as branchlets, glabrous or sparsely pubescent or pilose, especially at the often thickened nodes and when young. *Leaves*: petiole 2-17 mm long, glabrous or sparsely pubescent, clearly separate from the blade; blade (narrowly) ovate to obovate, 1.8-3.5 × as long as wide, 3.5-15.2 × 1.0-6.4 cm, stiffly to thinly coriaceous when fresh, mostly dark greenish-brown beneath when dried, acuminate at the apex with a 0.6-2.1 cm long, often spatulate and rounded or acute acumen, acute to rounded at the base, less often attenuate, glabrous on both sides; with 8-17(26) pairs of straight or curved secondary veins, in the middle of the leaf 0.4-1.7 cm from each other; between 2 clear secondary veins sometimes 1 or 2 less conspicuous ones; tertiary venation reticulate, mostly not very conspicuous beneath. *Inflorescence* axillary, a more or less irregular dichasial cyme, 1-4-flowered, 1.3-2.9 × 2.2-3.5 cm. Pedicels up to 2.7 mm long, pilose or glabrous. Bracts 1-6 along pedicel, the higher sepal-like, (broadly) triangular or (ob)ovate, 0.3-1.1 × 0.4-1.1 mm, truncate to obtuse at the apex, sometimes with 1-several small triangular glands, at the base inside, especially towards the ciliate margin, pilose or glabrous outside, glabrous inside. *Flowers* fragrant. *Calyx* 1.5-2.0 mm wide; sepals (broadly) triangular or ovate, (un)equal, 0.8-1.9 × as long as wide, 1.1-2.2 × 0.9-1.8 mm, connate at the base for 0.2-0.4 mm, rounded to mucronate at the apex, occasionally with glands at the base of the ciliate, often membranaceous margin, glabrous or sparsely pilose outside, especially in the centre, glabrous inside. *Corolla* bright yellow or cream, occasionally (greenish-) white, the tube often darker or brown, sparsely pilose inside, behind and up to 2.0 mm below anthers and at the auricle, glabrous outside, occasionally sparsely pilose, especially at the auricle, ciliate at the margins, especially towards the base and at the in bud covered one; tube 4.6-8.1 × as long as the calyx, 6.0-10.8 mm, at the base 0.8-1.2 mm, in the middle 0.8-1.1 mm, around the anthers 1.0-1.8 mm and at the throat 0.9-1.7 mm wide, with the widest part 7.5-10.0 mm from the base; lobes narrowly ovate or elliptic, 0.51-1.2 × as long as tube, 4.0-10.5 × as long as wide, 4.7-13.0 × 0.8-1.8 mm, acute or obtuse at the apex. *Stamens* 1.3-1.8 mm long, inserted 5.3-8.6 mm from the base of the corolla tube, at 0.76-0.85 of its length, 0-0.7 mm included; filaments 0.1-0.7 mm long, glabrous or occasionally sparsely pilose towards the apex at the back; anthers with their base 5.3-9.0 mm from the base of the corolla tube, at 0.77-0.86 of its length, 2.2-4.4 × as long as wide, 1.1-1.5 × 0.3-0.5 mm, obtuse to acuminate at the apex, glabrous or occasionally sparsely pilose at the apex outside. *Pistil* 7.8-10.4 mm long; ovary conical or almost cylindrical, less often narrowly

ovate on a cylindrical, ellipsoid or slightly widened glabrous base, 0.4-0.9 mm long and 0.4-0.9 mm wide, $1.8-2.5 \times 0.4-0.9$ mm, gradually narrowed at the apex, pilose or tomentose, often towards the base; ovules 50-90; style cylindrical, gradually widened into the ovary, $4.6-7.2 \times 0.1-0.3$ mm, tomentose or pubescent, less dense so towards the apex; pistil head cylindrical (on an ellipsoid base), ellipsoid or diablo-shaped, $0.15-0.32 \times 0.2-0.4$ mm, ciliate at the upper margin; stigmatic apex conical or ellipsoid (on a cylindrical or slightly widened base), $0.35-0.6 \times 0.15-0.2$ mm, puberulent, acute to rounded at the apex. *Fruit* yellowish, orange, (dark) blue-violet or (reddish-)brown or blackish, smooth or slightly bumpy, lenticellate or not, often shining when fresh, (depressed-) globose, less often ellipsoid or more or less cylindrical, $2.0-5.0 \times 1.8-5.0 \times 1.8-5.0$ cm, apiculate, rounded or retuse at the apex, rounded or indented at the base; 2-30-seeded; wall 0.1-0.7(1.1) cm thick; pulp white, yellow or cream. *Seed* rather irregularly ovoid or ellipsoid, mostly laterally compressed and/or with 1 or 2 flattened sides, $8-15 \times 6-12 \times 4-8$ mm. Embryo almost straight; cotyledons irregularly ovate or elliptic, $6.8-14.2 \times 5.0-11.0$ mm, undulate; rootlet $0.8-1.1 \times 0.9 \times 1.1$ mm.

Distribution: Central Africa inclusive of southeastern Nigeria.

Ecology: Forests. Alt. 0-700 m. Flowering in the rainy season. Mature fruits throughout the year, but more often in the rainy season.



MAP 16. *Landolphia glabra*

Use: The latex of *Landolphia glabra* is recorded both to make a good as to make a poor quality rubber. The fruit, although small, is eaten in Zaire.

Vernacular names:

CAMEROUN: Janese (Boulou), Meyong (Boulou), Yanguesja (Boulou).

GABON: Anchimé (without language or locality).

ZAIRE: Dundu ma Yatta (Kabongo, name of the fruit), Ilandi (Bankutchu), Indandi na boloshi (Bassongo-Meno), Itofe (Turumbu), Lilombo (Turumbu), Makata ya Nkima (Kikongo), N'afridi na hima (name of the fruit, near Katakoko-Kombe), N'kasa Mokeke (Banyolo-Mosele), Sukula Meno (near Luki), Yololo (Turumbu).

A selection of the ca. 90 specimens examined:

NIGERIA: Cross River State: Oban Group For. Res., Awi, FHI 60232 (K); km 25 Oban-Ekang Rd., Gentry & Pilz 32856 (MO); Oban Group For. Res., W block, van Meer 1376 (WAG); Oban Group For. Res., S of Mbarakam, van Meer 1610 p.p. (WAG).

CAMEROUN: Along Sabeu R. ca. 65 km SE of Akonolinga, Asonganyi 198 (P, WAG); ca. 15 km ESE of Mouanko, Asonganyi 690 (P, YA); Bitye, Bates 1354 (BM, MO); 18 km E of Djoum, Beentje 1605 (WAG); 2 km N of Ebolowa, Bos 5323 (BR, K, LD, P, WAG); 18 km SE of Kribi, N of Elephant Mt., Bos 6114 (BR, K, P, WAG); 9 km SW of Yaoundé, near Makak Rd., Breteler 1600 (WAG); Doumé, Breteler 1861 (P, WAG); Djoum, Hédin 1101 (P); Nye'ete, 20 km S of km 18 of Kribi-Akom Rd., de Kruijff 1059 (WAG); near Nyong, ca. 12 km SSW of Mbalmayo, Letouzey 11278 (P, WAG); near Nkongong II, ca. 15 km SSW of Ngoila, Letouzey 12023 (P, WAG); 30 km WSW of Mamfe, Letouzey 13573 (K, P, WAG); ca. 20 km NNE of Mamfe, between Nyong and Mabeme R., Letouzey 14148 (K, P, WAG); Douala, Edea Res., near Tissongo Lake, D.W. Thomas 269 (K); Nyong R., near bridge, ca. 65 km SSW of Eseka, W.J. de Wilde 2762 (BR, MO, P, WAG); km 14 Ebolowa-Ambam Rd., J.J. de Wilde 7592 (WAG).

GABON: km 60 Mouila-Yeno Rd., Breteler & Lemmens 8030 (WAG); between Libreville and Sibang, Chevalier 26796 (P); Stéphane Plantations, along Bokoué R., Chevalier 26998 (P); Akondjo, along Ramboué R., Chevalier 27033bis (P); Nkan, Hallé & Villiers 4787 p.p. (P); near Libreville, Klaine 650 (K, P, lectotype), 650-b (P), 955 (P, paratype), Klaine 3307 (BM, P, WAG); NW of Libreville, along rd. to Cap Esterias, Leeuwenberg 11388 (WAG); 2 km S of Cap Esterias, Leeuwenberg 12482 (LBV, WAG); Cap Whisky, N of Cap Santa Clara, Leeuwenberg 1249 (LBV, WAG); 1.5 km W of km 31 of KuogouleuAtogafina Rd., N of Kouamé, Leeuwenberg 12522 (WAG); Mouchagnyou, Le Testu 8733 (BM); ca. 1.5 km N of forestry-camp Oveng, Reitsma 3034 (WAG); ca. 15 km N of Libreville, Reitsma 3172 (WAG); Cristal Mts., 20 km NW of Asok, J.J. de Wilde et al. 283/83 (LBV, WAG); Doudou Mts., ca. 60 km NW of Doussala, J.J. de Wilde et al. 8977 (WAG); km 5 Cachimba Lake-Igotchi Rd., J.J. de Wilde et al. 9092 (WAG); ca. 12 km E of km 22 of Mayumba-Tchibanga Rd., J.J. de Wilde 9303 (WAG).

CONGO: between Brazzaville and St.-Joseph-du-Nkoué, Chevalier 27317bis (P).

ZAIRE: II: near Kisavu, Donis 2122 (BR); Kinkoko valley, Donis 2223 (BR). III: Mpese, Germain 2113 (BR). IV: Bena-Dibele, Flamigni 36 (BR), 84/3 (BR); Thibangu, Sapin anno 1910 (BR); Lubefu, Anonym. lettre 161 (BR). VI: Kole, Claessens 253 (BR); Coquilhatville (= Mbandaka), Dewèvre 590 (BR, HBG, K); between Mondombe and Yalusaka, Evrard 4412 (BR); Basankusu, along rd. to Bokakala, Evrard 4794 (BR, K, WAG); between Yalikungu and Yongo, Evrard 5168 (BR); Yalikungu, Evrard 5261 (BR, K); Bokone, Evrard 5588 (BR, K); Yasendu, Germain 4890 (BR, P); Mondombe, Jespersen anno 1907 (BR); Basomela, E. Laurent 14-2-1896 (BR, HBG); between Katakoko-Kombe and Lodja, Lebrun 6204 (BR, K); Bakuti, near Bengamisa, Lisowski 17816 (POZG); 6 km E of Yangambi, Louis 4321 (BR, C, FI, K, NY), 8618 (BR, C, K, NY); along Isalowe R., Louis 6550 (BR, C, F, K, MO, P, NY, S); Isalowe R.-Yakusu Rd., Louis 12537 (BR, C, FI, K, NY); Katakoko-Kombe, Sermeus 9 (BR).

17. *Landolphia glandulosa* (Pellegr.) Pichon, Mém. IFAN 35: 170. 1953.

Fig. 13, p. 79; map 17, p. 80

Basionym: *Carpodinus glandulosa* Pellegr., Bull. Mus. Nat. Hist. Nat. 31: 465. 1925.

Type: Gabon: Tchibanga, Le Testu 1968 (P, holotype; isotypes: BM, BR, E, K, LISC).

Liana. Trunk up to 3 cm in diameter or more. Branches narrowly and shallowly fissured, more or less rough and with often orange-brown lenticels, greyish to dark brown; branchlets brown, glabrous or pilose or pubescent, indumentum often orangish. *Leaves*: petiole 2-17 mm long with or without many glands on each, often tickened node, glabrous or pubescent; blade obovate or elliptic or narrowly so, 1.2-3.3 × as long as wide, 2.8-13.8 × 1.0-7.5 cm, coriaceous and dark green when fresh, coriaceous or papyraceous and orange-brown when dried, obtuse, rounded or acuminate at the apex with a rounded or acute 0.1-2.0 cm long acumen, obtuse, acute or auriculate at the base, glabrous or sparsely pilose at the base of the midrib above, glabrous or tomentose beneath, especially towards the base and at midrib and margin; with 5-9 pairs of curved secondary veins, in the middle of the leaf 0.9-2.2 cm from each other; between 2 secondary veins often 1-several (almost) horizontal and less conspicuous ones; tertiary venation reticulate or more or less scalariform. *Inflorescence* 1-8-flowered, axillary, a dichasial cyme, 2-5 × 1-3.5 cm; peduncle up to 4.0 mm long, tomentose or pubescent; pedicel up to 4 mm long, tomentose or pubescent. Bracts 2 or 3, triangular, oblong, ovate or elliptic or broadly so, 1.2-2.8 × 1.3-3.3 mm, obtuse to emarginate at the apex, mostly with several glands at the base inside or at the base of the ciliate margin, pubescent or tomentose outside, (almost) glabrous inside. *Flowers*: *Calyx* 2.5-3.8 mm wide; sepals elliptic, oblong or obovate, or broadly so, 0.7-1.6 × as long as wide, 2.4-4.3 × 2.0-3.3 mm, connate at the base for 0.2-0.4 mm, rounded, mucronate or truncate at the apex, with 1-8 triangular, ovate or rhombic glands (0.3-0.6 × 0.2-0.3 mm) at the base inside or at the base of the ciliate, membranaceous, often glabrous margin, pubescent to tomentose outside, (almost) glabrous inside. *Corolla* white, cream or (pale) yellow, glabrous outside except at the margin and the base of the lobes in bud exposed and adjacent part of the tube, there pilose, pilose inside behind and up to 1.5-2.5 mm below the anthers and on the auricle, otherwise (almost) glabrous; tube (1.9)2.8-3.5 × as long as calyx, (6.0)9.0-13.0 mm long, at the base 1.0-1.6 mm, in the middle 0.9-2.0 mm, around the anthers 1.8-3.0 mm and at the throat 1.6-2.5 mm wide; lobes 2.9-6.5 × as long as wide, 0.87-2.5 × as long as tube, (7.6)12.9-20.0 × (1.9)3.0-4.0 mm, ciliate, rounded, obtuse or mucronate at the apex. *Stamens* 1.7-2.3 mm long, inserted ((4.5)7.2-10.3 mm from the base of the corolla tube, at 0.75-0.80 of its length, (0.2)0.4-0.7 mm included; filaments 0.4-0.9 mm long; anthers with their base (4.8)7.5-10.7 mm from the base of the corolla tube, at 0.80-0.82 of its length, 2.5-6.0 × as long as wide, (1.5)1.8-2.0 × 0.3-0.7 mm, obtuse or acute at the apex, glabrous. *Pistil* 7.5-12 mm long, ovary ovoid, ellipsoid or conical on an (almost) glabrous, 0.2-0.9 mm high cylin-

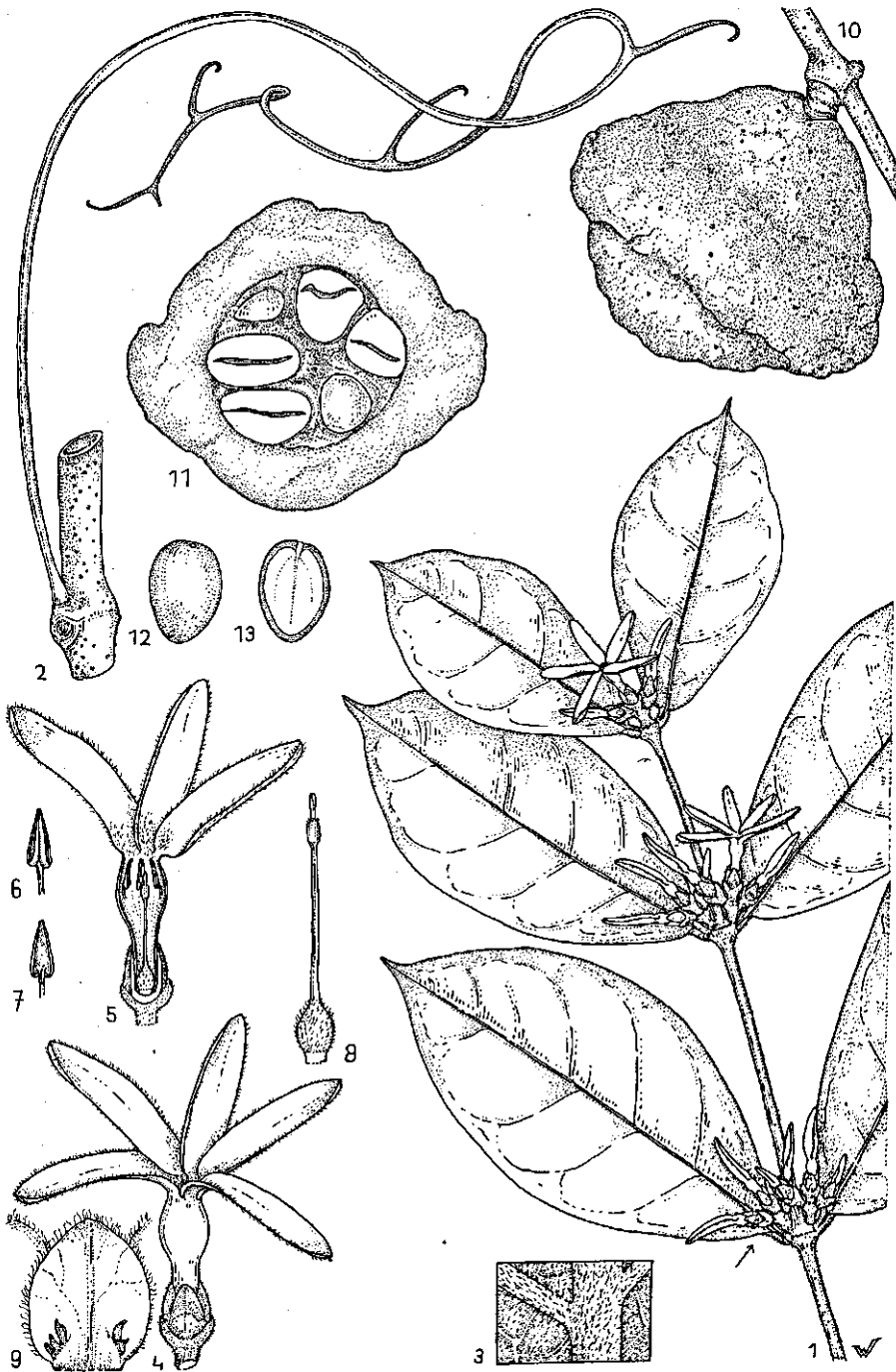
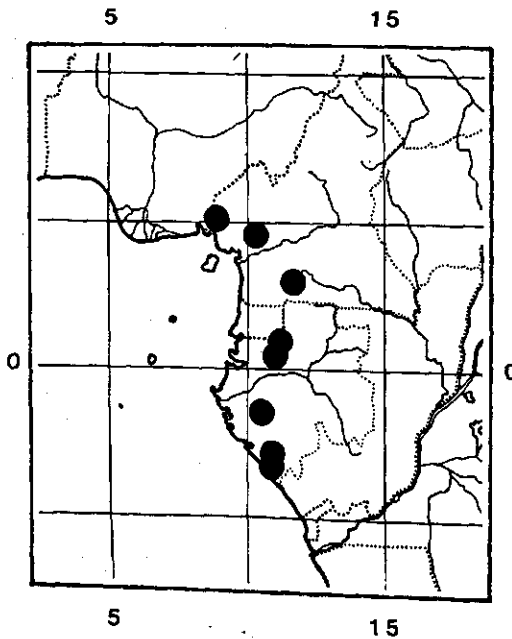


Fig. 13. *Landolphia glandulosa*. 1, habit ($\times 2/3$); 2, tendril ($\times 2/3$); 3, detail of leaf beneath ($\times 4$); 4, flower ($\times 2$); 5, opened flower ($\times 2$); 6-7 stamen in and outside ($\times 4$); 8, pistil ($\times 4$); 9, inner sepal inside, with colleters ($6\times$); 10, fruit ($\times 2/3$); 11, section of fruit ($\times 2/3$); 12, seed ($\times 2/3$); 13, section of seed with embryo ($\times 2/3$). 1 and 3-9 from Le Testu 6390; 2 and 10-13 from Leeuwenberg & Persoon 13588.

drical base, 1.0-2.0 × 1.1-1.5 mm, (densely) pilose; ovules 50-140; style cylindrical, gradually widened towards the base or not, 4.2-8.5 × 0.2-0.5 mm, glabrous, from pilose at the base to glabrous towards the apex; pistil head ellipsoid or oblong, 0.45-0.9 × 0.3-0.4 mm, more or less ciliate at the apex; stigmatic apex cylindrical with spirally curved ridges, 0.6-0.9 × 0.2-0.3 mm, puberulent, the lobes at the apex rounded to acute. *Fruit* orange, with small brown lenticels up to 0.2 mm in diameter, when immature green with orange-brown lenticels, smooth or somewhat bumpy, broadly obovoid with at 1-2 cm from the apex a 1-2 cm wide and about 1 cm thick transverse ridge, rounded or retuse at the apex, 4.6-7.1 × 5.6 × 7.7 × 5.6-7.5 cm, 5-15-seeded, wall 0.5-1.5 cm thick, greenish-white, pulp pale yellow. *Seed* irregularly ovoid or ellipsoid, often laterally compressed, 18.0-22.7 × 13-17 × 10-13 mm; embryo more or less curved, cotyledons (irregularly) ovate or elliptic, 12.0-17.2 × 9.0 × 14.1 cm, undulate; rootlet 1.9-2.1 × 1.5-1.9 mm.

Distribution: The wettest parts of Cameroun and Gabon.



MAP 17. *Landolphia glandulosa*

Ecology: Forests, mostly on lateritic soils. Alt. 0-600 m. Flowering mainly in the rainy season. Mature fruits at the end of the dry and the beginning of the rainy season.

Specimens examined:

CAMEROON: 3 km SSW of Nkandjok along Bafane-Yabassi Rd., Letouzey 11153 (P, WAG); Korup Nat. Park, near Ndian R., D. Thomas 4297 (K, WAG); km 48 Sangmélina-Yaoundé Rd., near Mvoutessi, Lisowski B 3587 (BR) and Lejoly 86/1107 (BR).

GABON: 30 km along forest exploitation Rd. NE of Abanga, Leeuwenberg & Persoon 13549 (WAG); 40 km along forest exploitation Rd. E of SEF camp, Leeuwenberg & Persoon 12588 (WAG); Tchibanga, Le Testu 1968 (BM, BR, E, K, LISC, P, type); Fougamou, Le Testu 6390 (B, BM, BR, LISC, MO, P, WAG); 15 km NW of Oveng, Reitsma 2934 (WAG); 10 km E of km 22 of Mayumba-Tchibanga Rd., J.J. de Wilde et al 9208 (WAG).

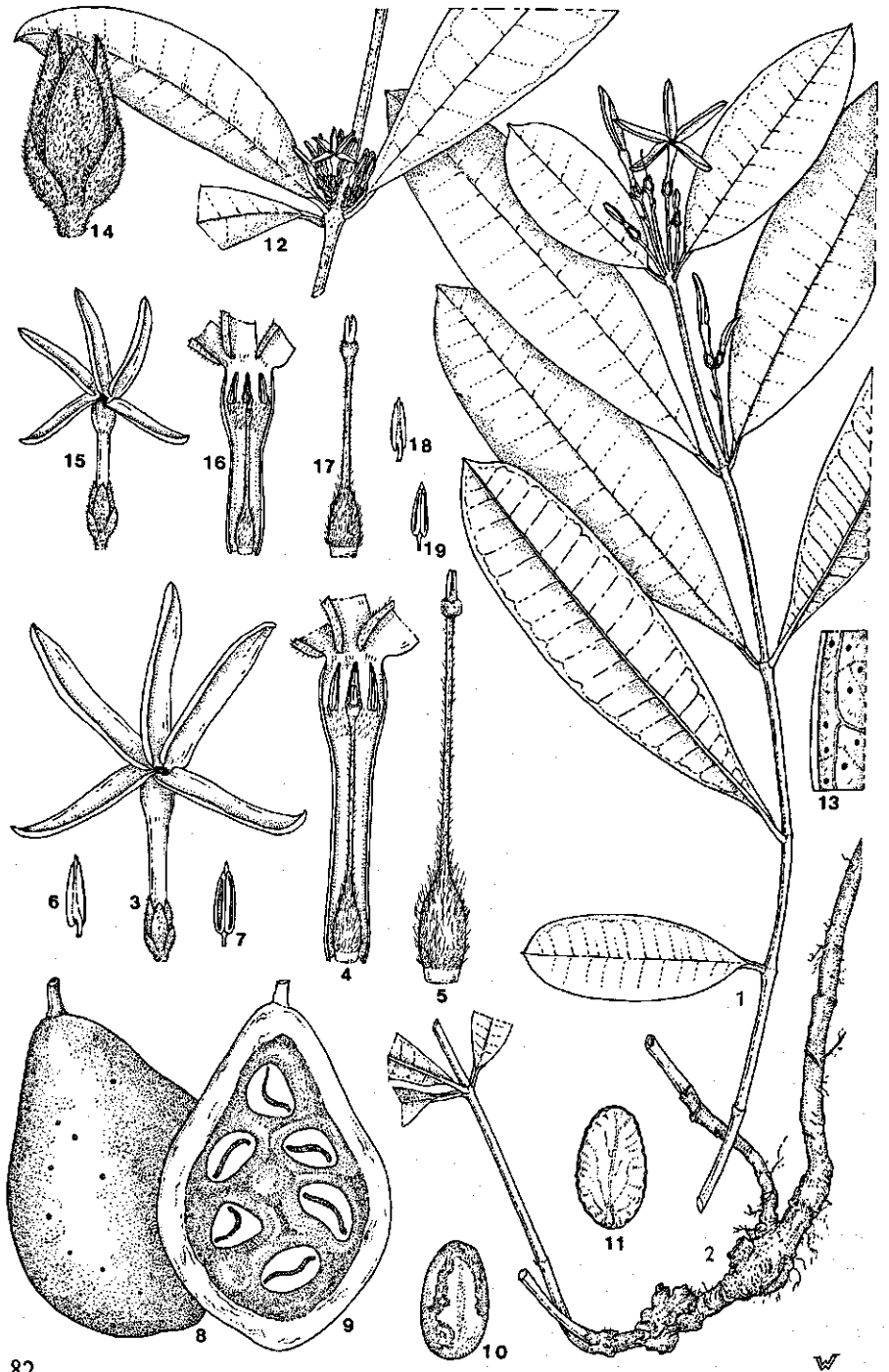
18. *Landolphia gossweileri* (Stapf) Pichon, Mém. IFAN 35: 186. 1953.

Fig. 19, p. 82; map 18, p. 84

Basionym: *Carpodinus gossweileri* Stapf, Journ. of Bot. 46: 211. 1908. Types: Angola: Cuando-Cubango: Cuanaval and Cuito Rs., Gossweiler 2592 (K, lectotype; isolectotypes: BM, COI, LISJC, designated by Pichon). Cambambe, between Cuebe and Cuartir Rs., Gossweiler 2621 (COI, LISJC, P, Z, paratype).

Excluded syntypes: Angola: Huíla: between Oxe R. and Maria Pia Fort, Gossweiler 1813 (BM, COI, K, LISC); Artur de Paiva, Gossweiler 1895 (BM, K, LISJC, P): = *Landolphia camptoloba* (K. Schum.) Pichon.

Low, erect shrub or (woody) herb, 15-70 cm high, without tendrils and with horizontal, subterranean, gnarly, often transversally cracked, blackish stems up to 1 cm in diameter or more. Stem above soil level up to about 1 cm in diameter. Branches and branchlets smooth or shallowly fissured, with small light-brown lenticels, light or dark (reddish) brown or grey, often lighter towards soil level, (almost) glabrous, sometimes pubescent when young. *Leaves* often 3 or 4 together; petiole 0.1-0.7 cm long, glabrous, often with 1 or several more or less conspicuous glands at each node; blade ovate to obovate or narrowly so, 2.6-7.6 × as long as wide, 1.0-11.8 × 0.3-3.3 cm, rounded, obtuse, mucronate or more or less inconspicuously acuminate at the apex with an acumen up to 1.4 cm long, acute or attenuate at the base, glabrous above, with some hairs at the apex and at the base of the midrib beneath, otherwise glabrous and with conspicuous small black glandular dots; with 8-20 pairs of curved or straight secondary veins, occasionally inconspicuous, in the middle of the leaf 0.4-1.4 cm from each other; among 2 secondary veins with or without 1 or 2 less clear ones; tertiary venation reticulate, (in)conspicuous beneath. *Inflorescence* axillary, a more or less compact irregular dichasial cyme, 0.8-1.6 × 0.8-1.6 cm, 1-5-flowered; peduncle up to 2.5 mm long, pubescent or pilose; pedicel up to 5.0 mm long, pubescent or pilose. Bracts 2-many along peduncle and pedicel, (ob)ovate, triangular or spatulate, 1.1-1.6 × 1.0-1.4 mm, rounded, truncate or mucronate at the apex, ciliate, pilose or pubescent outside, glabrous inside, sometimes some hairs towards the base. *Flowers* fragrant. *Calyx* 2.6-2.8 mm wide; sepals unequal, ovate to obovate or broadly so, 1.0-1.6 × as long as wide, 1.5-2.8 × 1.1-2.3 mm, connate at the base for 0.1-0.4 mm, obtuse to truncate at the apex, pilose or pubescent outside, often less so or glabrous towards the ciliate membranaceous margin up to 0.3 mm wide, glabrous inside. *Corolla*



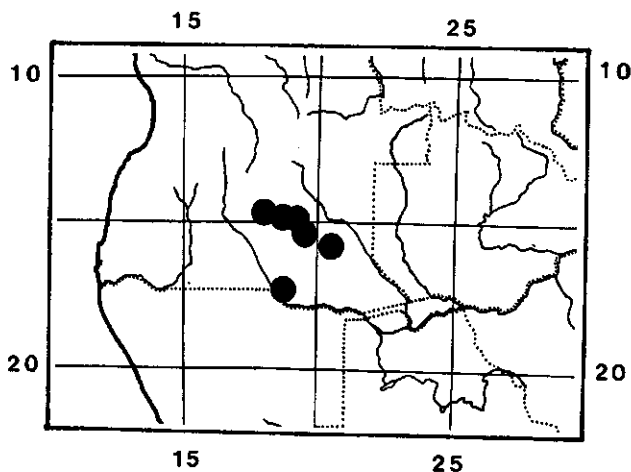
cream or yellow, pilose inside behind and up to 1.5 mm below anthers and at the auricle and/or apex of the lobes, otherwise glabrous, glabrous or pubescent outside in 1 mm long longitudinal ridges below the margin of the lobes and at the base of their in bud exposed part, margin ciliate; tube 2.2-3.6 × as long as calyx, 5.4-7.0 mm long, at the base 1.2-1.7 mm, in the middle 0.8-1.6 mm, around the anthers 1.3-1.9 mm and at the throat 1.2-1.5 mm wide; lobes narrowly ovate, 3.0-5.5 × as long as wide, 1.0-1.4 × as long as tube, 6.1-8.5 × 1.9-2.1 mm, rounded, obtuse or acuminate at the apex with a rounded acumen. *Stamens* 1.5-1.8 mm long, inserted 3.2-5.4 mm from the base of the corolla tube, at 0.59-0.76 of its length, 0.2-0.4 included; filaments 0.4-0.8 mm, glabrous, anthers with their base 3.8-5.6 mm from the base of the corolla tube, at 0.69-0.80 of its length, 2.4-3.7 × as long as wide, 1.3-1.8 × 0.35-0.5 mm, acuminate at the apex with an obtuse acumen up to 0.1 mm long, glabrous. *Pistil* 5.1-7.0 mm long; ovary ovoid or ellipsoid on a glabrous, 0.1-0.4 mm high and 0.5-1.1 mm wide cylindrical base, 1.3-1.5 × 0.7-1.2 mm, pilose, mostly densely so towards apex; ovules 30-40; style cylindrical or slightly widened towards base, 2.7-4.5 × 0.2-0.35 mm, pilose or tomentose, often more sparsely towards apex; pistil head cylindrical or ellipsoid, 0.3-0.45 × 0.3-0.4 mm, often ciliate at the upper margin, otherwise glabrous; stigmatic apex cylindrical or conical, 0.5-0.9 × 0.2-0.3 mm, puberulent, with a rounded or obtuse apex. *Fruit* probably yellow, rather smooth, lenticellate and/or with small glandular dots up to 0.1 mm in diameter and/or spots up to 1.0 cm in diameter, pyriform; 2.4-7.0 × 2.0-6.0 × 2.0-6.0 cm, 3-10-seeded; wall 0.1-0.7 cm thick. *Seed* irregularly (broadly) ovoid or ellipsoid, often laterally compressed and/or with 1 or 2 flattened sides, 9-23 × 7-14 × 5-9 mm. Embryo curved or almost straight, irregularly (broadly) ovate or elliptic, 8-21 × 6-13 mm, undulate; rootlet 0.6-1.3 × 0.9-2.1 mm.

Distribution: Southern Angola.

Ecology: Savannas and woodlands, Alt. 1000-1500 m. Flowering mainly at the end of the dry season. Mature fruits in the beginning of the rainy season.

Use: The fruits of *Landolphia gossweileri* are edible.

Fig. 19. *Landolphia lanceolata*. 1, habit (× 2/3); 2, rhizome (× 2/3); 3, flower (× 2); 4, opened flower (× 4); 5, pistil (× 6); 6-7, stamen out- and inside (× 6); 8, fruit (× 2/3); 9, section of fruit (× 2/3); 10, seed (× 2/3); 11, section of seed with embryo. *Landolphia gossweileri*. 12, habit (× 2/3); 13, part of leaf beneath (× 4); 14, calyx (× 6); 15, flower (× 2); 16, opened flower (× 4); 17, pistil (× 6); 18-19, stamen out- en inside (× 6). 1 from Håkanson 21-9-1931; 2 from Carisso & Mendonça 201; 3-7 from Lebrun 6433; 8-9 from de Wildeman, Mission Laurent pl. 48 and Gossweiler 58, preserved in alcohol at K; 10-11 from Gossweiler 58; 12-19 from Mendes dos Santos 2393.



MAP 18. *Landolphia gossweileri*

Vernacular name:

ANGOLA: Muhuni (near Longa).

Specimens examined:

ANGOLA: Cuando-Cubango: Cuanaval and Cuito Rs., Gossweiler 2592 (BM, COI, K, LISJC, lectotype); Cambambe, between Cueba and Quartir Rs., Gossweiler 2621 (COI, LISJC, P, Z, paratype); between Longa and Cuiriri Rs., Gossweiler anno 1906 (LISJC); between Longa and Mupecha, about 20 km from Cuvelai R., Mendes dos Santos 2174 (LISC); 40 km along Cuito-Cuanavale-Mavinga Rd., Mendes dos Santos 2274 (LISC); Mavinga Luizongozi, Bezi Bezi Lake, between Muchova R. and Veste., Mendes dos Santos 2393 (LISC); near Cuangar, Mendes dos Santos 2509 (LISC).

19. *Landolphia heudelotii* A. DC., Prodr. 8: 320. 1844; Pichon, Mém. IFAN 35: 129. 1953.

Fig. 14, p. 85; map 19, p. 88

Type: Sénégal and Guinée: Casamance R. region and Rio-Nunez, Heudelot 606 (G-DC, holotype; isotypes: BR, G, P).

Homotypic synonym: *Vahea heudelotii* (A. DC.) F. Müller in Wittstein, Org. Const. Pl.: 258. 1878.

Heterotypic synonyms: *L. michelinii* Benth. in Hooker, Fl. Nigrít.: 444. 1849 (as *michelinii*). Type: Sénégal: sin. loc., Michelin anno 1828 (K, holotype).

Vahea tomentosa Lepr. & Perrott. ex Baucher, Soc. Géogr. Commerc. Bordeaux, Bull., 2e sér. 7: 421. 1884. (n.v.). Type: Sénégal: Poumour, M'Boro region, Leprieur Apr. 1826 (P, lectotype, designated by Pichon). Homotypic synonyms: *Landolphia tomentosa* (Lepr. & Perrott. ex Baucher) Dew., Ann Soc. Sci. Brux. 19 (2): 136. 1895; *Landolphia heudelotii* var. *tomentosa* (Lepr. & Perrott. ex Baucher) Hua, Bull. Mus. Hist. Nat. 5: 182. 1899.

Vahea traunii Sadebeck, Jahrb. Hamb. Wiss. Anst. 3: 76. 1886. Type: Sénégal: sin. loc., Traun s.n. (HBG, lectotype, designated by Pichon). Homotypic syn-

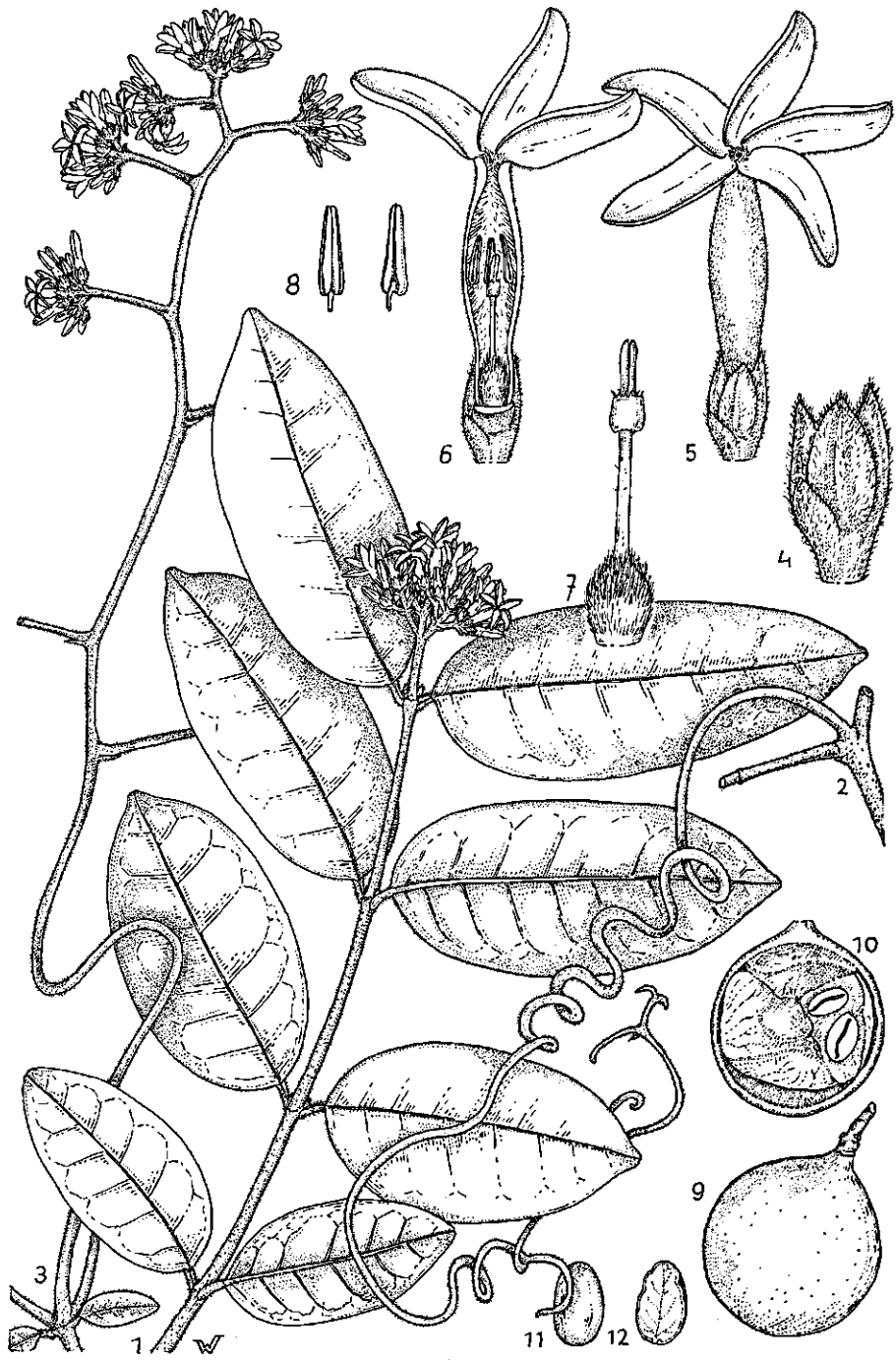


Fig. 14. *Landolphia heudelotii*. 1, habit ($\times 2/3$); 3, tendril-like inflorescence ($\times 2/3$); 4, calyx ($\times 6$); 5, flower ($\times 4$); 6, opened flower ($\times 4$); 7, pistil ($\times 8$); 8, stamen in- and outside ($\times 8$); 9, fruit ($\times 2/3$); 10, section of fruit ($\times 2/3$); 11, seed ($\times 2/3$); 12, section of seed with embryo ($\times 2/3$); 1 from Dawe 513; 2 from Geerling & Bokdam 2059; 3 from Chevalier 12726; 4-8 from Bamps 2849; 9-12 from Leeuwenberg 4325, preserved in alcohol.

onyms: *Vahea senegambensis* var. *traunii* (Sadebeck) Sadebeck, tom. cit. 77; *Landolphia traunii* (Sadebeck) Sadebeck ex K. Schum. in Engler, Bot. Jahrb. 15: 406. 1893.

Landolphia heudelotii var. *djenge* Stapf, Journ. Linn. Soc. Bot. 30: 87. 1894. Types: Sierra Leone: Falaba, Scott Elliott 5450 (K, lectotype, designated here); Kahreni, Limba, Scott Elliott 5586 (K, paratype, n.v., still existing?). Excluded syntypes: Sierra Leone: near Kukuna, Scott Elliot 4650 (K), Scott Elliott 4675 (K) = *Landolphia owariensis* P. Beauv.

Landolphia heudelotii var. *diaguissae* Chev., Rev. Int. Bot. Appl. 38: 401. 1948. Type: Guinée: Diaguissa, Chevalier 18027 (P, holotype).

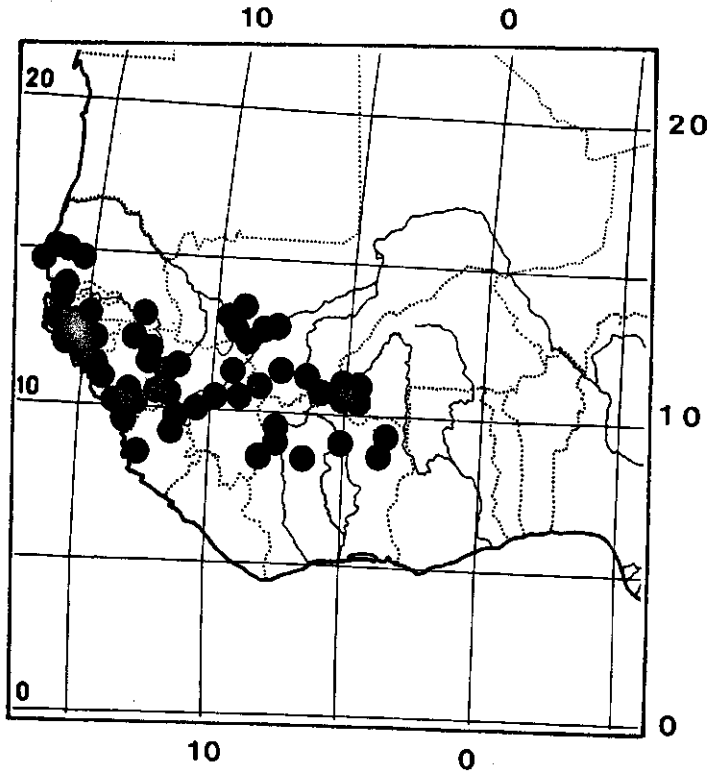
Liana or scandent shrub, up to 50 m long or probably more. Trunk up to 40 cm in diameter. Branches dark or light (blackish, violet or reddish) brown or greyish, mostly narrowly and shallowly fissured and/or rather rough, with whitish or orange lenticels 0.2-0.9 mm in diameter. Branchlets often light orange or yellow-brown, pilose, pubescent or tomentose, sometimes with empty bracts. *Leaves*: petiole 1.5-6 mm long, often with 1 or several small triangular glands on each node, pilose, pubescent or tomentose; blade (broadly) ovate to obovate, occasionally circular, 1.0-3.3 × as long as wide, 0.4-12.9 × 0.4-5.4 cm, papery or thinly coriaceous when fresh, acuminate with an acumen up to 1.0 cm long to retuse at the apex, acute to cordate at the base, pilose, pubescent or tomentose, with indumentum denser on midrib and secondary veins and beneath, occasionally glabrous, up to hirsute or lanate when young; with 4-15 pairs of straight or curved secondary veins, in the middle of the leaf 0.4-1.9 cm from each other, sometimes forming different angles with the midrib, between 2 secondary veins often 1 or several more or less horizontal less conspicuous ones; tertiary venation coarsely reticulate or sometimes more or less labyrinth-like, more or less conspicuous beneath. *Inflorescence* terminal, sometimes tendril-like, a dense, compound, more or less irregular dichasial cyme, when tendril-like, cymes at the end of the hooks of the tendrils, 1.5-4.0 × 1.2-4.5 cm or, when tendril-like as a whole 2.3-50 × 2.5-14 cm, 3-100-flowered, 1-50 flowers open at a time. Peduncle up to 28 cm long, tendril hooks up to 4.8 cm long, pilose, pubescent or tomentose. Pedicel up to 2.9 mm long, pubescent or pilose, often with longitudinal ridges with longer and/or denser indumentum. Bracts 1-3 along pedicel, (broadly) triangular or ovate, 0.7-1.9 × 0.5-1.6 mm, rounded, to acuminate at the apex with a rounded or acute acumen, pilose, pubescent or tomentose outside, pubescent inside. *Flowers* fragrant. *Calyx* (1.4)1.8-3.0(3.5) mm wide; sepals often unequal, (broadly) ovate to obovate or triangular, occasionally spatulate, 0.8-3.0 × as long as wide 1.1-3.4 × 0.6-2.1 mm, connate at the base for 0.1-0.8 mm, emarginate to mucronate at the apex, or acuminate with a rounded or acute acumen, pilose, pubescent or tomentose outside or with 2 of these types of indumentum at the same time, occasionally pubescent or almost glabrous inside, mostly pilose at the base, with a ciliate, occasionally membranaceous margin. *Corolla* (greenish-, brownish- or reddish-) white, cream or yellow, less often orange, the tube often darker than the lobes, glabrous outside at the

basal 0.1-1.5 mm, from that level gradually changing to pubescent, tomentose or pilose, pilose or villose inside from up to 2.3 mm below anthers upwards, mostly more densely so at the throat, occasionally glabrous except on the lobes; tube 2.1-6.9 × as long as calyx, 5.0-10.0 mm long, at the base 0.7-1.9 mm, around the anthers 1.6-3.3 mm and at the throat 1.0-2.3 mm wide, with the widest part 3.0-6.9 mm from the base; lobes (narrowly) ovate to obovate 0.4-1.0 × as long as tube, 1.2-4.5 × as long as wide, 3.1-8.4 × 1.1-3.7 mm, emarginate to mucronate with a rounded or acute acumen at the apex. *Stamens* 1.4-2.3 mm long, inserted 2.5-5.2 mm from the base of the corolla tube, at 0.40-0.60 of its length, 1.0-3.1 mm included; filaments 0.1-0.8 mm long, often pilose, anthers with the base 2.8-5.0(5.5) mm from the base of the corolla tube, at 0.43-0.64 of its length, 2.3-6.8 × as long as wide, 1.2-2.0 × 0.25-0.65 mm, rounded to acuminate or truncate and/or mucronate with an acute or rounded acumen at the apex, glabrous. *Pistil* 3.3-6.6 mm long; ovary obovoid, obconical, ellipsoid, cylindrical or rhomboid with a rounded or truncate apex and sometimes on a cylindrical, diabolo-shaped or 0.2-0.45 mm high, slightly widened or narrowed base 0.7-2.0 × 0.7-2.0 mm, (almost) glabrous at the lowest 0.1-1.0 mm, otherwise pubescent, tomentose or pilose, indumentum longer and denser towards the apex; ovules 40-150; style cylindrical, sometimes with a slightly widened base and/or apex, 0.8-3.1 × 0.15-0.4 mm, glabrous, occasionally pilose, especially towards the base; pistil head cylindrical, ellipsoid, ovoid, conical, diabolo-shaped or cylindrical on an ellipsoid base, 0.25-0.8 × 0.35-0.9 mm, ciliate at the upper margin, otherwise glabrous, sometimes with longitudinal ridges; stigmatic apex cylindrical, conical, obovoid, rhomboid or ellipsoid or conical on a cylindrical base, 0.4-1.2 × 0.2-0.65 mm. *Fruit* yellow or orange, rather smooth, with light or dark lenticels up to 0.7 mm in diameter, sometimes with light or dark spots, ellipsoid or pyriform, 1.8-5.0 × 1.8-5.0 × 1.8-5.0 mm, rounded at the apex; 1-10-seeded; wall 0.4-2.0 mm thick; sclereid cell layer 0.15-0.3 mm thick. *Seed* irregularly ovoid or ellipsoid, laterally compressed and often with 1 or 2 flattened sides, 8-18 × 5-14 × 4-8 mm. Embryo slightly curved or straight; cotyledons irregularly ovate or elliptic, 6.5-17.0 × 4.0-13.5 mm, undulate; rootlet 0.4-0.9 × 0.7-1.8 mm.

Distribution: West Africa from Sénégal to Ghana, inclusive of Mali and Burkina Faso, but not in Liberia, also represented in northern Cameroun.

Ecology: Dry and light forests, gallery forests, woodlands and savannas, often near or on rocks or rocky soils. Alt. 0-1400 m. Flowering mainly in the dry season. Mature fruits throughout the year.

Use: *Landolphia heudelotii* is used for its rubber on a small scale. Fruits edible. In Sierra Leone seeds used as medicine. It is widely distributed in botanical gardens.



MAP 19. *Landolphia heudelotii*

Vernacular names:

SÉNÉGAL: Baï (Malinké), Baracan (Diola), Folé (Socé and near Fogy), Follé (Mandika), M'Bao (near Dakar), M'Domasis (near Poumour), Nta (Namdiaja), Pollé (Mandungiu), Probé or Sobé (Balonto), Toll (Ouolof).

GUINÉE: Foré, Fôré or Foûré (Sousou, Foula and near Bramaya, Boké and Kisosso), Geyé or Geyen (Malinké), Goï (near Guélia, Guenguénia, Kouroussa and Siguiri), Goïn (Bambara, Malinké and near Kouroussa and Sonilia), N'Beï (Malinke), Ngéyé (Malinke), Poré or Pôré (Foula and Peuhl).

SIERRA LEONE: Djenge (Mende) E-Boi, E-Lel-Boi or Lelboi (Temne), Jenjëi (Mende).

MALI: Gohiné (near Kati), Goï (near Kita and Soulou), Goïn (Bambara), Gorune (Without exact locality), Ngoï (near Yonfolila), Poré (near Kita and Soulou).

CÔTE D'IVOIRE: Bei (near Tafiré).

GHANA: Pempen (Issaba).

BURKINA FASO: Gohine (Bambara).

A selection of the ca. 280 specimens examined:

SÉNÉGAL: Dakar, Cap Vert, Adam 404 (MO, P), Adam 876 (P), Perrotet 491 (G, M, P, W); Kaolack, Adam 8234 (MO, P); Toba, Bamps 7795 (BR); Tobor, van den Berghen 1307 (BR); Cap Skiring, van den Berghen 1553 (BR, WAG), 5074 (BR); Brin, van den Berghen 1644 (BR, WAG); Médina, van den Berghen 2055 (BR, WAG); Boukot Ouolof, van den Berghen 2230 (BR, WAG); Kabrousse, van den Berghen 2296 (BR, WAG); Kourouk For., van den Berghen 5566 (BR); Pointe Saint Georges, van den Berghen 5690 (BR); Mahon For., van den Berghen 7625 (BR); Sangalkam, Berhaut 894 (BR, P), Berhaut 5256 (P), de Wit 6048 and 6049 (WAG); Niokolo-Koba, Berhaut 2167 (P); between Badiouré and Bignona, Chevalier 2005 (P); Niaye, Chevalier 2012 (P); Itou, Chevalier 2073 (G, P); near Sedhiou, Chevalier Jan. 1900 (P); Casamanca R., Heudelot 606 (BR, G, G-DC, P, type); Poumour, M'Boro region, Leprieur Apr. 1826 (P, lectotype of *Vahea tomentosa*); Ndenhout, M'Boro region, Leprieur Feb. 1829 (P); Cayor, Poisson anno 1900 (L, P); Marassoum, Portères 3003 (P); Zichuinchor, Portères 3049 (P); sin. loc., Traun s.n. (HBG, lectotype of *Vahea traunii*); between Kolda and Salikénié, Trochain 1329 (P); 2 km NW of Bignona, Trochain 1457 (P); Niayes, NW of Tanma, Trochain 3208 (P); Assirik Mt., Tutin 21 (K); Mont-Rolland, near Thies, Wailly 4512 (P).

GAMBIA: Abuko Nature Res., N of Yundum, Bremer 662 (S), Starin 131 (K); Kombo, Heudelot anno 1835 (BR, P).

GUINÉE BISSAU: Bissau, Pussuhé, Espirito Santo 1831 (BR, K, LISC, MO, P); Farim, Florestais 331 (LISJC); Batafa, Pereira 1532 (LISC), Pereira 2058 (C, LISC); Batafa-Biginé, Pereira 2580 (LISC); Buba, Pereira 2939 (LISC); Calequise, Pereira 3670 (LISC); Cacheu-Bianga, Pereira 3714 (LISC); Bissau, Prabis, Raimundo & Guerra 86 (K, LISC); Bissau Island, Raimundo & Guerra 121 (LISC); Susana-Bagine, Raimundo & Guerra 299 (LISC); Varela, Raimundo & Guerra 429 (LISC); Teixeira Pinto, Cacheu, Raimundo & Guerra 615 (K); Mansoa, Raimundo & Guerra 623 (LISC); Catio, Raimundo & Guerra 707 (LISC); Gabu. Tumana, Raimundo & Guerra 861 (LISC); Orango Grande, Raimundo & Guerra 905 (LISC); Bubaque, Ancamone, Raimundo & Guerra 952 (LISC); Boé, Soares 7-5-1944 (LISJC); Naga, Anonym. 89 (LISJC).

GUINÉE: Youkouloun, Adam 2510 (MO); Siguiri, Chevalier 303 (P); Guéla, Chevalier 317 (K, P); Kouroussa, Chevalier 385 (P, W, Z), Paroisse 27 (B, P); Guenguenia, Chevalier 438 (P); Sonilia, Chevalier 447 (G, P, WAG); Ouassaia, Chevalier 516 (P); Kollangui, Chevalier 12223 (P); Lobé Chevalier 12277 (P), 12316 (P); between Konkouré and Timbo, Chevalier 12552 (P), 12555 (P); between Santa and Timbo, Chevalier 12592 (P); Conakry, Chevalier 12726 (K, P), 18907 (P); Kaba R. valley, Chevalier 13252 (P); Diaguissa, Chevalier 18027 (P, type of *Landolphia heudelotii* var. *diaguissae*); Kourara Chevalier 18200 (P); Faranah, Chevalier 20459 (K, P); Kindia, Koumbaya, near Mayou, Chillou 1186 (P); Pita, Chillou 1227 (BR, COI, P); Kolenté R., Chillou 1311 (P, WAG); Friguiagbé, Chillou 2424 (P, WAG); Mamou, Cochet 33 (P); Kindia, Furon s.n. (P); Rio Nunez, Heudelot 606 (BR, G, P, type); near Dalaba, Landale-Brown 2616 (BR, K, WAG); Kankan, Lisowski 55137 (BR, K, POZG); along Milo R., 4 km N of Kankan, Lisowski 55238 (BR, K, POZG); Kankan Mt., Lisowski 55139 (POZG); Firguia, Maclaud 101 (P); Kisosso, Maclaud 242 (P); Kain, Koné, Maclaud Dec. 1898 (P); Timbo, Miquel 12 (P); Bindilya, Paroisse 5 (P); Kondiafara, Paroisse 10 (P); Kouroufi, Paroisse 14 (P); near Boké, Paroisse 18 (P); Bramaya, Paroisse 70 (P); between Friguiagbé and Bramaya, Pobéguin 38 (P); between Bougouni and Kankan, Roberty 7104 (G); NW of Siguiri, Roberty 7215 (G); Dar Selam, Dinguiraye, Roberty 19556 (G, Z); Yambering, Schnell 2287 (P).

SIERRA LEONE: Kaballa, Dawe 513 (K); Mano, Deighton 2416 (K); Freetown, Deighton 3989 (K); Moyamba, Lane-Poole 60 (K); Unwin & Smythe 49 (K); Buyabuya, Scarcies R., Scott Elliot 4544 (K), 4773 (BM, K); near Wallia on Scarcies R., Scott Elliot 4630 (BM, K); Falaba, Scott Elliot 5450 (K, lectotype of *Landolphia heudelotii* var. *djenge*); about 12 km along Yberia-Bendugu Rd., Tindall 71 (BM, BR, K, P).

MALI: Famansa, Aberlin 620bis (P); Tienfala For., Aké Assi 14463 (WAG); between Bougouni and Sikasso, Aubréville 3052 (P), Roberty 13279 (G); Madina Diassa, Audru 6007 (WAG); Kati, Blot 251 (P), Chevalier 188 (P); Koulouba Cissé 58C (WAG); between Bankouma and Tioussou, Demonge 4297 (P); Birgo, Soulou valley, Dubois 42 p.p. (P); between Odienne and Bougouni, Roberty 7078 (G, Z); between Makakamgo and Bougouni, Rogeon 55 (P); Yonfolila, Anonym. 11-12-1954 (P).

CÔTE D'IVOIRE: Odienné, Adjanooun & Aké Assi 195 (WAG); Tafiré, Aubréville 1455 (P); Koro, Audru 5031 (WAG); km 454 Bamako-Ferkéssédougou Rd., Bamps 2489 (BR, WAG); 15 km SW of Seye, Geerling & Bokdam 2059 (BR, MO, WAG); 10 km N of Kakpin, Geerling & Bokdam 2525 (BR, WAG); km 10 Bako-Odienné Rd., de Koning 4440 (WAG); km 11 Kakpin-Dédi Rd., Leeuwenberg 12247 (WAG); Bouna Nat. Park, Téhini, Oldeman 919 (K, WAG); 17 km N of Mankana, J.J. de Wilde 968 (WAG).

GHANA: sin loc., Evans 26 (K), Kitson 785 (K).

BURKINA FASO: Mantira, Chevalier 816 (P); Koumi, Geerling & Bokdam 1367 (WAG); Sindou Rock, 50 km W of Banfora, Leeuwenberg 4325 (B, BR, K, MO, P, UC, WAG); Banfora, Roberty 13401 (G, Z); Bobo-Dioulasso, Service forestier de la Côte d'Ivoire 1841 (B, K); Deregbone, Toutain 2392 (P); Samorogonon, Toutain 2688 (P); Panga, Vuillet 563 (P).

CAMEROUN: Laoudjougay, Fotius 2606 (P); sin. loc., Traun 29-11-1912 (HBG, Z).

CULT: Madagascar: Ivoline, Alleizette Nov. 1906 (P). Tanzania: Amani, Brunthaler Aug. 1909 (WU), Peter 56982 (B), Zimmerman 2-1-1917 (BM, EA, FHO, K); Sigi, Greenway 6663 (K). Sénégal: Thiès, Chevalier 2009 (BR, P), Farmar 121 (BM, DBN, K) Guinée: experimental garden of Camayenne, Chevalier 12726 (P); Conakry, Botanical Station, Farmar 163 (BM, DBN, K). Saô Tomé: at Roça Boa Entrada, Chevalier 13635 (P). Mali: Koulikoro Station, Chevalier 24992 (BR, P). Zaire: botanical garden of Eala, Chevalier 28072 (P). Indonesia: Bogor Botanical Garden, Lecomte & Finet 342 and 343 (P). Mauritius: Royal Botanic Gardens, Anonym. 233 (K). France: Hortus Botanicus of Paris, Anonym. July 1904 (P). Brazil: Botanical Garden of Rio de Janeiro, Anonym. anno 1952 (NY).

20. *Landolphia hirsuta* (Hua) Pichon, Mém IFAN 35: 193. 1953.

Fig. 15, p. 91; 17, p. 99; map 20, p. 93

Basionym: *Carpodinus hirsuta* Hua, Bull. Mus. Hist. Nat. 6: 315. 1900.

Type: Sénégal: Tanéné, near Conakry, Lecerf anno 1900 (P, lectotype; isolecotypes: K, WAG, designated here).

Large liana 3-70 m long and up to 40 m high. Trunk 3-30 cm in diameter. Bark deeply fissured, somewhat or distinctly corky. Branches narrowly fissured or almost smooth, with whitish lenticels, brown or grey. Branchlets reddish- or orange-brown, hirsute or velutinous with indumentum orange-brown and often denser at nodes. *Leaves*: petiole 4.5-25 mm long, pilose to hirsute; blade elliptic or obovate, or broadly so, occasionally narrowly so or ovate, 1.1-3.0 × as long as wide, 3.6-35 × 2.2 × 17 cm, papery, herbaceous or coriaceous when fresh, mostly more or less coriaceous when dried, acuminate with an acute or obtuse acumen 0.4-1.5 cm long to emarginate at the apex, truncate to shortly angustate, or, auriculate at the base, with the margin more or less densely ciliate, pilose on the midrib above, less so on the secondary veins and otherwise almost glabrous, hirsute on the midrib beneath, less dense so on the secondary veins and otherwise sparsely pilose or almost glabrous; with 5-16 pairs of mostly curved secondary veins, in the middle of the leaf 0.3-5.7 cm from each other; between 2 secondary veins often 1 or several much less conspicuous and shorter straight ones; tertiary venation reticulate or scalariform, more or less conspicuous beneath; venation slightly impressed above; young leaves reddish. *Inflorescence* axillary, a very compact irregular dichasial cyme, 0.7-3.5 × 1.1 × 2.5 cm, 3-20-flowered; pedicels up to 1.8 mm long, tomentose. Bracts 1 to 3, ovate or triangular or broadly so, 1.8-2.3 × 1.4-2.1 cm, rounded to mucronate at

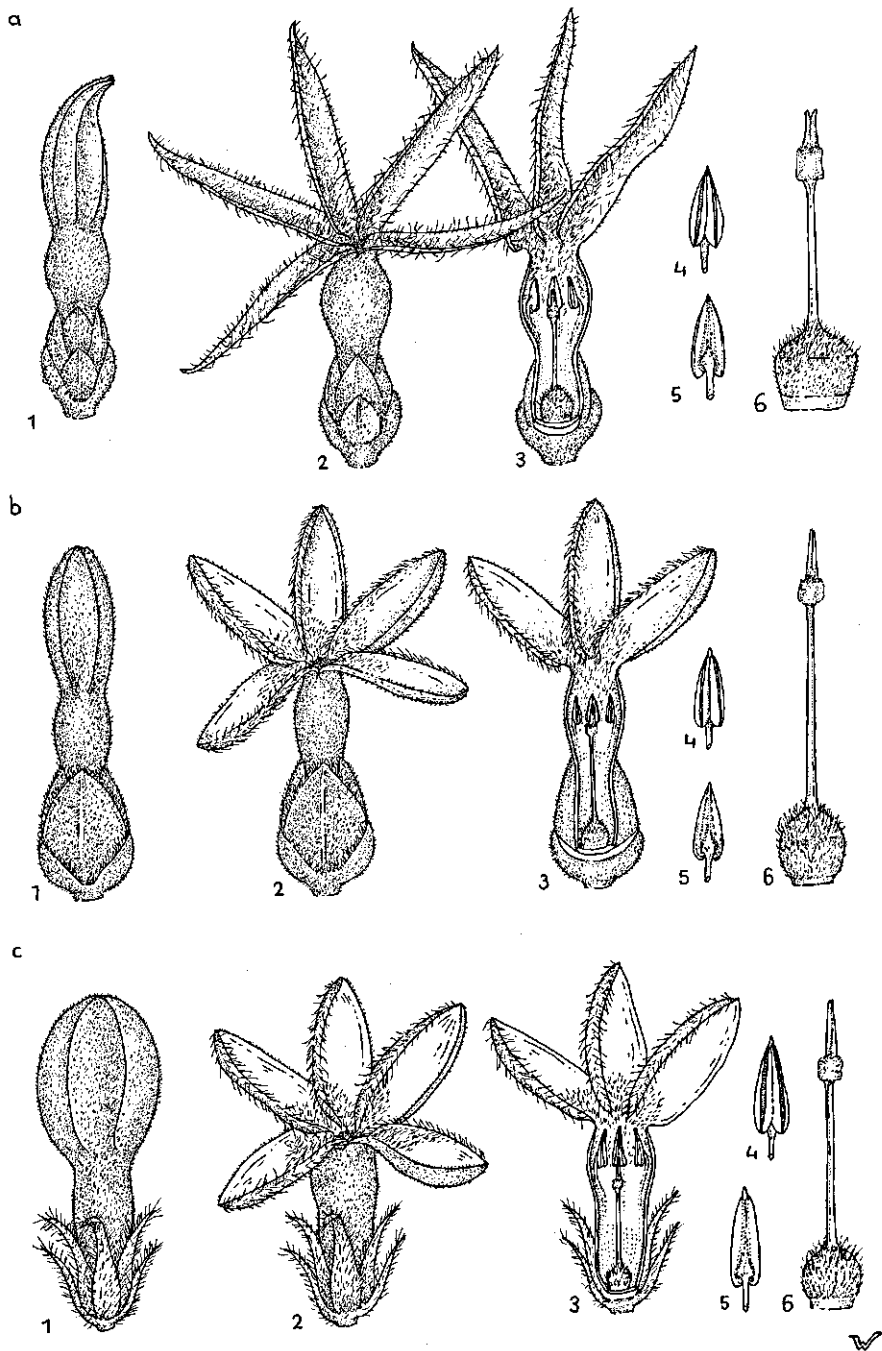


Fig. 15. *Landolphia hirsuta*. a. 1, bud ($\times 4$); 2, flower ($\times 4$); 3, opened flower ($\times 4$); 4-5, stamen in- and outside ($\times 10$); 6, pistil ($\times 10$). *Landolphia villosa* b. 1, bud ($\times 4$); 2, flower ($\times 4$); 3, opened flower ($\times 4$); 4-5, stamen in- and outside ($\times 10$); 6, pistil ($\times 10$). *Landolphia jumellei* c. 1, bud ($\times 4$); 2, flower ($\times 4$); 3, opened flower ($\times 4$); 4-5, stamen in- and outside ($\times 10$); 6, pistil ($\times 10$). a. from Leeuwenberg 12361; b. 1-3 from de Kruif 040; b. 4-6 from J. Louis 6106; c. 1 from Leeuwenberg 9709; c. 2-6 from FHI 29815.

the apex, tomentose outside, glabrous or partly hairy inside. *Flowers: Calyx* 1.9-2.9 mm wide; sepals ovate or broadly ovate, subequal, 0.8-1.7 × as long as wide, 1.4-2.4 × 1.0-2.1 mm, connate at the base for 0.1-0.5 mm, rounded to mucronate at the apex, tomentose or partly glabrous outside, with some hairs inside. *Corolla* white, creamy or yellow, above basal 1.4-2.0 mm tomentose or pubescent outside (glabrous below that level), pilose inside, behind and up to 1.0 mm below anthers, pilose with long curly hairs at the throat, an area at the auricle and at the margin of the lobes, otherwise glabrous; tube slightly thickened just below anthers and at throat, 1.5-2.3 × as long as calyx, 2.8-5.0 mm long, at the base 1.0-2.2 mm wide, in the middle 0.8-1.8 mm, around the anthers 1.3-2.3 mm, and at the throat 0.9-1.7 mm wide; lobes 3.0-5.7 × as long as wide, 0.8-1.9 × as long as tube, 2.8-8.0 × 0.7 × 1.8 mm, rounded or mucronate at the apex. *Stamens* 1.2-1.6 mm long, inserted (0.9)1.9-2.3 mm from the base of the corolla tube, at 0.38-0.63 of its height, 0.1-0.9 mm included; filaments 0.25-0.9 mm long; anthers with the base (1.5)2.4-2.8 mm from the base of the corolla tube, at 0.48-0.73 of its length, 1.6-2.6 × as long as wide, 0.7-1.0 × 0.3-0.5 mm, acute or acuminate with a 0.1-0.2 mm long acumen at the apex, glabrous. *Pistil* 2.8-3.9 mm long; ovary obconical on a glabrous, 0.1-0.5 mm high and 0.7-0.9 mm wide, cylindrical base, 0.5-1.1 × 1.0-1.2 mm, truncate at the apex, from (almost) glabrous (base) to pubescent or pilose (apex); ovules 30-80; style cylindrical, 1.0-1.7 × 0.15-0.25 mm, glabrous; pistil head cylindrical, slightly tapering, ellipsoid, or obovoid, 0.25-0.5 × 0.3-0.5 mm, ciliate at the upper margin; stigmoid apex with lobes almost separate, 0.2-0.5 × 0.15-0.4 mm. *Fruit* with orange or yellow cuticle, rather smooth, sometimes with scattered large and small spots (0.02 or 0.3 mm in diameter), globose, ellipsoid or irregularly ovoid, sometimes with an indented base like an apple, rounded or obtuse at the apex, 3.6-10.0 × 3.7-8 cm, 1-20-seeded; wall 0.5-2.0 cm thick, (pale) orange or creamy; pulp orange or yellow, surrounded by a hard, 1.0-3.0 mm thick layer. *Seed* irregularly ovoid or ellipsoid, often laterally compressed or with 1 or 2 flattened sides, 10-20(-30) × 7-14 × 4.5-12 mm. Embryo curved; cotyledons irregularly ovate or elliptic, 8.5-18 × 6.5-13.5 mm, sharply undulate; rootlet 0.8-1.5 × 0.8-1.9 mm.

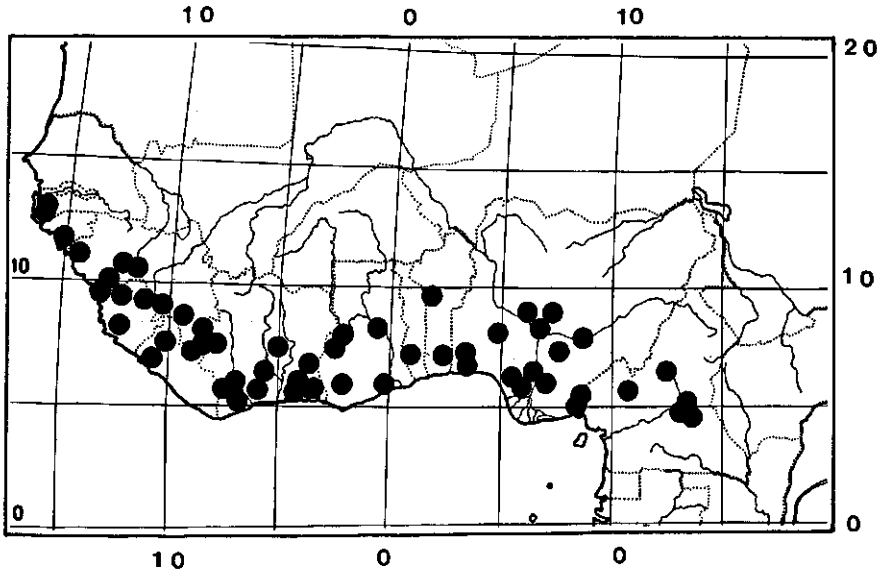
Distribution: West-Africa from Sénégal to Nigeria and central Cameroun.

Ecology: Evergreen or deciduous forests, gallery forests, or woodlands, on clayish or sandy soils. Alt. 0-1000 m. Flowering mainly in the dry season. Mature fruits at the end of the dry season.

Use: *Landolphia hirsuta* is exploited, sometimes commercially (Côte d'Ivoire), on a small scale for its rubber which is used for catching birds and which is said to be an excellent glue. Fruits edible.

Vernacular names:

GUINÉE: Bunkay (near Tanéné).



MAP 20. *Landolphia hirsuta*

SIERRA LEONE: Eboi (Temne), E-Mar (Temne), Holei or Holii (Temne and Mende), Jenjen (Mende), Ma-Mar (Temne), Naali (Mende), Pelewahun (Kamangai).

LIBERIA: Balwa (near Gola).

CÔTE D'IVOIRE: Amalin (near Kodjina), Bêdi-Bêdi (Agni), Ibimeto (Abé), Ouma pohoué (Ashanti).

GHANA: Ajámamá (without exact locality), Bedebede (Ashanti), Pumpune (near Berekum).

NIGERIA: Alubuda or Alibada (Hausa), Arribedda (near Bassa), Arubada (Hausa and Nupe), Ate (name for bird-lime in general, but especially in combination with this plant, near Yor), Atomi (Otto), Dekoro or Jekoro (without specified locality), Fecitre (near Bassa), Ibo or Ibo tree (near Lagos).

A selection of the ca. 110 specimens examined:

SÉNÉGAL: near Bignona, Berhaut 5938 (P); Dianki, Berhaut 5981 (P); Loudia, Berhaut 6206 (BR, P); Kaéme, Berhaut 6625 (BR, M, P); Tendimann, Berhaut 6806 (BR, P); Yutu, Berhaut 7073 and 7074 (BR, M, P); Adéane, Chevalier 2068 (P).

GUINÉE BISSAU: between Cabuchamque and Québu, Espirito Santo 2072 (K, LISC, LISJC, P, WAG); Fulacunda, Espirito Santo 2254 (BR, K, LISC, LISJC, MO, P, WAG); Catio, Espirito Santo 2372 (K, LISC); Bedanda, Cadique, Alves Pereira 2658 (LISC).

GUINÉE: Macenta, Adam 3389 (MO, P); Ditinn, Chevalier 12175 (P); near Timbo, Chevalier 12432 (P); Kindia, Chevalier 12775 (P); near Kouraia along Rd. to Bouloukountou, Chevalier 14867 (P); Timbikounda, near Faranah, Chevalier 20588 (P); Guéasso, Chevalier 20957 (P); Koya, Chillou 2266 (P); Tanéné, near Conakry, Lecerf anno 1900 (K, P, WAG, lectotype); near Bambaya, Paroisse 8 (P, paratype); Kondiagara, Paroisse 10 (P); source of Bafing R., Pobéguin 1618 (P).

SIERRA LEONE: Kabala, Mt Loma, Adam 23012 (MO); Tawia, Deighton 1041 (K); Njala, Deighton

3111 (BR, K, P), 5046 (K, P), 5823 (K); near Mange, Deighton 3608 (K); Piedmont For., W of Donia, Jaeger 9056 (K).

LIBERIA: Yéképa, Adam 26425 (MO); Kondessu, Baldwin 10666 (K, MO, NY, P, US, WAG); Gola, Bunting 88 (BM); Ganta, Harley 1444 (K, WAG).

CÔTE D'IVOIRE: between Anokro and Akploabo, along Bonaké-Béoumi Rd., Aké Assi 13850 (WAG); Agboville, Aubréville 1384 (P); near Soubéré, Bamps 2095 (BR, WAG); 40 km along railroad N of Abidjan, Chevalier 15618 (P); Bouroukrou, Chevalier 16931 (P); between Alépé and Malamasso, Chevalier 17515 (K, P, WAG); lower Momy Mt., Chevalier 21364 (P); Yapo, Chevalier 33054 (K, P); Banco For. Res., de Koning 4859 (WAG); 35 km SW of Guéyo, Leeuwenberg 3770 (BR, K, MO, P, WAG); km 24 Monogaga-Sassandra Rd., Leeuwenberg 12070 (WAG); km 22 Abengourou-Akoupé Rd., Leeuwenberg 12271 (WAG); Taï For., 20 km SE of Taï, Leeuwenberg 12338 (WAG); Adiopodoumé, Leeuwenberg 12361 (WAG).

GHANA: Berekum, Brown 2214 (FHO); Aburi, Chevalier 13876 (P); Fiapire, Chipp 83 (K); sin loc., Farmar 491 (BM, DBN(n.v.)); Aquapim, Horton 9/67 (K); Nwereme, Howe 2495 (E); Shiare, Togo Hills, Jenik & Hall 1162 (K).

BENIN: near Djougou, Chevalier 23884 and 23922 (P); near Daja Ouéré, Le Testu 21-10-1901 (P).

NIGERIA: Kaduna State(?): near Assatu, Hohoe Distr., St. Clair-Thompson 30-11-1930 (FHO). Niger State: Agaie, Bates 45 (K). Kwara State: Esie For. Res., FHI 18220 (FHO, K, P); Guraia R., Elliott 218 (K). Ogun State: Abeokuta, Chevalier anno 1905 (P). Lagos State: Lagos, Jungner 337 (UPS). Bendel State: Benin City, Chevalier 15119 (P); Sapoba, Kennedy 155 (FHO); Asaba Div., Unwin 4 (K). Benue State: Yor, Mackay 3-4-1940 (BM, BR, K, P); Ankpa, Anonym. 18 (K). Cross River State: ca. km 110 Calabar-Mamfe Rd., Baldwin 13770 (K, MO); Calabar, Krukoff anno 1949 (BR, MO, WAG).

CAMEROUN: ca. 30 km W of Mamfe, Baldwin 13820 (BR, K, P); 27 km NW of Bertoua, along Ndo R., Breteler 2622 (WAG); 1.5 km WSW of Koundi, van den Burg 76 (WAG); between Ebaka and Ponte, along Sanaga R., Letouzey 2917 (P); near Dengdeng, Mildbread 8430 (K); Tibati, Ledermann Ramorum 2325 (K).

21. *Landolphia incerta* (K. Schum.) Persoon, **comb. nov.**

Fig. 16, p. 95; map 21, p. 97

Basionym: *Carpodinus incerta* K. Schum. in Engler & Prantl, Nat. Pflanzenf. 4. 2: 132. 1895.

Type: Togo: Katschenki, Kling 7 (holotype not seen, destroyed in B; lectotype: K, designate here).

Heterotypic synonyms: *Clitandra mannii* Stapf, Kew Bull. 1894: 20. 1894. Type: Sierra Leone: Bagru R., Mann 848 (K, holotype; isotypes: GH, P). Homotypic synonym: *Aphanostylis mannii* (Stapf) Pierre, Bull. Soc. Linn. Paris, sér. 2. 11: 89. 1898; Pichon, Mém. IFAN 35: 241. 1953.

Carpodinus exserens K. Schum. in Engler, Bot. Jahrb. 23: 219. 1896. Type: Cameroun: Yaoundé, Zenker & Staudt 123 (holotype not seen, destroyed in B; lectotype: K, designated here; isotypes: BM, BR, P, S, UC, Z). Homotypic synonym: *Aphanostylis exserens* (K. Schum.) Pierre, Bull. Soc. Linn. Paris sér. 2: 90. 1898.

Carpodinus laxiflora K. Schum. In Engler, Not. Jahrb. 23: 220. 1896. Type: Sierra Leone: sin. loc., Afzelius s.n. (UPS, lectotype, designated here; isotypes: BM, LD, S). Homotypic synonyms: *Aphanostylis laxiflora* (K. Schum.) Pierre, l.c. *Clitandra laxiflora* (K. Schum.) Hall. f., Jahrb. Hamb. Wiss. Anst. 17. Beih. 3: 124. 1900. *Clitandra cymulosa* Stapf fa. *laxiflora* Chev., Rev. Int. Bot. Appl. 28: 412. 1948.

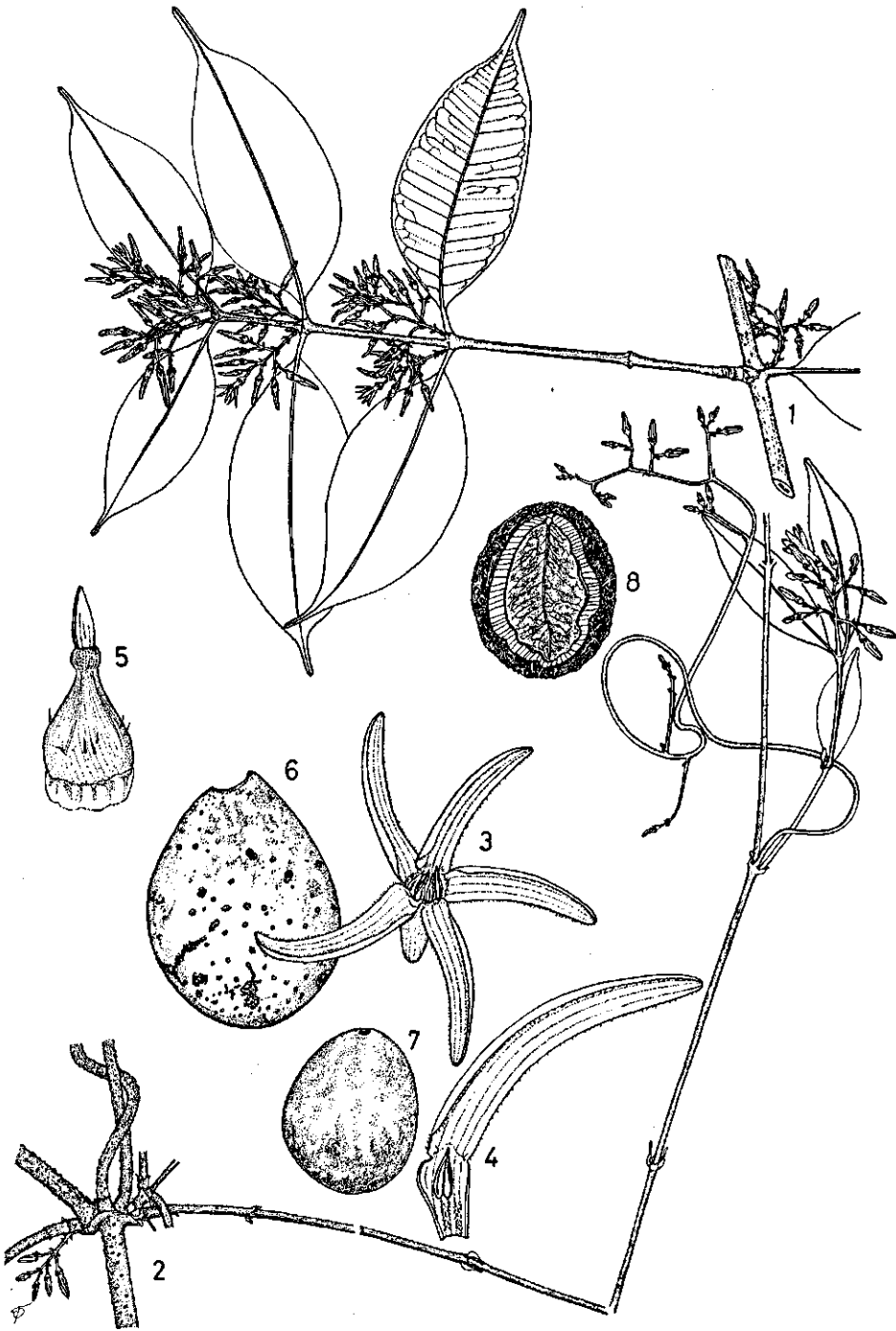
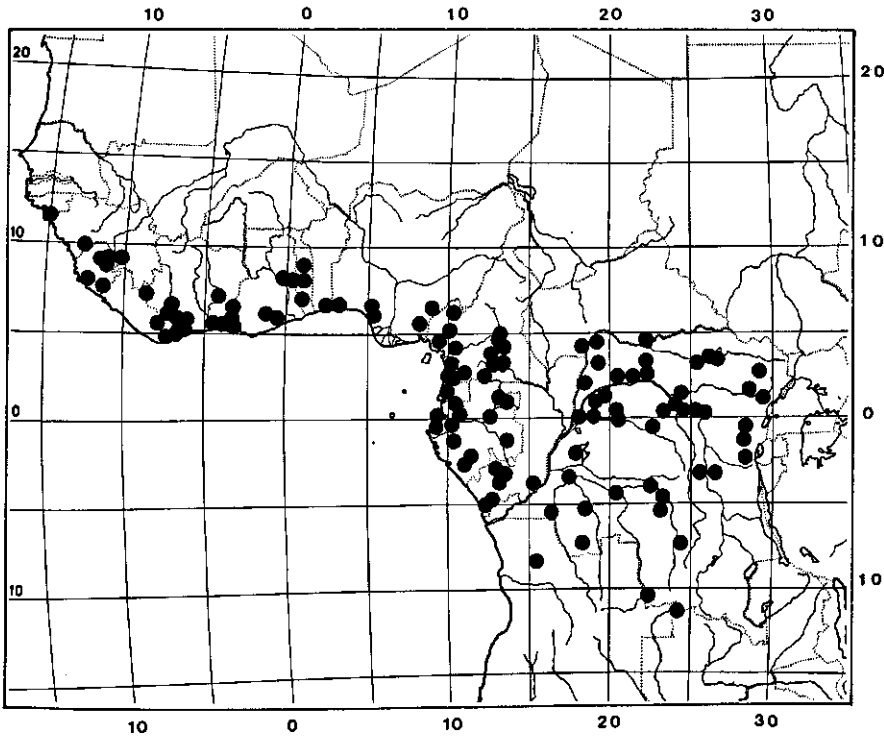


Fig. 16. *Landolphia incerta*. 1, habit ($\times 2/3$); 2, branch with tendril ($\times 2/3$); 3, corolla ($\times 4$); 4, part of corolla with stamen ($\times 6$); 5, pistil ($\times 20$); 6, fruit ($\times 1$); 7, seed ($\times 2$); 8, section of seed with embryo, surrounded by pulp ($\times 2$). 1 and 3-5 from Leeuwenberg 9027; 2 from Breteler & de Wilde 63 and Leeuwenberg 9065; 6-8 from Breteler 6487.

Clitandra gentilii De Wild., Belgique Coloniale: 137. 1903. Type: Zaire: Vallée de la Djuma, Gillet 2857 (BR, holotype).

Liana up to 40 m high climbing in trees, with curled tendrils up to 20 cm long. Trunk up to 15 cm in diameter; bark fairly rough, pale grey to dark brown. Branches brownish-red, lenticellate; branchlets greyish to dark brown, glabrous or sparsely pubescent. *Leaves* reddish when young, petiolate; petiole glabrous or sparsely pubescent, 2.5-9 mm long; blade papery to coriaceous, also when fresh, shiny, elliptic or ovate, 1.8-3 × as long as wide, 3-13 × 1.5 cm, caudate at the apex, cuneate or rounded at base, glabrous on both sides or with some scattered hairs on the pale green costa beneath; 10-20 pairs of secondary veins, forming an almost right angle with the costa, alternated by fainter parallel veins; tertiary venation reticulate. *Inflorescence* small, axillary or terminal, lax or congested, 1-7 cm long, 1-15 flowered (Louis 12085: 40-flowered). Peduncle 0.2-0.4 cm long, glabrous or sparsely pubescent; pedicels 1-8 mm long, glabrous or sparsely pubescent. Also exceptional tendril-like inflorescence up to 13 cm long. Bracts sepal-like, 0.4-0.9 × 0.3-0.6 mm, acute at apex, ciliate, without colleters. *Flowers* fragrant. *Sepals* subequal, pale green, persistent even under the fruit, connate at the base, triangular or ovate, 1-2 × as long as wide, 0.6-1.5 × 0.5-1.1 mm, acute at apex, erect, glabrous outside, glabrous inside, without colleters, ciliate. *Corolla* white or creamy, orange in bud, in mature bud 5.5-13 mm long; tube narrowly obconical or broadly infundibuliform, 1.2-3 × as long as the sepals, 1.2-3 mm long, if infundibuliform widened 0.5-0.75 of the length from the base, at base 0.4-0.8 mm and at mouth 1.1-1.6 mm wide, glabrous outside, pubescent inside from 0.35-0.5 of the length from the base to the mouth or only near the insertion of the stamens; lobes narrowly oblong to linear, (1-)2.5-5.6 × as long as the tube, 2.5-10.7 × as long as wide, 3-11.2 × 0.8-1.5 mm, acute at apex, entire, spreading, glabrous outside, glabrous or pubescent near the base inside, ciliate especially at base or exceptionally not. *Stamens* included or slightly exerted, inserted 0.45-0.8 of the tube length from the base of the corolla; filament short, 0.1-0.3 mm long, curved, glabrous; anthers narrowly ovate, 0.3-0.8 × as long as the corolla tube, 3-5 × as long as wide, 0.6-1.1 × 0.1-0.3 × 0.1-0.25 mm, long-acuminate at apex, deeply cordate at base with lobes touching each other, glabrous. *Pistil* 0.9-1.7 mm long; ovary broadly to narrowly ovoid, 1-2.25 × as long as wide, 0.45-1 × 0.3-0.5 mm, at base abruptly narrowed, glabrous or with a few stiff hairs at 0.4-0.6 of the length from the base; style very short, up to 0.4 mm long or absent, glabrous; pistil head 0.35-0.8 mm long, basal part annular, 0.05-0.2 × 0.1-0.3 mm; stigmatic apex ovoid or narrowly ovoid, 1.5-2.5 × as long as wide, 0.25-0.6 × 0.1-0.3 mm, cleft at apex for 0.25-0.5 of its length; 8-26 ovules on two parietal placentas. *Fruit* orange, often with white dots, ellipsoid, obovoid or globose, 1.5-4.5 × 1-3 cm, glabrous, lenticellate, smooth, 1-12-seeded, pulp orange; wall 0.7-1.4 mm thick. *Seeds* ellipsoid or ovoid, laterally compressed or not, 9-18 × 6-9 × 4-7 mm, brown, glabrous; endosperm white, horny, surrounding the flat embryo; embryo straight; cotyledons ovate or elliptic, very thin, 0.7-1.3 × 0.5-0.7 cm, pinnately veined; rootlet very short.



MAP 21. *Landolphia incerta*

Distribution: West and western Central Africa, from Guiné-Bissau to Angola and Zaire.

Ecology: rainforests and secondary forests. Flowering and fruiting mainly at the end of the dry season. Altitude: 0-1800 m.

Vernacular names:

SIERRA LEONE: Gawe (coll. C. Smythe 49).

NIGERIA: Ugbognikwi (near Benin City).

CAMEROUN: Danga (near Doumé, S of Yoko).

ZAIRE: Equateur: Eku (near Bari); Itofi moke (Mondombe distr.); Pangu (near Likimi); Mdongu (near Boyange). Haut-Zaire: Niabébé (near Poko); Mapeleko (near Bambili); Engbete kasa keke (Babua); Yololo i fufow, Yololo i nenu, Boila la ngema, Itofe, Inaolo a i itofe i fufow (Turumbu). Kivu: Longa (Kikusa); Ntungu (near Bunyakiri). Bandundu: Musamua sanga (near Lutshuma).

A selection of the ca. 230 specimens examined:

GUINÉ BISSAU: Bedanda-Catanhex, Alves Pereira 2827 (K, LISC); Cacoca, Cacine distr., Alves Pereira 2894 (K, LISC); Catio, Espirito Santo 2136 (K, LISC, MO, WAG), 3000 (LISC, LISJC, P. WAG).

GUINÉE: Kissidougou, Chevalier 25595 (K, MO, P, WAG); Friguiajbé, Chillou 384 (BR, C, P); sin loc., Jaques-Félix s.n. (P).

SIERRA LEONE: Bagru R., Mann 848 (GH, K, P, type of *Clitandra manni*): Buyabuya, Scott Elliot 4547 (K); sin. loc., Afzelius s.n. (BM, LD, S, UPS, type); Mano, Deighton 5324 (K, P); Mount Loma, Sinekoro, Adam 23414 (MO).

LIBERIA: Du R., Linder 89 (K); Yekepa, Mount Nimba, Adam 28750 (MO), 30248 (MO).

CÔTE D'IVOIRE: 50 km N of Sassandra, Leeuwenberg 2549 (BR, K, L, P, WAG, Z); Noé, Cavally R., Chevalier 19838 (P); Soubré, Leeuwenberg 12135 (WAG); Monogaga, Geerling & Bokdam 2442 (BR, K, MO, WAG); Bettié, Comoe R., Chevalier 17578 (K, MO, P, WAG); 10 km N of N'douci, Oldeman 708 (BR, K, WAG).

GHANA: Kade, Hall 43444 (K, MO, P, WAG); W of Chilling, Krachi Distr., Morton A3980 (K); Atewa Range, Hall & Lock 46743 (K, MO, WAG).

TOGO: Sokodé, Kersting s.n. (A); sin. loc., Baumann 514 (K); Katschenki, Kling 7 (K, type).

BENIN: between Saketé and Pedjilé, Chevalier 22910 (P).

NIGERIA: Ilaro, Onochie FHI 8233 (K); Ogbesse-Owo Road, FHI 20585 (K); Iyamoyong, Obubra Distr., Binuyo FHI 41226 (BR, K, WAG).

CAMEROUN: Atakama, Nkomo R., Bates 464 (BM, BR, G, K, P, Z); Yaoundé, Zenker & Staudt 123 (BM, BR, K, P, S, UC, Z, type of *Carpodinus exserens*); Bipinde, Zenker 314 (BR, BREM, C, GH, LD, NY, P, U, US, WAG), 3535 (BM, BP, BR, COI, E, G, GH, HBG, K, L, M, P, US, W, WU, Z); Lolodorf Road, 25 km from Kribi, Bos 6146 (BR, P, WAG); Fôret de Bakaka, Leeuwenberg 8431 (WAG); Bertoua, Breteler 1333 (K, WAG); Doumé, S of Yoko, Hédin 291 (P).

RÉPUBLIQUE CENTRAFRICAINE: 20 km W of Bangassou, Tisserant 3670 (BM, LISC, P, WAG); Bangui, Chevalier 5224 (P).

EQUATORIAL GUINEA: Rio Muni: sin loc. Tessmann 799 (K).

GABON: between Guidouma and Ste Croix, Le Testu 5091 (BM, LISC, MO, P, WAG); Lambaréné-Ogooué, Thollon 709 (P); Tchibanga, Le Testu 1822 (BM, BR, G, K, P, US); Makokou, Ivindo R., Gentry 33328 (MO); Libreville, Klaine 1862 (P).

CONGO: Mudongo, Farron 4380 (MO, P, WAG); Moetché, Bouquet 1088 (P).

ZAIRE: Bandundu: Kambangu, Callens 3248 (BR, NY). Kasai Occidental: Sankuru, Luja s.n. (BR). Kasai Oriental: Badibanga, Liben 1713 (BR, WAG). Equateur: Mondombe, Jespersen 45 (BR); Boyange St. Paul, Robyns 1070 (BR, K, MO); Bomandja, Evrard 4956 (BR, K). Haut-Zaire: Yangambi, Louis 5685 (BR, K, MO, P), 15865 (BR, C, K); 70 km E of Kisangani, Lisowski 16603 (BR); Nduye, Ituri, Lisowski 42662 (BR); Bambesi, Gérard 5779 (BR, MO, WAG). Kivu: Difuma, Rossignol 66 (BR); Myanga, Walikale, A. Léonard 1960 (BR, MO, WAG). Shaba: Kaniama, Mulenders 1237 (BR, K).

ANGOLA: Cambatela, Cuanza Norte, Gossweiler 10567 (COI); Buco Zau, Cabinda, Gossweiler 8069 (BM, COI, K, LISJC, LISU); Cai-forest, near Belize, Cabinda, Gossweiler 7673 (COI, LISJC, LISU).

ZAMBIA: Mwinilunga, F. White 3370 (BR, F, K, MO, WAG); *ibid.*, Mutimushi 3188 (K); *ibid.*, Holmes 1260 (K).

22. *Landolphia jumellei* (Pierre ex Jumelle) Pichon, Mém. IFAN 35: 196. 1953.

Fig. 15, p. 91; 17, p. 99; map 22, p. 101
Basionym: *Carpodinus jumellei* Pierre ex Jumelle, Ann. Inst. Col. Marseille 5, 1: 100. 1898.

Type: Gabon: Fernan-Vaz, Foret 20-1-1897 (P, drawing, holotype).

Heterotypic synonyms: *Carpodinus fulva* Pierre ex Hall. f., Jahrb. Hamb. Wiss. Anst. 17, Beih. 3: 108. 1900; Pierre, Bull. Soc. Linn. Paris, n. sér.: 38. 1898 (nomen). Types: Gabon: near Libreville, Klaine 1400 (P, lectotype; isolecototypes: BR, K, designated by Pichon); Sibange, farm near Gabim, Dinklage 575 (HBG, paratype). Excluded syntypes: Togo: near Tonugbe, along Tsi R., Baumann 520 (B, destroyed, n.v.): = *Landolphia hirsuta* (Hua) Pichon. Sudan:

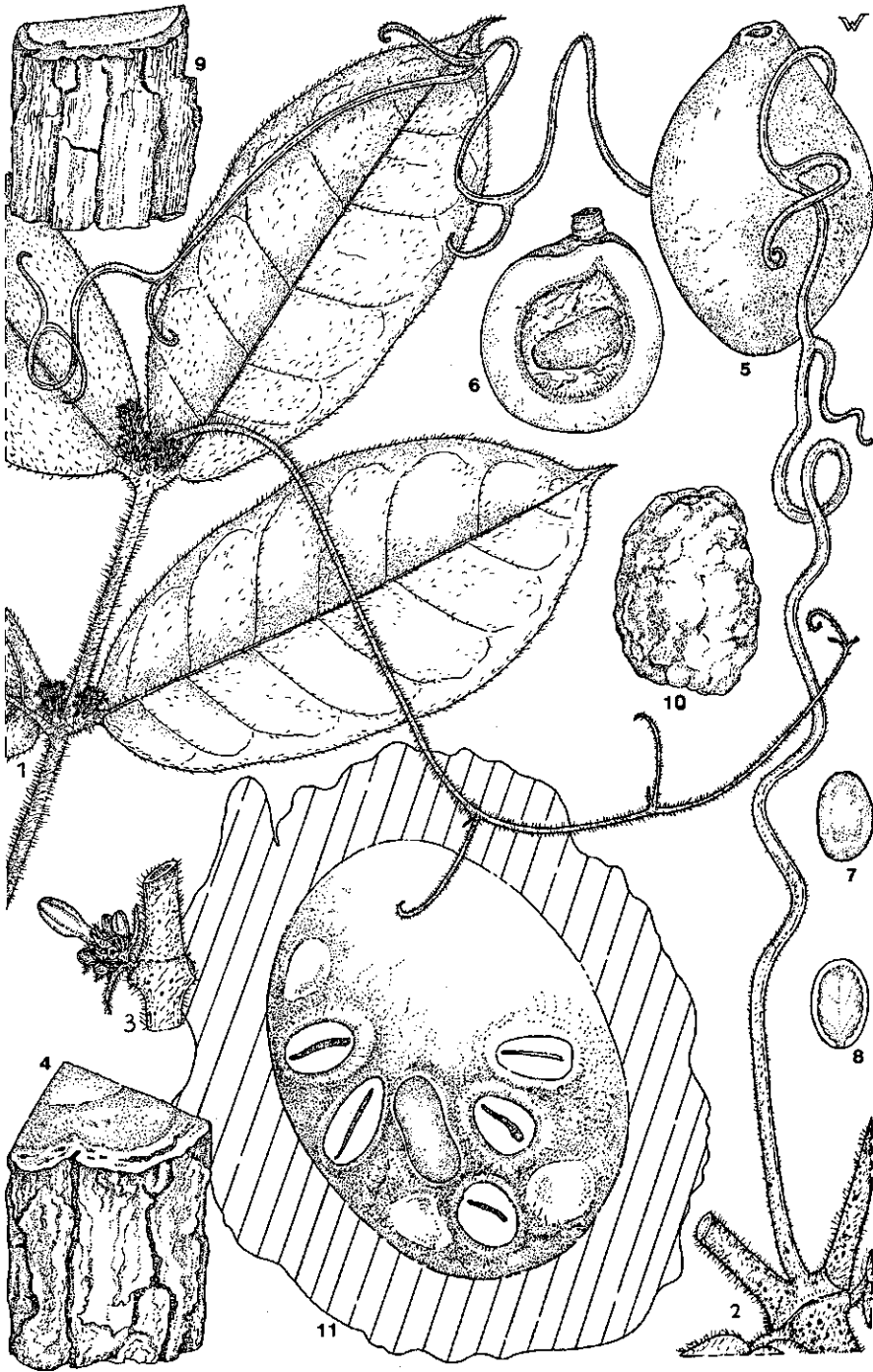


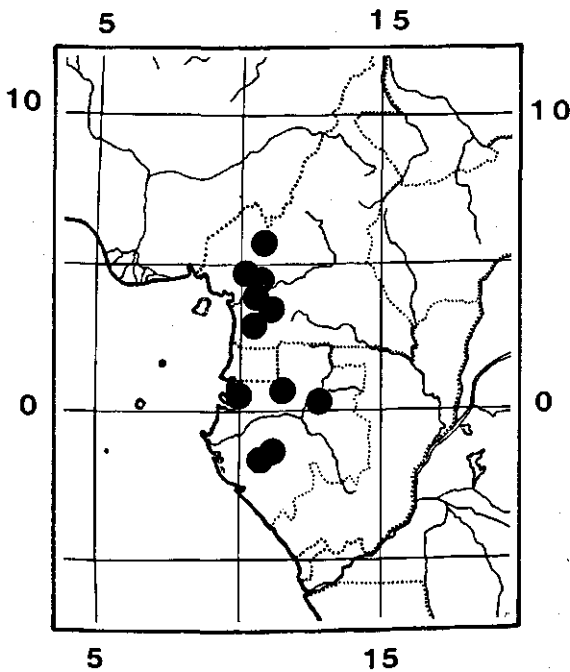
Fig. 17. *Landolphia jumellei*. 1, habit ($\times 2/3$); 2, branch with tendril ($\times 2/3$); 3, inflorescence ($\times 1$). *Landolphia hirsuta*. 4, bark ($\times 2/3$); 5, fruit ($\times 2/3$); 6, section of fruit ($\times 2/3$); 7, seed ($\times 2/3$); 8, section of seed with embryo ($\times 2/3$). *Landolphia villosa*. 9, bark ($\times 2/3$); 10, fruit ($\times 2/3$); 11, section of fruit ($\times 2/3$). 1-2 from Leeuwenberg & Persoon 13669; 3 from Leeuwenberg 9709; 4-6 from Leeuwenberg 3770; 7-8 from Deighton 5046; 9 from Sapin 20-10-1906; 10 from Liben 1816; 11 from J. Louis 4223. All fruits preserved in alcohol.

Nunz, Monbuttu country, Schweinfurth 3482 (K) = *Landolphia villosa* Persoon.
Carpodinus globulifera K. Schum. in Engl., Bot. Jahrb. 33: 316. 1903. Type:
Cameroun: Bipindi, Zenker 2352 (B, holotype, destroyed; HBG, lectotype,
designated here; isotypes: BM, BR, BP, COI, E, G, K, L, M, MO, P, S, W,
WAG).

Liana or scrambling shrub, up to 5 m or more high and up to 15 m long or more. Branches narrowly fissured or (almost) smooth, with light-brown or whitish lenticels, dark or light brown or greyish. Branchlets brown or light grey, sparsely to densely hirsute, more densely so when young and with denser orange or brown indumentum. *Leaves*: petiole 4-2.0 mm long, tomentose or pilose; blade elliptic or obovate or broadly so, occasionally almost circular, 1.1-3.8 × as long as wide, 4.0-33.0 × 2.0-10.5 cm, papery, herbaceous or subcoriaceous when fresh, more or less coriaceous or papyraceous and often orange-brown when dried, mostly acuminate at the apex with an acute or mucronate acumen, 0.1-2.3 cm long, otherwise truncate to mucronate, auriculate, cordate or cuneate at the base, with a ciliate margin, densely pilose above on midrib and secondary veins, otherwise pilose, hirsute beneath on midrib and secondary veins and otherwise sparsely to densely tomentose, with indumentum denser on tertiary veins, indumentum much less (to almost absent) on the shade leaves; with 5-13 pairs of more or less curved secondary veins, in the middle of the leaf 0.9-3.9 cm from each other; among 2 secondary veins often 1 or several less conspicuous and shorter, straight, horizontal secondary veins; tertiary venation scalariform, conspicuous beneath, venation impressed above. *Inflorescence* axillary, a very compact irregular dichasial cyme, 0.7-1.5 × 0.5 × 1.5 cm, 3-30-flowered; pedicel up to 2.0 mm long, densely pilose. Bracts 1 to 3, sepal-like, triangular or ovate or narrowly so, 2.2-4.0 × 0.6-1.0 mm, acute or obtuse at the apex, densely pilose outside, glabrous, pubescent or pilose and with a glabrous base inside. *Flowers*: calyx 3.0-4.0 mm wide, spreading; sepals ovate or elliptic or narrowly so, unequal, 1.9-4.3 × as long as wide, 2.3-3.4 × 0.7-1.6 mm, connate at the base for 0.1-0.4 mm, obtuse or acute at the apex, pilose outside with long hairs at the centre and along the margin, pilose or pubescent and with a glabrous base inside. *Corolla* orange or yellow, the lobes often darker, from 1.5-2.0 mm from the base tomentose or pilose outside, pilose inside behind anthers and occasionally also up to 1.0 mm below and above that level, and densely pilose with long hairs on and around the auricle, ciliate; tube thickened just below the anthers and at the throat, 1.3-2.0 × as long as calyx, 4.0-5.0 mm long, at the base 1.0-1.8 mm, in the middle 0.7-1.7 mm, around the anthers 1.1-2.2 mm, and at the throat 1.0-2.1 mm wide; lobes ovate to obovate or broadly so, 1.2-1.9 × as long as wide, 0.6-1.1 × as long as tube, 2.8-5.0 × 1.7-3.0 mm, obtuse or rounded at the apex. *Stamens* 1.4- 1.9 mm long, inserted 1.9-3.0 mm from the base of the corolla tube, at 0.45-0.6 of its height, 0.1-0.4 mm included; filaments 0.5-0.9 mm long; anthers with the base 2.7-3.5 mm from the base of the corolla tube, at 0.6-0.7 of its height, 2.4-2.9 × as long as wide, 1.0-1.2 × 0.35-0.5 mm acute or mucronate with an up to 0.1 mm long acumen at the apex, glabrous.

Pistil 2.9-4.2 mm long; ovary obconical, cylindrical, ellipsoid or ovoid on a glabrous, 0.2-0.4 mm high and 0.5-0.8 mm wide cylindrical or obconical base, 0.9-1.2 × 0.8-1.1 mm, truncate or rounded at the apex, pilose; ovules 40-80; style cylindrical, 1.3-2.3 × 0.15-0.2 mm, glabrous; *pistil head* cylindrical or ellipsoid, 0.2-0.3 × 0.3-0.5, mostly ciliate at the upper margin; stigmoid apex conical, 0.4-0.75 × 0.15-0.4 mm, rounded, acute or mucronate at the apex, puberulent. *Fruit* reddish, rough with warts and bumps, lenticellate, irregularly ovoid to obovoid or globose, retuse to obtuse at the apex, often irregularly so, 4.7-8.0(15.0) × 3.9-8.0(10.0) × 3.9-8.0(10.0) cm; 3-15-seeded; wall 0.4-1.5 cm thick; pulp yellow or orange, surrounded by a hard layer. *Seed* irregularly ovoid or ellipsoid, often laterally compressed or with 1 or 2 flattened sides, 9-24 × 7-24 × 6-15 mm. Embryo strongly curved; cotyledons irregularly ovate or elliptic, 8-22 × 6-22 mm, strongly and irregularly undulate; rootlet 1.3-3.0 × 1.6-2.1 mm.

Distribution: Cameroun and Gabon.



MAP 22. *Landolphia jumellei*

Ecology: Primary, secondary, riverine and coastal forests. Alt. 0-600 m. Flowering in the rainy season. Mature fruits throughout the year.

Use: *Landolphia jumellei* is said to yield rubber, but no use is recorded.

Vernacular names:

GABON: Acia (near Libreville), Avoum (Pahouin), Ivogue (near Fernan Vaz).

A selection of the ca. 40 specimens examined:

CAMEROON: Banga, S. Bakundu For., Brenan & Onochie 9431 (BM, FHO, K, P); ca. 75 km from Kumba, FHI 29815 (K, P); between Mbalange and Bombe, S. Bakundu For., FHI 30864 (K); near Mamfe, Krukoff 073 (MO, NY, US); km 11 Loum-Solé Rd., along Dibombé R., Leeuwenberg 9709 (WAG); 12 km NNE of Makak, Letouzey 11527 (P, WAG); Miselele, ca. 10 km NE of Tiko, Letouzey 14834 (BR, HBG, K, P, WAG); Bipindi, Zenker 2352 (BM, BP, BR, COI, E, G, HBG, K, L, M, MO, P, S, W, WAG, type of *Carpodinus globulifera*), Apr. 1903 (F, FHO).

GABON: near Libreville, Arsandeau s.n. (P), Klaine 1111 (P), 1260 (P), 1400 (BR, K, P, lectotype of *Carpodinus fulva*), Klaine 3104 (P), Klaine 3214 (P); Sibange, farm near Gabim, Dinklage 575 (HBG, paratype of *Carpodinus fulva*); Fernan-Vaz, Foret 20-1-1897 (P, drawing, type); Boulou, Jolly 65 (P); 13 km SSW of Makokou, along Ivindo R., Leeuwenberg 11535 (WAG); km 48 forest exploitation Rd. between timber exploitation Waka and Ngounié R., Leeuwenberg & Persoon 13669 (WAG); Pingo, Le Testu 2158 (BM, BR, LISC, P); Essone, Le Testu 9360 (BM, BR, P, WAG); ca. 7 km E of M'Voum, A.M. Louis et al. 264 (WAG); Etouk, along Mitzi-Medouneu Rd., A.M. Louis et al. 447 (WAG).

23. *Landolphia kirkii* Dyer, Rep. Roy. Gard. Kew 1881: 39. 1881; Pichon, Mém. IFAN 35: 88. 1953; F.K. Kupicha in Fl. Zamb. 7 (2): 411. 1985.

Fig. 18, p. 103; map 23, p. 106

Type: Tanzania: T6: Dar-es-Salaam, Kirk Oct. 1868 (K, lectotype, designated here). Homotypic synonyms: *Vahea kirkii* (Dyer) Sadebeck, Jahrb. Hamb. Wiss. Anst. 9 (1): 226. 1891; *Landolphia kirkii* Dyer var. *genuina* Hall.f., Jahrb. Hamb. Wiss. Anst. 17. Beih. 3: 71. 1900.

Heterotypic synonyms: *Landolphia kirkii* var. *delagoënsis* Dew., Ann. Soc. Sci. Brux. 19 (2): 140. 1895. Type: Mozambique: Maputo: Delagoa Bay, Junod 101 (G, holotype). Homotypic synonym: *Landolphia delagoënsis* (Dew.) Pierre, Bull. Soc. Linn. Paris, sér. 2: 15. 1898; *Landolphia kirkii* var. *kirkii* subvar. *delagoënsis* (Dew.) Hall. f., Jahrb. Hamb. Wiss. Anst. 17, Beih. 3: 74. 1900.

Landolphia polyantha K. Schum. in Engler, Bot. Jahrb. 28: 452. 1900. Type: Tanzania: T6: Pugu Mts., Goetze 5 (B, holotype, n.v., destroyed; lectotype: K, designated here; isotypes: BM, BR, E, L, P).

Landolphia dondeensis Busse in Tropenpfl. 5: 405. 1901. Type: Tanzania: T8: Donde area, Barikwa-Donde, Busse 584 (P, lectotype; isolectotypes: BM, G, HBG, K, L, W, designated by Pichon). Homotypic synonym: *Landolphia kirkii* var. *dondeensis* (Busse) Stapf in Fl. Trop. Afr. 4 (1): 56. 1902.

Clitandra stapfiana A. Chev., Mém. Soc. Bot. Fr. 7: 43. 1908. Type: Cult: Trinidad: Botanical Gardens of Trinidad, Haut 6988 (K, holotype).

Liana, 1-30 m long, and up to at least 20 m high, or erect or straggling shrub, 0.30-4(-8) m high. Trunk (0.8-)2-15(-30) cm in diameter. Bark dark brown or greyish-purple, smooth or rough. Branches with large and raised or small whitish, light brown or orange lenticels, smooth or rough. Branchlets dark or light,

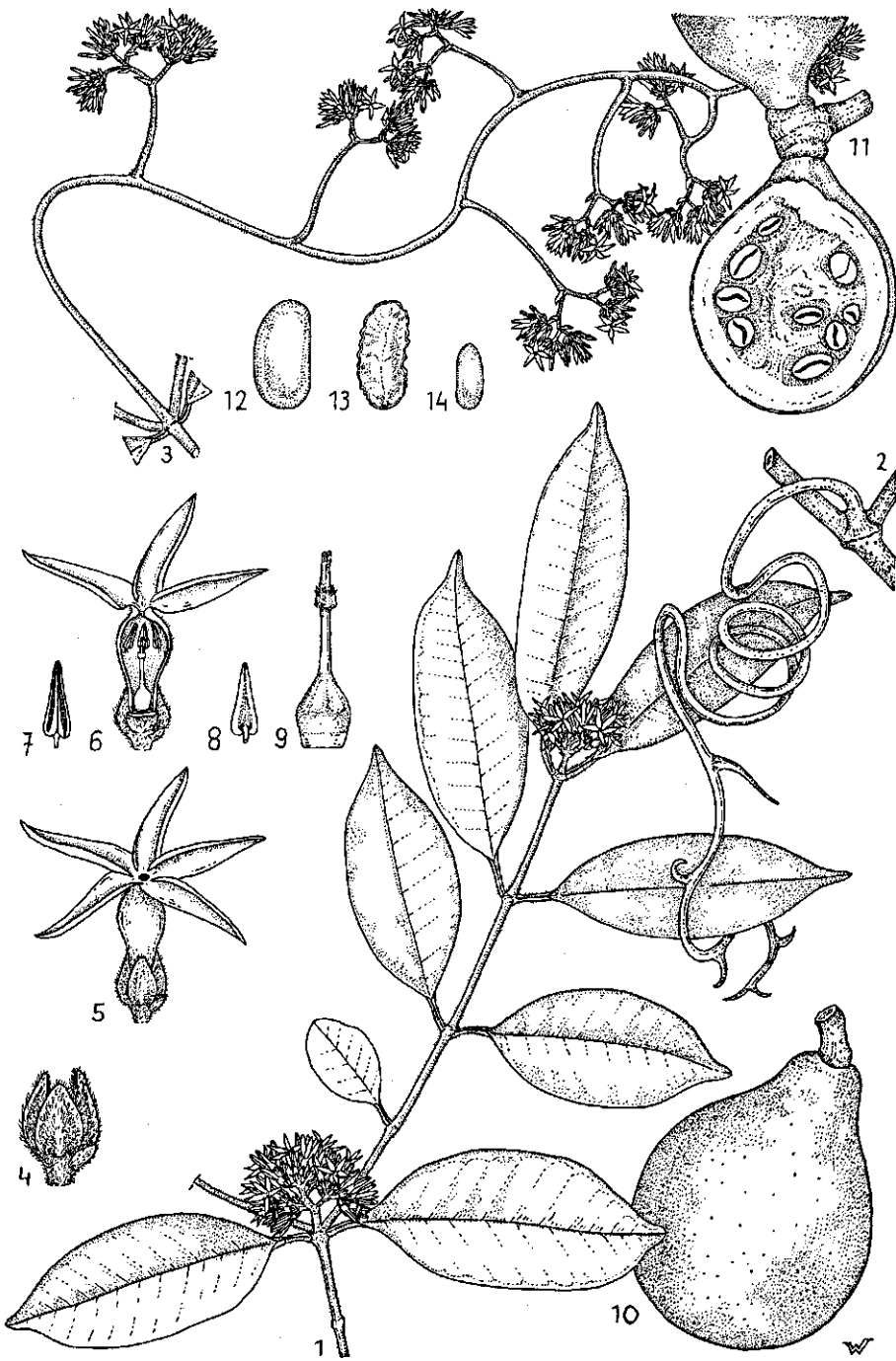


Fig. 18. *Landolphia kirkii*. 1, habit ($\times 2/3$); 2, tendril ($\times 2/3$); 3, tendril-like inflorescence ($\times 2/3$); 4, calyx ($\times 6$); 5, flower ($\times 4$); 6, opened flower ($\times 4$); 7-8, stamen in- and outside ($\times 10$); 9, pistil ($\times 10$); 10, fruit ($\times 2/3$); 11, section of immature fruit ($\times 2/3$); 12 and 14, seeds ($\times 2/3$); 13, section of seed with embryo ($\times 2/3$). 1 and 5-6 from Mendonça 2511; 2 from Strey 6810a; 3 from Correia & Marques 562; 4 and 7-9 from Lap 160; 10 from Mogg 30280; 11 from Reitsma 106; 12-13 from Gomes e Sousa 3771; 14 from Breteler 7562.

orange- or red-brown, blackish or greyish, pubescent, tomentose or pilose with whitish, green or brown indumentum. *Leaves*: pairs often alternated by one or several pairs of bracts; petiole 2-7 mm, pilose or tomentose or sometimes glabrous, often with glands in axil; blade ovate to obovate or narrowly so, occasionally broadly so, 1.3-4.3 × as long as wide, 0.9-10.0 × 0.3-4.4 cm, coriaceous or occasionally papery and glossy above when fresh, darker and often with an undulate margin when dried, retuse to acuminate at the apex with a rounded or emarginate, occasionally acute, up to 1.5 cm long acumen, attenuate to truncate at the base, occasionally nearly auriculate, more or less decurrent into the petiole, tomentose or pilose, more densely so above and on venation, especially towards base or glabrous, with margin ciliate or not; secondary veins in 7-22 pairs, straight or slightly curved, with distance in the middle of the leaf: 0.1-1.2 cm; mostly between two secondary veins one or several less conspicuous ones; tertiary venation reticulate, mostly inconspicuous, conspicuous in young leaves beneath and there sometimes darker and labyrinth-like. *Inflorescence* terminal, a dense, more or less compound dichasial cyme, occasionally at the end of the hooks of the tendrils, 0.8-5.5 × 0.7-5.5 cm or when in tendril all together: 1-14 × 1.4-10 cm, 3-70-flowered, up to 35 flowers open at a time in one inflorescence. Peduncle 2-40 mm long, often with bracts or bracteoles, pubescent, tomentose or pilose, when in tendril main axis 14-310 mm long up to first inflorescence. Pedicel 0.5-3.0 mm long, pubescent, pilose or tomentose. Bracts mostly triangular or ovate, 0.5-2.5 × 0.5-1.6 mm, mostly obtuse or rounded at the apex, ciliate, pilose or tomentose outside, pubescent or puberulent inside, often with a more or less continuous ridge of hairs on the basal line, sometimes with a membranaceous margin. *Flowers* fragrant or not. *Calyx* 1.2-2.4 mm wide: sepals ovate to obovate or triangular or broadly or narrowly so, unequal with the outer mostly shorter and wider than the inner, 0.7-3.1 × as long as wide, 0.9-3.5 × 0.8-1.8 mm, connate for 0.1-0.5 mm at the base, acute to retuse at the apex, sometimes mucronate or acuminate, ciliate, pubescent, pilose or glabrous outside, pubescent, puberulent or glabrous inside, often with a more or less continuous ridge of hairs at the basal line, sometimes auriculate at the base, often with a membranaceous margin. *Corolla* white, cream or yellow(-green), buds darker, occasionally orange, glabrous or outside basal 0.3-1.5 mm glabrous, from there pilose, pubescent, tomentose or glabrous, mostly with a few long hairs at the apex, ciliate or not, villose inside from 0.3-1.3 mm below anthers to behind the anthers and often also on auricles, otherwise sparsely pubescent or glabrous; tube 1.3-3.8(-5.3) × as long as calyx, 2.3-4.2 mm long, at the base 0.7-1.2 mm, around the anthers 1.0-1.9 mm and at the throat (0.3-)0.6-1.4 mm wide; lobes equal or subequal, (narrowly) ovate or occasionally elliptic, 0.6-1.8 × as long as the tube, 1.4-6.0 × as long as wide, 2.1-6.0 × 0.7-2.3 mm, rounded, obtuse or occasionally acute, acuminate or mucronate at the apex. *Stamens* inserted ca. 1.2-2.5 mm from the base of the corolla tube, at 0.4-0.7 of its length, 0.1-1.2(-1.8) mm included, 0.9-1.5 mm long; filaments 0.2-0.8 mm long, glabrous or occasionally pilose at the basal part inside; anthers with the base 1.3-2.7 mm from the base of the corolla tube, at 0.5-0.8 of its length, 1.5-3.5 × as long

as wide, 0.7-1.2 × 0.25-0.55 mm, rounded to acute or sometimes shortly acuminate or mucronate at the apex, glabrous. *Pistil* (1.5)2.0-3.1 mm long; ovary ovoid, ellipsoid, obpyriform, rhomboid or conical on a cylindrical base (0.1-0.6 mm high) or not, 0.6-1.3 × 0.5-1.0 mm, for 0.1-0.3 mm of a slightly different structure at the base, with (30)40-70(100) ovules, glabrous or occasionally pilose in ridges or very sparsely pilose at the upper part; style cylindrical, (0.15-)0.3-1.1 × 0.1-0.25 mm, glabrous; pistil head cylindrical or conical, 0.15-0.35 × 0.15-0.40 mm, often ciliate at the upper margin, glabrous; stigmatic apex cylindrical, conical, ellipsoid or obovoid, 0.25-0.9 × 0.15-0.35 mm, puberulent, in ridges or not. *Fruit* grey-green, yellow, brown or black, with small white, grey, brown, green or yellow more or less scattered lenticels (0.1-2.0(3.0) mm in diameter and often with a verrucose centre), occasionally without lenticels, globose, ellipsoid or pyriform, (1.2)3.0-9.3(14.4) × (1.1)3.0-8.0(14.4) cm, 10-30-seeded; wall (0.9)2.5-5.0(8.0) mm thick; sclereid cell layer 0.1-0.4 mm, occasionally not continuous; pulp orange, red or yellow. *Seed* (8.5)12.0-22.0 × 6.0-12.0 × 4.5-8.0 mm, irregularly ovoid or ellipsoid, laterally compressed; embryo straight or somewhat curved; cotyledons irregularly ovate or elliptic, 10.0-20.0 × 5.0-12.0 mm, hardly to conspicuously undulate; rootlet (0.4)0.7-1.0 × 0.8-1.3(1.6) mm.

Distribution: East Africa from south-eastern Zaire and Kenya to South-Africa. Widely distributed in botanical gardens.

Ecology: In light or more or less shady, dense, rather dry evergreen or deciduous forests and woodlands, also in savannas but there on or near rocky outcrops. Alt. 0-2000 m. Flowering throughout the year, probably somewhat more abundantly at the end of the dry, and in the rainy seasons. Mature fruits throughout the year.

Use: Pulp of the fruit of *Landolphia kirkii* is edible, used in Mozambique to brew a strong liquor. In Kenya the leaves are eaten as a vegetable. In Mozambique the stems are used for tying walls and roofs together, and the immature (?) fruits are used to poison arrows. Its rubber is used for many purposes, for example as chewing-gum (Tanzania), to make elastic strands (Zaire), to plaster drums (Zambia) or as a lime to catch birds (Mozambique, Zaire and Zambia). In Tanzania it is used as a drug to cure brain-diseases, and an extract of the root is said to be an aphrodisiac.

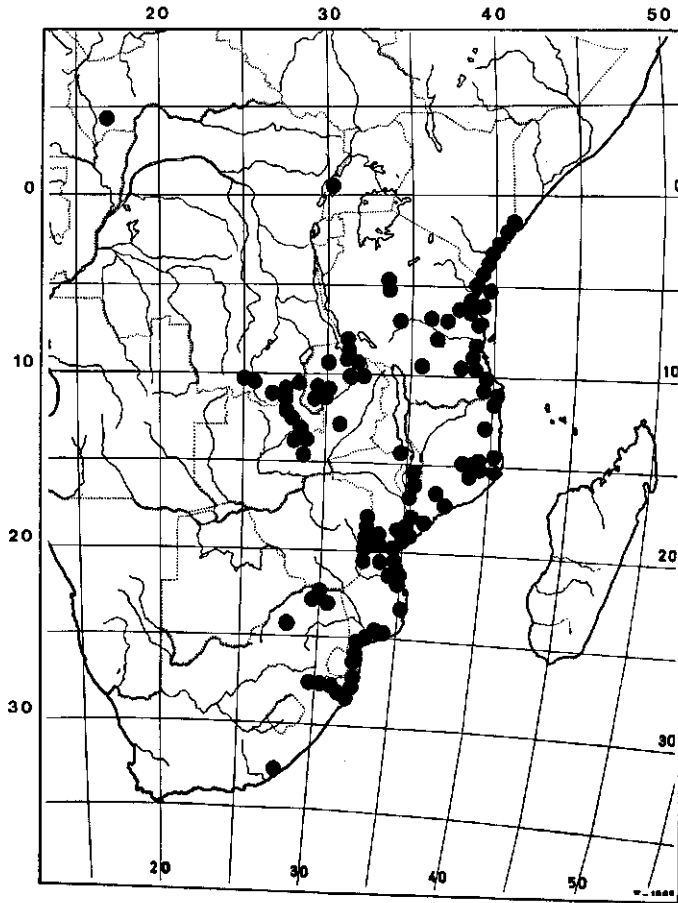
Vernacular names:

RÉPUBLIQUE CENTRAFRICAINE: Bira (near Boula).

ZAIRE: Bulundu (Kiluba), Mabungo (Kilambe), Mapila (Kishweili), Mateke, Mepila (Baluba), Muhulu (near Kolwesi), Mupila (Kitabwa), Mupira (Kiswahili), Mutoji (Kitshokwe), Muwungo (Kibemba).

KENYA: Dabeh (Boni), Giriam (near Kilifi), Mpira (Swahili, Kiboni), Mungo (near Kilifi), Mutangazi (near Kilifi).

TANZANIA: India rubber (English), Mabwungu (near Tukuyu), Matetja (near



MAP 23. *Landolphia kirkii*

Kasanga), Mbunga (Kiswah), Mikango (Kisaramo), Mpera (near Tundu Hills), Mpia mztu (Shambo), Mpila (Kikeke, Kimbunga, Kisuateli), Mpira (Kikeke, Kimbunga and near Pugu), M'Pira (Kisuaheli), Mpira nivitu (Kishambo), Mpira safi (near Useguka), Msito (near Tundu Hills), Muhanga (near Kiwali and near Tundu Hills), Mwuungoungo (near Kisarawe, Nyam. = Nyamwesi (?)), Songwe (near Nyassa Highlands), Utoroja (Kizegua).

ZAMBIA: In ponko (in Ndola District), Kabungateke (near Ndola), Mateke (near Abercorn), Mubongo (in Ndola District), Mubungo (Chiremba, Lamba and near Ndola), Mubungo-fukula (Lamba), Mubungu (near Ndola), Mudeke (Bemba), Mufulira (without location), Mukungo (near Lofu), Muteka (Chiremba and near Mwaba and Ndola), Muwungo (near Lake Bangweolo), Rubber vine (English).

MALAWI: Mpira (Woy).

MOZAMBIQUE: Babungua (Landim), Bungua (near Maputo), Docomela (without exact location), Madangomela (Landim), Magungo (near Maputo), Mahungua (near Massinga), Mamungo (near Matilde and near Mopeia), Mango (near Govuro), M'ankawa (Macua), Matinde Bunge (near Chimoio), Mavungua (Changana), Mavungwa (near Maputo), Mbungwa (Ronga and near Maputo), Mepira (near Itoculo), Mpira (near Chupanga), M'Pira (near Pundanhar), Mubunju (Chindao), Muhungo (near Maronga), Muhungua (near Búzi), Mungo (near Chimoio and near Búzi), Muongo (Chindau, Chixanga), Mut-sango (near Búzi), Muungo (Chindau, Chixanga and near Búzi), M'zimbiti (without exact location), Nungo (near Chupanga), Umbengwane (near Maputo), Umbungwa (Ronga, Thonga), Umbung Wane (near Maputo), Ungo-Tro (near Govuro), Ungue (Save), Vungua (near Gaza), Vungwa (Thonga and near Maputo), Vurimba (near Maputo, name for the rubber).

ZIMBABWE: Im Wungu (in Chirinda District) Muteke (without exact location), Muungo (near Lower Haroni), Muungu, Mu-ungu (near Selinda Mt.), Mu-Wungu (Chindao).

SOUTH-AFRICA: Mavungo (Venda), Mwikungo (near Sibasa), Rubber Tree (English).

CULT: Angola: Dinkandi (Lunuango); Trinidad: African rubber vine (English).

A selection of the ca. 430 specimens examined:

RÉPUBLIQUE CENTRAFRICAINE: Boula, Adamson 215 (G).

UGANDA: U2: Ruwenzori Mts., Stevenson Rock, Scott Elliot 8375 (K).

ZAIRE: XI: Near Lubumbashi, Bequaert 369 (BR), Gathy 2094 (BR, WAG), Lisowski 55132 (BR, K, WAG), 60254 (POZG), Quarré 4661 (BR, C, K), Rogers 10293 (BM, K, Z), 26223 (G); near Luishi, Lisowski 55133 (BR, K, WAG); near Kamina, Luapula R., Lisowski 60086 (POZG); near Kimengwe, Malaisse 7955 (BR, MO); km 60 of Lubumbashi-Sakania Rd., Schmitz 4466 (BR); between Sandoa and Dilolo, Schmitz 5399 (BR); km 7 Nasondoye-Kamina Rd., Schmitz 6208 (BR).

KENYA: K7: Gongoni, Bally 8856 (K); near Kombeni R., Breteler 7558 (WAG); Mwarakaya, Faden & Beentje 85/15 (WAG); km 3 Baragoni-Ijara Rd., Gilbert & Kuchar 5852 (EA); Arabuko, Graham 1850 (EA, FHO, K, NY); Mombasa, Hildebrandt 1999 (BM, P); Boni For., Katz 75/36 (EA); Kaya Kivara, Lap 160 and 164 (WAG); 4 km E of Ganze, Leeuwenberg 10792 (WAG); near Soko For., Reitsma 106 and 160 (WAG); 15 km W of Malindi, W of Kakuyuni, Spjut 3938 (BR, K, M, UC), Verdcourt 1188 (K, MO).

TANZANIA: Pemba Island: Weti, Burtt Davy 22397 (FHO); Ngezi For., Greenway 1479 (K). Zanzibar: sin. loc., Boivin Nov. 1848 (K, P), Vaughan 943 (FHO). Prov. unknown: Makonda, Krause Nov. 1929 (STE). T3: Pongwe-Kanga For., Faulkner 1798 (BR, K, S); Kiuhui For., Grote 3765 (EA, K); Langusa For., Sigi, Peter 56995 (WAG); E Usambaras, Maramba-Lugango, Peter 57029 (WAG); Kwamtilli-Segoma For., Peter 57041 (WAG); 15 km S of Mwakijembe, Robinette 1539 (EA). T4: Muva For. Res., Carmichael 994 (K); near Mbumba, along Kalambo R., Richards 11148 (BR, K). T6: Morogo, Eggeling 6356 (K); Pugu Mts., Goetze 5 (BM, BR, E, K, L, P, type of *Landolphia polyantha*), Holtz 1073 (EA), Semsei 3717 (BR, K, FI, WAG); Ifakara, Ulanga Distr., Haerdi 339 (BR, G, P, WAG); Ifakara Distr., Haerdi 199/0 (K, M); Pande For. Res., Harris 2575 (MO, WAG); Zanzibar-coast, near Dar-es-Salaam, Hildebrandt 1222 (BM, K, L, MO, W); Dar-es-Salaam, Kirk Oct. 1868 (K, lectotype); 48 km from Dar-es-Salaam, Kirk Feb. 1881 (K, paratype); Banda For. Res., Procter 2852 (FI, K); Ifinga, Lupembe area, N of upper Ruhudje R., Schlieben 1296 (BM, BR, G, LISC, P, S, Z); Kichi Hills, Vollesen 2702 (C, K, WAG). T7: Nyassa Highland, Kymbila Station, Stolz 301 (BM, BR, G, GH, HBG, K, L, M, MO, S, US, W, WAG, Z). T8: Barikwa, Donde, Busse 584 (BM, G, HBG, K, L, P, W, type of *Landolphia dondensis*); Lindi,

H34 (EA); Tundu Hills, Rodgers 730 (EA); 40 km W of Lindi, near Lake Lutamba, Schlieben 5271 (BM, BR, F, G, HBG, LISC, K, M, MO, NY, P, S, UC, US, Z).

ZAMBIA: W. Prov.: Mfulira, Bruse 407 (BR); Slime Dam in Fafue R., Holmes 467 (FHO, SRGH); ca. km 10 Mpongwe-Kafue Rd., Hoyle 1237 and 1238 (FHO); Miengwe For. Res., Miller 343 (EA, FHO); Chickele For. Res., near Ndola, Miller 359 (FHO); Bwana Mkubwa, Rogers 8388 (K, Z); Ndola Golf Course, White 3513 (BR, FHO, K, WAG). C. Prov.: Broken Hill For. Res., Brenan & Trapnell 7903 (FHO, K), Miller 356 (FHO). N. Prov.: Samfya Mission, Lake Bangweulu, Angus 241 (BM, BR, FHO, K, MO); Kalela, Mbesuma, along Kulunja R., Astle 938 (K, SRGH), Robinson 3946 (K, M, SRGH); Mporokoso, Bredo 5229 (BR); Abercorn, Bullock 1082 (BR, K, LISC, S), Richards 11240 (K, SRGH), Robertson 137 (K, PRE); near Mpulungu, Burt 6346 (BM, BR, FHO, FI, K, LISJC, P, PRE, S); Kasama, Clayphan 51 (K); Kasome, Fries 712 (UPS, Z); near Kipushi, Miller 353 (FHO); near Malole, Sanane 950 (WAG); Saisi R., Sanane 1380 (WAG).

MALAWI: sin. loc., Buchanan 182 (A, BM, E, G, US), 220 p.p. (K). C. Prov.: Mua Res., Namik-okwe R., Banda 693 (K, SRGH). S. Prov.: Shire Highlands, Buchanan s.n. (K); Zomba Distr., Clements 651 (FHO), Whyte 3 (K); Mulanje, Dowsett-Lemaire 1050 (K).

MOZAMBIQUE: Niassa: Itoculo, Andrada 523 (LISU); between Quiteraje and Mocimboa da Praia, Barbosa 2103 (LISC); Cabo Delgado, Ancuabe Mt., Groenendijk & Dunge 613 (BR); Monape, de Koning et al. 9574 (WAG); along Ribaué-Lalaua Rd., Maçêdo & Macuacua 3659 (WAG); km 21 Alto Molocué-Alto Liganha Rd., Torre & Correia 16283 (LISC). Zambesia: Namagoa Plantations, Lugela-Mocuba Distr., Faulkner 89 (BR, G, K, LISJC, S, SRGH); Matilde, Le Testu 318 (BM), 464 (BM, BR, K, LISC, P); Cauceçai, Le Testu 337 (BM); km 18 Mopeia-Raposo Rd., Torre & Correia 16752 (LISC); Maganja da Costa, 35 km S of Vila de Maganja, Torre & Correia 17023 (LISC). Manica & Sofala: Muccheve For. Res., Búzi, Carvalho 728 (BR, MO), 822 (BR, MO); near Sofala, Johnson 28 (K); Chupanga, Kirk 12 (K, paratype), 12-5-1861 (K, W, paratype); Chimoio, Nova Vanduzi, Mendonça 2511 (LISC); Mavita, Xiroso Mt., Mendonça 2632 (LISC); Dondo, Mossop 13483 (K, SRGH); Tchianganhi Mt., Perreira & Marques 763 (BR, LMU, MO, WAG); Madanda For., Swynnerton 81a (BM, K, SRGH, Z), Dawe 419 (K). Gaza & Inhambane: km 5 Tessolo-Jofane Rd., Correia & Marques 3313 (WAG); 30 km N of mouth of Limpopo R., Earthy 36 (FHO); Chirindzene, 5 km from Chipenhe, Fernandes et al. 287 (LMU); Massinga, Gomes & Sousa 1902 (BR, COI, K), 1910 (COI, K, LISC); between Mabote and Mambane, Mendonça 1976 (LISC); between Vilanculas and Macovane, Orey 13 (LISC); along Chibuto-Guija Rd., Pedro & Pedrogão 1523 (LMU, PRE); between Inhamine and Inhambane, Torre 3861 (LISC). Maputo: near Maputo, Barbosa & de Lemos 7784 (COI, K, LISC), Cormaus Jan. 1899 (LD), Schlechter 11619 (BM, BR, COI, E, G, HBG, K, L, M, MO, P, S, US, WAG, Z); km 26 Manhica-Chinhanguanine Rd., Correia & Marques 562 (LMU, MO, WAG); km 16 Salamanca-Ponta da Ouro Rd., Fernandes et al. 32 (LMU); Inhaca Island, P. Jansen & de Koning 7431 (WAG), Mogg 30027 (K, MO, PRE), 30280 (K, MO, PRE, SRGH); Delagoa Bay, Junod 101 (G, lectotype of *Landolphia kirkii* var. *delagoënsis*), Monteiro 2/3 (G, K, P); Bela Vista, Lemos & Balsinas 257 (BM, LISC, K, PRE, SRGH); near Polana, Torre 1938 (LISC).

ZIMBABWE: E. Prov.: S of Umtali, Chase 5116 (BM, BR, COI, K, LISC, MO, PRE, SRGH), 7855 (BR, K, LISC, MO, PRE, SRGH, WAG), 8055 (K, M, SRGH); E of Inyangani, Chase 7861 (K, LISC, PRE SRGH); Martin For. Res., Chimanmani Mts., Mavi 640 p.p. (SRGH); Gungunyana, Nobbs 716 (SRGH); Chirinda For., Pardy & Armitage 19 (SRGH), Swynnerton 81 (BM, K, SRGH, US, Z); Pungwe valley, Plowes 2359 (BR, LISC, SRGH); 2 km NW of Rakonde Hill, Nyamkombe R., Pope & Muller 1759 (MO); Musapi Gorge, Taylor 3329 (NBG).

SOUTH AFRICA: Transvaal: Soutpansberg, Wyllies Poort, Acocks 1905 (K, S), Jan. Codd 8343 (COI, K, L, MO, UPS), Hutchinson & Gillet 3230 (BM, K); near Fundunsi Lake, Codd & Dyer 4500 (K); near Punda Maria, Codd & Dyer 4557 (K); 22 km from Waterberg to Blouberg, Nel 379 (K); Soutpansberg, farm 'Zoutpan 193', Obermeyer et al. 304 (K); Soutpansberg, Waterpoort, Rogers 21547 (BP); Soutpansberg, Messina, Rogers 21682 (Z); Soutpansberg, 14 km E of Louis Trichardt, Schlieben 7359 (BR, F, G, HBG, K, M, NY); between Wyllies Poort and Louis Trichardt, Wall 17-10-1938 (S). Natal: Mkuse Game Res., Bamps 7042 (BR); Kosi Bay, Edwards 2550 (K); Ingwavuma, Ndumu Hill, Pooley 797 (E); near Maputa and Big Kosi Lake, Rodin 4698 (F, K, MO, NY, S, UC, US); St. Lucia, Hlabisa Distr., Strey 6810a (BR, E, M, MO, S), 6810b (M); Hlabisa, Ward 2663 (FHO); km 11 Mansengwenya-Mbaswana Rd., de Winter & Vahrmeijer 8537 (BR).

CULT: Grenada: Botanic Station St. George, Broadway 2870 (K, MO). Trinidad: Botanical Garden, Broadway 1-7-1922 (FHO), 17-4-1929 (G, P, S, US), Haut 6988 (K, type of *Clitandra stapfiana*). São Tomé: Roça Monte-Café, Chevalier 13638 (P). Angola: Cabinda: sin. loc. Dawe 38 (K). Indonesia: Java: Bogor Botanical Garden, van Harreveld 6562 (L), sub XVI C76, Lecuwenberg 13148 (WAG), Spire May 1904 (P), sub X C84, Anonym. 7-7-1869 (L, P). Jamaica: Castleton Gardens, Harris 4-11-1902 (NY, US). Sri Lanka: Gampaha Botanical Garden, Huber 54 (US); Nemeratgoda Botanical Gardens, Anonym. Mar. 1884 (BM, K). Guyana: sin loc., Jenman 4118 (NY). Mozambique: Mambone, Johnson 13 (K). India: Calcutta Botanical Gardens, Prain 21-5-1896 (K). Netherlands: Greenhouse Wageningen, van Setten 712 (WAG). Malaysia: Penang Botanical Gardens, Anonym. Mar. 1900 (K).

24. *Landolphia lanceolata* (K. Schum.) Pichon, Mém. IFAN 35: 188. 1953.

Fig. 19, p. 82; map 24, p. 111

Basionym: *Carpodinus lanceolata* K. Schum. in Engl. & Prantl, Nat. Pflanzenf. 4 (2): 132. 1895.

Type: Zaire: V: between Lufubu and Niangwe, Pogge 1074 (K, lectotype; isolectotype: P, designated by Pichon).

Heterotypic synonyms: *Landolphia hypogea* Ch. Lemaire or *Landolphia subterranea* Ch. Lemaire, Mouv. Géogr. 13: 10. 1896. Type: Zaire: between Isangila and Inkisi R., Luja Nov. 1895 (BR, lectotype, designated here).

Carpodinus lanceolata var. *angustifolia* Chev. Compt.-Rend. Acad. Sci. 135: 513. 1902. Type: Congo: Brazzaville, Chevalier 4274 (P, holotype; isotype: K).

Carpodinus lanceolata var. *latifolia* Chev. l.c. Type: Congo: Brazzaville, Chevalier 4272 (P, lectotype; isolectotypes: BM, G, L, W, Z, designated here).

Low, erect shrub or herb, 15-70 cm high, mostly without tendrils and with horizontal, subterranean, gnarly, often transversally cracked, blackish stems up to 1.3 cm in diameter or probably more, occasionally a tendrillate liana. Stem above soil level up to about 1 cm in diameter. Branches and branchlets smooth or shallowly fissured and/or rough with light-brown lenticels, reddish- or greyish-brown, pilose or glabrous. *Leaves* often in whorls of 3 or 4; petiole 0.1-1.5 cm long, sparsely pilose or glabrous, with 1 or several glands at each node; blade ovate to obovate or narrowly so, 1.5-9.0 × as long as wide, 1.6-16.0 × 0.6-4.4 cm, more or less coriaceous when fresh, retuse to mucronate or acuminate with an acute or obtuse acumen at the apex, up to 1.0 cm long attenuate, acute or obtuse at the base, glabrous, young leaves sparsely pilose at the margin, the apex (above) and the midrib (beneath), often with small black glandular dots beneath; with 6-17 pairs of (almost) straight secondary veins, in the middle of the leaf 0.4-1.2 cm from each other; between 2 secondary veins often 1 or 2 less conspicuous ones; tertiary venation reticulate, conspicuous beneath. *Inflorescence* terminal, a lax irregular dichasial cyme, 1.5-7.0 × 1.5-4.0 cm, 1-8-flowered; peduncle up to 60 mm long, pilose or glabrous; pedicel 1-26 mm long, pilose or glabrous. Bracts 1-4 along pedicel, the highest sepal-like, ovate to obovate, or narrowly or broadly so, 0.9-3.7 × 0.7-1.8 mm, retuse to mucronate or slightly acuminate at the apex, mostly with 1 or 2 small triangular glands at the base of the mostly ciliate, for up to 0.4 mm broad membranaceous margin, pilose outside, mostly only partly so, or glabrous, glabrous or with some hairs

at the apex inside. *Flowers* fragrant. *Calyx* 1.5-4.0 mm wide; sepals sometimes 4 or 6(7), unequal, ovate or elliptic, 1.0-3.3 × as long as wide, 1.7-4.5 × 1.3-2.3 mm, connate at the base for 0.1-0.4 mm, truncate to acuminate at the apex, sometimes auriculate at the base, with or without 1 or 2 small triangular glands at the base of the mostly ciliate, membranaceous margin, pilose or glabrous outside, glabrous inside. *Corolla* white, cream or yellow, pilose inside behind and up to 1.0-5.0 mm below the anthers and on the auricle, occasionally also pilose in the throat and/or on parts of the lobes, glabrous or pilose or pubescent outside, especially at the centre of the tube and just below the lobes and at the base of the ciliate margins not covered in bud; tube 1.9-5.2 × as long as calyx, 5.2-11.2 mm long, at the base 1.0-2.2 mm, in the middle 0.9-1.6 mm, around the anthers 1.9-2.7 mm and at the throat 1.7-2.6 mm wide; lobes (narrowly) ovate or elliptic, 2.2-6.5 × as long as wide, 0.5-2.2 × as long as tube, 4.5-17.0 × 1.9-4.0 mm, rounded to mucronate at the apex. *Stamens* 1.4-2.3 mm long, inserted 5.1-7.6 mm from the base of the corolla tube, at 0.62-0.89 of its length, 0.0-0.8 mm included; filaments 0.3-1.2 mm; anthers with their base 5.3-7.8 mm from the base of the corolla tube, at 0.68-0.9 of its length, 2.3-4.3 × as long as wide, 1.2-1.9 × 0.4-0.7 mm, rounded, acute or mucronate with an acumen, up to 0.1 mm long. Often with a few long hairs at the apex. *Pistil* 5.8-8.7 mm long; ovary ovoid, ellipsoid or conical on a glabrous base, 0.3-0.6 mm high and 0.7-1.2 mm wide cylindrical or slightly widened, 1.2-1.8 × 0.8-1.3 mm, pilose; ovules 30-80; style cylindrical, often somewhat widened towards the base and/or towards the apex, 3.9-6.0 × 0.15-0.3 mm, pilose or tomentose, often more so towards the apex; pistil head ovoid, cylindrical, ellipsoid or conical, 0.15-0.45 × 0.25-0.5 mm, mostly ciliate at the upper margin; stigmatic apex conical, cylindrical, or obovoid on a cylindrical base, 0.4-0.9 × 0.2-0.35 mm, rounded or obtuse at the apex, puberulent. *Fruit* (light) yellow or orange, smooth, with small lenticels up to 0.2 mm in diameter, occasionally also with glandular or verrucose dots up to 0.5 mm in diameter, globose, pyriform, rhomboid, (ob)ovoid or ellipsoid, rounded to acuminate at the apex, 2.3-10.0 × 1.7-10.0 × 1.7-10.0 mm, 2-12-seeded; wall 0.2-1.5 cm thick. *Seed* more or less irregularly ovoid or ellipsoid, often laterally compressed and/or with 1 or 2 flattened sides, 10-30 × 8-18 × 5-12 mm. Embryo curved or almost straight, irregularly (broadly) ovate or elliptic, 8-28 × 7-16 mm, undulate; rootlet 0.6-1.3 × 0.9-2.1 mm.

Distribution: Southern and western Zaire, adjacent parts of Congo and Angola.

Ecology: Steppes, savannas and woodlands, often on sandy soils. Alt. 0-1500 m. Flowering throughout the year. Mature fruits throughout the year.

Uses: The latex of *Landolphia lanceolata* is said to be of low quality for use as rubber. The fruits are said to be delicious, easily obtainable and are often sold on markets.

A selection of the ca. 150 specimens examined:

CONGO: Ilono, Babet 5-9-1930 (P); near Brazzaville, Chalot 8 (BR, P), Chevalier 4272 (BM, G, L, P, W, Z, lectotype of *Carpodinus lanceolata* var. *latifolia*), 4274 (K, P, type of *Carpodinus lanceolata* var. *angustifolia*), 4275 (BR, G, K, P, paratype of *Carpodinus lanceolata* var. *latifolia*), 4278 (G, paratype of *Carpodinus lanceolata* var. *latifolia*), 4287 (P, paratype of *Carpodinus lanceolata* var. *latifolia*), 4288 (G, L, P, paratype of *Carpodinus lanceolata* var. *latifolia*), 4296 (P, paratype of *Carpodinus lanceolata* var. *latifolia*), 5039 (P, paratype of *Carpodinus lanceolata* var. *latifolia*), 11268 (COI, P), de Wit 5985 (WAG); Gamakala, Descouings 6005 (P); Mansiniou, Hakanson 21-9-1931 (LD, S); Batéké Plateau, Makany 373b (P); Gatsou, Markström 076 (UPS); Yangui, de Néré 152 (P); between Mandiéle and Ngatsou R., Sita 1180 (P).

ANGOLA: Uíge: Maquela do Zombo, Dawe 153 (K); Sacandica, Gossweiler 10554 (BM, COI); between Quibocolo and Luete R., Raimundo et al. 497 (BR, LISC). Malange: Majakalla Country, Mechov 520 (G, M, UPS, W, Z). Lunda: between Carrissombo and Saurimo, Carisso & Mendonça 201 (COI); between Saurima and Dundo, Cavaco 1263 (P); near Carrissombo, Cavaco 1371 (P); Portugalia, Gossweiler 13662 (BM, COI, K, LISC, P, US). Bié: near Cuqueque R., Andrade 2 (COI, Z). Cuando-Cubango: Cassuango and Cuiriri R., Gossweiler 4086 p.p. (COI, LISC, K); Cuebe and Cuatiri Rs., Gossweiler s.n. (COI); km 80 Caiundo-Menongue Rd., Mendes 2368 (LISC); km 14 Menongue-Longa Rd., Mendes 2766 (LISC); Cuito-Cuanavale, Tumbo R. valley, Mendes 2910 (LISC); Cuito Cuanavale, Longa R. valley, Mendes 3164 (LISC).

ZAIRE: III: near Kinshasa, Baldwin 14163 (K), Bequaert 821 (BR), 7583 (BR); Kimwanda, Cabra-Michel 42 (BR); Dembo, Callens 1849 (BR), Dewèvre 489 (BR); Kimuenza-Lovanium, Breyné 7 (BR, MO), Carlier 158 (BR, K, M), Mildbraed 3613 (HBG, P); between Mvuazi and Ngidinga, Compère 569 (BR); Kinkole, Compère 1806 (BR); Luidi, Davio 52 (A, BR, MO, P, WAG), Delhaye 400 (BR, K); Selembao, Demeuse 110 (BR); Mvuazi, Devred 456 (BR, K); Mpese, Greggio anno 1900 (BR); Tampa, E. Laurent 19-3-1896 (BR, HBG, K); Sabuka, E. & M. Laurent Oct. 1903 (BR); between Isangila and Inkisi R., Luja Nov. 1895 (BR, lectotype of *Landolphia subterranea* or *Landolphia hypogea*); about km 102 Kin-Kikwit Rd., Lisowski 56745 (POZG); Amba Mt., Muambi 55 (BR); near Kinzanzu, Pauwels 132 (BR); between Lubizi and Msaka, Pauwels 615 (BR); Kimvula, Pauwels 1098 (BR); Dolo, Pynaert 124 (BR), Schlechter 12447 (BR); Lukunga, Robyns 261 (BR); Kipako, Vanderyst 13614 (BR); Sona-Bata, Vanderyst 25600 (BR); Kitempa, Vanderyst 30562 (BR); Kikoka, Vanderyst 32045 (BR); Selo, near Kisantu, Vanderyst 36076 (BR); Banza-Kisiwu, Vanderyst 14-5-1908 (BR). IV: Luebo, Achten 272b (BR); near Tolo, Body anno 1906 (BR); Kiykaka, Devred 1924 (BR, COI, K, LISC, M); Mwembe, Dumont 16 (BR); Domoy, near Ilebo, Dumont 62 (BR); Kwamouth, Gentil 94 (BR), M. Laurent 618 (BR); Ikusama, Germain 2493 (BR); Nioki, Flamigni 45 (BR); Bena-Dibele, Flamigni 128/9 and 129/9 (BR), Luja 266a (BR, HBG); Mangai, Flamigni 299 (BR); Demba, Germain 7971 (BR); Kinzenzenzo, Jernander 25 (BR); between Popok-abaka and Kasongo-Lunda, Lebrun 120 (BR); near Batioongo, Lejoly 82/774 (BR); between Luebo and Djoko-Punda, Lescrauwaet 272 (BR); Ndekesha, Liben 3371 (BR); Mikalay, Liben 3465 (BR, C, P, WAG); along Kenge-Bankana Rd., 4 km E of the W border of Bandundu Région, Lisowski 85031 (BR); Luluabourg, Lynes 100 (BR), Lynes 238 (BR); along Kianza-Kahemba Rd., Robyns 3667 (BR); Baija, along Kwilu R., Sapin 11-6-1906 (BR); Madibi, Sapin 2-7-1906 (BR); Gangangala, Vanderyst 6177 (BR); between Kikwit and Ipamu, Vanderyst 9771 (BR); Luala, Vanderyst 10017 (BR); Panzi, Vanderyst 17257 (BR); near Lubefu, Anonym. lettre 161 (27-2-1908) (BR). V: between Lubufu and Niangwe, Pogge 1074 (K, P, lectotype), VI: Basenga, Gentil 36 (BR); Dekese, Jensen and Dekese, Lebrun 6433 (BR, C, K); along Dekese-Bolombo Rd., Risopoulos 1137 (BR, WAG).

CULT.: Congo: Brazzaville, ORSTOM, Farron 4653 (P). Zaire: Mangé Plantations, Anonym. s.n. (BR).

25. *Landolphia landolphioides* (Hall. f.) Chev., Rev. Int. Bot. Appl. 28: 401. 1948; Pichon, Mém. IFAN 35: 53. 1953.

Basionym: *Clitandra landolphioides* Hall. f., Jahrb. Hamb. Wiss. Anst. 17, Beih. 3: 119. 1900. Homotypic synonym: *Carpodinus landolphioides* (Hall. f.) Stapf in Fl. Trop. Afr. 4 (1): 80. 1902.

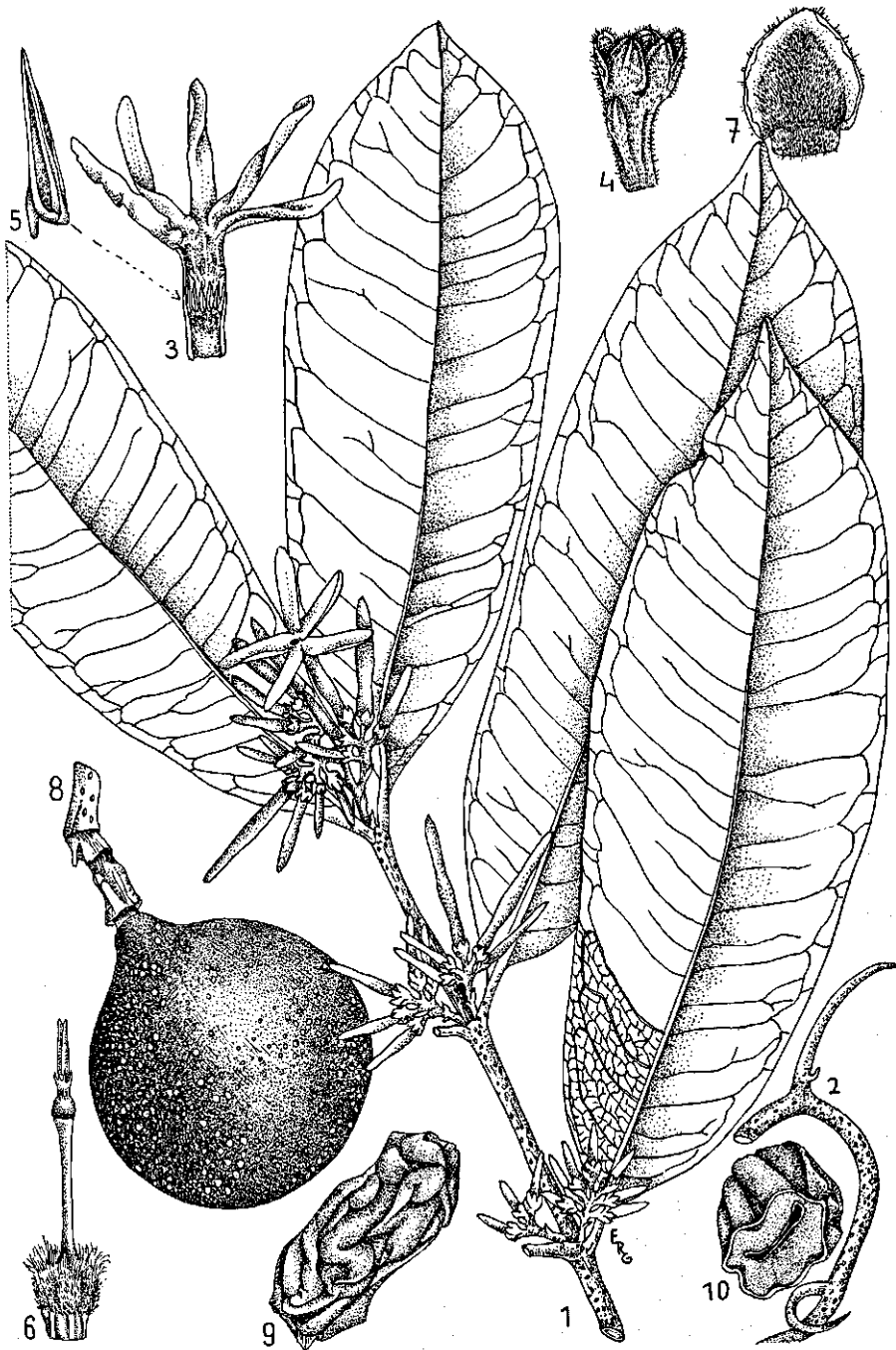


Fig. 20. *Landolphia landolphioides*. 1, habit ($\times 2/3$); 2, part of tendril ($\times 2/3$); 3, opened corolla ($\times 1$); 4, calyx ($\times 2$); 5, stamen ($\times 10$); 6, pistil ($\times 4$); 7, sepal ($\times 6$); 8, fruit ($\times 2/3$); 9, seed ($\times 2$); 10, section of seed ($\times 2$). 1 from Espirito Santo 4495; 2 from Leeuwenberg 9572; 3-7 from Leeuwenberg 9567; 8-10 from de Wilde 1281, preserved in alcohol.

Types: Cameroun: Buea, Deistel 556 (B, syntype, n.v. destroyed; lectotype: P; isolectotypes: A, BM, HBG, K, MO, S, UPS, US, W, Z, designated by Pichon).

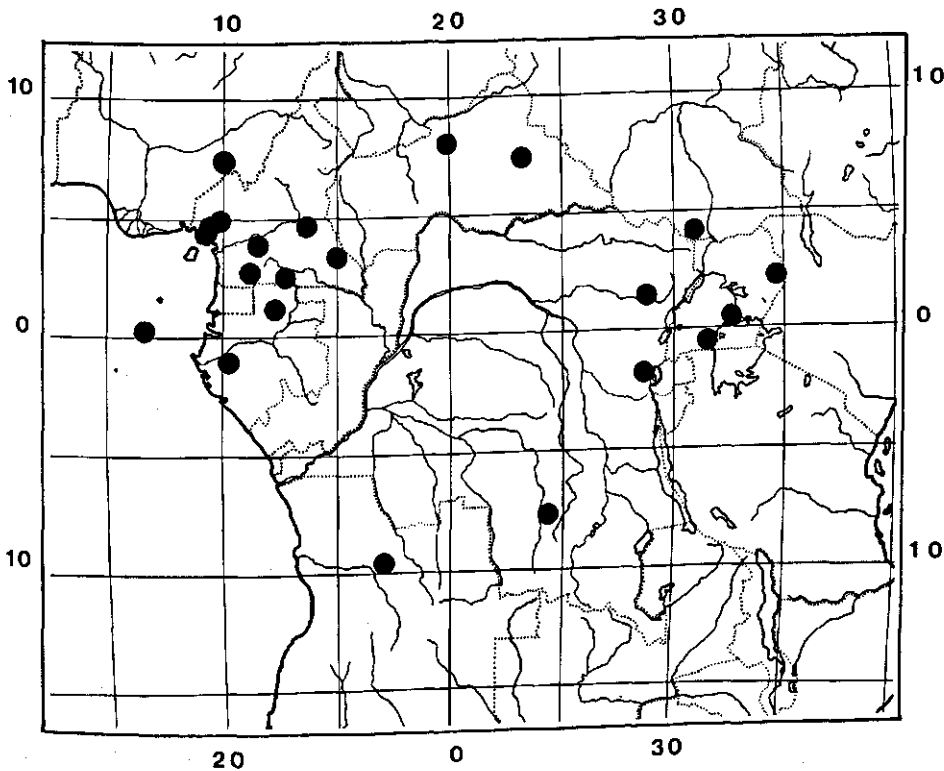
Heterotypic synonyms: *Landolphia dawei* Stapf in Fl.Trop. Afr. 4 (1): 590. 1904. Types: Uganda: Dumu For., Buddu, Dawe 47 p.p. (K, lectotype, designated here).

Landolphia dawei var. *multinervis* Chev., Bull. Soc. Bot. Fr. 53: 32. 1906. Type: Cultivated at São Tomé, Roça Porto-Allegre, Chevalier 13632 ter (P, lectotype, designated by Pichon).

Liana, 5-30 m high. Trunk brown or grey, up to 30 cm in diameter, bark fissured and somewhat verrucose. Branches with pale brown or greyish lenticels; branchlets red or dark, bright brown or grey, tomentose or glabrous. *Leaves*: petiole 4-17 mm long, glabrous, sometimes some glands in axil; blade elliptic, sometimes ovate or obovate, occasionally narrowly so, 1.4-3.9 × as long as wide, 6.0-26.0 × 2.8-10.3 cm, more or less coriaceous when fresh, membranaceous to coriaceous when dried, often paler beneath and with pale venation, obtuse or acuminate at the apex, with acumen obtuse or acute and up to 1 cm long, rounded, acute or slightly angustate at the base, more or less decurrent into the petiole, glabrous; secondary veins in 7-16 pairs, straight to slightly curved, with distance in the middle of the leaf: 0.3-3.0 cm; between 2 secondary veins 1-3 less clear ones, anastomising veins in a gentle curve; tertiary venation coarsely, labyrinth-like, reticulate, conspicuous and sometimes dark beneath; all veins impressed above. *Inflorescence* axillary or terminal, a more or less compound dichasial cyme, 2.5-6.5 × 1.9-4.0 cm, 3-45-flowered. Peduncle 3-15 mm long, glabrous to tomentose; pedicels 2-8 mm long, glabrous to tomentose. Bracts ovate or triangular, 1.8-4.0 × 0.8-2.0 mm, rounded to mucronate at the apex, ciliate, tomentose outside, glabrous inside, often with a membranaceous margin, 0.3-1.1 mm wide. *Flowers* fragrant. *Calyx*: 2.7-6.0 mm wide, sepals ovate to broadly ovate, subequal, 0.6-1.5 × as long as wide, 1.4-3.0 × 1.6-3.1 mm, connate at the base for 0.4-0.8 mm, rounded or obtuse at the apex, cordate at the base, ciliate or not, shortly tomentose or glabrous outside, glabrous inside, with an often glabrous membranaceous margin, 0.3-0.9 mm wide. *Corolla* white, creamy or yellow, often tinged with orange, red, violet or green, especially outside on the tube, often in- and outside, and in tube and lobes of different colour, pilose or tomentose outside, less hairy or even glabrous at the base of the tube, and towards the apex on the part of the lobes covered in bud or entirely glabrous, glabrous inside or nearly so, pilose around the anthers and up to 0.3 mm below that level, often in ridges; tube 3.2-6.2 × as long as calyx, 8.0-14.0 mm long, at the throat 2.3-2.9 mm wide, around the anthers 2.8-3.9 mm wide and at the base 1.6-2.7 mm wide; lobes (sub)equal, 0.7-1.6 × as long as tube, 2.7-5.0 × as long as wide, 6.5-17.4 × 2.5-4.3 mm, rounded at the apex. *Stamens* inserted 5.1-7.2 mm from the base of the corolla, at 0.4-0.6 of its length, 1.2-4.2 mm included, 2.2-3.0 mm long; filaments 0.3-1.0 mm long, occasionally with some hairs inside; anthers 2.8-6.9 × as long as wide, 1.9-2.7 × 0.4-0.8 mm, acuminate,

acumen 0.1-0.2 mm long. *Pistil* 6.8-8.0 mm long; ovary glabrous to tomentose, obconical on a glabrous to puberulent cylindrical base, 0.9-1.8 × 1.2-1.4 mm (cylindrical part 0.3-0.7 × 0.8-1.2 mm), with 50-180 ovules; style cylindrical, 4.0-4.3 × 0.2-0.3 mm, occasionally basal and/or upper part up to 0.5 mm wide, glabrous; pistil head pyriform 0.45-1.0 mm long, 0.4-0.6 mm wide near base, 0.2-0.4 mm near apex, fimbriate to ciliate; stigmatic apex 0.5-1.9 × 0.2-0.4 mm, puberulent on 4 or 5 curved ridges, occasionally lower part villose, with the lobes obtuse or acute at the apex. *Fruit* yellow, yellowish or glaucous, often with scattered lenticels, pyriform to nearly globose or ovoid, (3.5)5.5-8 × (2.5)5.5-7 × (2.5)5.5-7 cm, 5-30-seeded; wall 0.4-7.5 mm thick, sclereid cell layer 0.1-0.5 mm thick, not always continuous; pulp fleshy, yellowish. *Seed* 11-21 × 6-13 × 6-8 mm, irregularly ovoid, laterally compressed, scrobiculate, (depressions circulate or elongate, 0.7-6.0 × 0.7-2.0 mm, and up to 1.5 mm deep). Testa 0.2-1.5 mm thick. Embryo curved; cotyledons irregularly and broadly ovate, 1.3-1.7 × 0.5-0.9 mm, more or less coarsely undulate; rootlet 0.9-1.9 × 0.8-1.5 mm.

Distribution: Scattered over entire Central Africa inclusive of Sudan, Uganda, Angola and São Tomé, found once in Sierra Leone and Guinée.



MAP 25. *Landolphia landolphioides*

Ecology: Primary and secondary forests, also gallery and montane forests. Alt 0-1700 m. Flowering mainly at the beginning of the rainy season. Mature fruits throughout the year.

Uses: Latex of *Landolphia landolphioides* is used as a rubber in Uganda and Cameroun, and the fruits are eaten in Cameroun.

Vernacular names:

CAMEROUN: Aquatayan (near Nlohé), Avom (Boulou), Ngagé (Boulou).

RÉPUBLIQUE CENTRAFRICAINE: Dinga (Lissongo des Babingas), Mokangak-anga (Lissongo), Malomboma (Lissongo).

ZAIRE: V: Bula Matari (near Kaniama), Ebrenbalé (Mayogo), Lelimia (azandé).

SUDAN: Batuka (near Laso), Ola (near Laso).

A selection of the ca. 60 specimens examined:

GUINÉE: Dalaba, Adam 11847 (MO, WAG).

SIERRA LEONE: Loma, Jaeger 9801 (K).

NIGERIA: Gongola State, Chapman 5189 (K).

CAMEROUN: near Buea, Annet 36 (P, WAG), Bretelet et al. MC 294 (P, WAG), Dalziel 8242 (E, K, P, US), Deistel 144 (A, BM, K, P, S, US, W, Z), 556 (A, BM, HBG, K, MO, P, S, UPS, US, W, Z, type), Hutchinson & Metcalf 108 (K); Mt. Cameroun, Buea side, Etuge & Thomas 109 (WAG); Buea-Victoria Rd., Fairchild 1178 (BR, GH, MO, US); Mont Fébé, 3 km NW of Yaoundé, Bretelet 2860 (WAG); 10 km N of Ndemba II, 30 km N of km 29 of Bertoua-Nanga Eboko Rd., Leeuwenberg 5844 (BR, C, COI, K, LISC, MO, P, WAG); Manengouba Mts., near Nkongsamba, Leeuwenberg 9567 (WAG); W of Ebolowa-Si I, Raynal 10356 (P); N'Kolbisson, ca. 8 km W of Yaoundé, de Wilde & de Wilde-Duyffjes 1218 (WAG), 2629 (BR, K, MO, P, WAG, Z), 2646 (WAG).

RÉPUBLIQUE CENTRAFRICAINE: Yalinga, Le Testu 2597 (BM, BR, GH, K, LISC, MO, P, WAG), 3895 (BM, BR, GH, LISC, P, WAG); Le Chari, Martin s.n. (P); Boukoko, Tisserant 2498 (BM, BR, LISC, P, WAG).

GABON: Mimvoul, Le Testu 9063 (BM, GH, P).

SÃO TOMÉ: Monate Café, St. José, Espirito Santo 4495 (LISJC).

ZAIRE: sin. loc., Boone s.n. (BR). VI, Epulu, Hart 558 (BR); IX, Biriko, Masisi Terr., A. Léonard 3212 (BR, WAG).

ANGOLA: Malange: Quela, von Nolde s.n. (BM).

SUDAN: Equatoria: Laso, Yei R., Sillitoe 262 (K).

UGANDA: U1: Loro For., near Kipandi R., Dawe 504 (K). U4: Dumu For., Buddu, Dawe 13 p.p. (K, paratype of *Landolphia dawei*), 47 p.p. (K, lectotype of *Landolphia dawei*), (drawing fruit and seed) 85 (K), 223 (K); Kipayo For., Dümmer 669 (BM), 670 (BM, P, US), 2431 (BM, K, MO, US); Sese, Mugaye, Thomas 4100 (BR, K).

CULT.: São Tomé: Roça Monte-Café, Chevalier 13632 (P), 13633 bis (P), 13633 (P), Lucas 2 (BM, BR, LISJC); Roça Porto-Alegre, Chevalier 13632 bis (P), 13632 ter (P, lectotype of *Landolphia dawei* var. *multinervis*). Zaire: Botanical Gardens of Eala, Chevalier 28057 (P), 28081 (P).

26. *Landolphia lecomtei* Dew., Ann. Soc. Sci. Brux. 19 (2): 117. 1895; Pichon, Mém. IFAN 35: 135. 1953.

Type: Congo: Kitabi, near Kouilou R., Lecomte B-100 (BR, holotype; isotypes: K, P). Fig. 21, p. 117; map 26, p. 119

Heterotypic synonym: *Landolphia congolana* R. Good, Journ. of Bot. 67, suppl. 2: 83. 1929. Type: Angola: Cabinda: S of Buco Zau, Gossweiler 6854 (BM, holotype; isotypes: COI, LISJC, LISU).

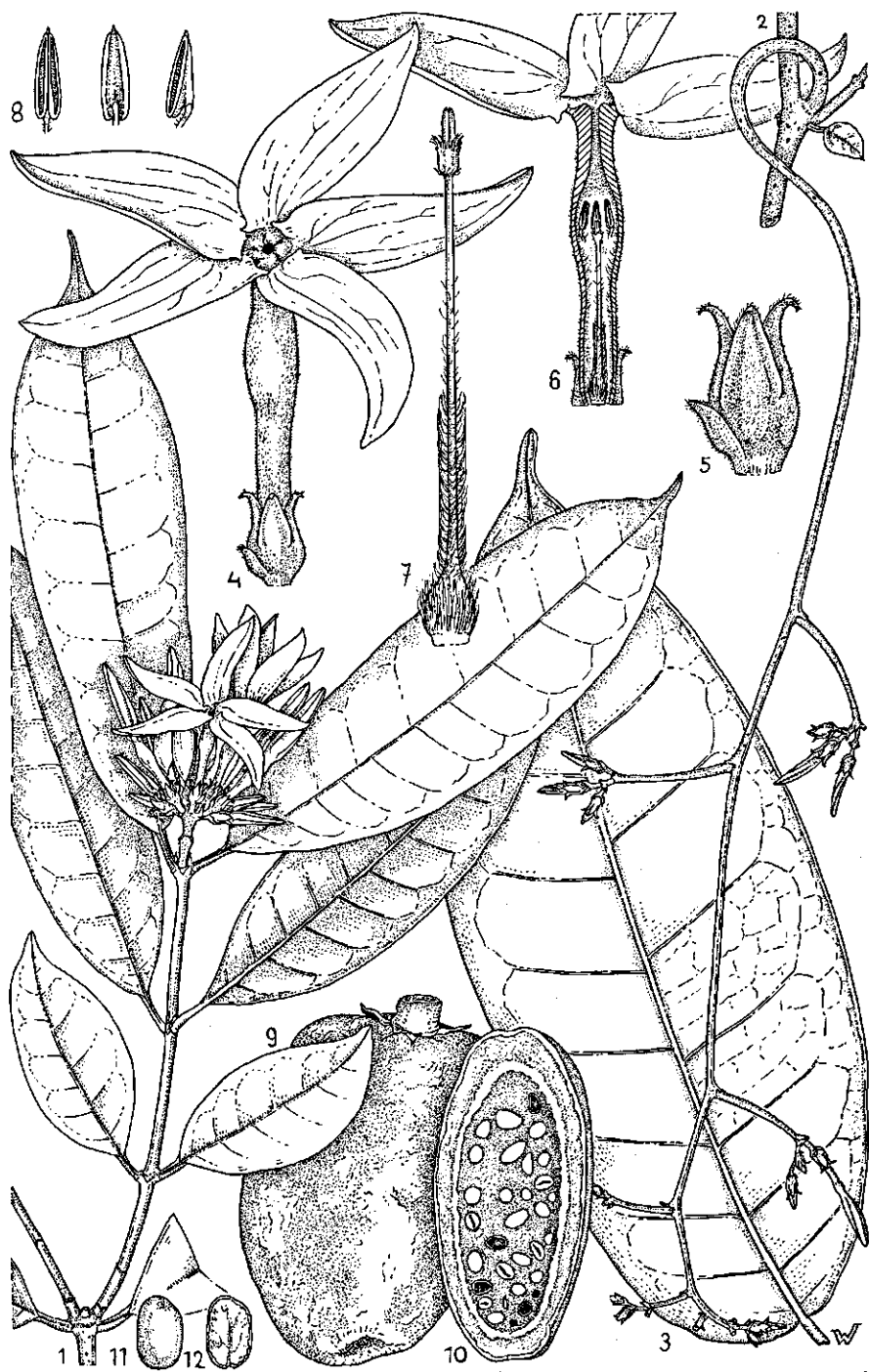
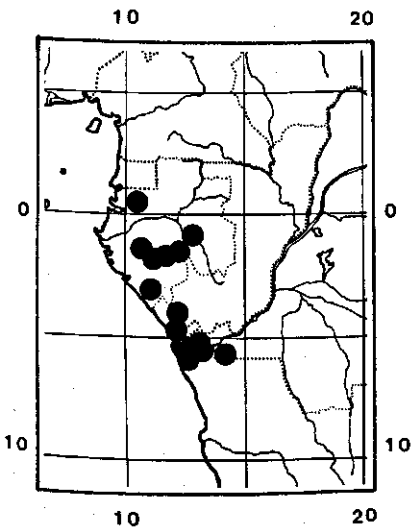


Fig. 21. *Landolphia lecomtei*. 1, habit ($\times 2/3$); 2, tendril-like inflorescence ($\times 2/3$); 3, leaf beneath ($\times 2/3$); 4, flower ($\times 2$); 5, calyx ($\times 4$); 6, opened flower ($\times 2$); 7, pistil ($\times 6$); 8, stamen inside and outside and laterally ($\times 6$); 9, fruit ($\times 2/3$); 10, section of fruit ($\times 2/3$); 11, seed ($\times 2/3$); 12, section of seed ($\times 2/3$). 1-8 and 10 from Leeuwenberg & Persoon 13653, preserved in alcohol; 9 and 11-12 from Toussaint 332.

Liana, up to 20 m high or probably more, occasionally a climbing shrub. Trunk up to at least 3 cm in diameter. Branches greyish or brown, shallowly and narrowly fissured and/or slightly rough, with light lenticels. Branchlets mostly dark brown, pilose, tomentose or lanate, often with rusty-brown indumentum, otherwise as branches. *Leaves*: petiole 2-13 mm long, with one to several triangular glands on each node, pilose or occasionally glabrous; blade ovate to obovate, narrowly or occasionally broadly so, 1-4.4 × as long as wide, (1.2-)3.6-20.2 × (0.6-)2.4-10.0 cm, papery or subcoriaceous when fresh, mostly acuminate at the apex with a rounded, acute or obtuse, 0.1-1.6 mm long acumen, less often acute to emarginate, mostly rounded or obtuse at the base, less often acute or slightly cordate, pilose on midrib and margin and otherwise pilose or glabrous beneath, pubescent, especially at midrib and margin to glabrous above, indumentum denser when young; 6-15 pairs of straight or curved secondary veins, in the middle of the leaf 0.3-1.8 cm from each other, between 2 secondary veins often a less conspicuous one, often forming a different angle with the midrib; tertiary venation coarsely and finely reticulate, conspicuous and often dark below, less conspicuous above, venation impressed above when fresh. *Inflorescence* terminal, sometimes tendril-like, a dense, compound, more or less irregular dichasial cyme, when tendril-like cymes at the end of the hooks of the tendrils, 2.8-4.3 × 2.5-6.2 cm or, when tendril-like as a whole 7.5-13.0 × 6.0-8.2 cm, 5-50-flowered, 1-20 flowers open at a time. Peduncle up to 30 cm long, tendril hooks up to 5 cm long, pubescent or pilose or almost glabrous. Pedicel up to 6 mm long, pilose, pubescent or tomentose. Bracts 1-3 along pedicel, the highest often more or less sepal-like, triangular to obovate, sometimes keeled, 0.5-4.9 × 0.6-4.3 mm, emarginate to mucronate at the apex, pilose or pubescent outside at least at the centre and base, pubescent inside, sometimes only partly, with a ciliate, sometimes membranaceous margin. *Flowers* sweet-scented. *Calyx* 3.5-6.0 mm wide at the apex and 2.5-4.0 mm wide at the base; sepals (narrowly or broadly) ovate to obovate, 0.9-2.9 × as long as wide, 2.5-6.0 × 1.5-4.6 mm, connate at the base for 0.2-1.0 mm, obtuse to mucronate or acuminate with an acute or obtuse acumen at the apex, less often rounded, auriculate, truncate or rounded at the base, tomentose or pubescent outside, pubescent and often hirt-pilose inside at the base, with a ciliate, sometimes membranaceous margin. *Corolla* white, the tube often yellowish, pale orange or green, glabrous outside at the basal 0.2-4.0 mm, from that level tomentose or pubescent around the anthers, with indumentum or glabrous at the part of the lobes covered in bud, often with long hairs at the apex, pilose inside from up to 0.3 mm above to up to 6.0 mm below anthers (more densely below) and often pilose or pubescent at the auricle, sometimes also puberulent at the lower part of the lobes or with hairs at the apex, with a ciliate margin; tube 2.3-6.1 × as long as calyx, (11.1)12.0-20.5 mm long, at the base 1.2-1.8 mm, in the middle 0.9-1.8 mm, around the anthers 1.5-3.0 mm and at the throat 1.1-2.7 mm wide, the widest part 9.0-15.0 mm from the base; lobes ovate with an often acute or obtuse auricle, 0.6-1.4 × as long as tube, 2.1-5.0 × as long as wide, 9.0-26.7 × 2.8-7.8 mm, rounded to shortly acuminate with a rounded acumen at the apex. *Stamens*

1.8-2.6 mm long, inserted 7.2-14.1 mm from the base of the corolla tube, at 0.57-0.74 of its length, 1.8-4.2 mm included; filaments 0.35-1.1 mm long, pilose inside; anthers with the base 7.6-14.4 mm from the base of the corolla tube, at 0.61-0.77 of its length, 2.6-6.0(8.0) × as long as wide, 1.6-2.2 × 0.3-0.7 mm, rounded to mucronate with a rounded acumen at the apex, glabrous. *Pistil* 7.9-13.7 mm long; ovary ovoid, ellipsoid or cylindrical with a conical apex, 1.2-2.3 × 1.2-1.7 mm, at the base for 0.1-0.25 mm of a slightly different structure, villose, with indumentum sparser and shorter towards the base, glabrous for 0.1-0.25 mm at the base; ovules 60-150; style cylindrical, 5.2-10.9 × 0.15-0.4 mm, for 1.9-4.5 mm villose at the base, with indumentum forming a cylinder around style, otherwise pilose and glabrous at the upper 1.5-7.5 mm; pistil head cylindrical (on an ellipsoid base), conical, ellipsoid, ovoid or slightly diabol-shaped, 0.3-1.1 × 0.25-0.7 mm, mostly ciliate at the upper margin, otherwise glabrous; stigmoid apex ovoid to obovoid (on a cylindrical or slightly widened base) or cylindrical, 0.25-1.1 × 0.15-0.4 mm, puberulent, often in ridges and sometimes with a few long hairs, rounded, acute or obtuse at the apex. *Fruit* yellow, green when young, smooth or finely bumpy, often with 1 or 2 large darker and/or many small lighter spots, often with small lenticels, ovoid, ellipsoid, oblong or pyriform, occasionally almost globose, 5.0-10.0 × 2.3-7.8 × 2.3-7.8 cm, rounded, truncate or emarginate at the apex; 15-70-seeded; wall 2.0-9.0 mm thick; sclereid cell layer 0.4-1.3 mm thick. *Seed* irregularly ovoid or ellipsoid, laterally compressed and often with 1 or 2 flattened sides, 9-15.5 × 6-11 × 4.5-6.5 mm. Embryo curved or almost straight; cotyledons irregularly ovate or elliptic, 7.5-13.5 × 4.8-9.5 mm, slightly undulate; rootlet 0.9-1.5 × 1.0-1.3 mm.

Distribution: Western Central Africa but not in Cameroun.



MAP 26. *Landolphia lecomtei*

Ecology: Forests, often on more or less open places. Alt. 0-700 m. Flowering throughout the year with a peak in the beginning of the rainy season. Mature fruits throughout the year.

Vernacular names:

CONGO: Binntouba (near Kitabi).

ZAIRE: Bobo or M'Bobo (near Luki), Mavoki (near Luki), Mvoki (near Kiobo), N'Dutu (near Luki and N'Kula), Singa ia Mavoki (near Luki).

A selection of the ca. 40 specimens examined:

GABON: ca. km 35 Mouila-Yeno Rd., Breteler & Lemmens 8201 (WAG); ca. km 15 Asok-Tchimbélé R. power station Rd., Breteler & de Wilde 225 (WAG); sine loc., Lecomte s.n. (P); 21 km SW of forestry camp Waka, Leeuwenberg & Persoon 13653 (WAG); Tchibanga, Le Testu 2116 (BM, BO, BR, F, G, GH, LISC, P); Fougamou, Le Testu 2220 (BM, BR, E, K, LISC, P, WAG); between Guidouma and Sainte-Croix Le Testu 5089 (BM, BR, LISC, MO, P, WAG); Lastoursville (Bonda), Le Testu 7526 (BM, BR, GH, MO, P, WAG); Comi, near Lastoursville (Bonda), Le Testu 8258 (BM, BR, GH, MO, P, WAG).

CONGO: Kitabi, near Kouilou R., Lecomte B-100 (BR, K, P, type); Niali, E of Kibangou, Sita 3991 (P).

ANGOLA: Cabinda: Roça Locula, near Valencia, Dawe 306 and 309 (K), Gossweiler 6441 (BM, COI, LISJC, LISU); S of Buco Zau, Gossweiler 6854 (BM, COI, LISJC, LISU, type of *Landolphia congolana*); Panga Mongo, near Subluali, Gossweiler 8035 (BM, COI, LISJC, LISU); Chilungo R., near Landana Mission, Gossweiler 5-1919 (LISJC), 6-1919 (LISJC).

ZAIRE: I: Moanda, along Tondé R., Wagemans 650 (BR). II: Kiobo, Donis 10 (BR); Luki, Kinkoko, Donis 2059 (BR, MO, P), Maudoux 209 (BR, WAG); Benza Masola, Laurent 1-10-1903 (BR); N'Kula-N'Kula, Toussaint 9 (K, MO, P); Luki, Toussaint 17bis (BR, K), 158 (BR), 332 (BR, K), 2099 (BR), 2106 (BR); Loanda, Vanderyst 27672, 27683, 27709, 27728, 27734, and 27798 (BR); Vaku, Wellens 469 (BR). III: Donda II, Compère 1054 (BR, K); Lusanga, Verschueren 130 (BR). sin loc.: Mayombe, Kesteleyn anno 1904 (BR, P).

27. *Landolphia leptantha* (K. Schum.) Persoon, **comb. nov.**

Fig. 22, p. 121; map 27, p. 122

Basionym: *Carpodinus leptantha* K. Schum. in Engler & Prantl, Nat. Pflanzenf. 4. 2: 132. 1895.

Type: Gabon: Sibang Farm, Libreville, Soyaux 233 (holotype not seen, destroyed in B; lectotype: K, designated here; P, Z).

Homotypic synonyms: *Clitandra leptantha* (K. Schum.) Hall. f., Jahrb. Hamb. Wiss. Anst. 17. Beih. 3: 123. 1900. *Aphanostylis leptantha* (K. Schum.) Pierre, Bull. Soc. Linn. Paris sér. 2. 11: 89. 1898; Pichon, Mém. IFAN 35: 237. 1953, partly excl. syn. *Sclerodictyon griffonianum*.

Large liana with curled tendrils up to 25 cm long. Branches dark brown, lenticellate, later red-brown to greyish-green; branchlets pubescent or almost glabrous. *Leaves* petiolate; petiole glabrous or pubescent, 3-8 mm long; blade papery to coriaceous when dried, shiny, elliptic, 1.8-3 × as long as wide, 6-15.1 × 3-6.2 cm, caudate at apex, cuneate at base, glabrous on both sides or with some scattered hairs; 5-8 pairs of secondary veins; tertiary venation reticulate. *Inflorescence* axillary, lax or congested, 1-8-flowered. Peduncle very short, up

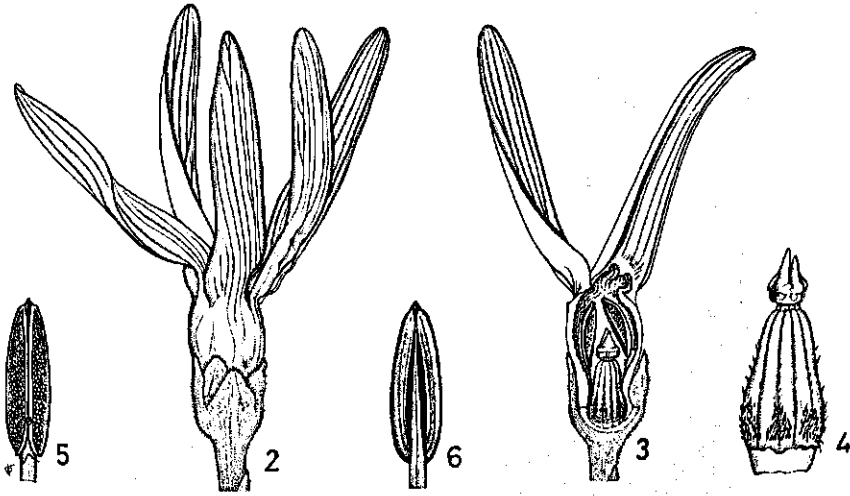
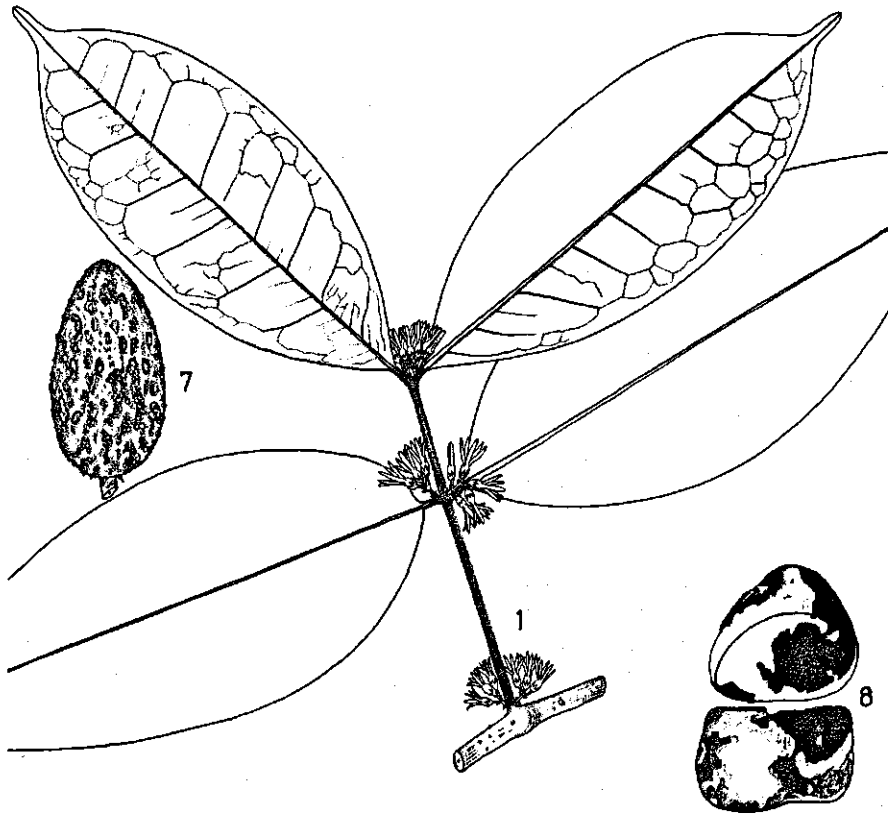
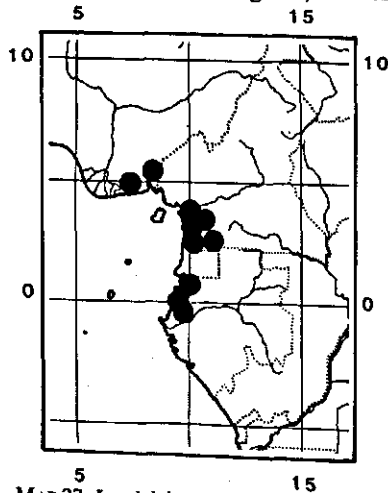


Fig. 22. *Landolphia leptantha*. 1, habit ($\times 2/3$); 2, flower ($\times 6$); 3, opened flower ($\times 6$); 4, pistil ($\times 20$); 5-6, stamen in- and outside ($\times 20$); 7, fruit ($\times 1$); 8, seeds ($\times 2$). 1-6 from de Wilde et al. 916; 7 from Bos 5013; 8 from Klaine 1159.

to 3 mm long, pubescent; pedicels 1-3 mm long, pubescent or sparsely pubescent. Bracts sepal-like, 0.4-1 × 0.4-0.6 mm, acute at apex, ciliate, without colleters. Flowers faintly fragrant. Sepals subequal, pale green, connate at base, triangular or ovate, 1-1.5 × as long as wide, 0.6-1.2 × 0.5-1 mm, acute at apex, erect, sparsely pubescent outside, glabrous inside, without colleters, ciliate. Corolla white or creamy, in mature bud 5-9 mm long; tube barrel-shaped, 1.2-2.7 × as long as the sepals, 1.1-2.2 mm long, at base 0.6-0.8 mm, at widest point 1-1.5 mm and at mouth 0.7-1.2 mm wide, glabrous outside, glabrous inside or pubescent near the insertion of the stamens, not thickened; lobes narrowly oblong, 2.8-4.8 × as long as the tube, 4.2-6.3 × as long as wide, 3.8-9 × 1-1.7 mm, acute at apex, entire, spreading, glabrous outside and inside, not ciliate. Stamens barely to clearly included, inserted 0.35-0.55 of the tube length from the base of the corolla; anthers sessile, narrowly ovate, 0.45-0.75 × as long as the corolla tube, 4.2-6.3 × as long as wide, 0.7-1.1 × 0.25-0.4 × 0.1-0.2 mm, short-acuminate and with small dark spot at the apex, deeply cordate at base with lobes not touching each other, glabrous. Pistil 1-1.6 m long; ovary pyriform, 1.7-2.3 × as long as wide, 0.7-1.3 × 0.3-0.6 m, abruptly narrowed at base, pubescent up to 0.6-0.75 of its length from the base, otherwise glabrous; style very short or absent; pistil head 0.25-0.4 mm long, with basal part annular, very short, up to 0.15 mm long and 0.1-0.2 mm in diameter; stigmatic apex conical or acuminate-conical, 1-1.5 × as long as wide, 0.15-0.3 × 0.15-0.2 mm, cleft at apex for 0.3-0.5 of its length; two parietal placentas with 18-36 ovules. Fruit orange with brown spots, ellipsoid or ovoid, 3.5-5 × 1.3-3.4 cm, possible larger, glabrous, smooth, 1-8-seeded; wall 1-2 mm thick. Seeds ellipsoid or ovoid, laterally compressed or not, 7-15 × 7-11 × 6-9 mm, brown, glabrous; endosperm white, surrounding the flat embryo; embryo straight; cotyledons ovate or elliptic, thin, 6-13 × 5-9 mm; rootlet very short.

Distribution: Nigeria, Cameroun and Gabon.



MAP 27. *Landolphia leptantha*

Ecology: rainforests and secondary forests, mainly flowering in March. Altitude: 0-1000 m.

Specimens examined:

NIGERIA: Oban, Talbot 1526 (BM, K, Z), 2047 (BM, L); Eket, Talbot 3190 (BM, K, Z); km 120 Calabar-Mamfe Road, Onyeachusim FHI 54069 (K).

CAMEROON: Ebolowa Road, 15 km from Kribi, Bos 5013 (BR, LD, M, WAG); Lolodorf Road, 20 km from Kribi, Bos 4132 (BR, K, M, P, WAG); 40 km E of Douala, Breteler 2605 (BR, FI, G, K, LISC, M, P, UC, WAG, Z); 15 km S of Ebolowa, W. de Wilde 1969 (BR, K, MO, P, WAG, Z), 1969b (BR, P, WAG); 50 km S of Badjob, W de Wilde 2135 (BR, K, MO, P, WAG, Z); Bipindi, Zenker 3024a (BM, BR, E, G, HBG, K, L, M, P, S, W, WAG, WU, Z), 4516 (BR, K, L).

GABON: Sibang Farm, Libreville, Soyaux 233 (K, P, Z, type), 250 (K); near Libreville, Klaine 730 (BR, P), 1158 (BR, K, P), 1159 (P), 1655 (P); sin. loc., Griffon du Bellay s.n. (P); Acondjo, Rambouc R., Chevalier 27034 (P); km 58 Ntoun Akok-Cocobeach Road, J.J. de Wilde et al. 916 (WAG).

28. *Landolphia letestui* (Pellegr.) Pichon, Mém. IFAN 35: 82. 1953.

Fig. 23, p. 124; map 28, p. 125

Basionym: *Clitandra letestui* Pellegr., Bull. Mus. Nat. Hist. Nat. 31: 385. 1923.

Type: Gabon: Tchibanga, Le Testu 1843 (P, holotype; isotypes: BM, BR, E, LISC).

Liana, up to 15 m long. Trunk up to 10 cm in diameter. Branches lenticellate, smooth or narrowly fissured; branchlets dark or light brown, creamy or grey, glabrous. *Leaves*: petiole 3-12 mm long, glabrous; blade elliptic or obovate or narrowly so, 1.5-3.8 × as long as wide, 3.0-14.0 × 1.8-5.2 cm, papery or coriaceous when fresh, glossy or dull above, obtuse to acuminate with rounded or acute (up to 1.8 cm long) acumen at the apex, acute or sometimes rounded at the base, decurrent into the petiole or not, glabrous; secondary veins in 7-13 pairs, nearly straight to slightly curved, with distance in the middle of the leaf: 0.7-1.7 cm; among 2 secondary veins often a less clear one; tertiary venation reticulate, often labyrinth-like and dark beneath. *Inflorescence* axillary or terminal, an irregular dichasial cyme, 0.3-1.4 × 0.7-1.7 cm, 1-14-flowered. Peduncles and pedicels 1-3 mm long, glabrous, occasionally sparsely pilose. Bracts ovate or triangular or broadly so, 0.4-0.8 × 0.4-0.6 mm, the higher ones often sepal-like, rounded or obtuse at the apex, ciliate or not, otherwise glabrous, occasionally with small triangular glands at the margin near its base. *Flowers*: *Calyx*: sepals unequal, ovate or broadly ovate, 0.8-2.2 × as long as wide, 0.8-1.3 × 0.5-1.5 mm, connate at the base for 0.1-0.4 mm, obtuse, rounded or acute at the apex, sparsely ciliate, glabrous or occasionally pilose outside, glabrous or with some hairs inside. *Corolla* creamy, whitish or yellowish, often tube and lobes and in- and outside slightly differently coloured, glabrous or occasionally inside with some hairs just below the anthers; tube 1.4-2.6 × as long as the calyx, 1.8-2.8 mm long, at the throat 0.8-1.6 mm, around the anthers 1.3-1.9 mm and at the base 0.5-0.9 mm wide, widest part 1.3-1.8 mm from base; lobes equal or subequal, ovate or elliptic or narrowly so, 0.8-1.5 × as long as the tube, 1.4-3.5 × as long as wide, 1.5-3.5 × 1.1-1.7 mm, rounded at the apex.

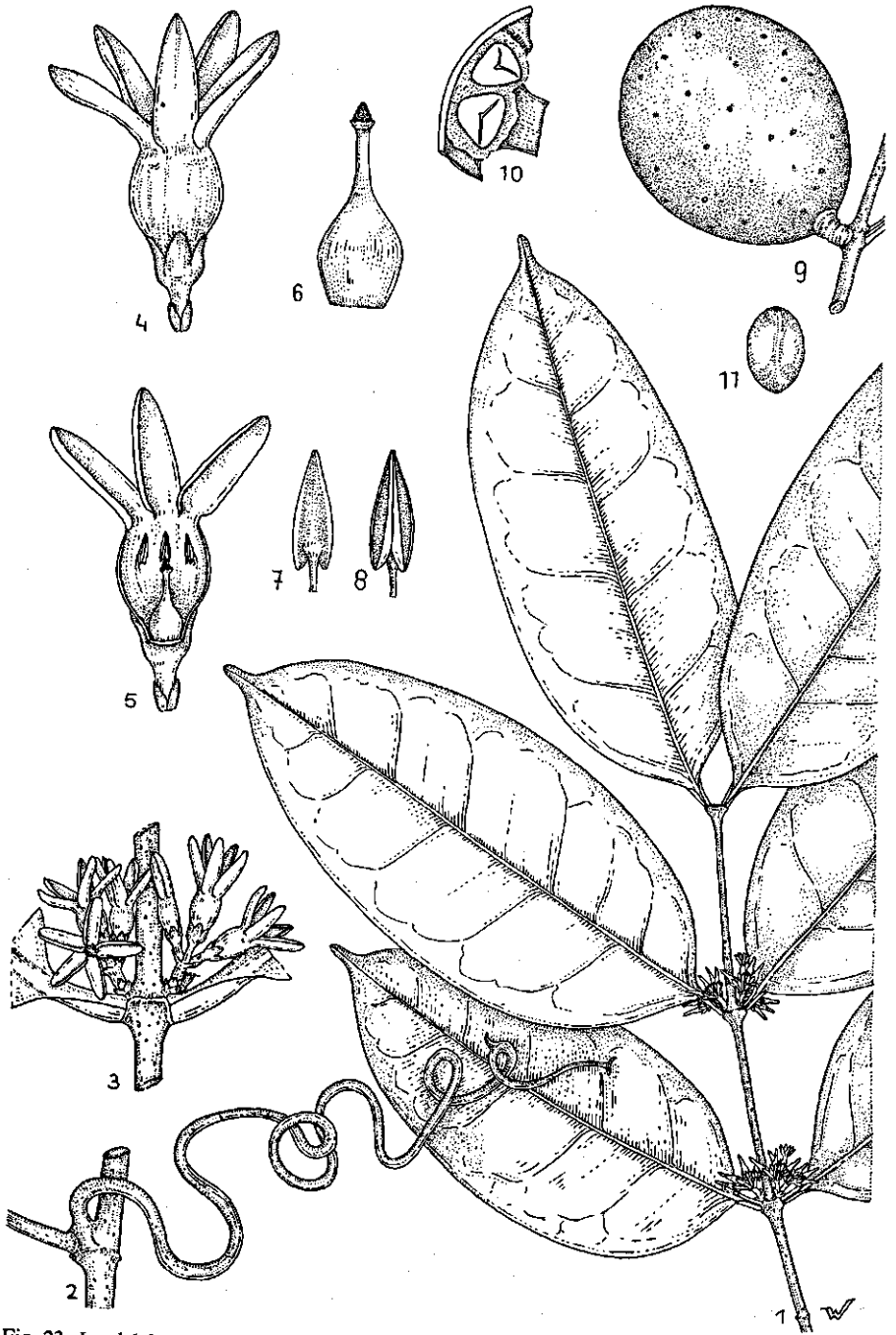
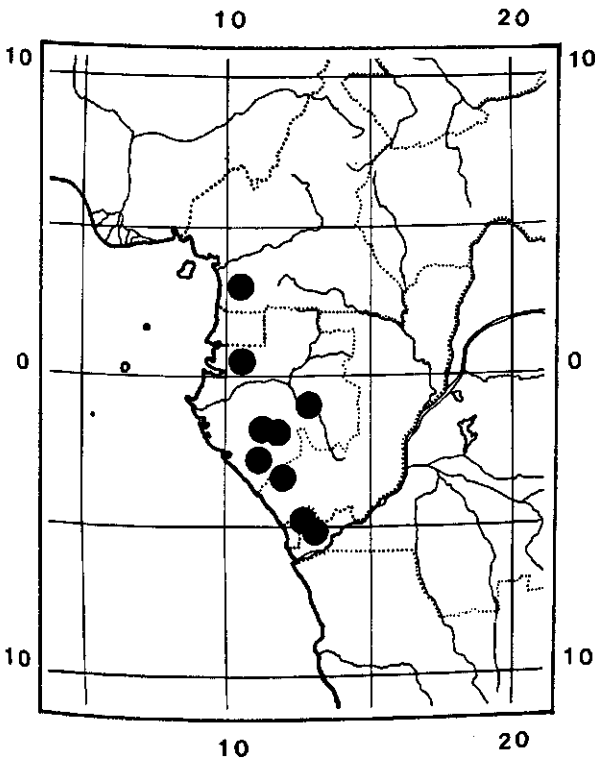


Fig. 23. *Landolphia tetestui*. 1, habit ($\times 2/3$); 2, tendril ($\times 2/3$); 3, inflorescences ($\times 2$); 4, flower ($\times 6$); 5, opened flower ($\times 6$); 6, pistil ($\times 18$); 7-8 stamen out- and inside ($\times 18$); 9, fruit ($\times 2/3$); 10, part of fruit with seeds on section ($\times 2/3$); 11, seed ($\times 2/3$). 1 from Le Testu 7950; 2-11 from de Wilde et al. 599.

Stamens inserted 0.9-1.5 mm from the base of the corolla tube, at 0.3-0.7(0.9) of its length, 0.2 mm exerted to 1.4 mm included, 0.9-1.3 mm long; filaments 0.3-0.6 mm long, glabrous; anther 2-4 × as long as wide, 0.6-1.0 × 0.2-0.4 mm, acute, sometimes acuminate, glabrous. *Pistil* 1.6-2.5 mm long; ovary ovoid to rhomboid, 0.8-1.5 × 0.5-0.8 mm, with the basal 0.1-0.2 mm of a lighter colour, with 50-150 ovules, glabrous or occasionally sparsely puberulent; style cylindrical, gradually narrowed towards the apex, 0.2-0.5 × 0.1-0.2 mm, glabrous; pistil head cylindrical, 0.05-0.2 × 0.15-0.2 mm, glabrous; stigmatic apex 0.2-0.5 × 0.1-0.15 mm, with the lobes rounded, occasionally acute at the apex, glabrous. *Fruit* pale yellow, sometimes with orange-red gloss, often with scattered orange-red lenticels (0.1-1.5 mm in diameter), globose, ellipsoid or obovoid, 3.7-6.0 × 2.9-5.9 cm, 5-17-seeded; wall 1-2.5 mm thick. *Seed* 10-17 × 9-14 × 4-7 mm, irregularly ovoid, often laterally compressed; embryo slightly curved; cotyledons irregularly ovate or elliptic, 7.5-15.0 × 6.8-12.0 mm, slightly undulate; rootlet 1.0-1.5 × 0.4-0.6(1.5?) mm.

Distribution: South-western Cameroun, Gabon, Angola (Cabinda) and Zaire (Bas-Zaire Prov.).



MAP 28. *Landolphia letestui*

Wageningen Agric. Univ. Papers 92-2 (1992)

Ecology: Primary and secondary forests, in dense shade as well as on open places. Alt. 0-500 m. Flowering in the beginning and the middle of the rainy season; mature fruits in the same season.

Uses: In Zaire the stem of *Landolphia letestui* is used for making 'k'oso' to climb the palm trees.

Vernacular names:

ZAIRE: Lumugu (near Kizu).

Specimens examined:

CAMEROON: Bipindi, Zenker 3595 (BM, BR, COI, E, G, HBG, K, L, M, MO, P, S, W, WU, Z).

GABON: Km 40 Mouila-Yeno Rd., Breteler & Lemmens 8195 (WAG); Tchibanga, Le Testu 1843 (BM, BR, E, LISC, P); Cwagnya, Le Testu 6414 (BM, BR, LISC, MO, P); Lastoursville, Le Testu 7043 (BM, BR, K, LISC, P, WAG), 7948 (BM, BR, GH, MO, P, WAG), 7950 (BM, GH, K, P, WAG); ca. km 100 Tchibanga-Voungou Rd., Louis et al. 599 (WAG); Cristal Mts., near Méla, de Wilde et al. 144/83 (WAG).

ANGOLA: Cabinda: Buco Zau, Gossweiler 6749 (BM, COI, LISJC), 6829 (BM, COI, LISJC, LISU).

ZAIRE: II: Kizu, Wellens 236 (BR).

29. *Landolphia ligustrifolia* (Stapf) Pichon, Mém. IFAN 35: 154. 1953.

Fig. 24, p. 23; map 29, p. 128

Basionym: *Carpodinus ligustrifolia* Stapf, Kew Bull. 1898: 304. 1898. Type: Congo: Zaire R., near Malebe Pool, Dewèvre 709 (K, holotype; isotype: BR).

Heterotypic synonyms: *Carpodinus* (?) *iganda* Pierre ex Stapf in Fl. Trop. Afr. 4 (1): 88. 1902; Pierre, Bull. Soc. Linn. Paris, sér. 2: 38. 1898 (nomen). Type: Gabon: near Libreville, Klaine 2123 (P, holotype; isotype: BR).

Carpodinus ligustrifolia var. *angusta* De Wild., De Wild. & Gentil, Lianes Caoutch. Et. Ind. Congo: 105. 1904. Type: Zaire: IV: Mukanda-Monene, Gentil 47 (BR, holotype).

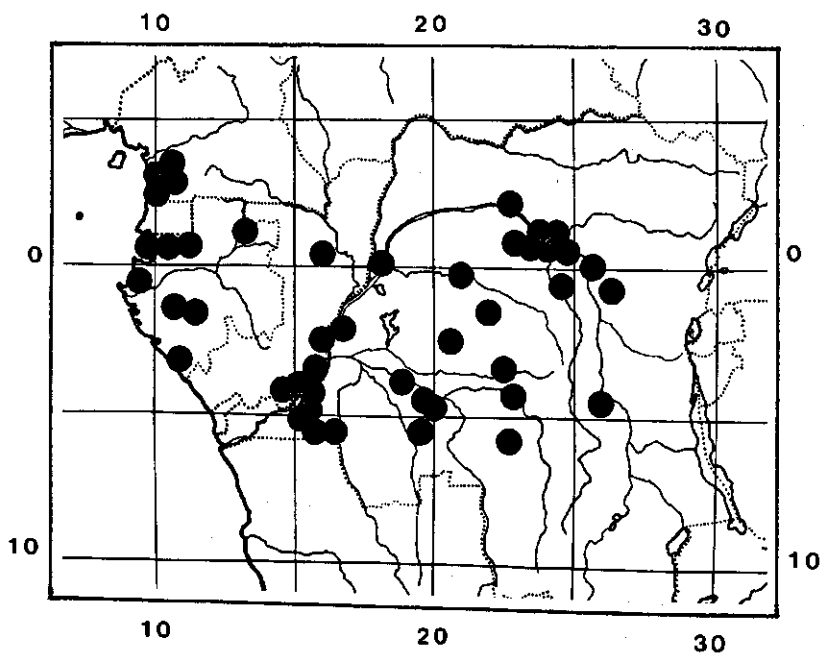
Carpodinus jespersenii De Wild., Not. Pl. Ut. Int. Congo, 2: 235. 1908. Type: Zaire: VI: Mondombe, Jespersen 11-1907 (BR, holotype).

Liana, occasionally creeping and shrubby, up to 30 m long, or probably more. Trunk up to 5 cm in diameter or more, finely and shallowly fissured. Branches blackish, grey or brown, smooth or rough, sometimes narrowly and shallowly fissured, with small, light lenticels. Branchlets dark or light brown or blackish, mostly shiny, sometimes with dull grey patches, mostly smooth, glabrous or pilose, especially when young and at the nodes, otherwise as branches. *Leaves*: petiole 3-9 mm long, not always exactly opposite, with 1 or several small triangular glands on each node, glabrous or sparsely pilose, especially when young; blade ovate, less often elliptic or obovate, 1.8-3.5 × as long as wide, 4.2-14.7 × 1.3-7.4 cm, (sub)coriaceous or pergamentaceous when fresh, acuminate at the apex with a 0.5-2.6 cm long, rounded, mucronate or emarginate acumen, less often rounded, rounded at the base, or less often retuse to cuneate, glabrous

or sparsely pilose towards the base when young; with 7-12 pairs of curved secondary veins, in the middle of the leaf 0.5-1.7 mm from each other, between 2 secondary veins often 1 or more less clear one; tertiary venation reticulate or more or less parallel with the secondary veins; midrib paler or dark purple beneath. *Inflorescence* axillary, a more or less irregular dichasial cyme, 1-4-flowered, 3.0-6.5 × 2.5-6.0 cm. Pedicels up to 5 mm long, pilose. Bracts 2-8 along pedicel, the higher sepal-like, (broadly or depressed-) ovate to obovate or triangular, occasionally spatulate, 0.3-1.8 × 0.3-2.2 mm, usually rounded or obtuse at the apex, often with one to several small triangular glands at the base of the ciliate margin or up to 3 mm below that level, pilose or pubescent outside, glabrous, pubescent or pilose inside, often with one to several glands at the base. *Flowers* fragrant. *Calyx* 2.1-3.7 mm wide; sepals (broadly) ovate or triangular, 0.6-1.5 × as long as wide, 1.6-3.5 × 1.7-3.2 mm, connate at the base for 0.1-0.4 mm, truncate to acute at the apex, with the margin ciliate and often membranaceous for 0.2-0.4 mm, pilose or pubescent outside, glabrous inside. *Corolla* white, yellowish, greenish or reddish-brown or in a combination of these colours, the tube often somewhat darker, pilose inside (behind and) up to 3.0 mm below anthers and at the auricle and in a longitudinal stripe from that level towards the apex, otherwise glabrous or sparsely pubescent (lobes), pubescent or pilose outside at the central and part of the lobes not covered in bud, less often also at the base of the covered part, with margin ciliate; tube 5.5-14.2 × as long as calyx, 12.0-30.0 mm long, at the base 1.1-2.4 mm, in the middle 1.0-1.9 mm, around the anthers 2.1-4.0 mm and at the throat 2.0-3.9 mm wide, with the widest part 15.5-23.0 mm from the base; lobes narrowly ovate or elliptic, 0.5-1.7 × as long as tube, 3.6-11.8 × as long as wide, 10.5-34.1 × 2.0-5.0 mm, rounded to acuminate with a rounded or acute acumen at the apex. *Stamens* 2.0-2.5 mm long, inserted 10.1-22.5 mm from the base of the corolla tube, at 0.81-0.90 of its length, 0.0-2.0 mm included; filaments 0.25-1.0 mm long, glabrous; anthers with their base 10.2-22.8 mm from the base of the corolla tube, at 0.78-0.90 of its length, 2.3-5.4 × as long as wide, 1.5-2.5 × 0.4-0.9 mm, acute, obtuse or mucronate at the apex, glabrous. *Pistil* 16.1-23.9 mm long; ovary ovoid, ellipsoid or, less often conical on a glabrous, sometimes more or less discoid, cylindrical or slightly narrowed base 0.3-0.8 mm high and 0.6-1.6 mm wide, 2.1-4.0 × 0.9-1.7 mm, more or less gradually narrowed towards the apex, pilose or pubescent; ovules 80-200; style cylindrical, more or less gradually widened towards the base, 11.4-18.1 × 0.15-0.7 mm, pilose or pubescent, more sparsely so or glabrous towards the apex; pistil head cylindrical, ellipsoid or slightly diaboloid-shaped, 0.3-0.7 × 0.3-0.6 mm, often ciliate at the upper margin, otherwise glabrous; cylindrical, conical or ellipsoid on a cylindrical base, 0.4-1.2 × 0.2-0.4 mm, puberulent, often in ridges, rounded to acute at the apex. *Fruit* shiny, bright green, (tinged with) red, violet, yellow or orange, turning blackish or brown when ripening, sometimes with purple longitudinal stripes or yellow spots, especially when young, smooth or slightly bumpy, often with yellow or brown lenticels, ellipsoid, ovoid, oblong, conical or, less often more or less globose, 3.8-17 × 2.7-13 × 2.7-13 cm, obtuse, retuse or emarginate, occasionally

acute at the apex, rounded to retuse at the base, 5-100-seeded; wall 0.2-1.7 cm thick; pulp whitish, cream or brown. *Seed* irregularly ovoid or ellipsoid, mostly laterally compressed and/or with 1 or 2 flattened sides, 8-20 × 6-13 × 6-9 mm. Embryo curved or almost straight; cotyledons irregularly ovate or elliptic, 6.8-14.5 × 5.2-12.0 m, undulate; rootlet 0.5-1.0 × 1.0-1.4 mm.

Distribution: Central Africa.



MAP 29. *Landolphia ligustrifolia*

Ecology: High and wet as well as dry and low (riverine) forests. Alt. 0-1000 m. Flowering throughout the year, with a peak in the rainy season. Mature fruits throughout the year.

Uses: The latex is recorded of *Landolphia ligustrifolia*, both as useful and as useless for rubber production; the rubber is used as a glue in Zaire. The fruits are edible.

Vernacular names:

GABON: Iganda (near Libreville).

ZAIRE: Antontongo (Bassongo-muno), Bonsélé (Lokundu, Kundu, M'Boié and near Eala), Boon-sélé (Bangala), Bosele (Kundu), Bosélé Mvindo (near Mukanda-Monene and Atene), Inaolo a Libetebete (Turumbu), Inaolo a

Lilombo (Turumbu), Indowoli (near Kole), Lilobo (Turumbu), Louna (near Iku), Mbungu-Mbungu (near Kinkosi), Mokele (near Mondombe), Mokenga (near Mondombe), Monséré (near Eala), Motepa (near Bena-Dibele), Musompo (Tshiluba), Ngila Seka (Turumbu).

A selection of the ca. 120 specimens examined:

CAMEROON: 9 km N of Kribi, Bos 3513 (WAG), 5560 (BR, K, LD, P, WAG); 2 km S of Kribi, Bos 3586 (WAG), 5399 (WAG); Batanga, Dinklage 1162 (HBG); Rocher du Loup, km 36 Kribi-Campo Rd., de Kruif 1039 (WAG); 20 km SE of km 15 of Kribi-Ebolowa Rd., J.J. de Wilde 8684 (WAG); along Nyong R., ca. 55 km SW of Eseka, W.J. de Wilde 1598 (WAG); along Nyong R., ca. 65 km SSW of Eseka, W.J. de Wilde 2739 (BR, P, WAG).

GABON: km 43 Mouila-Yeno Rd., Arends et al. 587 (WAG); ca. km 15 Asok-Tchimbélé R. power station, Breteler & de Wilde 232 (WAG); km 60 Mouila-Yeno Rd., Breteler & Lemmens 8024 (WAG); Bélinga, Hallé 3228 (P); near Libreville, Klaine 2123 (BR, P, lectotype of *Carpodinus* (?) *iganda*); km 30 Rd. NE of Abanga, Leeuwenberg & Persoon 13553 (WAG); 17 km W of Waka forestry camp, Leeuwenberg & Persoon 13694 (WAG); Mondah For., 2 km S of Cap Esterias, Leeuwenberg & Persoon 13708 (WAG); E part of Wonga-Wongué Presidential Res., ca. 100 km S of Libreville, J.J. de Wilde et al. 900/83 (LBV, WAG); 5 km along Rd. to Panga from km 35 of Mayumba-Tchibanga Rd., J.J. de Wilde et al. 9261 (WAG).

CONGO: near Brazzaville, Chevalier 4281 (BR, P), 11080 (K, P), 11393 (P); M'Pouya, along Zaire R., Chevalier 5042 (K, P); between Brazzaville and St. Paul-du-Nkoué, Chevalier 27379 (P); Zaire R., near Mabele Pool, Dewèvre 709 (BR, K, type); between Renéville and Mbamou, Chevalier 27643bis (P); along Goma Tsé-tsé Rd., Farron 4745 and 4746 (P); Batéké Plateau, Makany 1651 (P); Brazzaville, along Zaire R., de Néré 188 (P); km 30 Kinkala Rd., Trochain 7977 (P).

ZAIRE: III: Mamfinu, Breyne 2317 (BR); Kimuenza-Lovanium, Carlier 302 (BR), Gillet 2184 (BR), Robyns 4233 (BR); Kinkosi, Compère 1574 (BR); Diaki, along Madimba-Kasangulu Rd., Compère 2061 (BR); N'Dembo, Gillet 2023 (BR); Sanda, Gillet 3410 (BR); near Kinshasa, Gillet 8-1902 (BR); Makala, Jans 399 (BR); Bombo-Luméné Res., along Luméné R., Lejoly 82/938A (BR); Kinkosi-Luidi, Nsimundele 852 (BR); Pangu, Pauwels 2408 (BR); Kimbanseke, Bwanpongo Terr., Pauwels 6234 (BR, WAG). IV: Mistingundu, Chevalier 27857 (P); Bena-Dibele, Flamigni 41 (BR), 142/11 (BR), 268 (BR); Mukanda-Monene, Gentil 42 (BR), Gentil 47 (BR, type of *Carpodinus ligustrifolia* var. *angustifolia*); Mwanzagoma R., Dibaya Terr., Liben 2310 (BR, WAG); Atene, Sapin 9-1907 (BR); Kamtscha, Vanderyst 11322 (BR); between Lubue and Longe Rs., Vanderyst 12368 (BR); between Kwango R. and Kundi-Popokabaka Rd., Anonym. 34 and 35 (BR). V: near Lubufu, Anonym. lettre 161 (27-2-1908) (BR). VI: between Lubutu and Kirundu, Bequaert 6832 (BR); Nge-nengene, Bokdam 4225 (WAG); Binga, Callens 2560 (BM, NY); Botanical Garden of Eala, Chevalier 28103 (P); Coquilhatville (= Mbandaka)-Eala Rd., Couteaux 104 (BR, K, MO, P, S); Ligasali, Mangala, Evrard 38 (BR); Eala, Evrard 3100 (BR), Lebrun 6787 (BR, K, MO), Staner 865 (BR, K, MO), Staner 1502 (BR, NY, S); Audenaerde Plantation, Boende, Evrard 3944 (BR); Nkinki-Pomanjoku, Monkoto Nat. Park, Evrard 4634 (BR); Kole, Flamigni 312 (BR), 314 (BR); Iku, Hulstaert 651 (BR); Mondombe, Jespersen 4 (BR), 11-1907 (BR, type of *Carpodinus jespersenii*); Bomane, M. Laurent 1878 (BR); Mokandjo, M. Laurent 1879 (BR); Yangambi, Louis 11649 (BR, K), 13814 (BR, K, MO), 16894 (BR); Tumele-Tumele, near Opala, Louis 14158 (BR, S); between Yangambi and Isangi, Louis 15170 (BR, F, K); Bumba, Pynaert 96 (BR); Baluki, near Eala, Robyns 385 (BR); Ruki R., near Bamania, Robyns 670 (BR, K).

30. *Landolphia macrantha* (K. Schum.) Pichon, Mém. IFAN 35: 146. 1953.

Fig. 25, p. 130; map 30, p. 132

Basionym: *Carpodinus macrantha* K. Schum. in Engler, Bot. Jahrb. 23: 220. 1896. Homotypic synonym: *Clitandra macrantha* K. Schum. (Hall. f.), Jahrb. Hamb. Wiss. Anst. 17, 3 Beih.: 117. 1900. Type: Sierra Leone: sin. loc., Afzelius s.n. (UPS, lectotype, designated here; isotypes: BM, K).

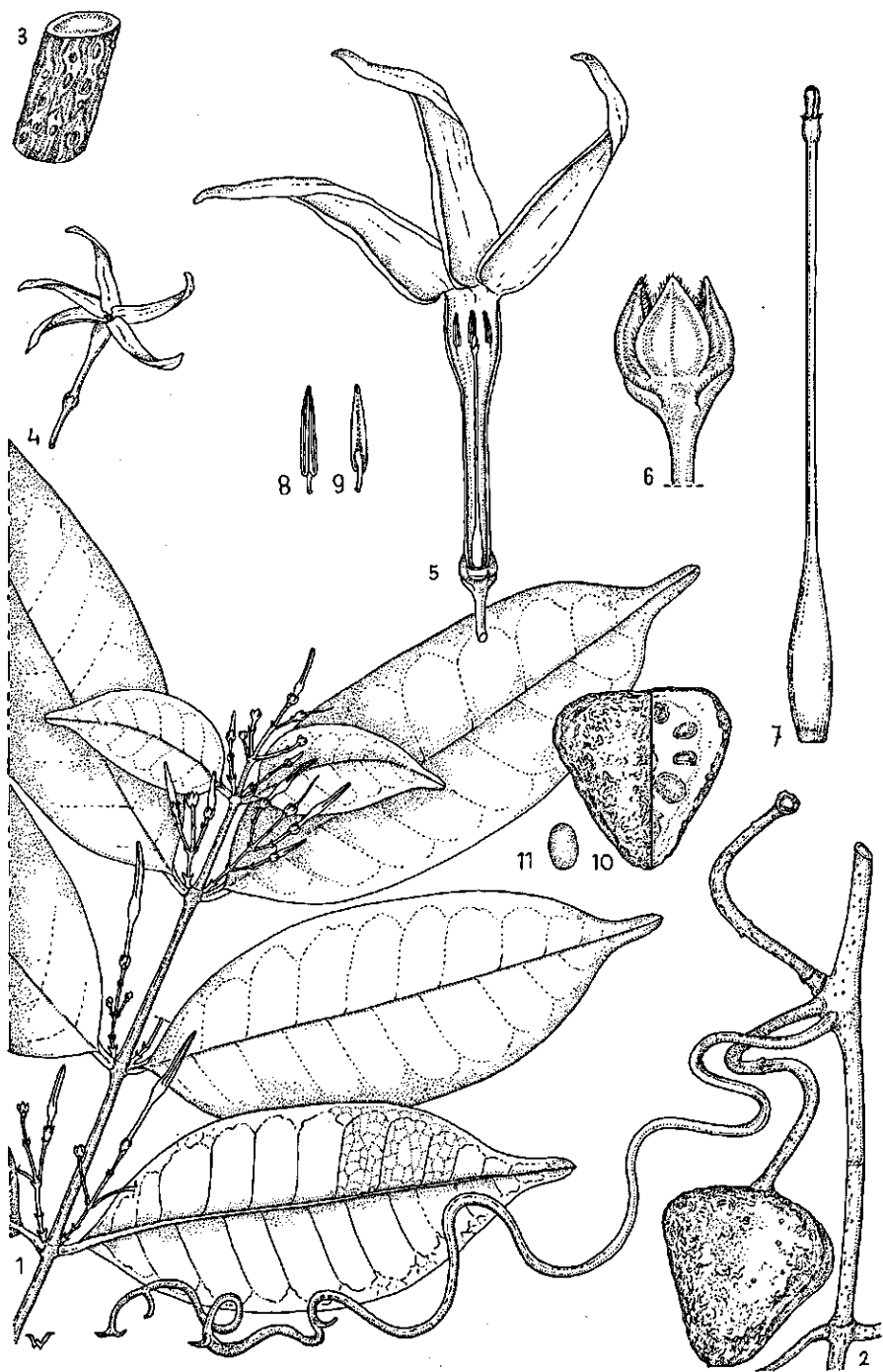
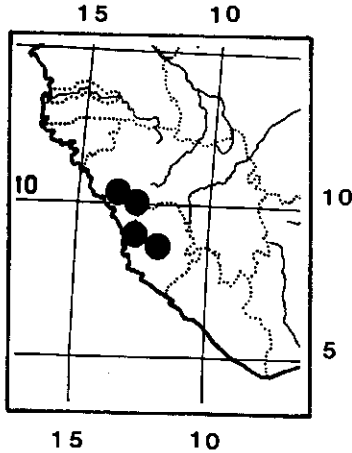


Fig. 25. *Landolphia macrantha*. 1, habit ($\times 2/3$); 2, branch with tendril and fruit ($\times 2/3$); 3, part of branch ($\times 4$); 4, flower ($\times 2/3$); 5, opened flower ($\times 2$); 6, calyx ($\times 8$); 7, pistil ($\times 6$); 8-9, stamen in- and outside ($\times 6$); 10, fruit ($\times 2/3$); 11, seed ($\times 2/3$). 1 and 10-11 from Scott Elliot 4924; 4-5 and 7-9 from Chillou 486; 6 from Pobeguïn 1530.

Liana. Branches and branchlets light or reddish-brown, shallowly fissured, bark often peeling off, slightly rough, with light brown lenticels up to 0.5 mm in diameter, glabrous. *Leaves*: petiole 3-8.5 mm long, glabrous, with 1 or several small triangular glands on each node; blade (narrowly) ovate to obovate, 1.4-3.3 × as long as wide, 4.0-12.2 × 1.8-5.1 cm, thickly coriaceous when dried, acuminate with a rounded or retuse acumen 0.3-1.8 cm long, less often rounded or obtuse at the apex, acute or attenuate at the base, apiculate, glabrous; with 7-14 pairs of straight or somewhat curved secondary veins, often forming different angles with the midrib and in the middle of the leaf 0.4-1.5 cm from each other; tertiary venation reticulate; venation raised and lighter beneath in dried leaves. *Inflorescence* axillary or terminal, a lax, more or less compound and irregular dichasial cyme, 1-5-flowered, 2.5-6.0 × 2.0-4.0 cm. Peduncle 7-28 mm long, glabrous. Pedicel 4-31 mm, glabrous. Bracts in pairs or not, 1-5 along pedicel and/or peduncle, (broadly) triangular, oblong or ovate, 0.3-1.3 × 0.3-1.4 mm, retuse to acute at the apex, often with 1 or 2 small triangular glands at the base of the mostly membranaceous and ciliate margin, glabrous or with a few hairs outside, glabrous and sometimes with 2-6 small triangular glands at the base inside. *Flowers*: calyx 1.5-2.2 mm wide; sepals unequal, (broadly) ovate, 0.4-1.8 × as long as wide, 0.8-1.9 × 0.8-1.8 mm, connate at the base for 0.1-0.4 mm, obtuse to emarginate at the apex, glabrous outside or occasionally with some hairs in the centre, glabrous inside and sometimes with 1 or 2 small triangular glands at the base of the ciliate and often membranaceous margin. *Corolla* white, pilose inside behind and up to 1.0-1.5 mm below the anthers and at the base (up to 3 mm above that level) and/or the auricle of the lobes, otherwise (almost) glabrous, glabrous outside or with some scattered hairs at the part of the lobes not covered in bud; tube 6.9-22.5 × as long as calyx, 13.2-21.0 mm long, at the base and in the middle 1.0-1.7 mm, around the anthers 2.3-3.2 mm and at the throat 2.2-2.6 mm wide, with the widest part 11.0-15.5 mm from the base; lobes narrowly ovate, oblong or elliptic, 0.8-1.1 × as long as the tube, 3.0-6.6 × as long as wide, 11.0-19.8 × 3.0-4.2 mm, rounded or obtuse at the apex. *Stamens* 1.5-2.3 mm long, inserted 10.0-14.5 mm from the base of the corolla tube, at 0.65-0.82 of its length, 1.1-4.1 mm included; filaments 0.3-0.8 mm long, glabrous; anthers with their base 10.2-14.8 mm from the base of the corolla tube, at 0.66-0.84 of its length, 2.5-4.5 × as long as wide, 1.9-2.2 × 0.45-0.8 mm, rounded to shortly acuminate at the apex, glabrous. *Pistil* 11.0-15.7 mm long; ovary narrowly ovoid or conical on a cylindrical or slightly widened, 0.1-0.4 mm high and 0.6-0.8 mm wide base, gradually narrowed towards the apex, 3.0-4.4 × 0.6-0.9 mm, glabrous; ovules 30-80; style cylindrical, gradually widened towards the base, 7.0-10.5 × 0.2-0.4 mm, glabrous; pistil head diaboloid-shaped, ellipsoid or cylindrical (on an ellipsoid base), 0.3-0.65 × 0.3-0.5 mm, often ciliate at the upper margin, otherwise glabrous; stigmatic apex conical, ellipsoid (on a cylindrical base) or cylindrical, 0.4-0.6 × 0.25-0.4 mm, with the lobes rounded or obtuse at the apex, puberulent or almost glabrous. *Fruit* yellow, smooth or verrucose, with orange lenticels 0.1-0.4 mm in diameter, conical, 2.5-3.9 × 2.4-4.0 × 2.4-4.0 cm, rounded or obtuse at the apex, truncate at the

base, 8-15-seeded; wall 2.1-5.0 mm thick in dried fruits. *Seed* more or less irregularly ovoid or ellipsoid, mostly laterally compressed and/or with 1 or 2 flattened sides, 7-13 × 6-11 × 3-9 mm (estimated). Embryo curved or almost straight; cotyledons irregularly ovate or elliptic, 6-12 × 5-10 mm (estimated), (hardly) undulate.

Distribution: Western Guinée and Sierra Leone.



MAP 30. *Landolphia macrantha*

Ecology: Woodlands. Alt. approximately 0-1000 m. Flowering at the end of the dry and the beginning of the rainy season. Mature fruits in the dry season.

Uses: The fruits and seeds of *Landolphia macrantha* are said to be edible, and it is called a rubber plant, exploitation however is not recorded.

Vernacular names:

SIERRA LEONE: E-Lonk (Temne), Am-Fenke (Kunike Temne).

Specimens examined:

GUINÉE: Friguiajbé, Chillou 486 (BR, P); Kouria, Pobéguin 1530 (P).
SIERRA LEONE: sin. loc., Afzelius s.n. (BM, K, UPS, lectotype); Makali, Deighton 4087 (K); Heddle's farm, Lane-Poole 250 (K); Talla, near Ninia, Scott Elliot 4924 (BM, GH, K).

31. *Landolphia mannii* Dyer, Rep. Roy. Gard. Kew 1881: 39. 1881; Dewèvre, Ann. Soc. Sci. Brux. 19 (2): 148. 1895; Pichon, Mém. IFAN 35: 103. 1953.

Type: Gabon: Corisco Bay, Mann anno 1862 (K, holotype). Fig. 26, p. 133; map 31, p. 136

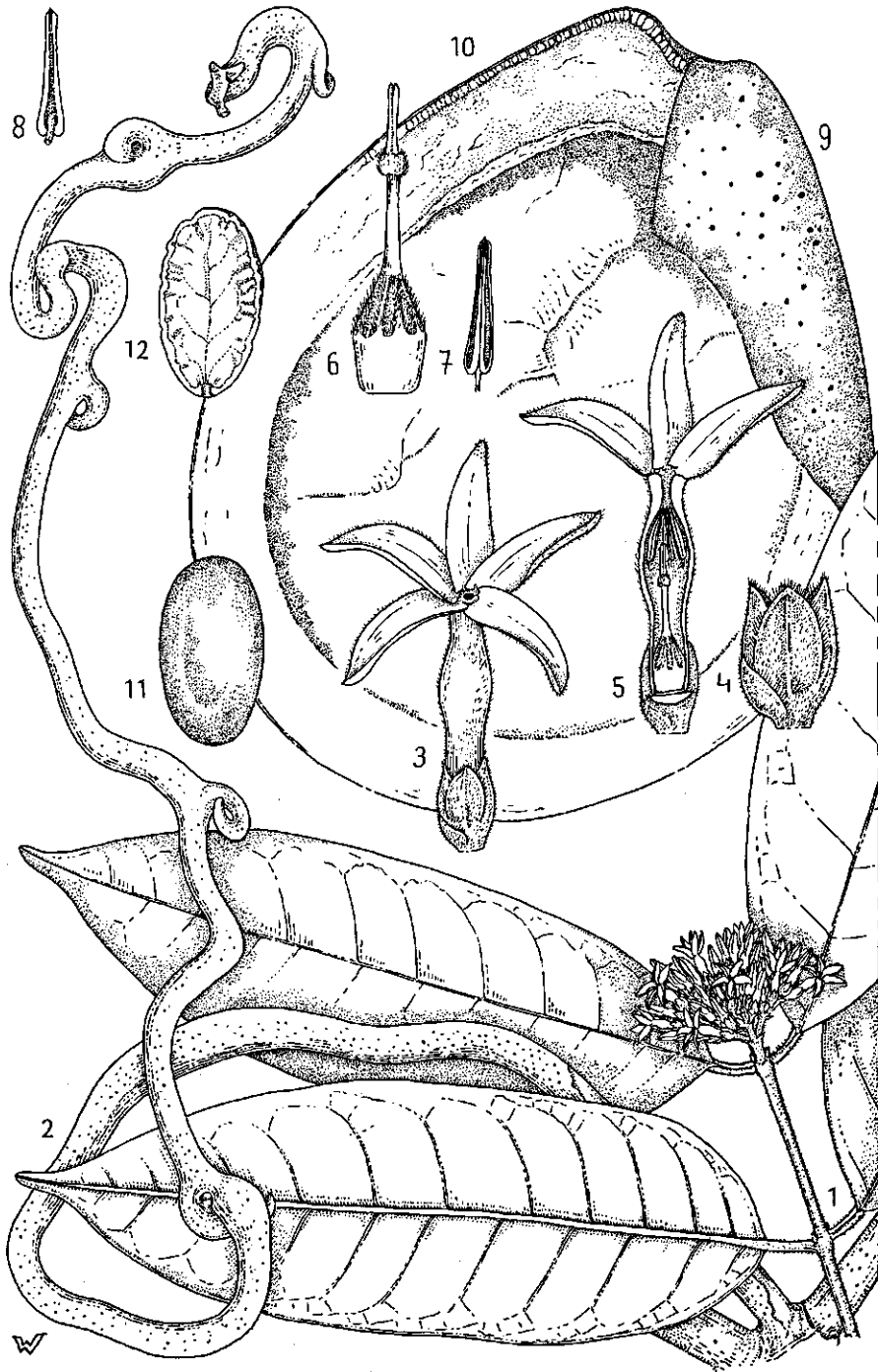


Fig. 26. *Landolphia mannii*. 1, habit ($\times 2/3$); 2, tendril ($\times 2/3$); 3, flower ($\times 4$); 4, calyx ($\times 6$); 5, opened flower ($\times 4$); 6, pistil ($\times 8$); 7-8, stamen in and outside ($\times 8$); 9, fruit, partly on section ($\times 2/3$); 10, seed ($\times 2/3$); 11, section of seed with embryo ($\times 2/3$). 1 from Letouzey & Villiers 10514; 2 from Rosselet lettre 534; 3-8 from Gossweiler 13075; 9-12 from v.d. Maesen 5316.

Heterotypic synonym: *Landolphia foreti* Jumelle, Compt.-Rend. Acad. Sci. 74: 1541. 1897. Types: Gabon (?): Fernan-Vaz (?), Forêt 12-11-1897 (P, lectotype, designated by Pichon).

Heterotypic synonym: *Landolphia klainii* Pierre, Bull. Soc. Linn. Paris, sér. 2: 15. 1898. Type: Gabon: near Libreville, along Ogooué R., Klaine 850 (P, lectotype; isolectotypes: BR, K, designated here).

Liana or scandent shrub up to 40 m high and up to 100 m long or probably more. Trunk up to 30 cm in diameter or probably more. Branches greyish or brown, mostly narrowly and shallowly fissured and/or more or less rough, with light lenticels. Branchlets pilose, pubescent, tomentose often with orange-brown indumentum, or glabrous. *Leaves*: petiole 4-13 mm long, with 1 or several triangular glands on each node, pilose, tomentose or glabrous; blade (narrowly) ovate to obovate, 1.2-4.3 × as long as wide, 2.5-24 × 2.0-8.5 cm, herbaceous or (sub)-coriaceous when fresh, more or less clearly acuminate at the apex with an acute to emarginate acumen, 0.5-2.0 cm long, rounded or acute at the base, less often truncate, obtuse or attenuate, glabrous or sparsely pilose on the midrib, secondary veins and/or margin, especially towards the base and beneath, more densely so, up to tomentose and violet when young; with 6-18 pairs of almost straight or curved secondary veins, in the middle of the leaf 0.7-1.6 cm from each other, often forming different angles with the midrib, tertiary venation reticulate, conspicuous above and beneath, venation often pale beneath. *Inflorescence* terminal, sometimes tendril-like, a dense, compound, more or less irregular dichasial cyme, when tendril-like, cymes at the end of the hooks of the tendrils, 2.0-5.0 × 1.7-5.5 cm or, and then as a whole 5-81 × 3-20 cm, 6-140-flowered; 2-80 flowers open at a time. Peduncle up to 30 cm long, tendril hooks up to 7 cm long, pilose, pubescent or glabrous. Pedicel up to 5 mm long, pubescent or pilose. Bracts 1-3 along pedicel, (broadly) ovate to obovate or triangular, occasionally slightly spatulate, 0.7-2.7 × 1.1-3.5 mm, acuminate to emarginate at the apex, pilose, pubescent or tomentose outside, sometimes glabrous, pubescent or glabrous inside, sometimes pilose at the base, sometimes with glands at the base of the ciliate margin. *Flowers* sweet-scented. *Calyx* 1.8-5.0 mm wide; sepals spreading or not, occasionally 4, often unequal, (broadly) ovate to obovate, circular or triangular, sometimes with a thickened or keeled back, 0.9-2.3 × as long as wide, 1.2-5.0 × 1.0-3.9 mm, connate at the base for 0.1-0.7 mm, emarginate to mucronate or acuminate with a rounded or acute acumen at the apex, pilose, pubescent or tomentose outside, sometimes partly so or entirely glabrous, pubescent or glabrous inside, sometimes with 1 or 2 glands at the base of the ciliate, sometimes membranaceous margin. *Corolla* white, yellow or cream or in a combination of these colours, sometimes tinged with orange or pale red and the tube often darker than the lobes, glabrous at the lowest 0.1-2.5 mm outside, from that level gradually changing to tomentose, pubescent or pilose from around the anthers upwards, pilose or villose inside behind and up to 0.6-2.2 mm below anthers, otherwise glabrous or occasionally pubescent at the base and/or apex of the lobes, with a ciliate margin; tube 1.3-5.9 × as

long as calyx, (3)4.0-9.1(10.0) mm long, at the base 1.0-1.8 mm, below the anthers 0.8-2.0 mm, around the anthers 1.4-2.9 mm and at the throat 0.8-2.1 mm wide, with the widest part 2.5-5.5 mm from the base and the wall thickened between anthers and throat; lobes (narrowly) ovate to obovate, 0.45-1.2 × as long as tube, 1.4-4.5 × as long as wide, 2.9-8.0 × 1.3-3.0 mm, obtuse or rounded at the apex, less often truncate and/or mucronate. *Stamens* 1.6-2.8 mm long, inserted 2.0-5.1 mm from the base of the corolla tube, at 0.40-0.69 of its length, (0.1)0.6-3.1 mm included; filaments 0.3-1.3 mm long, often pilose or villose, anthers with the base 2.1-5.5 mm from the base of the corolla tube, at 0.46-0.77 of its length, 2.6-6.3(7.2) × as long as wide, 1.5-2.4 × 0.3-0.75 mm, truncate to acuminate or mucronate at the apex, glabrous. *Pistil* 3.4-6.3 mm long; ovary conical or ovoid on a cylindrical, slightly widened or less often somewhat diaboloid-shaped glabrous base, 0.3-1.3 mm long and often with the lowest 0.1-0.3 mm of a slightly different structure, 1.3-2.3 × 0.8-1.8 mm, pilose, tomentose or pubescent in ridges, with indumentum, less dense and shorter towards the glabrous base and often glabrous towards the apex; ovules 50-200; style cylindrical, sometimes with a slightly widened base and/or apex, 0.7-2.0 × 0.15-0.3 mm, glabrous; pistil head ovoid, ellipsoid, cylindrical or slightly widened, 0.15-0.4 × 0.2-0.5 mm, mostly ciliate at the upper margin; stigmatic apex conical, cylindrical, ellipsoid on a cylindrical base or slightly widened, 0.7-1.9 × 0.15-0.4 mm, the lobes often unequal and acute or obtuse at the apex, less often rounded, mostly pubescent or puberulent, often in ridges. *Fruit* (pale) yellow, reddish or orange, more or less smooth or slightly bumpy, with more or less scattered brown or grey lenticels up to 3.0(5.0) mm in diameter, occasionally also with light spots, (sub)globose, pyriform or obovoid, 8.6-20.0(26.1) × 7.2-20.0(24.6) × 7.2-20.0(24.6) cm, rounded or slightly emarginate at the apex; 15-130-seeded; wall 6-23 mm thick; sclereid cell layer 0.9-3.6 mm thick; pulp yellow or orange. *Seed* irregularly ovoid or ellipsoid, laterally compressed and often with 1 or 2 flattened sides, 18-38 × 12-23 × (5)8-18 mm. Embryo curved or almost straight; cotyledons irregularly ovate or elliptic, 15.6-36.0 × 10.5-21.5 mm, undulate; rootlet 0.3-2.0 × 1.0-3.1 mm.

Distribution: Central Africa inclusive of southern Nigeria and northern Angola.

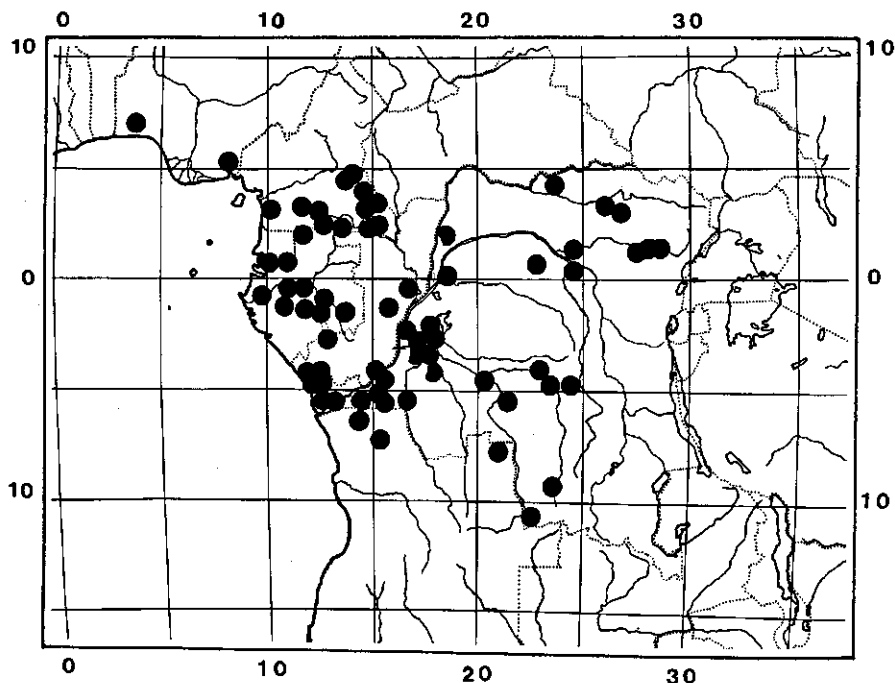
Ecology: Forests, often along rivers. Alt. 0-1000 m. Flowering throughout the year. Mature fruits throughout the year.

Uses: *Landolpha mannii* is recorded to contain a good rubber, although also reports exist to the contrary. The pulp of the fruit is abundant, very tasty and well appreciated.

Vernacular names:

CAMEROUN: Yeñese or Yañene (Boy).

GABON: Anzoma (near Abanga), Matoize (near Corisco Bay), Ndembo (near



MAP 31. *Landolphia mannii*

Iossanga Lake and Ogoué R.), Ndumbo (Mpongwé), Ndimbo, Ndyembo, Ndeymbo, Ndyembo or Ndzime (near Ogoué R.).

CONGO: Zavu or Zasu (near Nioumvoua and Kiloki).

ZAIRE: Akandjela or Akangela (Turumbu), Batofé (near Eala), Biombio (near Bambili), Bolombola or Bolambolu (at Jard. Col. Laeken), Boyo (Turumbu), Bunguio (Bangala), Djenia (near Eala), Iboboro (near Imese, Mokolo and Jard. Col. Laeken), Loko (near Sabuka), Madungu (W Zaire and at Jard. Col. Laeken), Malemanso or Malemango (near Bokala), Malombo (at Jard. Col. Laeken), Manemandjo (near Luki), Matobi (Bangala), Mokeka (Bokunga), Mononge Monéne (near Eala), Muemie (near Bena-Dibele), Mungue (Bangala), Nay-euga-Nzambi (without locality), Nlambo (near Luki), Nyoko (near Popok-abaka), Nzoko (near Sabuka and Jard. Col. Laeken), Yoko or Zoko (near Kinshasa).

TANZANIA: Rubber vine (English).

A selection of the ca. 200 specimens examined:

NIGERIA: Oyo State: Ibadan S For. Res., FHI 22807 (K). Cross River State: Obom Itat, Ariwaodu 85 (MO, WAG).

CAMEROON: Bitye, Bates 1311 (BM, Z), 1733 (K, P); near Alati, SE of Djoum, Biholong 270 (P, WAG); km 6 Bertoua-Batouri Rd., Breteler 2226 (P, WAG); along Lokoundjé R., km 26 Kribi-Edéa Rd., Leeuwenberg 5623 (BR, C, K, LISC, MO, P, WAG); km 36 Yokadouma-Moloundou

Rd., Leeuwenberg 6204 (BR, P, WAG); along Soo R., km 26 Mbalmayo-Ebolowa Rd., Leeuwenberg 11587 (WAG); near Letta, Letouzey 2961 (P); 38 km SSE of Djoum, Letouzey 8397 (COI, G, P); near Ndongo, Letouzey 12123 (BR, K, P, WAG); 65 km NNE of Moloundou, along Boumba R., Letouzey & Villiers 10514 (BR, HBG, K, P, WAG, YA); along Batouri-Yokadouma Rd., Meijer 15120 (WAG); near Moloundou, Yendi, Mildbraed 4714 (HBG).

GABON: Achouka, Dybowski 160 (P), Klaine 7-6-1895 (P); Fernan-Vaz (?), Forêt 12-11-1897 (P, lectotype of *Landolphia foretii*), (drawing) Forêt s.n. (?) (com. Jumelle 14-9-1897) (P, paratype of *Landolphia foretii*); Abanga, Fourneau 20-7-1905 (P); Iossanga Lake, Griffon du Bellay 4 (BR, P), Griffon du Bellay anno 1864 (P, paratype of *Landolphia klainii*); Ogoué R., Griffon du Bellay 36 (P); Thollon 135 (P); ca 15 km SW of Ndjolé, Hallé 1774 (P); Booué, Hallé & Thomas 207 (P); near Libreville, along Ogoué R., Klaine 850 (BR, K, P, lectotype *Landolphia klainii*), 1467 (P); ca. 21 km SW of Waka forestry camp, Leeuwenberg & Persoon 13660 (WAG); Sindara, Le Testu 2212 (A, BM, BR, LISC, MO, P, US); Liwara, Le Testu 2259 (BM, P); Lastoursville, Le Testu 7102 (BM, BR, LISC, P, WAG); Binanga, Le Testu 8723 (BM, BR, P, WAG); Corisco Bay, Mann anno 1862 (K, type); Lopé R. Res., Reitsma 2284 (WAG); Franceville, Thollon 508 (P).

CONGO: Brazzaville, Chevalier 4289 (P), Pobéguin 166 (P); between Nigoux and Ngantchou, Chevalier 5012 (BR, K, L, P); Lokoléla-Mossaka, Chevalier 5071 (P); Loango, Lecomte D078 (P); Nioumvoua, Lecomte C-97 (P); Ngoko R., Pobéguin 187 (P); between Bouga and Wessa, along Sanga R., Schlechter 12698 (BM, BR, G, K, L, P, Z); near Ndzendi, Mougounou area, Sita 4652 (WAG).

ANGOLA: Cabinda: Songo, Gossweiler 6061 (BM, LISJC, LISU); Buco-Zau, Gossweiler 6728 (BM, COI, K, LISJC, LISU); Subluali, Gossweiler 8245 (BM, COI, LISU). Zaire: near San Salvador, Dawe 103 (FHO, K); near San Gololo, Dawe 175 (K). Uíge: Bumbe, near Lucunga R., Gossweiler 13075 (LISC). Lunda: Dundo, Gossweiler Nov. 1946 (US).

ZAIRE: II: Lemba R., Dewèvre 362 (BR); Luki, Donis 2396 (BR). III: Madimba, Breyné 617 (BR); Kitobola, Flamigni 107 (BR, NY); Kinshasa, M. Laurent 411 (BR, K), Gillet 2525 (BR); Kimpasa, Vanderyst 33748 (BR); Sabuka, Anonym. s.n. (BR). IV: Lubefu, Cranshoff 26 (BR); near Bolobo, Dewèvre 721A p.p. (BR); Bena-Dibele, Flamigni 2-7-1906 (BR), Rosselet lettre 534 (BR); near Dinga, Gentil Aug. 1902 (BR); Lusambo R., Laurent 2-12-1895 (BR); Bokala, Laurent 10-11-1903 (BR), Vanderyst 4637 (BM, BR); Munungu, Lescrauwaet 253 (BR); Wouri, Luja 163 (BR); Katola, Sapin Apr. 1908 (BR); Mushie, Service de l'Agriculture & du Domaine 676 (BR); near Wombali, Vanderyst 1055 (BR). VI: Avakubi, Bequaert 1798 (BR); Penghe, Bequaert 2123 (BR); Mai Ndombe, Jans 402 (BR); Mondombe, Jaspersen Nov. 1907 (BR); Eala, Staner 1413 (BR, C, K, MO, P, S), 1517 (BR, F, K, NY, UC); Uele, Poko, lettre 881 (1906) (BR); 7 km N of Yaosuka, Louis 3756 (BR, FHO); Yangambi, Isalowe Res., Louis 5879 (BR, C, K, MO, P), between Isangi and Lileko, Louis 14572 (BR, K, MO); Gambon, Seret 742 (BR); Yambuya, Solheid 126 (BR). VII: Bambili, Département des Finances 684 no 3 (BR); Kundugu Mt., near Masabe, N of Bondo, Lisowski 50161 (POZG). VIII: Mt. Hoyu, Bokdam 4415 (WAG). XI: Dilolo, Sapin June 1908 (BR).

CULT: Trinidad: St. Clair Experiment Station, Broadway 2894 (K, NY, Z). République centrafricaine: Toumba, Chevalier 4292 (G, P). Gabon: Libreville, Jardin d'essais, Chevalier 4414 (G, P). Guinée: Camayenne, Jardin d'essais, Chevalier 12024 (P). Benin: Allada, Sandemont Plantation, Chevalier 23391 (BR, P). Zaire: Eala Botanical Garden, Chevalier 28052 (P); Bena-Dibele, Flamigni 30/3, 34/3 (BR); Jardin Colonial Laeken, Jardin Colonial Laeken 256 (BR); Kondue, Lacourt Plantations, Sapin Dec. 1909 (BR). Indonesia: Bogor Botanical Garden, Dilmy 5-9-1959 (BO, K, L). Tanzania: Amani, Greenway 1583 (FHO, K), 6668 (BR, K). Madagascar: Ivolina, Station d'Ivolina 3 (P). Netherlands: Wageningen, Greenhouse, van Setten 604 (WAG). Cameroun: Victoria (= Limbe) Botanical Garden, Winkler 647 (A, Z).

32. *Landolphia maxima* (K. Schum. ex Hall. f.) Pichon, Mém. IFAN 35: 177. 1953
Fig. 27, p. 138; map 32, p. 140

Basionym: *Carpodinus maxima* K. Schum ex Hall. f., Jahrb. Hamb. Wiss. Anst. 17, Beih. 3: 105. 1900.

Types: Cameroun: Bipindi, Zenker 1573 (L, lectotype; isolectotypes: BM, E,

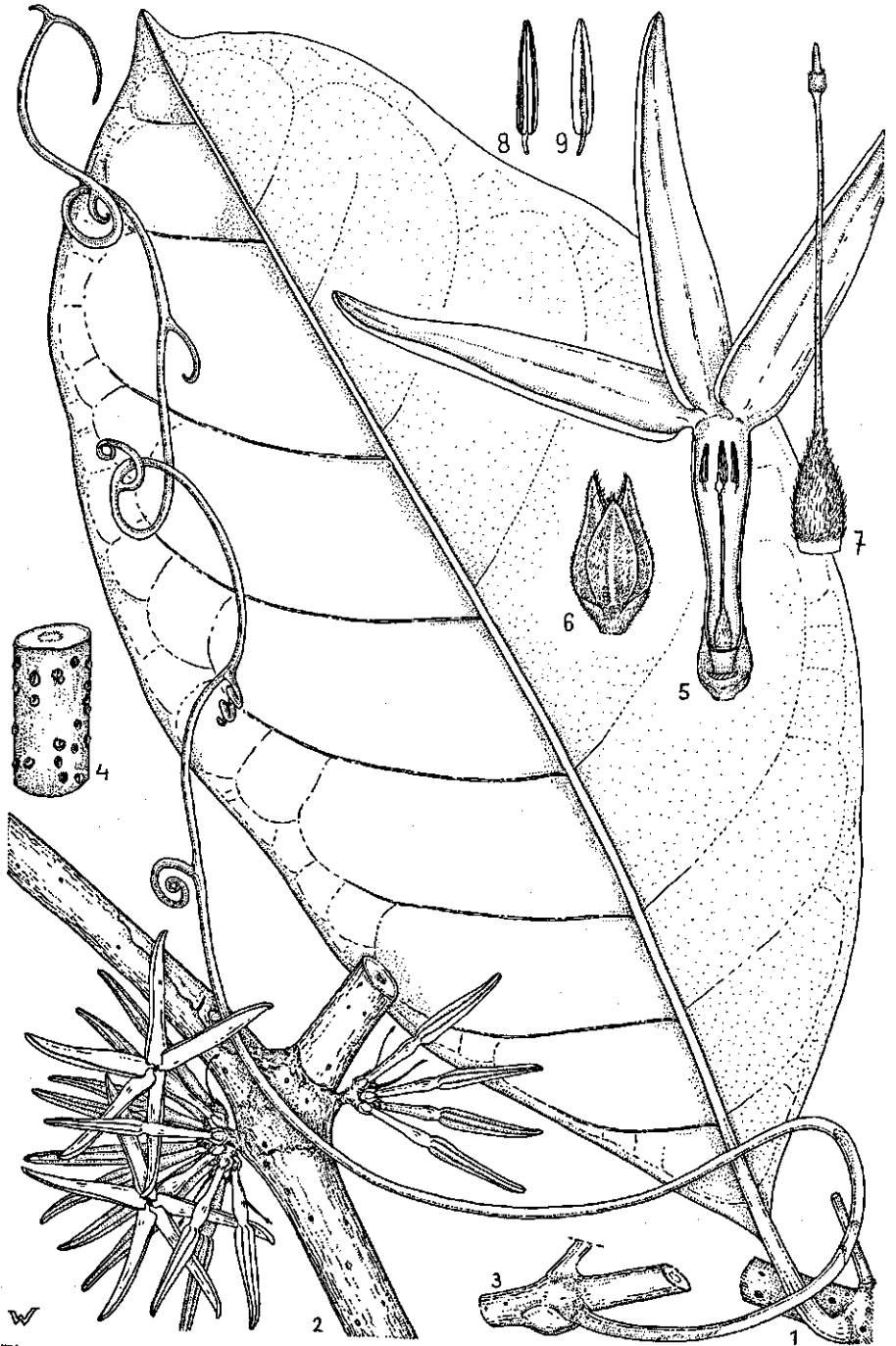


Fig. 27. *Landolphia maxima*. 1, leaf beneath ($\times 2/3$); 2, inflorescences ($\times 2/3$); 3, tendril ($\times 2/3$); 4, part of branch ($\times 2/3$); 5, opened flower ($\times 2$); 6, calyx ($\times 4$); 7, pistil ($\times 6$); 8-9, stamen in- and outside ($\times 6$). 1 and 4 from Leeuwenberg & Persoon 13705; 2-3 and 5-9 from Bos 3759.

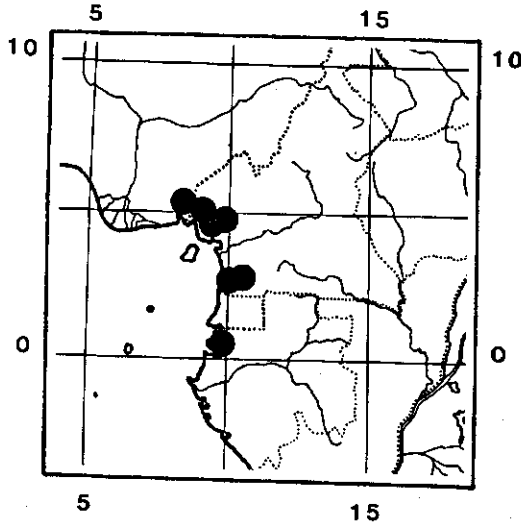
G, HBG, K, M, P, S, W, designated by Pichon); Batanga Dinklage 710 (HBG, paratype).

Excluded syntypes: Cameroun: Batanga, Dinklage 1060 (HBG), 1457 (HBG) = *Landolphia foretiana* (Pierre ex Jumelle) Pichon.

Liana, up to 15 m high or more. Trunk with longitudinal crests, shallowly fissured or smooth, up to 3 cm in diameter or more. Branches more or less hollow, shallowly and narrowly fissured or smooth, with or without large lenticels up to 2 mm in diameter, light yellow or reddish-brown, or with a mosaic of these colours; branchlets shallowly and narrowly fissured or smooth, with or without similar lenticels, glabrous. *Leaves*: petiole 9-42 mm long, with 1 or several glands on each node, narrowly fissured, glabrous; blade elliptic, ovate or obovate, 1.5-3.0 × as long as wide, 21.5-40 × 9.8-22.5 cm, parchmentaceous or coriaceous when fresh, papyraceous or more or less coriaceous when dried, apex more or less clearly acuminate with an obtuse or acute acumen, up to 1.9 mm long or occasionally acute to rounded, attenuate to truncate at the base, glabrous, often covered with small black dots beneath; with 7-13 straight or curved secondary veins, in the middle of the leaf 3.2-6.5 cm from each other; between 2 secondary veins several less clear ones with a less sharp angle; tertiary venation clearly scalariform, conspicuous beneath; venation impressed above. *Inflorescence* 1-20-flowered, axillary or cauliflorous, 3-7 × 4-10 cm; pedicels 1-3 mm, pubescent or pilose. Bracts 2-4, in pairs or not, broadly triangular or ovate, 0.6-1.3 × 0.8-1.4 mm, rounded to acute at the apex, mostly with 1 or several glands in the axil and at the base of the ciliate margin, pilose at the apex, glabrous or pilose inside. *Flowers*: calyx 2.5-3.0 mm wide; sepals triangular, elliptic, oblong or ovate, 0.9-2.0 × as long as wide, 1.7-3.4 × 1.2-2.7 mm, connate at the base for 0.4-0.5 mm, rounded to acute at the apex, often membranaceous at the ciliate margin, partly pilose outside, glabrous or pilose inside. *Corolla* white or creamy-green with a purple base, the lobes inside sometimes lighter, pilose outside on auricle and apex and occasionally also at basal part of margin not covered in bud and/or at the center, otherwise glabrous, pilose inside between and up to 2-4 mm below anthers, otherwise glabrous; tube (3.4)4.0-8.0 × as long as calyx, 11.4-14.0 mm long, at the base 1.4-3.0 mm, in the middle 0.9-1.8 mm, around the anthers 2.0-3.0 mm and at the throat 1.8-2.8 mm wide; lobes 3.4-7.0 × as long as wide, 1.1-1.8 × as long as tube, 14.2-25.0 × 2.8-5.5 mm, rounded to acute at the apex. *Stamens* 2.3-2.9 mm long, inserted 9.0-11.1 mm from the base of the corolla tube, at 0.7-0.8 of its length, 0.3-0.9 mm included; filaments 0.4-0.9 mm long; anthers with their base 9.0-11.3 mm from the base of the corolla tube, at 0.72-0.82 of its length, 3.6-5.4 × as long as wide, 2.1-2.7 × 0.5-0.6 mm, obtuse or acute at the apex, glabrous. *Pistil* 11.0-12.4 mm long; ovary ovoid or ellipsoid, on a glabrous 0.2-0.5 mm high cylindrical base, villose, 1.2-2.5 × 0.9-1.2 mm; ovules 60-80; style cylindrical, gradually widened towards the base, 8.0-9.2 × 0.1-0.2 mm, from pilose at the base via pubescent and/or tomentose to glabrous at the upper 0.5-1.0 mm; pistil head cylindrical or ellipsoid, 0.3-0.7 × 0.3-0.5 mm, ciliate at the apex; stigmatic apex

cylindrical, ellipsoid or ovoid, 0.4-0.6 × 0.15-0.2 mm, pubescent in ridges or not, the lobes at the apex rounded to acute. Fruits and seeds unknown.

Distribution: South-western Nigeria, Cameroun and north-eastern Gabon, not far from the coast.



MAP 32. *Landolphia maxima*

Ecology: Primary or secondary forest, often on sandy soils. Alt. 0-100 m. Flowering throughout the year.

Specimens examined:

NIGERIA: Cross River State: Oban, Talbot 62 (BM), 1304 (BM).
 CAMEROUN: km 10 Ebone-Yabassi Rd., Bamps 1631 (BR); Lobé R., 1 km above Batanga ferry, Bos 3759 (BR, C, K, P, WAG); Batanga, Dinklage 710 (HBG, paratype); Kumba, Krukoff 048 (MO, NY); Korup Nat. Park, near Ndian R., D. Thomas 4320 (WAG); Bipindi, Zenker 1573 (BM, E, G, HBG, K, L, M, P, S, W, lectotype).
 GABON: Mondah For. 2 km S of Cap Esterias, Leeuwenberg & Persoon 13705 (WAG).

33. *Landolphia membranacea* (Stapf) Pichon, Mém. IFAN 35: 176. 1953.

Fig. 28, p. 141; map 33, p. 143

Basionym: *Clitandra membranacea* Stapf in Fl. Trop. Afr. 4 (1): 597. 1904.

Type: Liberia: Sinoe, Greenville, Sim 1 (K, holotype).

Slender liana 5-20 m high. Trunk deeply fissured, soft and corky, 0.3-1.4 cm in diameter. Branches thinly corky, rough and/or shallowly fissured, light greyish-brown; branchlets narrowly fissured to smooth and shining, sparsely

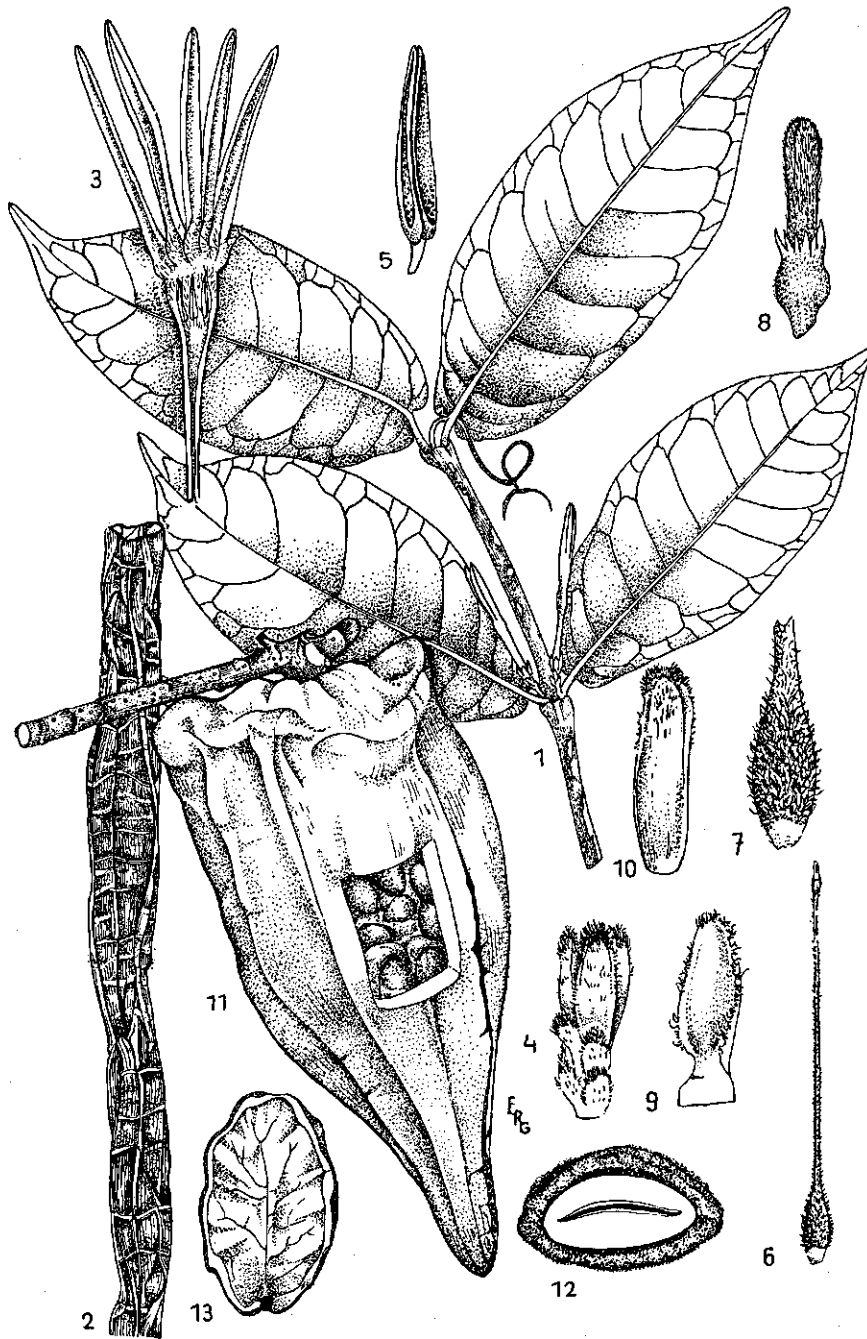
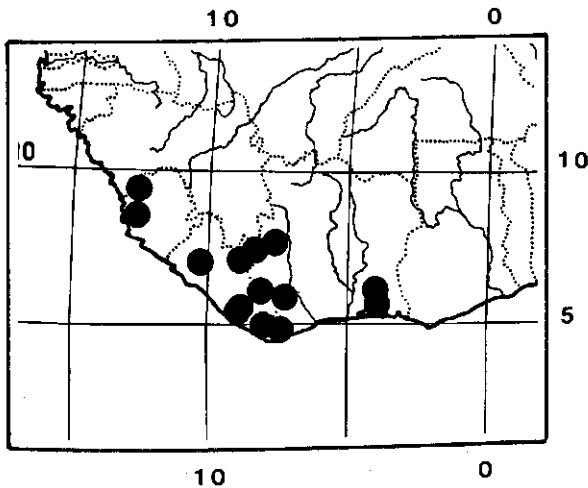


Fig. 28. *Landolphia membranacea*. 1, habit ($\times 2/3$); 2, bark ($\times 2/3$); 3, opened mature bud ($\times 4$); 4, calyx ($\times 6$); 5, stamen inside ($\times 10$); 6, pistil ($\times 4$); 7, ovary ($\times 12$); 8, pistil head ($\times 30$); 9-10, sepal out- and inside ($\times 8$); 11, fruit ($\times 2/3$); 12, section of seed surrounded by pulp ($\times 2$); section of seed with one cotyledon ($\times 2$). 1 from Thomas 4268; 2 from Sceatta annis 1938-1939; 3-10 Thomas 4408; 11 from de Koning 4759; 12-13 from Leeuwenberg 12364, preserved in alcohol.

lenticellate or not, with the bark peeling off, glabrous or sparsely pubescent, especially when young. *Leaves*: petiole 1-12 mm, often with 1 or 2 small glands on each node, glabrous or sparsely pubescent; blade ovate, elliptic or obovate or narrowly so, 1.8-4.4 × as long as wide, 4.1-24 × 1.5-12 cm, coriaceous or membranaceous when fresh, papyraceous when dried, apex acuminate or occasionally retuse, with a more or less clear acumen, 0.8-2.7 cm long, cordate or sometimes obtuse or acute at the base, glabrous; with 5-11 pairs of curved secondary veins, in the middle of the leaf 1.1-2.9 cm from each other; between 2 secondary veins 1-3 less clear ones; tertiary venation reticulate, more or less conspicuous beneath. *Inflorescence* 1-2-flowered, axillary; pedicel 1.5-4.2(5.5) mm long, glabrous. Bracts 5-10 along pedicel, in pairs or not, triangular, ovate, oblong or broadly so, 0.5-1.1 × 0.6-1.0 mm, rounded or obtuse at the apex, often with glands at the base of the mostly ciliate margin, outside pubescent or tomentose, especially near apex and margin, otherwise to almost glabrous, (almost) glabrous inside. *Flowers*: calyx 1.5-2.7 mm wide; sepals ovate to obovate, unequal, 1.3-2.6 × as long as wide, 1.5-2.6 × 0.9-1.6 mm, connate at the base for 0.3-0.6 mm, rounded or obtuse at the apex, sometimes with small triangular glands at the base of the mostly ciliate margin, pilose, pubescent or tomentose outside, glabrous inside. *Corolla* greenish-white, with the lobes darker than the tube, sparsely pubescent outside on the lower part of the lobes exposed in bud, and sometimes also on the margin and towards the apex, pilose inside behind and up to 2 mm below the anthers and pubescent or tomentose especially on and near the auricle, the margin and towards the apex; tube 5.2-8.7 × as long as calyx, 12.0-15.8 mm long, 0.8-1.5 mm wide, at the base in the middle 1.0-1.1 mm around the anthers 1.8-2.4 mm and at the throat 1.4-2.2 mm wide; lobes 6.0-9.9 × as long as wide, 0.95-1.3 × as long as tube, 13.8-19.5 × 1.7-2.6 mm, acute or obtuse at the apex. *Stamens* inserted 10.1-13.4 mm from the base of the corolla tube, at 0.80-0.85 of its length, 0.1-0.8 mm included; filaments 0.3-0.7 mm long; anthers with the base 10.2-13.3 mm from the base of the corolla tube, at 0.80-0.85 of its length, 3.5-5.5 × as long as wide, 1.8-2.2 × 0.35-0.6 mm, rounded or obtuse at the apex, glabrous. *Pistil* 10.5-12.3 mm long; ovary ovoid or oblong on a glabrous, 0.3-0.6 mm high cylindrical base, pubescent, 1.8-2.7 × 0.8-0.9 mm, ovules 30-50; style cylindrical, gradually widened towards the base, 7.7-9.3 × 0.1-0.2 mm, pubescent at the base to sparsely so or glabrous at the apex; pistil head cylindrical, ellipsoid or ovoid, 0.2-0.4 × 0.2-0.25 mm, glabrous and ciliate at the upper margin; stigmatic apex cylindrical or narrowly obovoid, 0.5-0.6 × 0.15-0.25 mm, glabrous or puberulent, with the lobes rounded at the apex. *Fruit* orange or (pale) yellow, sometimes with darker longitudinal parts, smooth or slightly verrucose, conical, or (narrowly) ovoid or ellipsoid, with a flattened base with a raised central part and with 5-12 radial ridges and 5-12 more or less conspicuous longitudinal ridges, obtuse to acuminate, with an acumen 0.6-2.7 cm long at the apex, 5-17 × 4.0-12.5 × 4.0-12.5 cm, 4-25-seeded; wall 3.5-25 mm thick. *Seed* irregularly ovoid or ellipsoid, mostly laterally compressed, 7-17.5 × 4-11 × 4-5 mm. Embryo somewhat curved or

straight; cotyledons irregularly ovate or elliptic, 5.5-16.0 × 3.1-10.0 mm, slightly undulate; rootlet 0.5-0.7(-1.3) × 0.8-1.2 mm.

Distribution: Sierra Leone, Liberia and Côte d'Ivoire.



MAP 33. *Landolphia membranacea*

Ecology: Forests. Alt. 0-300 m. Flowering mainly at the end of the rainy season, Mature fruits throughout the year.

Use: The fruits of *Landolphia membranacea* are said to be edible. In Liberia it is recorded to yield a good rubber, but it is not exploited.

Vernacular names:

SIERRA LEONE: Elonk (T, near Mamaka), Finste (S, near Yonibana), Fotefafia (S, near Yonibana), Kafure (M, near Yonibana) Natemai (L, near Yonibana) Ndagewo (L, near Yonibana), Ngiaboa (L, near Yonibana), Ngulabile (M, near Yonibana), Noak Poinyandi (M, near Yonibana), Nyaiye (M, near Yonibana), Ra-sa-ra-ten (Temne, meaning dog's udder, probably because of the shape of the apex of the fruit), Wawa (M, near Mamaka), Yoyombe (L, near Yonibana).

A selection of the ca. 50 specimens examined:

SIERRA LEONE: Njala, Deighton 2932 (K); near Yonibana, Thomas 3978 (W), 4117 (LD, UPS), 4268 (S), 4408 (BM, K), 4576 (BR), 4738 (P).

LIBERIA: Saniquelli, Kitoma, Adam 11649 (MO), Adam 16747 (MO); Mt. Nimba, Adam 20246 (P), 28583 (MO); Yéképa, Tokadeh, Adam 30027 (MO); Jabroke, Webo Distr., Baldwin 6628 (K); Gletown, Tchien Distr., Baldwin 6782 (K); Ganta, Baldwin 9331 (K); 32 km N of Kakata, Lecuwenberg & Voorhoeve 4969 (WAG); Greenville, Sinoe, Sim 1 (K, type); Sinoe basin, Whyte 3 and 19 ter (BM, K).

CÔTE D'IVOIRE: Ira For., NE of Blapleu, Bamps 2342 (BR); Bébasso For., Bamps 2521 (BR); N-Yapo, ca 70 km N of Abidjan, Bernardi 8595 (P, WAG); 14 km NW of Tabou, Breteler 7394 (WAG); Bingerville, Chevalier 16049 (P); Bouroukrou, 92 km along railroad, Chevalier 16732 (P); near Kééta, Chevalier 19329 (P); Mt. Copé, Grabo Distr., Chevalier 19664 (K, P, WAG); Banco For. Res., de Koning 3907 (WAG); Yapo For., 24 km S of Agboville, Leeuwenberg 12160 (WAG), 12161 (WAG), Scaetta annis 1938-1939 (P).

CULT: The Netherlands: Greenhouse Wageningen, Breteler 7514 (WAG), van Setten 728 (WAG). Côte d'Ivoire: Adiopodoumé, de Koning 5601 and 5775 (WAG), Toilliez 357 (BR, P).

34. *Landolphia micrantha* (A. Chev.) Pichon in Mém. IFAN 35: 84. 1953.

Fig. 29, p. 145; map 34, p. 146

Basionym: *Clitandra micrantha* A. Chev. in Mém. Soc. Bot. Fr. 8: 44. 1908.

Type: Côte d'Ivoire: Near Yaou, between Soubiré and Namouéfio, Chevalier 17691 (P, holotype; isotypes: B, K, MO, WAG).

Homotypic synonym: *C. elastica* var. *micrantha* (Chev.) Chev. ex Dalz., Usef. Pl. W. Trop. Afr.: 369. 1937.

Liana, up to 25 m long and up to 10 m high or occasionally a straggling shrub. Trunk up to 2 cm in diameter. Bark smooth or narrowly fissured, turning bright red when exposed. Branches lenticellate with bright orange-brown lenticels, brown or greyish. Branchlets often rough by lenticels, narrowly fissured, green or brown, glabrous. *Leaves*: petiole 3-10 mm, glabrous; blade elliptic or sometimes ovate or obovate, occasionally broadly or narrowly so, $0.9-3.6 \times$ as long as wide, $4.6-17.8 \times 1.8-15.1$ cm, papyraceous to coriaceous when fresh, herbaceous when dried, dull or sometimes glossy above, acuminate at the apex, with acumen rounded or acute, occasionally somewhat spatulate, 0.2-1.8 cm long, acute to rounded at the base, glabrous; secondary veins in 5-11 pairs, straight or gently curved; distance in the middle of the leaf: 0.9-2.2 cm; tertiary venation more or less inconspicuous. *Inflorescence* axillary and terminal, a dichasial cyme, $0.5-1.3 \times 0.5-1.7$ cm, 1-16-flowered. Peduncle 0.1-2.0 mm long, glabrous. Pedicels 1.5-3.0 mm long, glabrous. Bracts and bracteoles ovate or triangular or broadly so, $0.4-0.9 \times 0.5-0.7$ mm, obtuse at the apex, occasionally emarginate, ciliate or not, glabrous. *Flowers* fragrant. *Calyx* 0.8-2.2 mm wide; sepals nearly equal, ovate or triangular or broadly so, $1.0-2.4 \times$ as long as wide, $0.9-1.5 \times 0.4-1.1$ mm, connate at the base for 0.1-0.2 mm, obtuse to emarginate at the apex, often with a membranaceous margin, ciliate, glabrous. *Corolla* white, creamy, (pale) orange or yellowish, glabrous outside, or occasionally some bristles at the height of the anthers, pilose inside in ridges among the anthers and/or up to 0.4 mm below that level, occasionally lobes pilose inside, especially at auricle; tube $1.3-3.8 \times$ as long as calyx, 1.5-3.1 mm long, 0.8-1.6 mm wide at the throat, 1.1-1.8 mm around the anthers, and 0.6-1.0 mm wide at the base, widest part 0.7-2.0 mm above base, wall thickened above anthers; lobes equal or nearly so, ovate or elliptic or narrowly so, $0.8-1.6 \times$ as long as tube, $2.0-4.3 \times$ as long as wide, $1.8-3.9 \times 0.8-1.2$ mm, apex rounded to acute or mucronate. *Stamens* inserted 0.55-1.4 mm from the base of the corolla tube, at 0.32-0.52 of its length, 0.6 mm included to 0.1 mm exerted, 0.9-1.4 mm long;

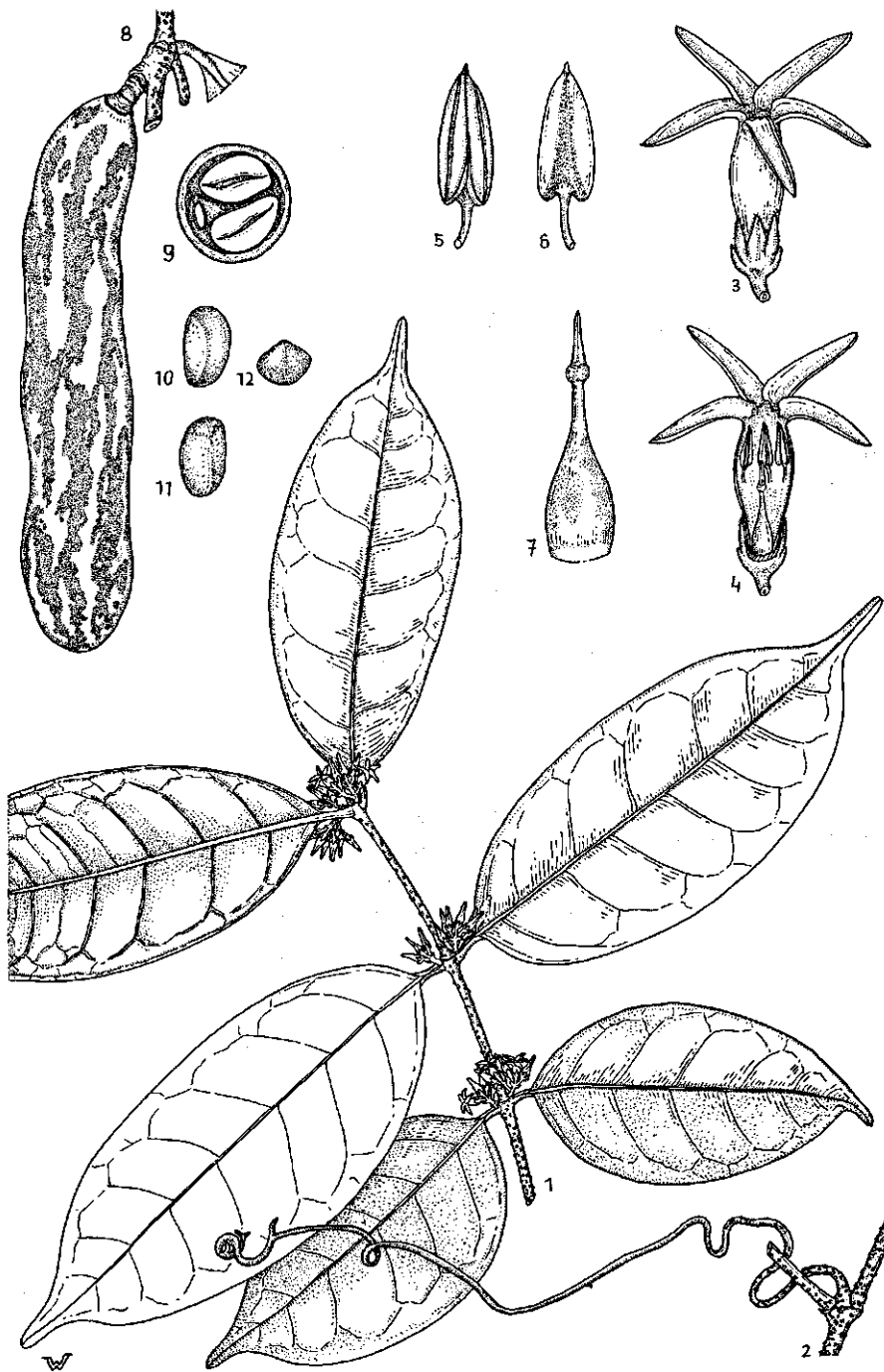
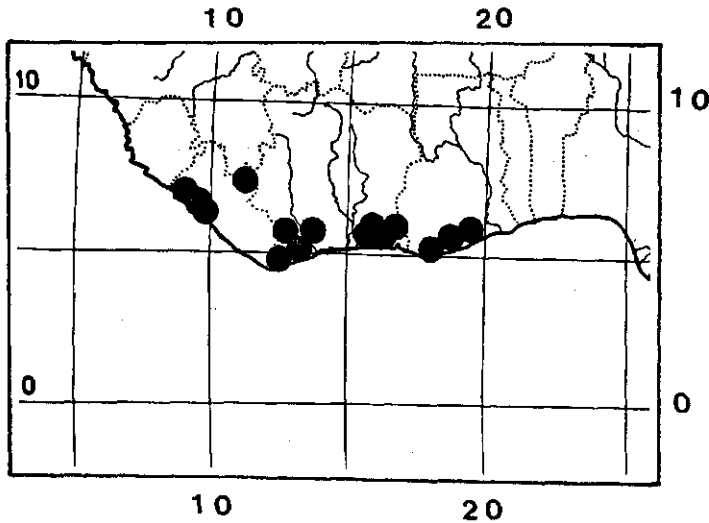


Fig. 29. *Landolphia micrantha*. 1, habit ($\times 2/3$); 2 tendril ($\times 2/3$); 3, flower ($\times 6$); 4, opened flower ($\times 6$); 5-6, stamen in- and outside ($\times 18$); 7, pistil ($\times 18$); 8, fruit ($\times 2/3$); 9, section of fruit ($\times 2/3$); 10-12, seed, three sides ($\times 2/3$). 1 from de Koning 6517; 2 from de Koning 2620; 3-7 from Leeuwenberg 12080; 8-12 from de Koning 1029.

filaments 0.2-0.6 mm long, glabrous, anthers with the base 0.7-1.7 mm from the base of the corolla tube, at 0.5-0.8 of its length, 1.7-4.5 × as long as wide, 0.7-1.0 × 0.2-0.4 mm, obtuse to acuminate (with acumen 0.1-0.2 mm long) at the apex, glabrous. *Pistil* 1.1-2.1 mm long, glabrous; ovary ovoid or pyriform, occasionally on a short, up to 0.2 mm high cylindrical base of a slightly lighter colour, 0.6-1.1 × 0.4-0.5 mm; with 20-50 ovules; style cylindrical, 0.05-0.6 × 0.1-0.25 mm; pistil head cylindrical or ovoid, 0.05-0.2 × 0.1-0.3 mm; stigmoid apex 0.2-0.5 × 0.1-0.25 mm, with the lobes rounded at the apex. *Fruit* greenish, orange, creamy or yellowish, smooth, covered (sometimes nearly entirely) with often elongated darker green or brown scabrous spots (up to about 1.0 × 0.5 cm), mostly cylindrical or irregularly narrowly ellipsoid, ovoid or obovoid, occasionally broader so to nearly globose, 1.9-10.6 × 0.7-3.1 cm, 5-17-seeded, with seeds mostly in a single row; wall 0.7-4.0 mm thick, sclereid cell layer 0.2-0.4 mm thick. *Seed* 7.0-15.0 × 6.0-1.3 × 2.0-9.0 mm, irregularly ovoid to obovoid, mostly flat on one or two sides; testa 0.6-0.8 mm thick; embryo straight or slightly curved; cotyledons irregularly (broadly) ovate, 5.5-13.8 × 5.6-12.5 mm, slightly undulate; rootlet 0.4-0.8 × 0.9-1.1 mm.

Distribution: Liberia, Côte d'Ivoire and Ghana.



MAP 34. *Landolphia micrantha*

Ecology: Primary or secondary forest or bush, on sandy soil or laterite. Alt 0-500 m. Flowering mainly at the end of the dry season. Mature fruits mainly in the dry season, occasionally also in other seasons, never in the middle of the rainy season.

Use: None, however in Liberia *Landolphia micrantha* is said to yield a good rubber.

Vernacular name:

GHANA: Salaria (near Benso).

A selection of the ca. 60 specimens examined:

LIBERIA: Nimba Mt., Adam 20741 (K, MO, UPS); Gangra, Adam 30061 (MO); Mecca, Baldwin 10437 (K, MO, WAG); near Firestone Plantations, along Dukwai R., Cooper 235 (A, F, FHO, K, MICH, NY, US); Krahn Bassa For., van Harten 328 (K, WAG); Bomi Hills, Jansen 1777 (WAG), van Meer 388 (MO, WAG); Monrovia, Proctor Cooper s.n. (BM); 30 km from Karka town, Whyte s.n. (K).

CÔTE D'IVOIRE: Banco For., Adjanohoun 1417B (WAG), Bernardi 8129 (P), de Koning 1029 (WAG), 1096 (WAG), Leeuwenberg 12080 (WAG), Oldeman 959 (BR, G, K, L, MO, P, S, UC, WAG, Z); Anguédédou For., Ake Assi 6873 (WAG), de Wilde 3428 (BR, K, NY, P, WAG); Yapo For., Bernardi 8702 (K, NY, P, WAG), Oldeman 1002 (K, WAG); km 78 Sassandra-Gagnoa Rd., Bretelet 6137 (WAG); along the Mé R., between Potou lagune and Alépé, Chevalier 17396 (P); Yaou, between Soubiré and Namouéfio, Chevalier 17691 (K, MO, P, WAG, type); km 3 Abbé-Abengourou Rd., de Koning 32 (WAG); km 30 Tabou-Bereby Rd., de Koning 2344 (WAG); 81 km NNE of Sassandra, 5 km E of Rd. to Lakota, near Goboro R., Leeuwenberg 3092 (BR, K, UC, WAG); km 27 Monogaga-Sassandra Rd., Leeuwenberg 12147 (WAG); km 7 Olodio-Grabo Rd., Leeuwenberg 12307 (WAG); Tai For., 20 km SE of Tai, Leeuwenberg 12343 (WAG); Nzida, Nozeran s.n. (P); near ORSTOM, 17 km W of Abidjan, Versteeg & den Outer 663 (MO, U, WAG).

GHANA: Benso, Andoh 5475 (P); Neun For. Res., Enti SP533 (BR, MO), Enti & Awaok R1115 (BR, MO, WAG); Bimpang For. Res., Enti SP586 (BR, MO), SP600 (BR, MO); from Dompim to Ndumfu For. Res., Hall & Enti GC38366 (FHO, K); Atewa Range For., Lock GC43538 (MO, WAG).

35. *Landolphia nitidula* Persoon, nom. nov. Fig. 30, p. 148; map 35, p. 149

Basionym: *Clitandra nitida* Stapf in Fl. Trop. Afr. 4.1: 595. 1904, not *L. nitida* Lebrun & Taton (1948).

Type: Liberia: Sinoe Basin, Whyte 1 (K, lectotype, designated by Pichon; isolecotypes: BM, P).

Homotypic synonym: *Anthoclitandra nitida* (Stapf) Pichon, Mém. IFAN 35: 230. 1953.

Liana up to 30 m high climbing in trees, with tendrils up to 30 cm long. Branches greyish-brown, lenticellate; branchlets medium red-brown to dark brown, glabrous or sparsely pubescent. Leaves petiolate; petiole glabrous, 7-18 mm long; blade subcoriaceous, also when fresh, shiny, obovate or elliptic, 1.4-2.1 × as long as wide, 5-12 × 3-6.8 cm, caudate at apex, cuneate or rounded at base, glabrous on both sides; 7-16 pairs of secondary veins, anastomosing; tertiary venation reticulate. Inflorescence small, axillary, congested, 1-30-flowered; exceptionally also tendril-like. Peduncle 1-11 mm long, glabrous; pedicels 1-5 mm long, glabrous. Bracts sepal-like, 0.3-0.6 × 0.3-0.5 mm, acute at apex, without colleters, ciliate. Sepals subequal, persistent even under the fruit, connate at base, triangular or ovate, 1-1.5 × as long as wide, 1-1.4 × 0.8-1.1 mm, acute at apex, erect, glabrous outside, glabrous inside, without colleters, ciliate. Corolla limb yellow, tube orange, in the mature bud 6-11 mm long; tube obovoid,

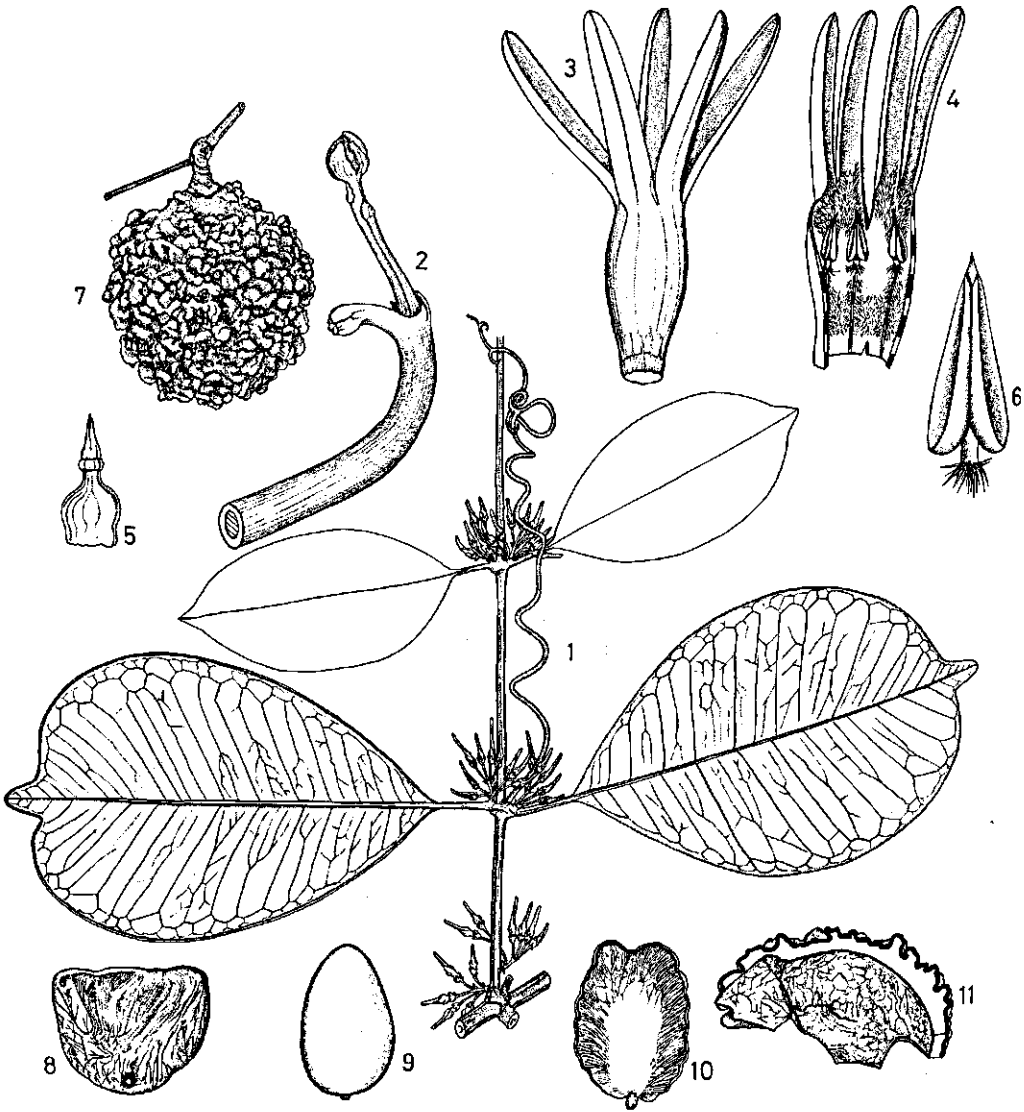
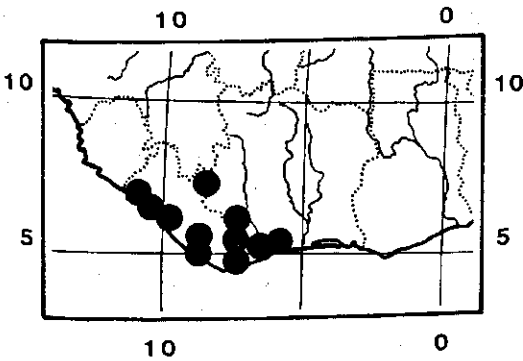


Fig. 30. *Landolphia nitidula*. 1, habit ($\times 2/3$); 2, part of tendril-like inflorescence ($\times 5$); 3, corolla ($\times 5$); 4, opened corolla ($\times 5$); 5, pistil ($\times 10$); 6, stamen inside ($\times 20$); 7, fruit ($\times 1/2$); 8, seed with pulp ($\times 1$); 9, seed without pulp ($\times 1$); 10, embryo ($\times 11/2$); 11, part of fruit on section ($\times 1/2$). 1 and 6 from Geerling & Bokdam 2355; 10, embryo ($\times 11/2$); 11, part of fruit on section 599; 7-11 from Breteler 5994.

2.3-3 × as long as the sepals, 2.7-3.6 mm long, at base 0.7-0.9 mm, at widest point 1.3-1.6 mm and at the mouth 1-1.3 mm wide, glabrous outside, pubescent inside from 0.25-0.3 of the length of the tube to the mouth, sparsely pubescent behind the anthers; lobes linear, 1.3-2.1 × as long as the tube, 4.1-6.5 × as long as wide, 4.6-6.3 × 0.9-1.1 mm, acute at apex, entire, spreading, glabrous outside, pubescent inside near the base, ciliate. *Stamens* included, inserted 0.45-0.55 of the tube length from the base of the corolla; filament 0.2-0.4 mm long, often with a few stiff hairs at the base; anthers narrowly ovate, 0.35-0.45 as long as the corolla tube, 3-4.3 × as long as wide, 1.1-1.3 × 0.3-0.4 × 0.15-0.2 mm, long-acuminate at apex, deeply cordate at base with lobes not touching each other, glabrous. *Pistil* 1.3-1.6 mm long; ovary broadly obovoid, 0.8-1.2 × as long as wide, 0.5-0.6 mm, glabrous; style 0.1-0.3 mm long, glabrous; pistil head 0.5-0.7 mm long, basal part annular, 0.1-0.15 × 0.2-0.25 mm; stigmoid apex conical, 2-4 × as long as wide, 0.45-0.6 × 0.15-0.25 mm, cleft at apex for 0.5-0.7 of its length; 25-40 ovules on two parietal placentas. *Fruit* orange to brownish-green, globose, 1.5-4.9 × 1.5-5 cm, with verrucose surface, glabrous, 1-17 seeded; wall 2-7 mm thick. *Seed* ellipsoid or ovoid, laterally compressed or not, 12-18 × 9-14 × 6-9 mm, brown, glabrous; endosperm white, horny, surrounding the flat embryo; embryo straight; cotyledons ovate or elliptic, undulate, very thin, 10-14 × 6-10 mm; rootlet very short, up to 1.5 mm long.

Distribution: Liberia and Côte d'Ivoire.



MAP 35. *Landolphia nitidula*

Ecology: Rain forests and secondary forests. Probably flowering and fruiting scattered over the year.

Specimens examined:

LIBERIA: Sinoe Basin, Whyte 1 (BM, K, P, type); N of Monrovia, Kaka Town, Whyte s.n. (BM, K, paratype); Sinoe, Greenville, Sim 24 (K, P, paratype); Dukwai Rd., Cooper 43 (A, BM, F, K, NY); Mecca, Boporo Distr., Baldwin jr. 10411 (K); Mt. Nimba, Adam 20939 (K, UPS), 27608 (BR, MO, WAG).

CÔTE D'IVOIRE: Dakpadou-Sago, Geerling & Bokdam 2355 (WAG); 45 km N of Taï, along road to Guiglo, Leeuwenberg 3057 (WAG); Grabo, Aké Assi 7919 (WAG); km 54 Sassandra-Gagnoa Road, Breteler 5994 (WAG); 13 km E of Sakré, Aké Assi 12068 (K).

CULT.: Netherlands, Wageningen, Van der Laan 658 (WAG, seedling of Breteler 7320); *ibid.*, Leeuwenberg 12399 (WAG, seedling of Breteler 7320).

36. *Landolphia noctiflora* Persoon sp. nov. Fig. 31, p. 151; map 36, p. 152

Liana ramis multis coloribus cortice decidua. Folia laminis ovatis usque obovatis apice acuminatis glabris. Inflorescentia axillaris pauciflora pedicellis brevibus. Flores odorantes praesertim nocte florentes. Sepala late ovata inaequalia utroque latere glabra. Corolla alba, flavescens vel flava extus glabra tubo longo angusto calycem longitudine multo superante lobis tubo aequilongis vel tubum paulo superantibus. Stamina fauce corollae inserta inclusa. Fructus flavus vel viridis globosus.

Type: Gabon: ca. km 40 Lalara-Kakolou Rd. and then 25 km along a forest exploitation track to the S, Breteler & de Wilde 520/78 (WAG, holotype).

Liana up to 5 m high, or probably more. Trunk 1-5 cm in diameter. Branches multi-coloured red- or orange-brown or greyish, rough with whitish lenticels and with the bark peeling off, otherwise narrowly fissured. Branchlets glabrous. *Leaves*: petiole 3.5-11 mm long, with small glands on each node, glabrous; blade ovate, oblong or elliptic, narrowly so or occasionally obovate, 1.6-4.3 × as long as wide, 5.2-15.3 × 2.0-6.9 cm, papery to coriaceous when fresh, coriaceous when dried, acuminate at the apex with an emarginate to obtuse acumen 0.15-1.5 cm long and 0.2-0.6 cm wide at its base, acute to truncate at the base, glabrous; with 8-15 pairs of (almost) straight secondary veins, in the middle of the leaf 0.6-1.4 cm from each other; between 2 secondary veins one or more less clear ones, sometimes forming a sharper angle with the midrib; tertiary venation reticulate, often labyrinth-like and darker beneath. *Inflorescence* axillary, a more or less irregular, reduced dichasial cyme, 1.4-5.0 × 0.2-4.0 cm, 1-4-flowered. Pedicel 0.3-0.9 mm long, glabrous. Bracts 2-8 along pedicel, often not in pairs, triangular, ovate or occasionally elliptic, or broadly so, 0.5-1.2 × 0.5-1.8 mm, apiculate to emarginate at the apex, ciliate or not, at the base of the sometimes membranaceous margin and at the basal line often with triangular glands inside, glabrous outside, glabrous inside or pilose at the basal line. *Flowers* sweet-scented, open mainly during the night. *Calyx* 1.9-2.2 mm wide, sepals broadly ovate, unequal, 0.5-1.0 × as long as wide, 1.0-1.9 × 1.6-2.3 mm, connate at the base for 0.2-0.3 mm, emarginate to apiculate at the apex, ciliate and with an often membranaceous margin, glabrous both sides. *Corolla* (greenish-) white or yellow, or creamy, pilose inside behind anthers and up to 1.5-11 mm below that level and occasionally also in the throat, otherwise glabrous, glabrous outside, but often with some hairs on the lobes; tube 7.2-10.0 × as long as calyx, 13.0-17.0 mm long, 1.1-1.4 mm wide at the base, 1.9-2.5 mm around the anthers and 1.7-2.4 mm wide at the throat; lobes 1.05-1.25 × as long as tube, 4.4-6.8 × as long as wide, 16.3-20.8 × 2.7-3.9 mm, rounded or obtuse at the apex, occasionally retuse. *Stamens* inserted 10.2-14.5 mm from the base of the corolla

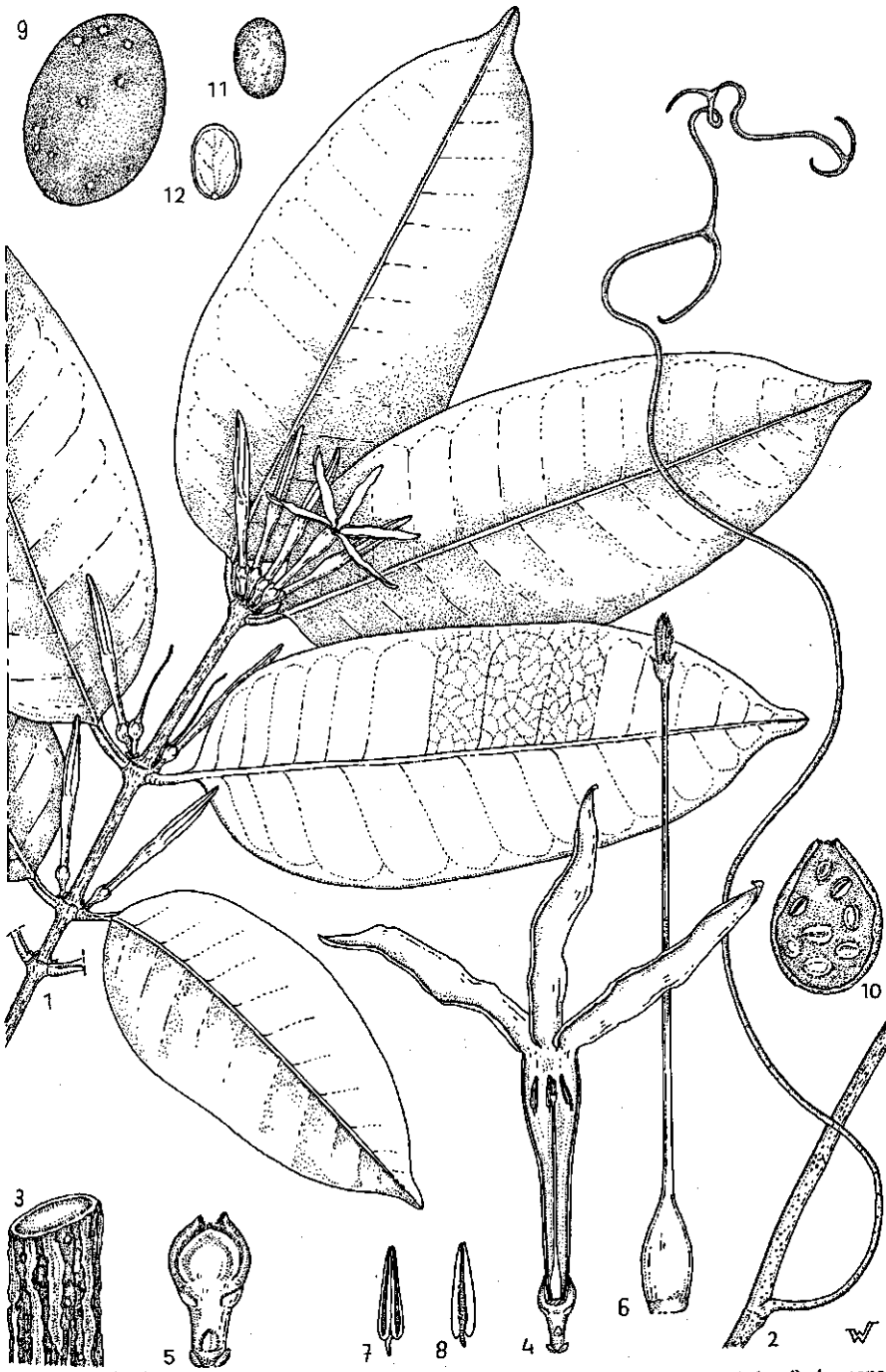
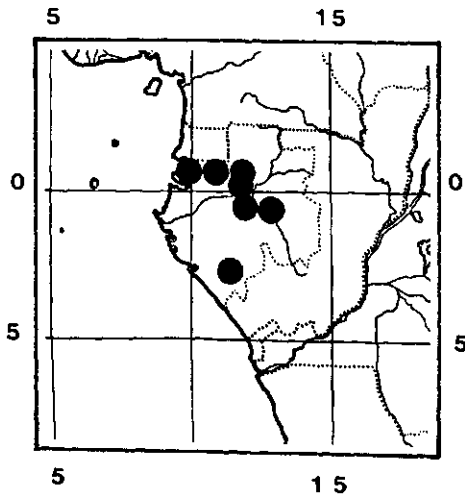


Fig. 31. *Landolphia noctiflora*. 1, habit ($\times 2/3$); 2, tendril ($\times 2/3$); 3, part of branch ($\times 4$); 4, opened flower ($\times 2$); 5, calyx ($\times 4$); 6, pistil ($\times 6$); 7-8, stamen in- and outside ($\times 6$); 9, fruit ($\times 2/3$); 10, section of fruit ($\times 2/3$); 11, seed ($\times 2/3$); 12, section of seed with embryo ($\times 2/3$). 1 and 3-8 from A.M. Louis et al. 734; 2 from Breteler & de Wilde 520; 9-10 from Gentry 33121; 11-12 from Hladik 2585.

tube, at 0.78-0.85 of its length, 0.7-1.2 mm included, 2.2-2.5 mm long; filaments 0.3-0.8 mm long; anthers with the base 10.2-14.5 mm from the base of the corolla tube, at 0.78-0.85 of its length, 3.1-4.8 × as long as wide, 2.2-2.3 × 0.45-0.7 mm, rounded or somewhat acuminate at the apex, glabrous. *Pistil* (8.5-)10.9-15.2 mm long; ovary ovoid on a short (0.4-0.7 mm high) cylindrical base or cylindrical with the upper part conical, (1.4-)1.8-2.5 × 0.45-0.8 mm, with the lower 0.4-0.7 mm of a different colour, glabrous; ovules (40-)70-100; style (5.1-)7.7-11.4 × 0.1-0.3(-0.5) mm, cylindrical and mostly gradually widened towards the base, glabrous; pistil head cylindrical, 0.3-0.7 × 0.25-0.5 mm, ciliate at the upper margin; stigmoid apex cylindrical and with a mostly rhomboid upper part, 0.6-1.0 × 0.2-0.4 mm, pubescent and at the apex pilose, mostly in ridges, the lobes obtuse at the apex. *Fruit* yellow or green with small and large light verrucose lenticellate spots (0.1-3.2 mm in diameter), globose, 2.5-5.5 × 2.5-5.5 × 2.5-5.5 cm, approximately 10-seeded; wall 1.1-2.1 mm thick, sclereid cell layer 0.2-0.3 mm thick. *Seed* ovoid or ellipsoid, laterally compressed or not, 8-15 × 4-9 × 4-6 mm. Embryo slightly curved or straight; cotyledons ovate or elliptic, 6.8-13.5 × 3.4-7.9 mm, slightly undulate or not; rootlet 0.6-0.8 × 0.8-1.0 mm.

Distribution: Gabon.



MAP 36. *Landolphia noctiflora*

Ecology: Forests on clay or sand. Alt 0-500 m. Flowering at the end of the dry and the beginning of the rainy season. Mature fruits probably throughout the year.

Note. *Landolphia noctiflora* is closely allied to *L. camptoloba* because of the

long slender corolla tubes and pistils, glabrous ovaries and the sclereid cell layer of the fruit. *L. noctiflora*, however, has axillary instead of terminal inflorescences and larger leaves.

Specimens examined:

GABON: ca. 40 km along Lalara-Kakolou Rd. and than 25 km along a forest exploitation track to the S, Breteler & de Wilde 520/78 (WAG, holotype); near Makokou, Lobo quarter, Caballé 334 (WAG); M'Passa Field Station, along Ivindo R., 10 km S of Makokou, Gentry 33121 (MO), Gentry 33133 (MO), Hladik 2585a (WAG); Catholic Mission, Makokou, Hallé 2730 (P, WAG); Cristal Mts., 40 km along forest exploitation Rd. E of SEF Camp, Leeuwenberg & Persoon 13507 (LBV, WAG), 13509 (WAG); 33 km along forest exploitation Rd. NE of Abanga, Leeuwenberg & Persoon 13566 (LBV, WAG); Moka creek, E of Mondah For., Leeuwenberg & Persoon 13712 (LBV, WAG); ca. 50 km SE of Achouka, Louis et al. 734 (WAG); ca. 45 km SW of Ndendé, near Ndendé-Tschibanga Rd., Louis et al. 1176 (WAG).

37. *Landolphia owariensis* P. Beauv., Fl. Owar. Bénin 1(6): 55. 1804; Pichon, Mém. IFAN 35: 1953, partly excl. syn. *L. heudelotii* var. *djenge*.

Fig. 32, p. 154; 33, p. 155; map 37, p. 158

Type: Nigeria: Bendel State, Warri, Palisot de Beauvois s.n. (G, holotype).

Homotypic synonyms: *Paederia owariensis* (P. Beauv.) Sprengel, Syst. Veg. 1: 669. 1825. *Vahea owariensis* (P. Beauv.) F. Muell. in Wittstein, Org. Cost. Pl.: 258. 1878. *Pacouria owariensis* (P. Beauv.) Hiern, Cat. Afr. Pl. Welw. 1: 661. 1898. *L. kirkii* var. *owariensis* (P. Beauv.) De Wild. & Th. Dur. ex H. Dur., Bull. Jard. Bot. Brux. 2: 696. 1910.

Heterotypic synonyms: *L. humilis* K. Schum. ex Schlecht., Westafr. Kautsch. Exped.: 288. 1900, nomen cum ic.; ex Stapf in Fl. Trop. Afr. 4(1): 53. 1902. Type: Zaire: III, Stanley Pool, Schlechter 12544 (K, holotype; isotypes: BM, BR, P, Z).

L. gentilii De Wild., Obs. Apoc. Latex. Rec. Gentil: 10. 1901. Type: Zaire: VI, between Tumba and Leopold II Lakes, Gentil 1 (BR, holotype). Homotypic synonym: *L. owariensis* var. *gentilii* (De Wild.) Chev., Rev. Int. Bot. Appl. 28: 397. 1948.

L. stolzii Busse in Engler, Bot. Jahrb. 32: 168. 1902. Type: Tanzania: T7, Kondeland, Stolz 94 (holotype not seen, destroyed in B; lectotype: K, designated here; isotypes: A, E, P).

L. owariensis var. *rubiginosa* Stapf in op. cit. 50. Type: Cameroun: Yaoundé, Zenker 538 (K, holotype; isotypes: BM, BR, COI, S, W, WU, Z).

L. owariensis var. *tomentella* Stapf in op. cit. 51. Type: Sudan: Djur Land, Seriba Ghattas, Schweinfurth 1377 (K, lectotype; isolectotypes: P, S, WU, designated here). Homotypic synonym: *L. tomentella* (Stapf) Chev., Bull. Soc. Bot. Fr. 53: 21. 1906.

L. humilis var. *umbrosa* Chev., Compt. Rend. Acad. Sci. Paris 135: 514. 1902. Type: Congo: Brazzaville, Chevalier 4267 (P, lectotype; isolectotypes: BR, K, designated here).

L. pierreii Hua, Compt. Rend. Acad. Sci. Paris 135: 868. 1902. Type: Gabon: near Libreville, Klaine 1390 (P, lectotype; isolectotype: BR, designated by

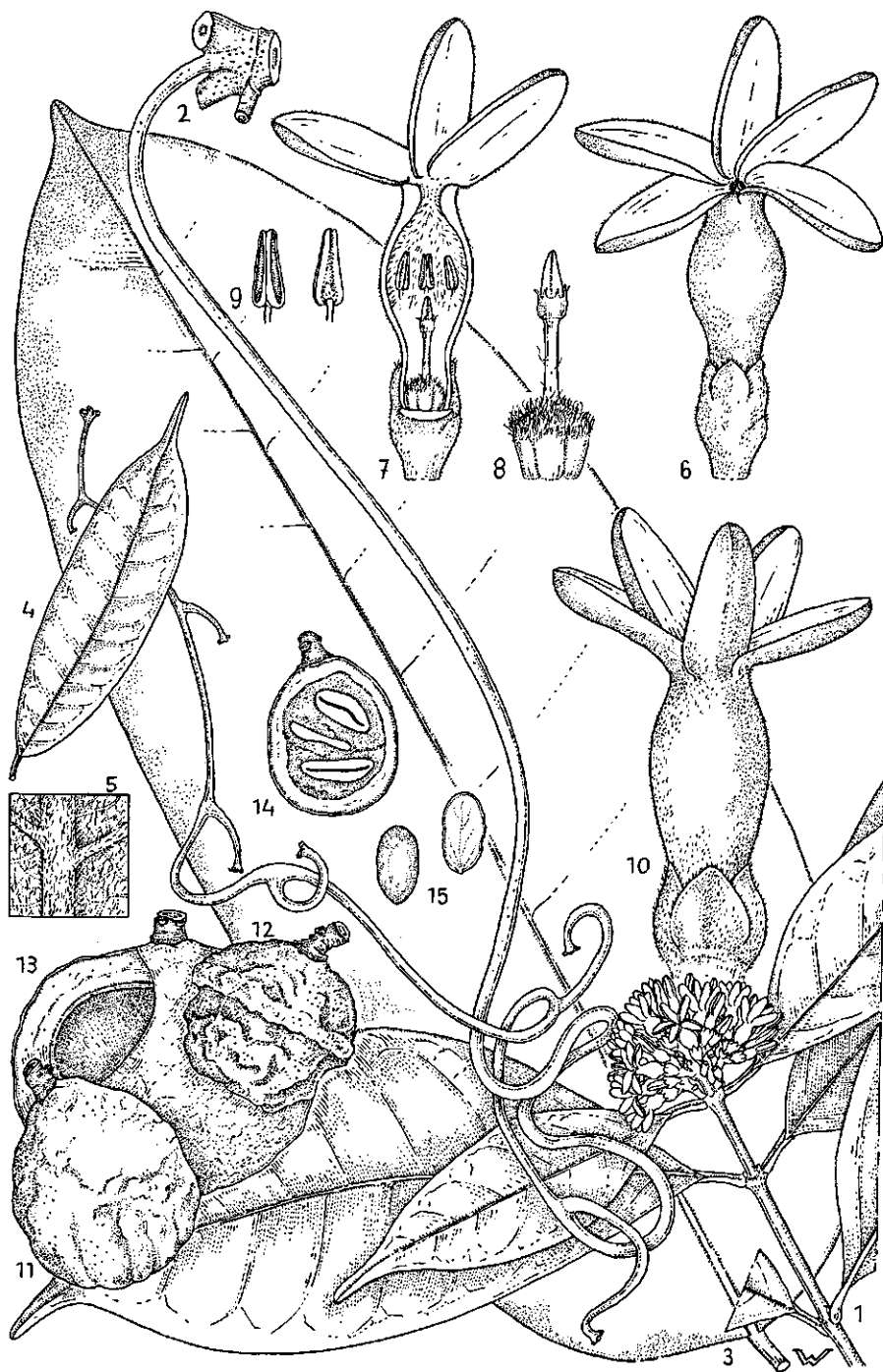


Fig. 32. *Landolphia owariensis*. 1, habit ($\times 2/3$); 2, tendril ($\times 2/3$); 3-4, leaves ($\times 2/3$); 5, part of leaf beneath ($\times 4$); 6, opened flower ($\times 4$); 7, opened flowerd ($\times 4$); 8, pistil ($\times 8$); 9, stamen in- and outside (8); 10, flower ($\times 4$); 11-12, fruits ($\times 2/3$); 13, fruit partially and 14, entirely on section ($\times 2/3$); 15 seed, also on section ($\times 2/3$). 1 from Leeuwenberg & Persoon 13643; 2 and 6-9 from Leeuwenberg & Persoon 13568; 5 and 10 from Leeuwenberg & Persoon 13646; 11 and 14-15 from Leeuwenberg 8337; 12 from W. de Wilde et al. 1702; 13 from Breteler 2228.

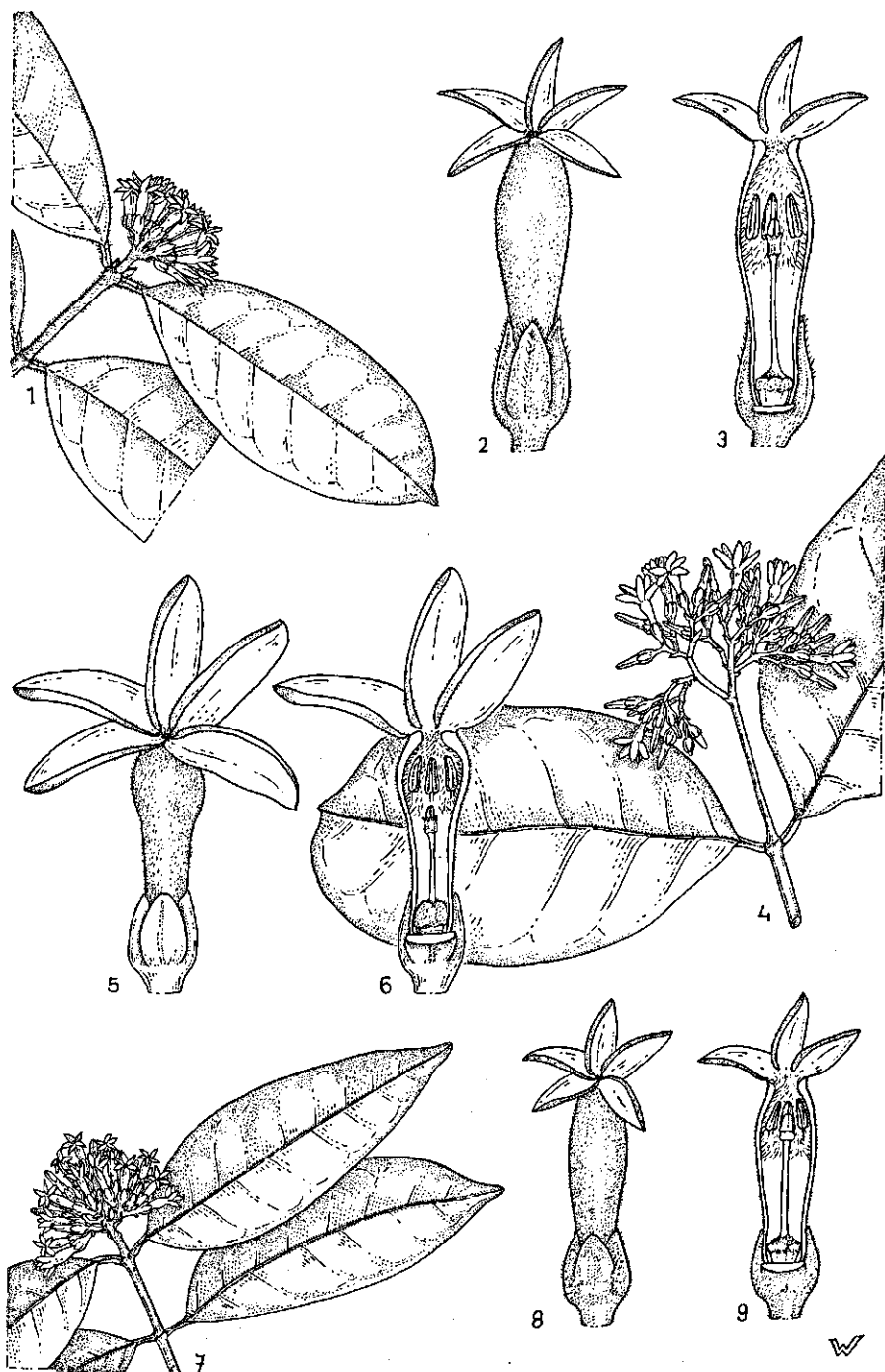


Fig. 33. *Landolphia owariensis*. 1, 4 and 7, habit ($\times 2/3$); 2, 5 and 8, flower ($\times 4$); 3, 6 and 9 opened flower ($\times 4$). 1-3 from Reitsma 1450; 4-6 from Chevalier 29813; 7 from Gossweiler 7616; 8-9 from Attims 179.

Pichon). Homotypic synonym: *L. owariensis* var. *pierrei* (Hua) Pichon, Mém. IFAN 35: 127. 1953, **syn. nov.**

L. droogmansiana De Wild. in De Wildeman & Gentil, Lianes Caoutch. Et. Ind. Congo: 59. 1904. Type: Zaire: IV, Kandakanda, Gentil 63 (BR, holotype). Homotypic synonyms: *L. owariensis* var. *droogmansiana* (De Wild.) Chev., Rev. Int. Bot. Appl. 28: 397. 1948.

L. turbinata Stapf ex Chev., Bull. Soc. Bot. Fr. 53: 32. 1906. Type: Uganda: Dumu, Dawe 47 (K, holotype). Homotypic synonym: *L. subturbinata* Stapf ex Dawe, Rep. Bot. Miss. Uganda Protect.: 50. 1906. The holotype of the first name is the lectotype, designated here, of the second.

L. glaberrima Chev., Mém. Soc. Bot. Fr. 8: 45. 1908. Type: République Centrafricaine: Ndellé, Chevalier 7574 (P, lectotype; isolectotypes: BM, BR, G, K, L, designated here). Homotypic synonym: *L. owariensis* var. *glaberrima* (Chev.) Chev., Et. Fl. Afr. Centr. Fr. 1: 191. 1913.

L. stapfiana Wernh., Cat. Pl. Talb. S. Nig.: 59. 1913. Type: Nigeria: Cross River State, Oban, Talbot 1617 (BM, holotype; isotypes: K, Z).

L. mayumbensis R. Good, Journ. Bot. 67. Suppl. 2: 83. 1929. Type: Angola: Cabinda, Humbre, Belize, Maiombe, Gossweiler 7934 (BM, holotype; isotypes: COI, K, LISJC, LISU). Homotypic synonym: *L. owariensis* var. *mayumbensis* (R. Good) Pichon, op. cit. 126, **syn. nov.**

L. owariensis var. *ubanghiensis* Chev., Rev. Int. Bot. Appl. 28: 398. 1938. Type: République Centrafricaine: Bessau, Chevalier 5319 (P, lectotype, designated here).

L. owariensis var. *nigerina* Chev., l.c. (French descr.). Type: Nigeria: Bendel State, Benin City, Unwin in Chevalier 15125 (P, holotype). Homotypic synonym: *L. nigerina* Chev., Expl. Bot. Afr. Occ.: 407. 1920, nomen.

L. owariensis var. *guineensis* Chev., l.c. (French descr.) and Expl. Bot. Afr. Occ.: 407. 1920, nomen. Type: Guinée: Diaguissa, Chevalier 12917 (P, lectotype, designated here).

L. owariensis var. *djalonis* Chev., l.c. (French descr.) and op. cit. 406, nomen. Type: Guinée: Fouta Djalon, Plateau of Dalaba-Diaguissa, Chevalier 18820 (P, lectotype, designated here).

L. owariensis var. *rubiginosa* Chev., l.c. (French descr.) and op. cit. 407, nomen. Type: Benin: between Sakété and Pedjelé, Chevalier 22909 (P, lectotype; isolectotypes: BR, K, designated here).

L. miegeana Chev., op. cit. 402, pl. on 403 (Latin descr.). Type: Côte d'Ivoire: between Divo and Guitry, Chevalier Feb. 1948 (P, holotype).

L. tomentella var. *gracilis* Chev., op. cit. 405 (French descr.) and Et. Fl. Afr. Centr. Fr.: 191. 1913, nomen. Type: République Centrafricaine: Ndellé, Chevalier 7006 (P, holotype).

L. tomentella var. *lucens* Chev., l.c. (French descr.) and l.c., nomen. Type: République Centrafricaine: Ndellé, Chevalier 6583 (P, lectotype; isolectotype: K, designated here).

L. tomentella var. *minor* Chev., l.c. (French descr.) and l.c., nomen. Type: République Centrafricaine: Ndellé, Chevalier 7129 (P, holotype).

L. tomentella var. *pumila* Chev., l.c. (French descr.) and op. cit. 192, nomen. Type: République Centrafricaine: between Ndellé and Bahr Tété, Chevalier 7004 (p. holotype).

L. tomentella var. *rufescens* Chev., l.c. (French descr.) and l.c., nomen. Type: République Centrafricaine: Ndellé, Chevalier 8126 (P, lectotype, designated here).

L. tomentella var. *subnuda* Chev., l.c. (French descr.) and op. cit. 193, nomen. Type République Centrafricaine: Ndellé, Chevalier 7135 (P, lectotype; isolectotype: K, designated here).

L. tomentella var. *pulcherrima* Chev., op. cit. 406 (French descr.) and Bull. Soc. Bot. Fr. 53: 21. 1906, nomen. Type: République Centrafricaine: Ndellé, Chevalier 7929 (P, lectotype, designated here).

L. humilis var. *cordifolia* Chev., op. cit. 407 (French descr.). Type: Congo: Mpouya, Chevalier 5040ter (P, holotype).

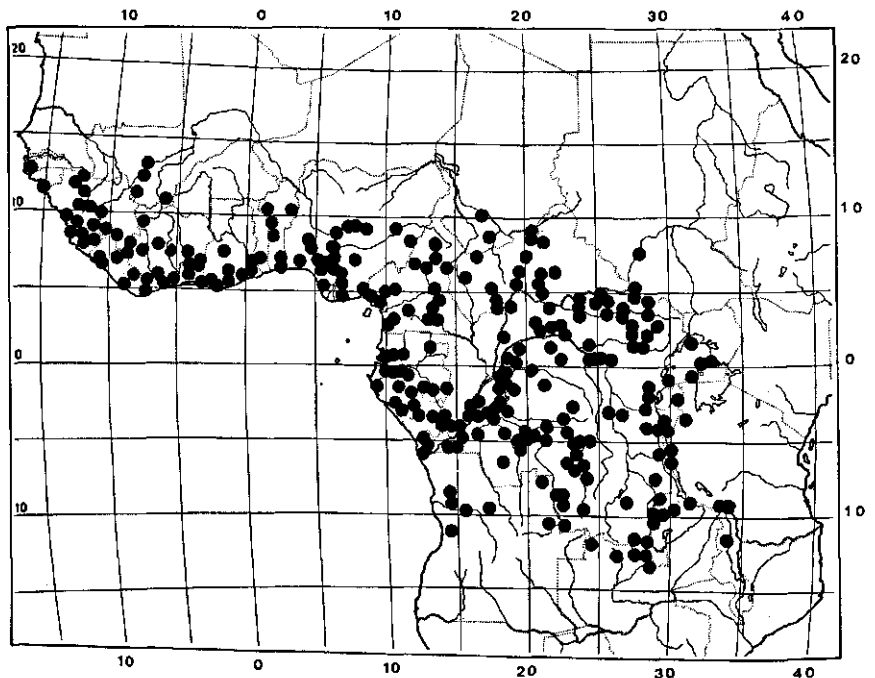
L. humilis var. *gracilis* Chev., l.c. (French descr.) Type: Congo: Brazzaville, Chevalier 4271 (P. holotype).

L. leiocalyx Pichon, Mém. IFAN 35: 129. 1953. Type: Guinée: Fouta Djalon, Pobéguin 1929 (P. holotype). Homotypic synonym: *L. owariensis* var. *leiocalyx* (Pichon) Huber, Kew Bull. 1962: 437. 1962 and in Fl. W. Trop. Afr. 2nd. ed. 2: 56. 1963, **syn. nov.**

Liana with tendrils, up to 100 m long or less often a shrub up to 3 m high. Trunk up to 40 cm in diameter; bark grey-brown to red-brown, rough, smooth or fissured, with or without protruding lenticels. Branches dark brown, lenticellate; branchlets brown-pubescent or sometimes glabrous. *Leaves*: petiole (1)2-12 mm long, pubescent or sometimes glabrous; blade coriaceous or papery, even when fresh, dark green above, paler beneath, ovate, elliptic to narrowly oblong or sometimes obovate, 1.6-3.3 × as long as wide, 2.1-28 × 1.1-11.2 cm, acuminate to obtuse at the apex (acumen 0-20 mm), cuneate or rounded at the base, glabrous to puberulous and very often pubescent on costa and secondary veins above, pubescent to glabrous beneath, but on costa and secondary veins always pubescent to puberulous; with 6-23 pairs of secondary veins. *Inflorescence* terminal or on tendrils, a many-flowered lax to congested cyme. Peduncle 0-15 cm long, pubescent or sometimes glabrous; pedicels 0.5-2.8 mm long, pubescent or rarely glabrous. *Flowers* sweet-scented; sometimes slightly zygomorphic. *Sepals* green (but mostly seemingly red by the red pubescence outside), connate at the base (0.1-0.5 mm), unequal, ovate to oblong, 0.8-1.9 × as long as wide, (1.2)1.9-4 × 1.5-3.2 mm, obtuse to retuse at the apex, auriculate, white to red-pubescent outside, glabrous or sometimes puberulent inside, ciliate. *Corolla* white or creamy (sometimes yellow), turning pink-brown or red after anthesis, sometimes with a yellow throat; tube urceolate to almost cylindrical, in the latter case usually widened at the base and around the stamens and sometimes compressed below the stamens, narrowed at the throat, 1.4-3.5 × as long as the calyx, 0.6-3.5 × as long as the lobes, 3.7-9.9 mm long, variably puberulous outside, variably pubescent inside below or from the insertion of the stamens to

the throat or the base of the lobes; lobes oblong, 0.2-1.5 × as long as the tube, 1.3-2.8(4.5) × as long as wide, 1.7-9.1 × 1-3.2 mm, auriculate at the right side, the part covered in bud glabrous or sometimes puberulous to pubescent, otherwise puberulous outside, variably pubescent inside at the base and otherwise puberulous or glabrous. *Stamens* included for 0.3-2 mm, inserted 3-6.3 mm above the corolla base; filament 0.2-1 × 0.1-0.2 mm, pubescent or glabrous; anthers 0.9-1.6 × 0.3-0.6 mm, obtuse at the apex, cordate at the base, pubescent or glabrous outside. *Pistil* 3.4-6.3 mm long; ovary cylindrical to depressed globose on a cylindrical base, flask-shaped or obovoid, often ribbed, 0.6-2.2 × 1.2-2.2 mm, with a pubescent to lanate belt (0.4-1.1 mm) at the retuse apex; style 1-3.2 × 0.2 mm, glabrous or pubescent at the basal part; pistil head 0.6-1.5 × 0.5-1.5 mm, basal part pubescent to glabrous; stigmatic apex 0.3-0.9 mm long. *Fruit* yellow, orange, red, red- or blue-purple, globose, ellipsoid, ovoid or broadly ovoid, 2.2-15 × 1.8-15 cm, many-seeded, with a glabrous, smooth or rough sclerified pericarp, very often lenticellate; fruit wall red to purple in section, 0.2-15 mm thick; pulp white, yellow, sometimes orange-tinged, edible. *Seeds* brown to red-brown, ellipsoid and laterally compressed, ovoid, globose or tetrahedral, 10-18 × 7.1-15.5 × 4.5-10 mm.

Distribution: In West en Central Tropical Africa. From Sénégal to Angola and from Sudan to Zambia and Malawi.



MAP 37. *Landolphia owariensis*

Ecology: Rain forest, secondary forest, gallery forest and savannas. In savanna habitats as fire resistant shrub. Altitude: 0-1700 m. Flowering and fruiting: In West Africa, W of Ivory Coast, in the dryer regions flowering and fruiting mainly January-February, in Burundi probably September-October, for the other regions not clear. In the wetter regions scattered over the year, as far as is known.

Geographical selection of the ca 1200 specimens examined:

- SÉNÉGAL: Cassamance, region of Oussouye, Boutitimo, Berhaut 6937 (BR, M, P).
MALI: Banamba Road, Aberlin 62 (P); Tienfala, 25 km E of Bamako, Raynal 20948 (P); 3 km W of Yangfolila, Ellenberger 163 (P); Lobougoula, Anonym. s.n. (P).
GUINÉE BISSAU: Catio, Cacine, Raimundo & Guerra 822 (K).
GUINÉE: Mali, Chevalier 34393 (P); Fouta Djallon, Pobéguin 1929 (P, type of *L. leiocalyx*); Diaguissa, Chevalier 12917 (P, lectotype of *L. owariensis* var. *guineensis*); Plateau Dalaba-Diaguissa, Chevalier 18820 (P, lectotype of *L. owariensis* var. *djalonis*); Kaba R., Chevalier 13136 (P); Kindia, Oua-Oua R., Chevalier 13212 (P, paratype of *L. owariensis* var. *guineensis*); Faranah, Niger R., Chevalier 20455 (P); Conakry, Chevalier 18907ter (P); region of Faranah, Sokourala, Chevalier 20949 (P); Macenta, Camarandou, Adam 3753 (MO); Nimba Mts base, Schnell 563 (P).
SIÈRE LEONE: near Kununa, Gt. Scarcies R., Scott Elliot 4650 (BM, K); Mts. Loma, Jaeger 1448 (K); Freetown, Fourah Bay College, Cole 126 (K); Tawia, Bake Loko, Deighton 3617 (K); near Mano, Deighton 3789 (K); W of Panguma, Smythe 75 (K); sin. loc., Don s.n. (BM, CGE).
LIBERIA: Gbarnga, Linder 761 (A, K); Yekepa, East Nimba Mts, Adam 24156 (MO); 30 km S of Ganta, Adam 29906 (MO); Tchien-Zwedru Road, near Cavally R., Jansen 2553 (WAG); Bomi Hills, Bopulo-Yoma Road, van Meer 70 (BR, MO, WAG); Robertsfield, Farmington R., Jansen 1956 (WAG); Greenville, Sinoe, Sim 6 (K).
CÔTE D'IVOIRE: Odiénné, Adam 27156 (MO); Upper Sassandra R., between Sanrou and Ouodé Mts, Chevalier 21623 (P); between Djiroutou and Toula, basin of Cavally R., Chevalier 19546 (K, P); Prolo, Chevalier 19873 (K, P); area of Mankono, between Siana and Mandala, Chevalier 21856 (P); Priakakro, Audru 5211 (P); Mbayakrou, Chevalier 22270 (BR, K, P); basin of Sassandra R., Guidéko, Chevalier 16491 (P); 56 km N of Sassandra, E of Béyo, Leeuwenberg 2559 (BR, FHO, K, UC, WAG); between Divo and Guitry, Chevalier, Feb. 1948 (P, type of *L. miegeana*); between Bongouanou and André, Chevalier 22472 (COI, P); Agboville, Chevalier 16991 (P); near Assikasso, Chevalier 22603 (P); between Zaranou and Bébou, Chevalier 22629 (COI, P); Bingerville, Jolly 320 (A, BR, FHO, K, P, UC); Aboisso, Chevalier 17732 (P).
GHANA: Mamiri F.R., Andoh 5007 (FHO); N of Axim, Asanafoa, Brent 43 (K); Yefri - Sessidum Road, Kitson 27-1-1916 (BM); Banka, Vigne 1366 (K); Assin, West-Skinn 280 (K); Akwapim, Lock GC 43967 (MO, WAG); Krepi Hills, Johnson 5224 (K); Hohoe Distr., Elavanyo, St. Clair-Thompson 3585 (E, FHO, MO).
TOGO: road to Plateau de Dayes, Breteler 7268 (WAG); N of Kpalimé, 4 km W of Kpété-Tsiko, road to Ndigbé Apédamé, Hakki et al. 821 (K, WAG).
BENIN: Atakora Mts., Natitingou-Bocorona Road, Chevalier 24176 (P); between Kambole and Bassila, Chevalier 23803 (P, paratype of *L. owariensis* var. *rubiginosa*); near Djougou, Chevalier 23883 (P); Adja Ouéré, Le Testu 170 (BM, BR, K, LISC, P); between Sakété and Pedjelé, Chevalier 22909 (BR, K, P, type of *L. owariensis* var. *rubiginosa*); Kabalé, Sinsin 1194 (BR, BRLU).
NIGERIA: Oyo State: Mamu, Foster 197 (K, W); Ehiti Distr., Imesi-Igbojo Road, Latilo & Fagbeni FHI 67516 (K, WAG). Ondo State: Idama Distr., Idame Hills, SE of Orosun, Keay FHI 25513 (K, P); Owo-Benin Road, ca 30 km SE of Owo, v. Meer 896 (WAG). Kwara State: Omu, Illorin, Lamb 24 Nov. 1912 (K); Kappa, Bonu, near Olle F.R., Daramola & Adebussuyi FHI 38436 (K, WAG); Lokoja, Dalziel 100 (K). Bendel State: Asaba Distr., Anwai R., Unwin 9 (K); Benin City, Chevalier 15125 (P, type of *L. owariensis* var. *nigerina*); Benin Distr., Okomu, F.R., Brenan 9082 (BM, CGE, FHO, K, P); Warri, Palisot de Beauvois s.n. (G, type). Rivers State: Degema Distr., Talbot 3832 (BM). Anambra State: Onitsha, Barter 1773 (K, P); Ihiala Distr., Oseakwa, Emwiogbon FHI 65787 (WAG); Milliken Hill, Enugu Headwater area, Hepper 2226 (K, P, S). Niger State:

Agaie, Yates 46 (K); near Kafin, Lamb FHI 3198 (FHO). Kaduna State: Daduna-Keffi Road, ca 1.5 km N of turning to Kwoi, Tuley 1755 (K); near Gwantu, Jemoa, Tuley 2278 (K). Benue State: Obu Distr., Thomas 469 (K). Gongola State: Muri Div., Mumuye Distr., Gangsto F.R., Chapman 4159 (FHO); Vogel Peak, Jangla Yabi, Jabdi Hill, Hepper 1517 (BR, K, P, S). Cross River State: Oban, Talbot 1617 (BM, K, Z, type of *L. stapfiana*); Old Calabar, Mann 2311 (K, P).

CHAD: Saras Region, between Mara and Saoda, Chevalier 8572 (K, P); Bedaya, Palaiger 400 (P).

CAMEROON: Mbella Assom Lake, Letouzey 2471 (P); near Babongo, 40 km N of Meiganga, Satabié 554 (P, WAG); Lom R., near Deng Deng, Mildbraed 8719 (K); Mayo Tolore, 50 km W of Tibati, Letouzey 5744 (P); Plateau of the Adamaoua, road to Meigangak, ca 4 km S of Ngaoundéré, Breteler 586 (A, BR, LISC, M, P, WAG); 80 km SE of Banyo, Plaine Tikar, Biholong 237 (P, YA); Bertoua, Breteler 2228 (WAG); Bamena, ca 15 km W of Bangangté, W. de Wilde et al. 2364 (BR, K, P, WAG); Manengouba Mts. base, WNW of Nkongssamba, Leeuwenberg 8337 (WAG); Kumba, Staudt 883 (BM, FHO, GH); Yaoundé, Zenker 538 (BM, BR, COI, K, S, WU, Z, type of *L. owariensis* var. *rubiginosa*); Abongmbang, Cottes 10 (P); Lomié - Djaposten Road, Letouzey 3756 (P); 16 km S of Djouo, 20 km E of Somalomo, Dja R., Letouzey 4394 (P); Bipindi, Zenker 537 (A, B, BR, C, G, GH, LD, MO, NY, P, U, UC, US, WAG); km 9 Kribi-Ebolowa Road, Bos 3408 (BR, P, WAG).

GABON: sin. loc. Buettner 497 (P, paratype of *L. pierrei*); near Libreville, Klaine 286 (P, paratype of *L. pierrei*), 454 (P, paratype of *L. pierrei*), 544 (P, paratype of *L. pierrei*), 926 (P, paratype of *L. pierrei*), 1357 (P, paratype of *L. pierrei*), 1390 (P, lectotype of *L. pierrei*), 1972 (P, paratype of *L. pierrei*); ca 25 km along forest track NE of Asok, Breteler et al., 88/78 (LBV, WAG); km 33 forest exploitation road from Abanga to the NE, ca 80 km NE of SEF camp, Leeuwenberg & Persoon 13568 (WAG); Bélinga, N. Hallé & Le Thomas 28 (P); Ayem Lake, near Ebimangliâ, Chevalier 26434 (P); Akondjo, Ramboué R., Chevalier 27038 (P); Chaubier Soforga, Lopé Res., Reitsma 2676 (WAG); km 17 forest expl. road W of Chantier Waka, 7 km left of bifurcation, Leeuwenberg & Persoon 13618 (WAG); Chaillu Mts, Missionary Station at Mouyanama, ca 15 km Mimongo-Mgibou, de Wilde et al. 479/83 (WAG); km 36 Lastoursville-Moanda Road, Breteler & de Wilde 778/78 (WAG); Savanes de Mwanda, Le Testu 8079 (BM, BR, P); Plateau Batéké, near Lekoni savanna, Reitsma 2437 (WAG); Doudou Mts, ca. 35 km SW of Doussala, Reitsma 1422 (WAG); Tchibanga, Le Testu 2057 (A, BM, BR, LISC, MO, P, W, Z); Upper Nyanga R., Doussoumzi, Le Testu 1715 (BM, BR, P).

CONGO: 15 km N of forest camp of Ngango, Mayombe, Attims 179 (P); Komono, Breyne 4126 (BR); Brazzaville area, Ilono, near Kimbato, Babet 5-9-1930 (P); Meyya-Mpassa Road, Bangou F., Farron 4091 (P); Mouyondzi Distr., near Kalo, Markström 059B (BR, LD, UPS); Brazzaville, Chevalier 4263 (P, paratype of *L. humilis* var. *umbrosa*), 4267 (BR, K, P, lectotype of *L. humilis* var. *umbrosa*), 4268 (P, paratype of *L. humilis* var. *umbrosa*), 4271 (K, P, type of *L. humilis* var. *gracilis*); couloir du Congo, near Ngantchou, Chevalier 5034 (P); Congo R., M'Pouya, Chevalier 5040bis (P, paratype of *L. humilis* var. *umbrosa*), 5040ter (P, type of *L. humilis* var. *cordifolia*).

ANGOLA: Cabinda, Maiombe, area of Belize, Gossweiler 7934 (BM, COI, K, LISJC, LISU, type of *L. mayumbensis*); Luai, Quanza Norte, Dembos, Quibaxe, Barbosa & Henriques 9191 (BM, COI, LISC, LISU); Cuanza Norte, Cazengo, Lucala R., Gossweiler 9423 (BM, K, LISJC, US); Golungo Alto Distr., Welwitsch 5930 (BM, BR, C, COI, G, K, MO); Canda-Gabela, km 12, Bamps & Martins 4310 (BR, LISC, UPS, WAG); Cuanza Norte, Pungo Andongo, Exell & Mendonça 193 (BM, COI, LISJC); Quela, von Nolde 803 (BM, COI); Lunda, Luxico R., Carumbo, Carisso & Mendonça 533 (COI); Dundo Luachimo R., Young 540 (A, BM, BR, NY, S, Z).

RÉPUBLIQUE CENTRAFRICAINE: Bouar, Audru 3385 (P); Bossembélé, Audru 3428 (P); Boukoko, Tisserant 2027 (BM, BR, P); Malodoudou, savanne of Bèbé, NW of Boukoko, Badré 7 (P); Sibut, Chevalier 5462 (BM, COI, P, W, Z, paratype of *L. owariensis* var. *ubanghiensis*); between Fort Sibut and Fort Pospel, Chevalier 5386 (P, paratype of *L. o. var. ubanghiensis*); Diouma, Chevalier 5872 (BR, P, paratype of *L. tomentella* var. *subnuda*); Fort Crampel (= Gribingui), Chevalier 6291 (P); Bessau, Chevalier 5319 (P, lectotype of *L. o. var. ubanghiensis*), 5320bis (P, paratype of *L. o. var. ubanghiensis*); Dar Banda, Koukourou R., Chevalier 6583bis (P); between Ndellé and Bahr Tété, Chevalier 7002 (P, paratype of *L. o. var. ubanghiensis*), 7004 (K, P, type of *L. tomentella*

var. *pumila*); Ndellé, Chevalier 6583 (K, P, lectotype of *L. tomentella* var. *lucens*), 7006 (P, type of *L. tomentella* var. *gracilis*), 7067bis (P, paratype of *L. tomentella* var. *pulcherrima*), 7129 (P, type of *L. tomentella* var. *minor*), 7132 (K, P, paratype of *L. tomentella* var. *rufescens*), 7133 (P, paratype of *L. tomentella* var. *lucens*), 7139 (P, paratype of *L. tomentella* var. *rufescens*), 7153 (K, P, lectotype of *L. tomentella* var. *subnuda*), 7155 (P, paratype of *L. tomentella* var. *subnuda*), 7574 (BM, BR, G, K, L, P, lectotype of *L. glaberrima*), 7924 (COI, P, W, Z, paratype of *L. glaberrima*), 7929 (P, lectotype of *L. tomentella* var. *pulcherrima*), 7930 (P, paratype of *L. tomentella* var. *subnuda*), 8126 (P, lectotype of *L. tomentella* var. *rufescens*); Koubou, Chevalier 8305 (P, paratype of *L. tomentella* var. *lucens*); Kaga-Toulou Creek, Chevalier 7390 (P); between Ndellé and Mamoun R., Chevalier 7784 bis (P); 4 km SE of Bambari, Fay 1812 (K); Boyketté, Audru-Boudet 2288 (P); near Ippy, Tisserant 2448 (BM, BR, P); Bria, Le Testu 2410 (BM, BR, K, LISC, P).

ZAIRE: I: Moanda, Wagemans 649 (BR). II: Luki, Wagemans 1118 (BR, WAG). III: Mvuazi, Devred 1233 (BR, WAG); Kitiloba, Flamigni 275 (BR, K, US); Kisantu, Vanderyst 13019 (BR); Stanley-Pool, Schlechter 12544 (B, BM, BR, K, P, Z, type of *L. humilis*); Bokala, Sparano 24 (BR). IV: Bolobo-Kitaba, Flamigni 10369 (BR, WAG); Kwamouth, Lake Leopold II, Pynaert 309 (BR); Nioki, Kutu Terr., Flamigni 6044 (BR, MO); Bandundu, Vanderyst 3497 (BM, BR); Ipeke, Gilbert 14579 (BR); Tolo region, Dept. Finances 683 (BR); between Mue and Kinsele, Vanderyst 5549 (BR); Lukombe, Sapin Dec. 1910 (BR); Kasai Lubue, Gentil 46 (BR); Illanganga, Kwango, Sapin Dec. 1907 (BR); Atene, Sapin Nov. 1907 (BR); Bangala, Lubue R. basin, Gentil 43 (BR); Mapongu, Dumont 275 (BR, MO, WAG); Bolombo, Laurent 2-12-1903 (BR); Lulua R., Luisa Terr., Liben 2505 (BR); Bena-Dibele, Flamigni 285 (BR); Kondue, Luja V (BR); Kasongo-Batetela, Sapin 20-10-1906 (BR); near Lubefu, Lettre 161 (BR); Tono-Feshi-Kwango, Devred 2073 (BR); Tshitadi, Kabinda, Lescauwat 317 (BR); Kandakanda, Gentil 63 (BR, type of *L. droogmansiana*); 7 km E of Koumbala, Fay 4185 (BR); Kapanga, Overlaet 1236 (BR); Katola, Lomani, Sapin Apr. 1908 (BR). V: Lake Toa, Sapin 23-11-1906 (BR); Gandajika, Liben 3269 (BR, WAG); Kaniama, Upper Lomani R., Mullenders 1643 (BR); Sapeza, Desenfans 1807 (BR). VI: Imese, Dewèvre 886a (BR); Likimi, De Giorgi 202 (BR); Yambata, De Giorgi 1692 (BR); Loeka Rd., Bumba Terr., Evrard 3437 (BR, K); Dundusana, Mortehan 1032 (BR); near Kulu, Uele, van den Branden 456 (BR); Bambesa, Gérard 2653 (BR, MO, WAG); Poko, Lettre 881 (BR); Lower Uele, Dewulf 166 (BR); Tukpwo, Gilbert 45 (BR); Nala, Seret 846 (BR); Ibambi, Wamba Terr., Piedboeuf 206 (BR); Avakubi, Bequaert 1912 (BR); Penghe, Bequaert 2148 (BR, K); 10 km W of Kisangani, Bokdam 3270 (WAG); 80 km E of Kisangani, Lisowski 16754 (BR); Aruwini R., between Yambuya and Mongandjo, Evrard 2125 (BR, K); Yangambi, J. Louis 3009 (B, BR, MO, US); Esali Islands, Bamps 393 (BR, C, FHO, M); Djolu, Evrard 5744 (BR, K, WAG); Bodala, Coulon s.n. (BR); Bokakata, Dewèvre 811a (BR); Bokolongo-Djoa, Terr. Bolomba, Evrard 3563 (BR, K); Bokatola, L. Dubois 786 (BR); Bamania, Seret 1042 (BR, G, GH, K, UC); between Selenge and Lukolela, Goossens 4975 (BR); Tumba Lake, Laurent 16-12-1903 (BR); Bomongo-Ebeka, Evrard 5933 (BR, K); Bokuma, Hulstaert 1559 (BR); between Tumba and Leopold II Lakes, Gentil 1 (BR, type of *L. gentilii*); Kiri, Laurent 6-11-1903 (BR); Bokote, Hulstaert 993 (BR); Nganda Efeka-Amateka path, Evrard 4600 (BR); Kitshanga, Walikale Terr., A. Léonard 2818 (BR, MO, WAG); Irangi, Troupin 4268 (BR, K, NY, WAG); Bunyakiri, Terr. Kalehe, Gutzwiller 1844 (BR, WAG); Sarambila, Michelson 640 (BR); Pangi For., Michelson 552D (BR, K, P); Katoko-Kombe, Claessens 386 (BR); Mukumari, Germain 7999 (BR, K, P); Kole, Cranshoff 25 (BR). VII: Zongo, Evrard 2545 (BR); between Banzyville (= Mobayi) and Yakama, Lebrun 2183 (BR, C, K); Lebo, Lebrun 2361 (BR, C, K); between Gwane and Zemio, Piedboeuf 202 (BR); Tukpwo, Gérard 1132 (BR); Doruma region, Leclerc 201 (BR); Mongoli R., de Graer 343 (BR); near Dungu, Seret 1 (BR); Gambari, Vanderyst 3663 (BM, BR). IX: Ironga, Terr. Kalehe, Pierlot 823 (BR); Miombo For., Ubwari Peninsula, Ankei 79/0375 (BR, WAG). XI: Upemba Nat. Park, de Witte 3812 (BR, MO, P); Kalemie, Matsui 1351 (EA); Muhila, near Baton, Lisowski 60791 (BR); Dilolo, Lualala, Sapin June 1908 (BR); Lubumbashi, Schmitz 3068 (BR); Tanganika, Terashima 42 (EA).

SUDAN: Jambio Distr., near Nanunga R., Andrews 1635 (K); Bahr El Ghazal, Yubo, Dandy 711 (BM); Wau, Djurland, Schweinfurth 1667 (K, P, paratype of *L. o.* var. *tomentella*); Seriba de Jur Ghattas, Schweinfurth 1377 (K, P, S, W, lectotype of *L. o.* var. *tomentella*).

UGANDA: U2: Budongo For., Synnot 510 (K); Nyamugoye, Purselglove 3585 (EA, K). U4: Dumu, Dawe 47 (K, type of *L. turbinata*); Buddu, Dawe 204 (K); near Entebbe, Chandler 2722 (B, BR,

K, P); Bugala, Thomas 4103 (K); Gaba, Dümmer 2639 (BM, K, US).

RWANDA: near Bare, Runyinya 867 (BR).

BURUNDI: km 8 Rumonge-Bururi Road, Auquier 4138 (BR, WAG); Kigwena, Reekmans 5482 (BR, K, LD, MO, WAG).

TANZANIA: T4: Kakondo, Kibondo Distr., Tanner 6010 (K); Kasakati, Kigoma Distr., Suzuki 292 (EA); Mahali Mts, Nishide 370 (K). T7: Nyassa Plateau, Kyimbila, Stolz 175 (B, BM, BP, C, G, GH, HBG, K, L, LD, M, MO, S, US, W, WAG, Z); Kondeland, Stolz 94 (A, E, K, P, type of *L. stolzii*).

ZAMBIA: W: Mwinilunga R. Rapids, Mutimushi 2279 (K); Mufulia F.R., Holmes 638 (FHO); Konkola, Ndola Distr., Holmes 772 (FHO); Kitwe, Fanshawe 4627 (K); Luanchya, Fanshawe 7982 (FHO). N: Kawambwa Distr., Fanshawe 3547 (BR, K); near Mupoposhi R., Astle 761 (K, SRGH); Mporokoso, Trapnell H9/43 (EA); Abercorn (= Mbala) Distr., Lake Chila, Robson 501 (BM, BR, K, LISC, SRGH); Lufulu R., Richards 15285 (K, SRGH); Ntumbacushi Falls, Lawton 863 (FHO).

MALAWI: N: Nkhata Bay Distr., Kalwe For., Pawek 11904 (K).

NOTES. The indumentum of the flowers is very variable, even within a single inflorescence (e.g. in Johnston 524 and W. de Wilde et al. 1666). The outer surface of the corolla tube is densely or sparsely hairy all over or only partly so, sometimes even only in stripes. The indumentum of the interior is located between 0-1 mm below the insertion of the stamens and the mouth or the base of the lobes. The lobes are hairy outside at the base, moreover ciliate or not, while the interior is glabrous or variously hairy, usually less densely so towards the mostly glabrous apex. The corolla lobes vary between narrow and broad, and long and short. These combinations are possible even within a single flower. A single inflorescence often contains several of these flower forms. The calyces of the type specimen of *L. leiocalyx* have often some hairs, and so it loses the only distinctive character used by Pichon. The type constitutes an extreme of a series of glabrous to densely hairy calyces known within *L. owariensis*.

38. *Landolphia parvifolia* K. Schum. in Engler, Bot. Jahrb. 15: 409. 1893; Pichon, Mém. IFAN 35: 94. 1953, partly, as for type variety; Kupicha in Fl. Zambez. 7(2): 412. 1985.

Fig. 34, p. 163; map 38, p. 165

Type: Angola: Huila, Lopollo, Welwitsch 5928 (holotype not seen, destroyed in B; lectotype BM, designated here; isotypes: BR, C, COI, G, K, P).

Homotypic synonyms: *Pacouria parvifolia* (K. Schum.) Hiern, Cat. Afr. Pl. Welw. 1: 663. 1898. *L. kirkii* var. *parvifolia* (K. Schum.) Hall. f., Jahrb. Hamb. Wiss. Anst. 17. Beih. 3: 74. 1900. *L. owariensis* var. *parvifolia* (K. Schum.) Hall. f. ex Stapf in Fl. Trop. Afr. 4(1): 58. 1902.

Heterotypic synonyms: *L. subterranea* Chev., Mém. Soc. Bot. Fr. 8: 46. 1906, non Lemaire (1896); Pichon, op. cit. 102, syn. nov. Type: Angola: sin. loc., Gründler s.n. (K, holotype).

L. claessensii De Wild., Bull. Jard. Bot. Etat. Brux. 5: 104. 1915. Type: Zaire: Sankuru, Katako-Kombe, Claessens 380 (BR, holotype).

Liana, (scrambling) shrub or small tree, 1-10 m high, up to 15 m long or more, with or without curled tendrils up to 40 cm long. Trunk up to 1.5 cm in diameter or more, with a smooth, grey, cream or brown bark. Branches cylin-

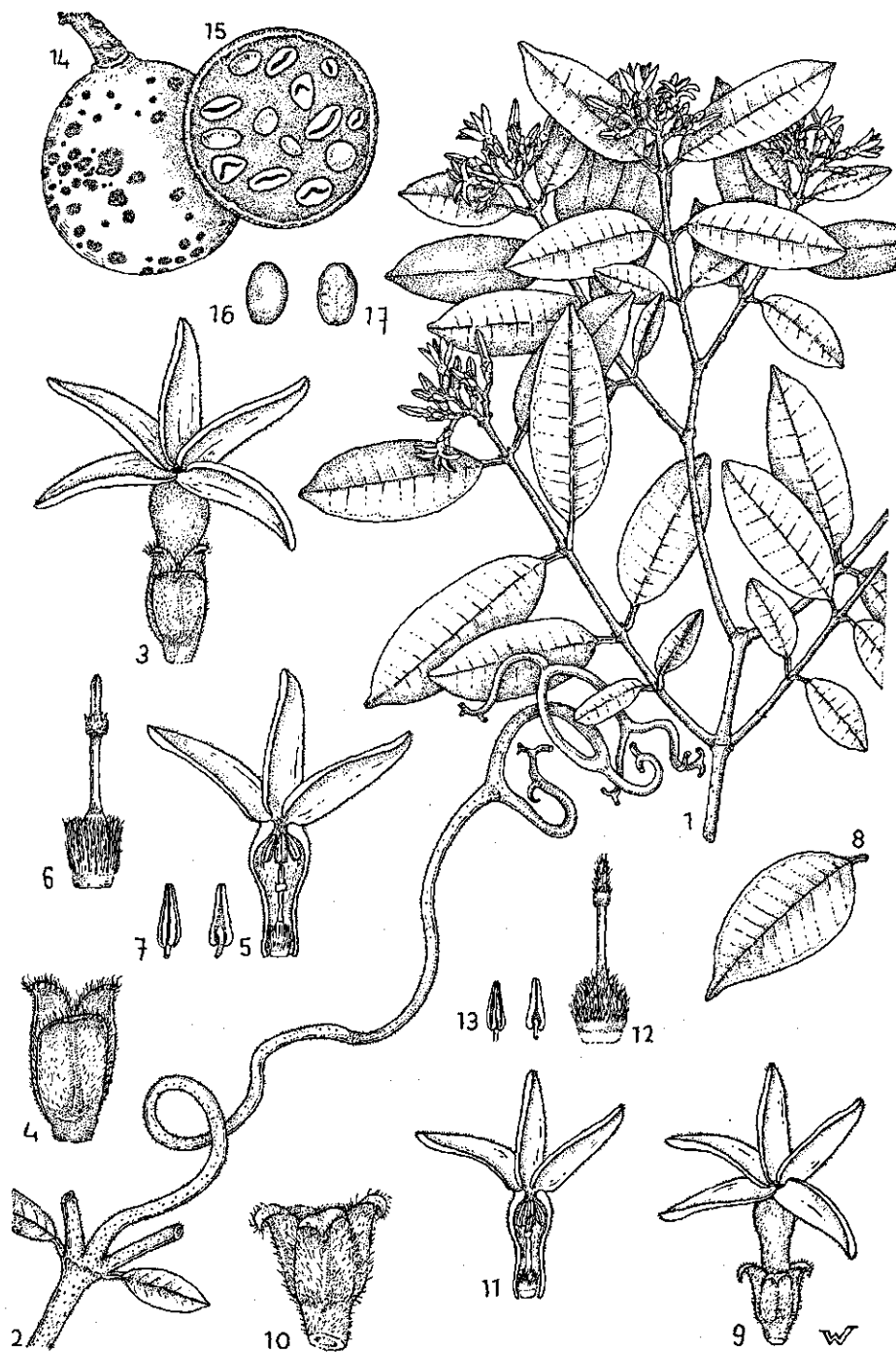
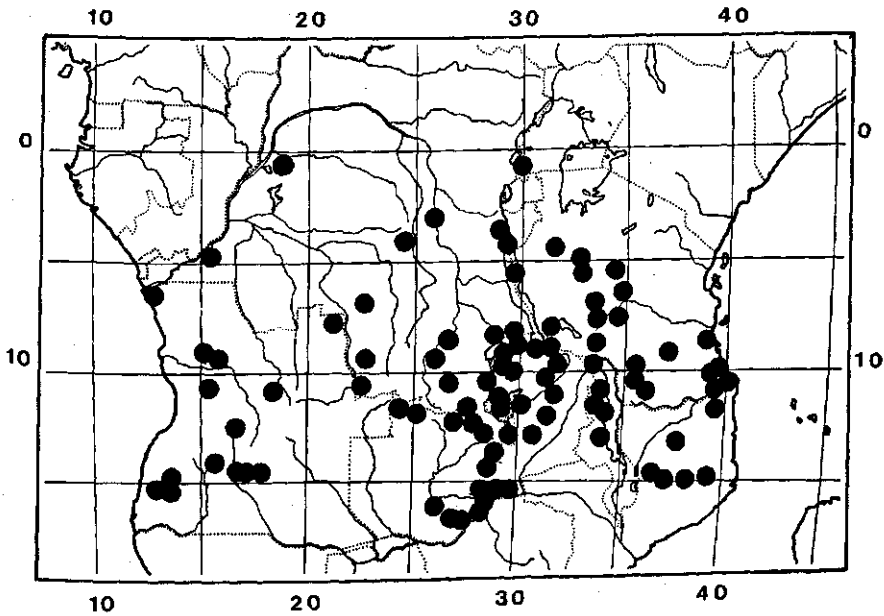


Fig. 34. *Landolphia parvifolia*. 1, habit ($\times 2/3$); 2, branch with tendril ($\times 2/3$); 3 and 9 flowers ($\times 4$); 4 and 10 calyxes ($\times 6$); 5 and 11, opened flowers ($\times 4$); 6 and 12 pistils ($\times 8$); 7 and 13 stamens in- and outside ($\times 8$); 14, fruit ($\times 2/3$); 15 section of fruit ($\times 2/3$); 16 seed ($\times 2/3$); 17, section of seed ($\times 2/3$). 1 from Brummitt et al. 13866; 2 from Mendes 208; 3-7 from Phillips 4479; 8 from Gossweiler 8521; 9-13 from Claessens 380; 14 and 16-17 from Brenan & Greenway 8033; 15 from Borges 307.

dricul, lenticellate, green, light to blackish brown or greyish; branchlets densely pilose to glabrous with reddish indumentum. *Leaves*: petiole 2-6 mm, tomentose to glabrous; blade nearly circular or ovate to obovate or narrowly so, 1.4-4.9 × as long as wide, 0.6-6.6(-8.7) × 0.4-2.7(-3.7) cm, acuminate to rounded or mucronate at the apex, acumen obtuse or rounded, 0.1-1.0 mm long, subcordate to rounded at the base, glabrous or sparsely pilose to hirsute especially on midrib above, more densely hairy to lanate on midrib below, often densely pilose to lanate when young; secondary veins in 8-17 pairs, mostly nearly straight, often with different angles with the midrib, in the middle of the leaf 2-6(-8) mm from each other, with 1-3 less conspicuous secondary veins in between; tertiary venation reticulate, conspicuous or not; margin sparsely to densely ciliate; venation often light above, red beneath. *Inflorescence* terminal, a more or less irregular dichasial cyme, often with many empty bracts, 1.0-4.5(-14.0) × 1.0-4.0(-8.0) cm, 2-40(60)-flowered, with 1-15 or more flowers open at a time. Peduncle 0.3-2.5 cm long, occasionally tendril-like and then up to 6 cm long, and with hooks up to 2.5 cm long, pilose to glabrous; pedicel 0.2-1.2 mm long, glabrous to tomentose. Bracts (often hardly distinguishable from sepals) 1-2 along pedicel, ovate to obovate, mostly broadly or depressed so, 0.9-3.0 × 1.2-2.8 mm, emarginate to rounded at the apex, glabrous to partly tomentose, often ciliate with hairs up to 0.6 mm long, often keeled. *Flowers*: fragrant or almost not so. *Calyx* 0.9-3.2 mm wide; sepals sometimes 3 or 4, unequal, the inner up to 1 mm longer, narrower and often with less indumentum outside, depressed-ovate to -obovate or narrowly so, emarginate to acuminate at the sometimes recurved apex, occasionally mucronate, 0.8-2.7 × as long as wide, 1.4-4.0 × 0.9-2.9 mm, connate at the base for 0.15-0.3 mm, indumentum as on bracts, sometimes less and/or shorter, especially at the inner sepals, occasionally with a recurved margin, sometimes keeled. *Corolla* (yellowish) white, (pale or greenish-) yellow, pink or creamy or in a combination of these colours, throat and buds often darker, lobes sometimes with a brown spot at the base, tomentose, pilose or pubescent, outside from 0.0-2.2 mm from the base, mostly the part of the lobes not covered in bud glabrous or less hairy, villose inside behind and up to 1.2 mm below anthers, otherwise glabrous in tube and glabrous to sparsely pubescent or pilose; tube 1.1-2.8 × as long as calyx, 2.9-5.3 mm long, 0.8-1.2 mm wide at the base, around the anthers 1.2-2.2 mm and at the throat 0.8-1.9 mm wide, with the widest part 2.0-3.9 mm from the base, throat with a thickened wall for 0.4-0.8 mm, occasionally with 5 teeth; lobes ovate, elliptic or oblong, 0.6-1.6 × as long as tube, 1.3-5.3 × as long as wide, 2.2-7.9 × 1.0-2.1 mm, rounded or obtuse, ciliate or not. *Stamens* 1.0-1.6 mm long, inserted 1.7-3.0 mm from the base of the corolla tube, at 0.48-0.71 of its length, 0.2-0.9 mm included; filament 0.3-0.7 mm long, glabrous, often curved, with the widening of the tube, anthers with the base 1.9-3.4 mm from the base of the corolla tube, at 0.53-0.77 of its length, 1.7-3.1(-4.6) × as long as wide, 0.9-1.2 × 0.25-0.55 mm rounded to acuminate at the apex, occasionally with a few long hairs, also at the outside of the stamens. *Pistil* 2.4-3.3 mm long; ovary ellipsoid, cylindrical, ovoid or obovoid with a rounded, obtuse or truncate apex, on a cylindrical or slightly widened or nar-

rowed base 0.1-0.35 mm high, 0.9-1.5 × 0.65-1.2 mm, glabrous at the lowest 0.15-0.5 mm, this glabrous part often sharply divided into a light and a dark area, occasionally the dark area in between two lighter areas, otherwise pubescent, pilose or villose, indumentum longer and denser towards apex, apex sometimes glabrous for up to 0.4 mm; ovules 40-90; style cylindrical, often with a gradually widened base and/or apex, 0.5-1.2 × 0.15-0.35 mm, glabrous, sometimes villose or pilose towards the base and into the ovary, occasionally some hairs towards the apex; pistil head cylindrical or ovoid to obovoid, 0.15-0.4 × 0.2-0.5 mm, ciliate at the upper margin, glabrous; stigmoid apex cylindrical, triangular, diaboloid-like, obconical or ovoid to obovoid, 0.5-1.1 × 0.15-0.4 mm, with the lobes at the apex, rounded to acute, sometimes unequal, pubescent. *Fruit* yellowish, greenish-violet, whitish or pale grey-green or in a combination of these colours, rather smooth, often with rusty or yellowish or dark brown or lighter circular rough crater-like spots (0.1-3.0 mm in diameter) often fusing to irregular spots or areas of 1 mm to several cms in diameter, (depressed-)globose or slightly ellipsoid, 1.8-4.8 × 1.7-4.8 × 1.7-4.8 cm, rounded at the apex and at the base, 8-30-seeded; wall 0.9-4.0 mm thick; sclereid cell layer 0.2-0.7 (1.5) mm thick. *Seed* ovoid or ellipsoid, laterally compressed and sometimes with 1 or 2 flattened sides, 6.0-17.0 × 4.0-9.0 × 3.5-8.0 mm; embryo curved or straight; cotyledons more or less regularly ovate or elliptic, 5.8-15.0 × 3.7-8.0 mm, (hardly) undulate; rootlet 0.6-3.0 × 0.7-1.5 mm.

Distribution: Central and East Africa.



MAP 38. *Landolphia parvifolia*

Ecology: Gallery forest or thickets. Alt. 0-1500 m.

Geographical selection of the ca. 270 specimens examined:

ANGOLA: Lower Congo R., Sumba, Gossweiler 8521 (BM); Dundo, NE of Lunda, Gossweiler 13701 (BM, K, P, US); Huila, Ganguelas, Mendes 2028 (LISC); km 11 Sá da Bandeira to Funda-Vala Road, Henriques 92 (K, LISC, LISU); between Cunene and Cubanga Rs., Gossweiler 2874 (BM, COI, K, LISJC); between Cataco and Cubanga Rs., Gossweiler 1890 (BM, COI, K, LISJC); Rio Cuchi, Bie, Gossweiler 3222 (BM, COI, LISJC); Lopollo, Welwitsch 5928 (BM, BR, C, COI, G, K, P, type); between Sá da Bandeira and Humpata, Exell & Medonça 2009 (BM, COI, LISJC); sin. loc., Gründler s.n. (K, type of *L. subterranea*).

ZAIRE: III: Menkao, Breyne 3182 (BR); km 9 Maluku-Menkao Road, Breyne 782 (BR). IV: Katola, Lomani, Sapin Apr. 1908 (BR). V: Upemba Nat. Park, de Witte 3100 (BR, C, P, WAG); Katoto, near Bukama, Lukuesa 951 (BR, K). VI: Ikenge, Paulus in Laurent 537 (BR); Sankuru, Katoko-Kombe, Claessens 380 (BR, type of *L. claessensii*). IX: Ruzizi R. valley, Germain 7036 (BM, BR, K, P). XI: Pweto, Robyns 1962 (BR, K); Musasa, Brédo 4096 (BR); S of Kasenga, Lisowski 55135 (BR, K, POZG); Dilolo, Sapin 2-7-1908 (BR); Kisenge, Risopoulos 994 (BR, WAG); 43 km NW of Kolwezi, Schajjes 1801 (BR, WAG); Kalonga, Kambove Terr., Streef 948 (BR); Kipepe, Lubumbashi, Breyne 3686 (BR); near Kasumbalesa, Lisowski 55136 (POZG); near Kabunda, Sakania Terr., Lisowski 55134 (BR, K, POZG); 5 km SE of Namopala, Lisowski 60095 (POZG).

UGANDA: U2: Kinkizi Co., 7 km SW of Kirima, Lye et al. 4184 (EA).

BURUNDI: Bururi Rumange, Lewalle 5623 (BR, K, P, WAG); Mutambara, Reekmans 9855 (BR, K, MO, P, WAG).

TANZANIA: T4: Kabogo Mts, Kigoma, Toyoshima 472 (EA); Tabora, Mungwe 9 (EA); Unyamambe, Peter 35234 (B, WAG); Ufipa Distr., 3 km from Sumbawanga, Richards & Arasululu 25811 (K, MO); near Kasanga, Richards 11015 (BR, K). T5: S of Itigi, Greenway & Polhill 11596 (BR, K, LISC); 9 km W of Bagamoyo, Sayalel 5135 (EA); Niombo Woodland, Kawede 4372 (EA). T6: Mahoko Hills, Ulanga Distr., Rees T 20 (EA). T7: Kamari R., Hornby 657 (K); Igila Hill, Kepembawe, Richards 19801 (K, P). T8: Tundu Hills, Rodgers 95 (EA); Matalau, Schlieben 2504 (BR, G, Z); 8 km W of Gumbiro, Milne-Redhead & Taylor 8441 (B, BR, K, LISC); Lilombo R., Busse 1252 (EA); 40 km W of Lindi, Schlieben 5889 (B, BM, BR, G, HBG, LISC, M, P, Z); Rondo Plateau, Busse 2568 (BM, BR, HBG); Newala, Hay 19 (BR, K); Rondo F.R., Ruffo 6 (EA). Zanzibar: Tayla Feb. 1886 (BM).

ZAMBIA: N: Lake Mweru, Fanshawe 3987 (K); near Kafulwe, White 3601 (FHO, K, WAG); Kundabwika Falls, Kalungwishu R., Whellan 1413 (K, PRE, SRGH); Abercorn, Bock 27 (PRE); Mpu-lungu, Hutchinson & Gillett 3949 (BM, K, LISC, SRGH); near Samfya, Angus 257 (BM, BR, FHO, K, MO); Chishinga, Astle 3156 (SRGH); Raloli Road to Kasama, Lawton 573 (FHO); Chinsali-Shiwa-Ngandu Road, Richards 10646 (K, SRGH); 30 km SW of Mpika, Brummitt & Polhill 13779 (K); Kipushi, Miller 350 (FHO). W: 15 km N of Kalene Hill, Robinson 6048 (B, K, M, SRGH); N of Mwinilunga, Milne-Redhead 3410 (BM, BR, K, PRE); near Lumwana, Brummitt et al. 13866 (BR, C, K, P, WAG); 5 km S of Solwezi, Simon & Williamson 1856 (K, LISC, PRE, SGRH); Hippo Pool, Ndola Distr., Holmes 463 (FHO); Bwana Nkubwa, Fries 333 (UPS, Z). C: Mkushi Distr., Strid 2782 (C, MO, WAG); between Kafue R. and Broken Hill, Hutchinson & Gillett 3601 (BM); 16 km S of Lusaka, Mundenda 9 (FHO, K, SRGH); between Rufunsa and Lusaka, Exell et al. 1208 (BM, PRE, SRGH); Chakwenga Headwaters, Robinson 6147 (B, M, NY, SRGH); Chirundu Road, 21 km from Kafue bridge, Bainbridge 21/53 (FHO). S: 9 km N of Ngoma Kafue Nat. Park, Mitchell 17/89 (FHO, K, SRGH); Mazabuka, White 6628 (FHO).

MALAWI: N: 21 km W of Karonga, Pawek 10107 (MO); S of Mzambari, Pawek 10803 (BR, MO, SRGH, UC, WAG); 1 km S of Nkhata Bay, Brummitt 10578 (BR, K, WAG); Kabunduli Road, Pawek 6963 (C, MO, PRE, UPS, WAG). C: Kata, Chia area, Brass 17535 (K, MO, NY, SRGH).

MOZAMBIQUE: Cabo Delgado: Macondes, Correia 96 (LISC); *ibid.*, 3 km from Mueda, Torre & Paiva 12049 (LISC). Niassa: km 16 Manupa-Nungo Road, Jansen et al. 85 (WAG); Serra de Mecopo, Mendonça 856 (LISC); between Nova Chares and Ribaua, Medonça 1227 (LISC); Nam-pula Distr., Andrade 505 (LISU). Zambesia: Gurué, Torre & Paiva 10547 (LISC).

39. *Landolpia pyramidata* (Pierre) Persoon, comb. nov.

Fig. 35, p. 168; map 39, p. 169

Basionym: *Aphanostylis pyramidata* Pierre, Bull. Soc. Linn. Paris sér. 2. 11: 89. 1898; Pichon, Mém. IFAN 35: 324. 1953.

Type: Gabon: Libreville, Autran in Heckel 9 (P, holotype; drawing in BR).

Heterotypic synonym: *L. squamosa* Pichon, op. cit. 201. Type: Gabon: Mboro, Chevalier 27070 (P, holotype).

Large liana with curled tendrils up to 25 m long. Branches dark brown to brownish-red, with bark peeling off, lenticellate; branchlets glabrous. *Leaves* when young reddish, petiolate; petiole glabrous, 3-10 mm long; blade coriaceous, also when fresh, shiny, elliptic, 2-3.5 × as long as wide, 7-13 × 2.7-5.3 cm, caudate at apex, cuneate at base, glabrous on both sides; 7-12 pairs of secondary veins; tertiary venation reticulate. *Inflorescences* small, axillary and ramiflorous, 1-12-flowered. Peduncle and pedicels very short, up to 3 mm long, glabrous or sparsely pubescent. Bracts sepal-like, 0.6-1 × 0.5-0.8 mm, rounded at apex, ciliate, without colleters. *Sepals* subequal, persistent even under the fruit, connate at the base, ovate, 1-1.5 × as long as wide, 0.9-1.5 × 0.8-1.2 mm, rounded at the apex, erect, glabrous outside and inside, without colleters, ciliate. *Corolla* creamy, in mature bud 5-6 mm long; tube obconical to obovoid, 1.4-2 × as long as the sepals, 1.5-1.9 mm long, at base 0.7-0.8 mm and at mouth 1.1-1.3 mm wide, glabrous outside, glabrous inside or pubescent from the insertion of the stamens to the mouth; lobes ovate, 1.1-1.5 × as long as the tube, 1.6-2.4 × as long as wide, 1.7-2.6 × 0.9-1.2 mm, acute at apex, entire, spreading, glabrous outside, glabrous inside or pubescent near the base, not ciliate. *Stamens* included, inserted 0.5-0.6 of the tube length from the base of the corolla; filaments 0.6-0.7 mm long, glabrous or pubescent at the base; anthers ovate, 0.3-0.35 × as long as the corolla tube, 1.6-1.9 × as long as wide, 0.5-0.6 × 0.3-0.35 × 0.2 mm, rounded at apex, cordate at base with lobes touching each other. *Pistil* 1-1.2 mm long; ovary globose, 0.5-0.6 × 0.5-0.6 mm, glabrous up to 0.5 of its length from the base, otherwise tomentose; style 0.3-0.4 mm long, glabrous; pistil head 0.2-0.3 mm long, basal part annular, 0.05-0.1 × 0.15-0.2 mm; stigmatic apex conical, 0.7-1.2 × as long as wide, 0.1-0.2 × 0.15-0.2 mm, cleft at apex for 0.2-0.4 of its length; 30-45 ovules on two parietal placentas. *Fruit* orange to brownish-red, conical, truncate at apex, truncate and bumpy at base, 4-8 cm long, at base 2-4 cm and at apex 1.5-2.3 cm wide, glabrous, lenticellate, smooth, with pulp, 1-10-seeded; wall 2-3 mm thick. *Seed* ovoid or ellipsoid, laterally compressed or not, 1.6-1.9 × 1.3-1.6 × 0.7-0.9 cm, glabrous; endosperm white, horny, surrounding the flat embryo; embryo straight; cotyledons ovate or elliptic, thin, 1.4-1.6 × 1.1-1.3 cm; rootlet very short, up to 1.5 mm long.

Distribution: Gabon.

Ecology: rainforests and secondary vegetation. Flowering Oct.-Dec., fruiting Dec. Altitude: 0-100 m.

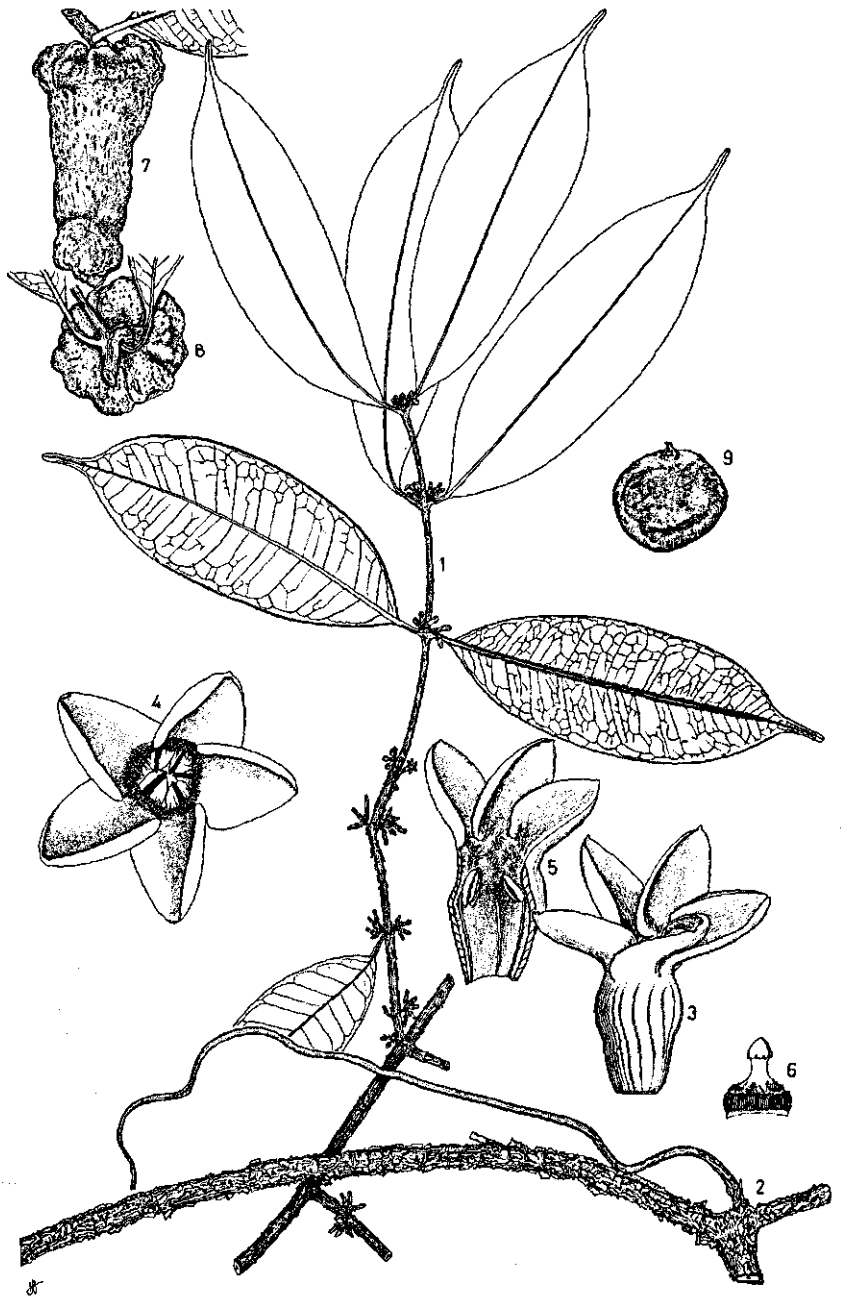
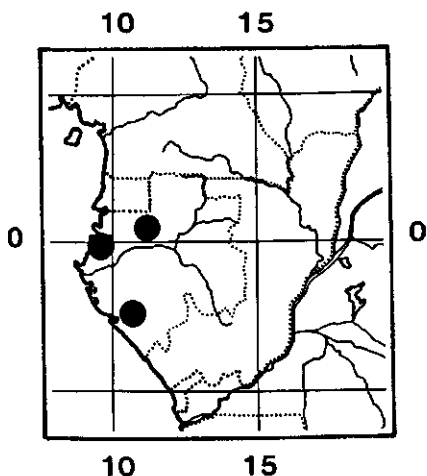


Fig. 35. *Landolphia pyramidata*. 1, habit ($\times 1/2$); 2, branch with tendril ($\times 1/2$); 3, corolla ($\times 10$); 4, flower above ($\times 10$); 5, section of corolla ($\times 10$); 6, pistil ($\times 10$); 7-8, fruits ($\times 1/2$); 9, seed ($\times 1$). 1 from Leeuwenberg 12408; 2-5 from Arends et al. 599; 6-9 from A.M. Louis et al. 1405.



MAP 39. *Landolphia pyramidata*

Specimens examined:

GABON: Libreville, Autran in Heckel 9 (P, drawing in BR, type); Mboro, Chevalier 27070 (P, type of *L. squamosa*); Ramboué R., Chevalier 27132 (P, paratype of *L. squamosa*); 2 km S of Cap Estarias, Leewenberg 12408 (WAG); *ibid.*, A. Louis et al. 1405 (WAG); W of Doussala, Reserve de Faune de Moukaba, Arends & J.J. de Wilde 599 (WAG).

40. *Landolphia reticulata* Hall. f., Jahrb. Hamb. Wiss. Anst. 17. Beih. 3: 87. 1900.

Fig. 36, p. 170; map 40, p. 171

Type: Gabon, Mboussou, Buchholz s.n., (holotype not seen, destroyed in B; K lectotype, designated here).

Homotypic synonym: *Ancylobotrys reticulata* (Hall. f.) Pichon, Mém. IFAN 35: 300. 1953.

Large liana, up to 40 m high climbing in trees. Branches dark brown, with many small lenticels; branchlets terete, densely rusty-brown-puberulous. *Leaves* opposite, petiolate; petiole 5-16 mm long, more or less densely rusty-brown-puberulous; blade glossy above, papery or more often coriaceous when fresh, ovate or elliptic, 1.7-2.1 × as long as wide, 6-22 × 2.8-10 cm, acuminate at the apex, acumen 5-20 mm long, rounded or acute, subcordate to truncate at the base, slightly undulate, glabrous to minutely tomentose above, especially on the costa, tomentose beneath, in young leaves tomentose on both sides, with 6-10 pairs of nearly straight to slightly curved secondary veins, 0.5-2.4 cm from each other in the middle of the leaf, between 2 secondary veins 0-2 more or less straight, less conspicuous ones; tertiary venation reticulate. *Inflorescences* terminal, pedunculate, consisting of cymes, tendril-like, each cyme up to 100-flowered, 9-39 × 3-16 cm. Peduncle 5-15.5 cm long, densely rusty-brown-puberulous, glabrescent and with many small lenticels later; pedicels 0.5-2 mm

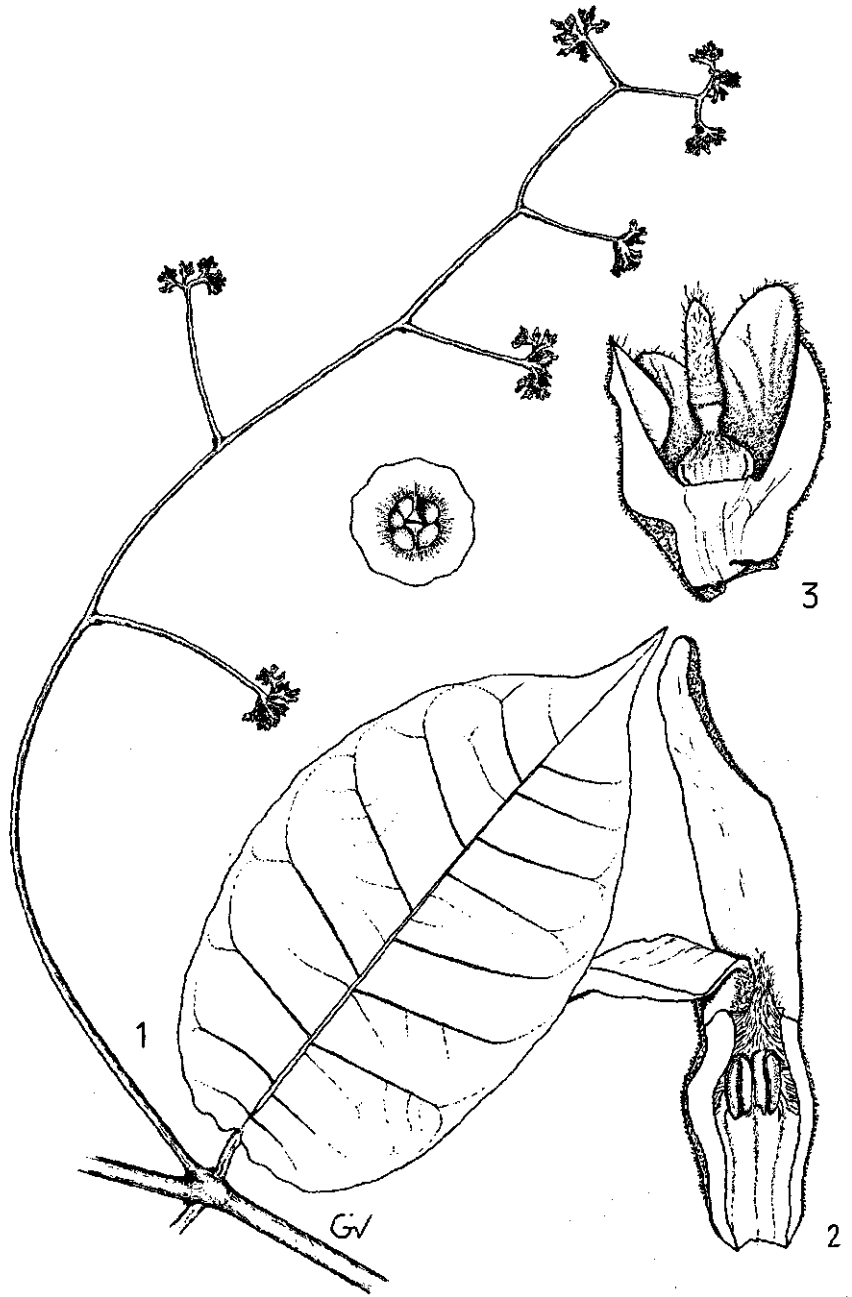
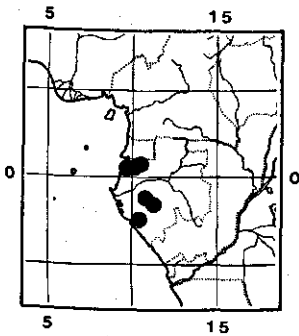


Fig. 36. *Landolphia reticulata*. 1, habit ($\times 2/3$); 2, section of corolla ($\times 3.3$); 3, calyx with pistil ($\times 6.7$); 4, transverse section of ovary ($\times 20$). 1-4 from Leeuwenberg 12512.

long, densely rusty-brown-puberulous. Bracts sepal-like, triangular, 0.8-1 × 0.8-1 mm, acute to rounded at the apex, ciliate, densely rusty-brown-puberulous outside, glabrous inside. *Flowers* usually subtended by two bract-like bracteoles. *Sepals* connate at the base for up to 0.3 mm, triangular, 1.1 × as long as wide, 1.7 × 1.5 mm, obtuse or rounded at the apex, auriculate at the base, glabrous or minutely puberulous outside, minutely ciliate, glabrous inside. *Corolla* pale yellow to white, in the mature bud 10 mm long, puberulous outside; tube thick, 2.5 × as long as the sepals, 0.6 × as long as the lobes, 4.3 mm long, contracted at the base and 1 mm wide, widened above to 2.5 mm wide being 2.8 mm above the base (0.65 of the tube length), again contracted at the throat and 2.1 mm wide, abruptly widened at the throat, with a pilose belt inside from behind the anthers (3.1 mm above the base) to the base of the lobes; lobes narrowly triangular, 1.7 × as long as the tube, 4 × as long as wide, 7.2 × 1.8 mm, acute at the apex, involute at the left side, glabrous outside at the parts covered in bud, glabrous inside. *Stamens* 2.7 mm included (0.63 of the tube length), inserted 2.8 mm (0.65 of the tube length) from the base of the corolla (the base of the anthers being 2.8 mm above the base of the tube); filaments glabrous, 0.8 mm long; anthers 1.75 × as long as the filaments, more or less elliptic, 2.3 × as long as wide, 1.4 × 0.6 mm, rounded to truncate at the apex with a minute apicule, sagittate at the base, glabrous outside, minutely pubescent inside. *Pistil* 1.5 mm long; ovary subglobose to almost ovoid, 0.4 × 0.9 × 0.9 mm, pubescent on the upper half, abruptly narrowed into the style; style glabrous, almost cylindrical, thickened at the apex, 0.1 × 0.1 mm; pistil head cylindrical, 0.8 × 0.2 mm, cleft at the apex, pubescent; apex of pistil approximately 2.2 mm below apices of anthers. *Placentas* each with 2-3 ovules. *Fruit* orange, with many small lighter coloured lenticellate spots, smooth, verrucose, subglobose (?), rounded to truncate (?) at the apex, cordate to truncate at the base, up to 3.5 × 5 cm, 1(?)4-seeded; wall 2 mm thick. *Seed* ovoid, with one flattened side, 20 × 15 × 11 mm. Embryo straight; cotyledons elliptic, 14 × 10 mm; rootlet 5 × 1.5 mm.

Distribution: Gabon.



MAP 40. *Landolphia reticulata*

Ecology: In forests. Alt. up to 600 m. Flowering at the beginning of the rainy season (Oct.-Nov.).

Other specimens examined:

GABON: Moka, Leeuwenberg & Persoon 13711 (WAG); km 31 Kongouleu-Atogafina, Leeuwenberg 12512 (WAG); 22 km NE of Assok, Breteler & de Wilde 244 (WAG); near Kembele village, Thomas & Wilks 6520 (WAG); 17 km W of Camp Waka, Leeuwenberg & Persoon 13623 (WAG); 30 km SW of Dounala, Reitsma 1969 (WAG).

41. *Landolphia robustior* (K. Schum.) Persoon, **comb. nov.**

Fig. 37, p. 173; map 41, p. 174

Basionym: *Clitandra robustior* K. Schum. in Engler & Prantl, Nat. Pflanzenf. 4.2: 130. 1895.

Type: Zaire: between Nyangwe and Kimbunda, Pogge 1015 (holotype not seen, destroyed in B; lectotype: K, designated here).

Homotypic synonym: *Anthoclitandra robustior* (K. Schum.) Pichon, Mém. IFAN 35: 231. 1953.

Heterotypic synonym: *Carpodinus myriantha* K. Schum. in Engler, Bot. Jahrb. 23: 221. 1896. Type: Cameroun: Yaoundé, Zenker & Staudt 197 (holotype not seen, destroyed in B; lectotype: K, designated here; isotypes: BM, BR, COI, P, S, UC, WU, Z). Homotypic synonym: *Clitandra myriantha* (K. Schum.) K. Schum. ex Pierre, Bull. Soc. Linn. Paris sér. 2. 5: 40. 1898; Hall. f., Jahrb. Hamb. Wiss. Anst. 17. Beih. 3: 121. 1900.

Liana up to 40 m high climbing in trees, with tendrils up to 25 cm long. Trunk up to 8 cm in diameter; bark fairly rough, pale grey to dark brown, lenticellate. Branches pale grey to dark brown, lenticellate, with outer bark often peeling off; branchlets greyish to dark brown, glabrous. Leaves when young reddish-brown, petiolate; petiole glabrous, 4-18 mm long; blade subcoriaceous, also shiny when fresh, elliptic, 1.8-3.8 × as long as wide, 5.5-24 × 2-8.5 cm, caudate at apex, cuneate or rounded at base, glabrous on both sides; 6-8 pairs of secondary veins; tertiary venation reticulate. Inflorescence small, axillary, congested, 1-20-flowered, exceptionally tendril-like and up to 15 cm long. Peduncle and pedicels very short, up to 2 mm long, glabrous or pubescent. Bracts sepal-like, 0.4-0.8 × 0.4-0.6 mm, acute at apex, ciliate, without colleters. Flowers fragrant. Sepals subequal, pale green, persistent even under the fruit, connate at base, triangular, ovate or narrowly ovate, 1-2.6 × as long as wide, 0.6-1.8 × 0.4-0.8 mm, acute at apex, erect, glabrous outside, glabrous inside, without colleters, ciliate. Corolla white or creamy, pink at the base of the tube, creamy in bud, in mature bud 7-12 mm long; tube barrel-shaped or nearly so, 2.5-9 × as long as the sepals, 3.4-5.6 mm long, at base 0.6-0.9 mm, at widest point 1.1-1.5 mm and at mouth 0.7-1.1 mm wide, glabrous outside, pubescent inside from 0.1-0.15 of the length of the tube to the insertion of the stamens or to the mouth, indumentum often less dense near the mouth; lobes linear, 0.8-1.9 × as long as the tube, 7-12 × as long as wide, 3.8-10.7 × 0.5-0.9 mm, acute at apex, entire, spreading, glabrous outside, glabrous inside or sparsely pubescent near the throat of the

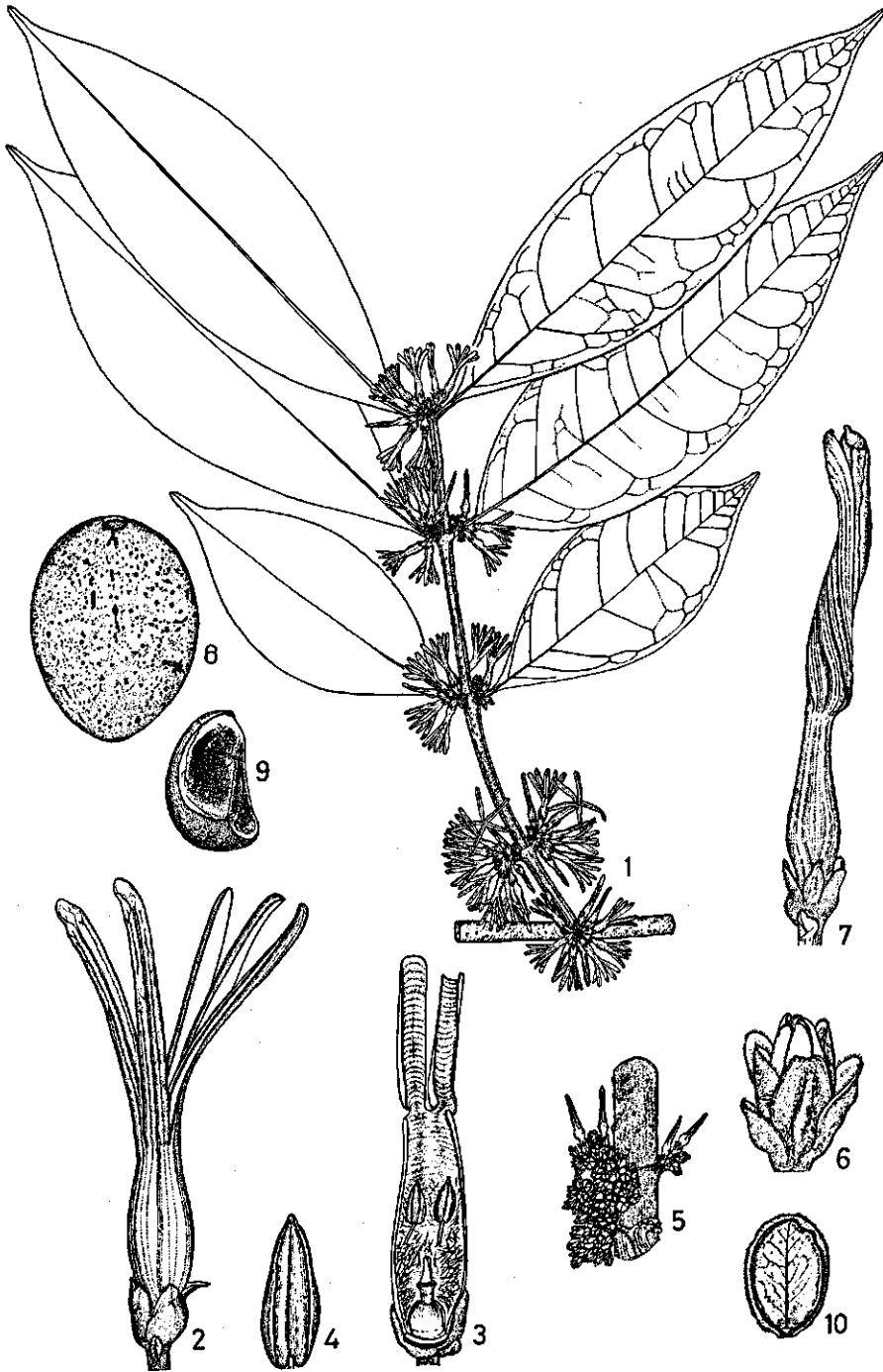
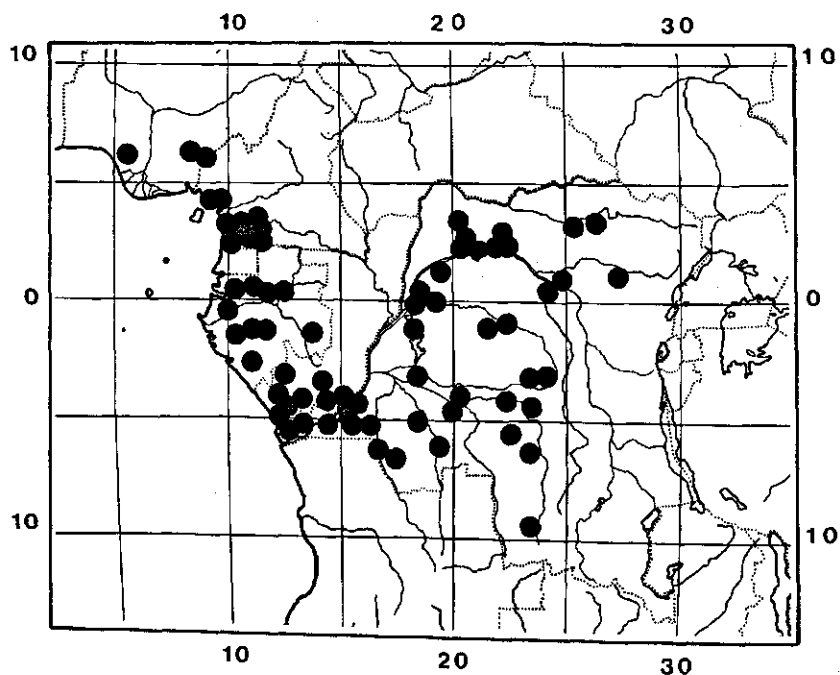


Fig. 37. *Landolphia robustior*. 1, habit ($\times 2/3$); 2, flower ($\times 6$); 3, opened flower ($\times 6$); 4, stamen inside ($\times 20$); 5, branch with ramiflorous inflorescences ($\times 2$); 6, young flower bud ($\times 20$); 7, mature flower bud ($\times 6$); 8, fruit ($\times 2/3$); 9, seed ($\times 2/3$); 10, section of seed with embryo ($\times 1$). 1-4 and 7 from Bos 4941; 5-6 from Leeuwenberg 9074; 8-10 from de Wilde et al. 742.

tube, not ciliate. *Stamens* included, inserted 0.2-0.4 of the tube length from the base of the corolla; filament 0.5-0.9 mm long, erect, glabrous; anthers narrowly ovate, 0.15-0.3 × as long as the corolla tube, 2.5-5 × as long as wide, 0.7-1.4 × 0.2-0.4 × 0.15-0.3 mm, acuminate at apex, deeply cordate at base with lobes touching each other, glabrous. *Pistil* 1.2-1.7 mm long; ovary broadly cylindrical, 0.8-1.25 × as long as wide, 0.4-0.6 × 0.4-0.6 mm, glabrous up to 0.4-0.6 of its length from the base, otherwise pubescent; style 0.3-0.5 mm long, glabrous; pistil head 0.35-0.85 mm long, basal part annular, 0.05-0.1 × 0.1-0.15 mm; stig-moid apex narrowly cylindrical, 3.5-7 × as long as wide, cleft apex for 0.35-0.7 of its length; 18-32 ovules on two parietal placentas. *Fruit* orange, with pale brown lenticels, ellipsoid to obovoid, 1.7-6.7 × 1.4-4.3 cm, glabrous, smooth, 1-15-seeded; pulp creamy; wall 1.5-4 mm thick. *Seed* ellipsoid or ovoid, laterally compressed or not, 9-18 × 8-13 × 6-9 mm, brown, glabrous; endosperm creamy, soft, surrounding the flat embryo; embryo straight; cotyledons elliptic or ovate, 8-14 × 5-10 mm, 0.5-1 mm thick, rootlet very short.

Distribution: Nigeria, Cameroun, Gabon, Congo, Zaire and N. Angola.



MAP 41. *Landolphia robustior*

Ecology: rainforests and secondary forests. Flowering and fruiting scattered over the year. Altitude 0-1000 m.

Vernacular names:

CAMEROUN: Ongam (near Nlohé); Damoba (Ewondo = Yaoundé); Avom (Ewondo).

GABON: Noyengo (near Libreville); Avom (Pakwinde).

ZAIRE: Equator: Yongo (Limongo); Mpoo (near Bolomba); Moudougu (Budja); Tungu (Libati); Monkelé (Ikenge); Mondongu, Dougo lougo (near Likimi); Kulukola (Ngwaka); Boanzolo, Opwadudu (near Dundusana); Butuma (near Mongala). Haut-Zaire: Yololo (Turumbu). Shaba: Sonko, Kaiembé (Lulus). Kasai Oriental: Batetela lukanga kakese (near Kelaku); Oloma wema (near Ketako). Bandundu: Dia nzangi dia kasema (Kiyaka). Bas-Zaire: Mbungu mfinda (near Kimbuba); Bindokela (Nkunga); Mavoki ia lumungu (N'kula).

ANGOLA: Lumungo, Chicuaco (in Cabinda).

A selection of the ca. 170 specimens examined:

NIGERIA: Sapoba Forest Reserve, Daramola FHI 60021 (K); Isobendiga-Afi, Ikom dist., Keay FHI 28266 (K, P).

CAMEROUN: Lolodorf, Staudt 108 (A, BM, COI, E, G, K, P, S, Z); Yaoundé, Zenker & Staudt 197 (BM, BR, COI, K, P, S, UC, WU, Z, type of *Carpodinus myriantha*); Kribi, Bos 4828 (BR, K, WAG); 40 km S of Badjob, W. de Wilde 1597 (BR, K, P, U, WAG, Z); Solé, Lecuwenberg 9074 (WAG).

GABON: Piti Masango, Le Testu 5951 (BM, P, WAG); Libreville, Klaine s.n. (P); km 23 Moanda-Franceville Road, Breteler 6775 (WAG); Oyem, between Ogooué R. and Cameroun border, Le Testu 9190 (BM, MO, P, WAG); Oveng, A. Louis et al. 378 (WAG).

CONGO: Plateau des Cataractes, Sita 1839 (P); Boungoulo, Pointe Noire, Sita 1303 (P); Forêt de Bangou, Niari, De Néré 751 (P).

ZAIRE: Bas-Zaire: N'kula valley, Toussaint 188 (BR, K, P); M'vuazi, Devred 849 (BM, BR, K); Ile des Mimosas, Kinshasa, Breyné 145 (BR). Bandundu: Bosobé, Jans 833 (BR); Batiapanga, 34 km SE of Kisangani, Lisowski 17104 (BR). Kasai Occidental: between Nyangwa and Kimbunda Pogge 1015 (K, type). Kasai Oriental: Katoko-Kombe, Dobbelaere s.n. (BR); Nsadi-Kalenda Road, Liben 2283 (BR, WAG). Equateur: Ikenge, Paulus s.n. (A, BO, BR, K, NY, P, S, Z); Mondombe, Jespersen 50 (BR); Dundusana, Mortejan 1041 (BR, K); Binga, Lisala, Ghesquière 3388 (BR); Bokolong-Djoa, Bolomba, Evrard 3547 (BR, K); Monkoto National Park, Yongo, Evrard 4719 (BR, K). Haut-Zaire: Avakubi, Bequaert 1855 (BR, K); Yangambi, Lusambila Valley, Louis 4202 (BR, K, S); Yangambi, Tofende Island, Louis 13658 (BM, BR, C, K, P); Bambesa, Gérard 4876 (BR, WAG). Shaba: Kafakumba, Sapin s.n. (BR).

ANGOLA: Rio Lufo, Belize Cabinda, Gossweiler 7920 (BM, COI, LISU); Sumba Peco, Cabinda, Gossweiler 9149 (BM, K); Panga Munga, Cabinda, Gossweiler 6033 (COI, LISU).

Note: exceptional tendril-like inflorescence in Gossweiler 9149.

42. *Landolphia rufescens* (De Wild.) Pichon, Mém. IFAN 35: 161. 1953.

Fig. 38, p. 176; map 42, p. 178

Basionym: *Carpodinus rufescens* De Wild., Not. Pl. Ut. Congo 2: 241. 1908.

Type: Zaire: VI: Mondombe, Jespersen 68 (BR, holotype; isotype: P).

Heterotypic synonym: *Carpodinus rufescens* var. *longeacuminata* De Wild. l.c.

Type: Zaire: IV: Bena-Dibele, Flamigni 37 (BR, holotype).

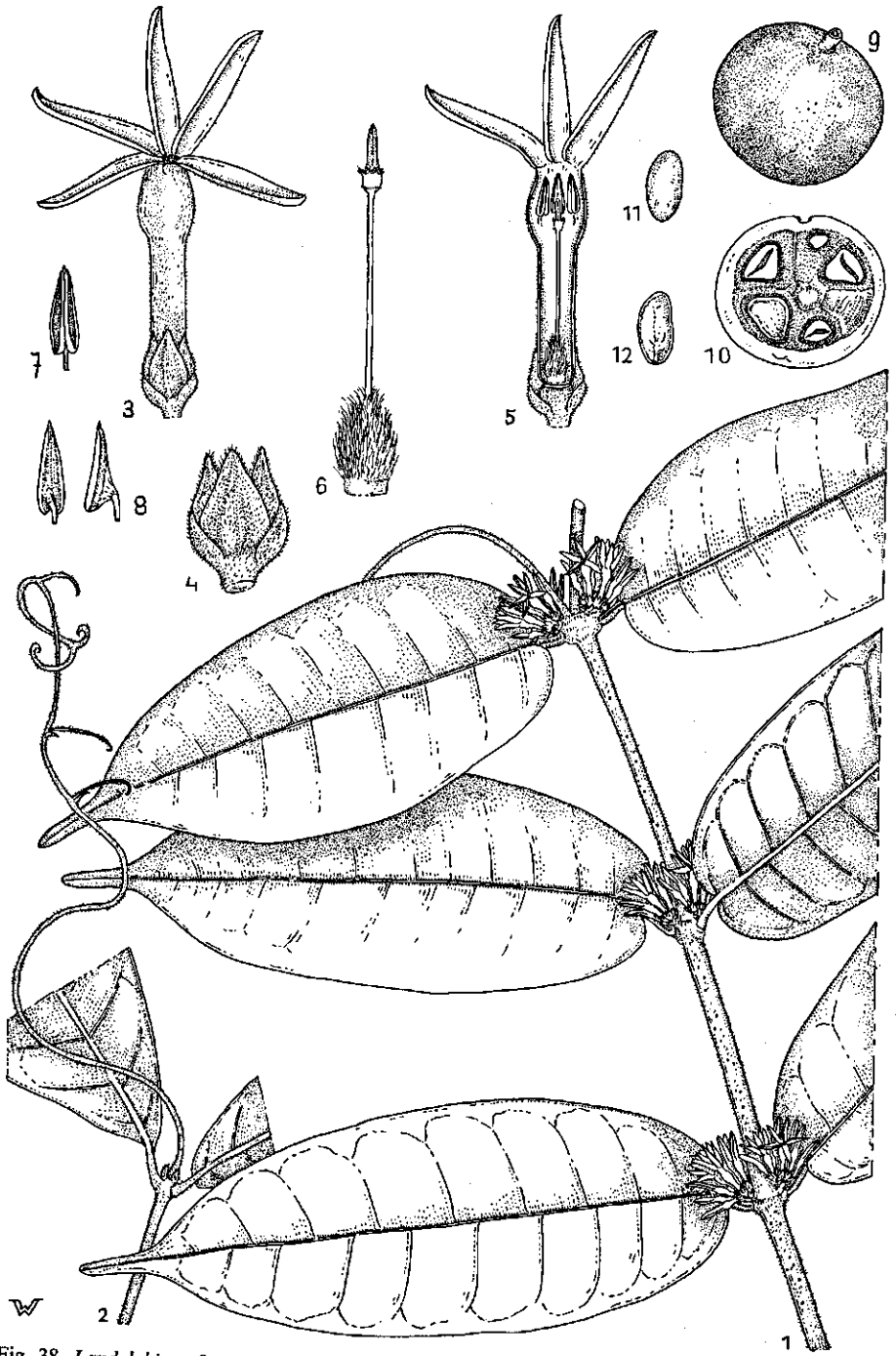
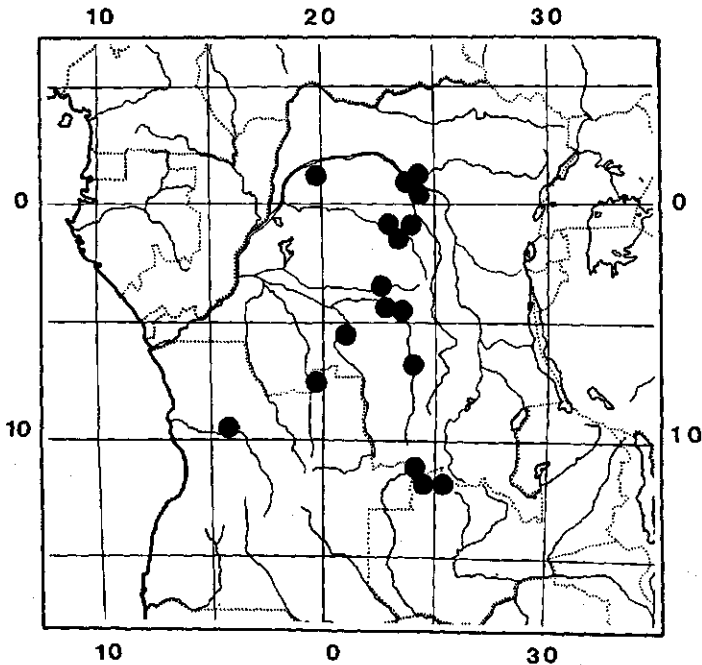


Fig. 38. *Landolphia rufescens*. 1, habit ($\times 2/3$); 2, branch with tendril ($\times 2/3$); 3, flower ($\times 4$); 4, calyx ($\times 6$); 5, opened flower ($\times 4$); 6, pistil ($\times 8$); 7-8, stamen in- and outside, and laterally ($\times 8$); 9, fruit ($\times 2/3$); 10, section of fruit ($\times 2/3$); 11, seed ($\times 2/3$); 12, section of seed with embryo ($\times 2/3$). 1 and 3-8 from Evrard 2238; 2 from Holmes 1256; 9-10 from Liben 3741; 11-12 from Jespersen 15.

Liana or climbing shrub, 4-30 m high. Trunk 1-8 cm in diameter. Branches, rather smooth, lenticellate, light and/or dark brown, grey or blackish. Branchlets rather smooth, glabrous, pilose or pubescent with an orange indumentum, especially when young. *Leaves*: petiole 0.2-1.1 cm, glabrous, pubescent or pilose, sometimes with 1 or several glands on the nodes; blade ovate to obovate or narrowly so, 1.8-4.5 × as long as wide, 5.0-15.5 × 1.9-6.5 cm, coriaceous when fresh, often more or less glaucous and shiny above when dried, acuminate at the apex with a 0.3-1.8 cm long acute to truncate or occasionally emarginate acumen, cordate, auriculate or rounded at the base, occasionally acute, glabrous or pilose above on the midrib and otherwise glabrous, glabrous or pilose beneath, especially at the midrib and less so at secondary and tertiary veins and towards the apex, margin sometimes sparsely ciliate towards the base; with 7-15 straight or curved secondary veins with often different angles with the midrib and in the middle of the leaf 0.5-1.7 cm from each other; between 2 secondary veins sometimes 1 or 2 less conspicuous ones; tertiary venation reticulate, more or less conspicuous beneath. *Inflorescence* 2-40-flowered, axillary, an irregular and compound dichasial cyme, 0.7-2.3 × 1.0-3.0 cm; pedicel up to 1.7 mm long, pilose or pubescent. Bracts 1-3 along pedicel, often sepal-like, broadly ovate or triangular, 0.7-1.7 × 0.8-1.5 mm, obtuse or rounded at the apex, sometimes with 1 or 2 small triangular glands at the base of the ciliate margin, pilose or pubescent outside and glabrous inside. *Flowers*: calyx 1.6-2.5 mm wide; sepals 4 or 5, sepals unequal, (broadly) ovate or triangular, connate at the base for 0.2-0.5 mm, 0.9-1.3 × as long as wide, 1.1-2.5 × 1.0-1.8 mm, rounded or obtuse at the apex, sometimes with or 2 small triangular glands at the base of the ciliate margin, pilose or pubescent outside, glabrous inside. *Corolla* white to yellow, glabrous outside at the base for 0.8-1.5 mm and from that level gradually changing to pubescent or pilose, more sparsely so or glabrous towards the apex and/or the part of the lobes covered in bud, pilose inside behind and up to 0.6 mm below anthers and at the auricle of the lobes, otherwise glabrous; tube 2.3-5.7 × as long as the calyx, 5.0-6.7 mm long, at the base 0.9-2.0 mm, in the middle 0.8-1.4 mm, around the anthers 1.8-1.9 mm, and at the throat 1.1-1.7 mm wide, the widest point 4.2-5.0 mm from the base; lobes (narrowly) ovate or elliptic, 0.50-0.85 × as long as the tube, 2.3-3.0(4.0) × as long as wide, 2.5-5.7 × 1.5-1.9 mm, rounded or obtuse at the apex. *Stamens* 1.5-1.8 mm long, inserted 3.5-4.4 mm from the base of the corolla tube, at 0.58-0.75 of its length, 0-0.7 mm included; filaments 0.15-0.8 mm long, glabrous; anthers with their base 3.9-4.9 mm from the base of the corolla tube, at 0.65-0.79 of its length, 2.3-4.7 × as long as wide, 1.1-1.4 × 0.3-0.5 mm, acute or obtuse at the apex, glabrous, mostly clearly thickened at the back. *Pistil* 4.6-6.0 mm long; ovary ovoid, ellipsoid, cylindrical or obconical with an obtuse to truncate apex and on a glabrous, 0.2-0.7 mm high and 0.6-0.8 mm wide cylindrical base, 0.75-1.4 × 0.7-1.1 mm, pilose or villose, indumentum mostly longer and denser towards apex; ovules 30-50; style cylindrical or slightly widened towards the base, 2.2-3.8 × 0.15-0.2 mm, glabrous or sparsely pubescent except for the upper part; pistil head ellipsoid or cylindrical, often with an ellipsoid base, 0.2-0.45 × 0.25-0.4 mm, ciliate

at the upper margin; stigmoid apex cylindrical, conical or cylindrical with a conical apex, 0.55-0.8 × 0.2-0.25 mm, obtuse or acute at the apex, puberulent, often in ridges. *Fruit* yellowish or green mostly with blackish, yellow or reddish spots, rather smooth, globose or broadly ellipsoid, 2.7-5.2 × 2.9-5.0 cm, rounded at the apex, 8-20-seeded; wall 0.05-0.8 cm thick, reddish when exposed and quickly turning brown or black. *Seed* irregularly ovoid or ellipsoid, often laterally compressed, 9-14 × 6-9 × 5-7 mm; embryo almost straight, cotyledons irregularly ovate or elliptic, 8-12 × 5-8 mm, undulate; rootlet 0.5-1.1 × 0.7-1.0 mm.

Distribution: Zaire and adjacent parts of Zambia and Angola.



MAP 42. *Landolphia rufescens*

Ecology: Forests, often in swampy areas near rivers. Alt. 0-800 m. Flowering at the end of the dry and the beginning of the rainy season. Mature fruits mainly in the rainy season.

Use: The rubber of *Landolphia rufescens* is said to be of low quality and quantity.

Vernacular names:

ZAIRE: Itofe (Turumbu), Iyoyo (Turumbu), Libetebete (Turumbu), M'Bata (near Bayala), Mundogulongu (near Bayala), Yololo (turumbu), Yoyo (Turumbu).

A selection of the ca. 25 specimens examined:

ANGOLA: Cuanza Norte: Belo Mt., Cazengo Distr., Gossweiler 681 (BM, K, P), 729 (BM).

ZAIRE: IV: Luebo, Achten 248b (BR); Bena-Dibele, Flamigni 37 (BR, holotype of *Carpodinus rufescens* var. *longeacuminata*); S of Kahemba, Renier 115 (BR). V: Gandajika, Liben 3741 (BR, WAG). VI: Kole, Claessens 254 (BR); Lisaga-Manjala, Evrard 2238 (BR, K); Basankusu, Evrard 4837 (BR); S of Mongandjo, Lombo R. basin, Germain 4765 (BR, P); Yandja Lake, Germain 5157 (BR, C, M, P); Yolo, Germain 7455 (BR, P); Yabahondo, Germain 8108 (BR); Mondombe, Jespersen 15 (BR, P), 68 (BR, P, type); Yangole, Louis 11862 (BR), Louis 15729 (BR).

ZAMBIA: ca. km 90 Mwinilunga-Solwesi Rd., Angus 479 (BM, BR, F, K, MO, PRE), 479a (BR, K, MO); Lisombo R., 15 km SW of Kalene Hill R., Drummond 8329 (SRGH), Drummond & Williamson 9478 (SRGH); Mwinilunga, Holmes 1256 (K).

43. *Landolphia stenogyna* Pichon, Mém. IFAN 35: 151. 1953.

Fig. 39, p. 180; map 43, p. 181

Type: Gabon: near Libreville, Klaine 2259 (P, holotype).

Heterotypic synonym: *Carpodinus talbotii* Wernh., Cat. Pl. Talb.: 61. 1913, not *L. talbotii* Wernh., op. cit. 60. Type: Nigeria: Cross River State: Oban, Talbot 1055 (BM, holotype).

Liana, up to 20 m high or probably more. Branches grey, purplish or brown, smooth or slightly rough, sometimes narrowly and shallowly fissured, with white or light orange lenticels. Branchlets glabrous. *Leaves*: petiole 6-19 mm long, with 1 or several small triangular glands on each node, (almost) glabrous; blade ovate to obovate, 1.4-3.0 × as long as wide, 4.2-15.5 × 1.6-9.1 cm, coriaceous or papery when fresh, smooth and shiny when dried, acuminate at the apex with an up to 1.6 cm long rounded, obtuse or occasionally acute acumen, rounded to acute at the base, glabrous, with small black glandular dots beneath; with 5-12 pairs of curved secondary veins, in the middle of the leaf 0.8-2.9 mm from each other; between 2 secondary veins often 1 or 2 less conspicuous ones; tertiary venation reticulate and rather conspicuous beneath, venation paler. *Inflorescence* axillary, a reduced, more or less irregular dichasial cyme, 1-3-flowered, 3.0-6.6 × 2.5-6.0 cm. Pedicels 2.0-6.0 mm long, glabrous, pilose or pubescent. Bracts 2-10 along pedicel, mostly in pairs and the highest sepal-like, broadly or depressed-ovate, oblong or triangular, 0.25-1.8 × 0.6-1.8 mm, acute to truncate at the apex, sometimes with 1 or 2 small triangular glands at the base of the ciliate margin, glabrous to pilose outside, glabrous or pilose inside at the margin and otherwise glabrous, sometimes with 1 or several glands at the base. *Calyx* 2.3-3.2 mm wide; sepals (broadly) ovate, elliptic or oblong, 0.7-1.6 × as long as wide, 1.3-2.8 × 1.3-2.9 mm, connate at the base for 0.2-0.4 mm, rounded to acute, or occasionally attenuate at the apex, with a ciliate, membranaceous margin, glabrous or with some hairs at the apex outside, glabrous inside, occasionally with 1 or 2 glands at the base towards the margin. *Corolla* white or creamy, greenish- or reddish-yellow, tube and lobes often slightly different in colour, pilose inside up to 1.0-2.0 mm below anthers and on auricle, glabrescent to entirely glabrous towards the apex, otherwise (almost) glabrous, glabrous outside; tube 7.1-14.3 × as long as the calyx, 15.0-21.0 mm long, at the base 1.1-3.1 mm, in the middle 1.5-2.1 mm, around the anthers 2.4-3.0 mm and

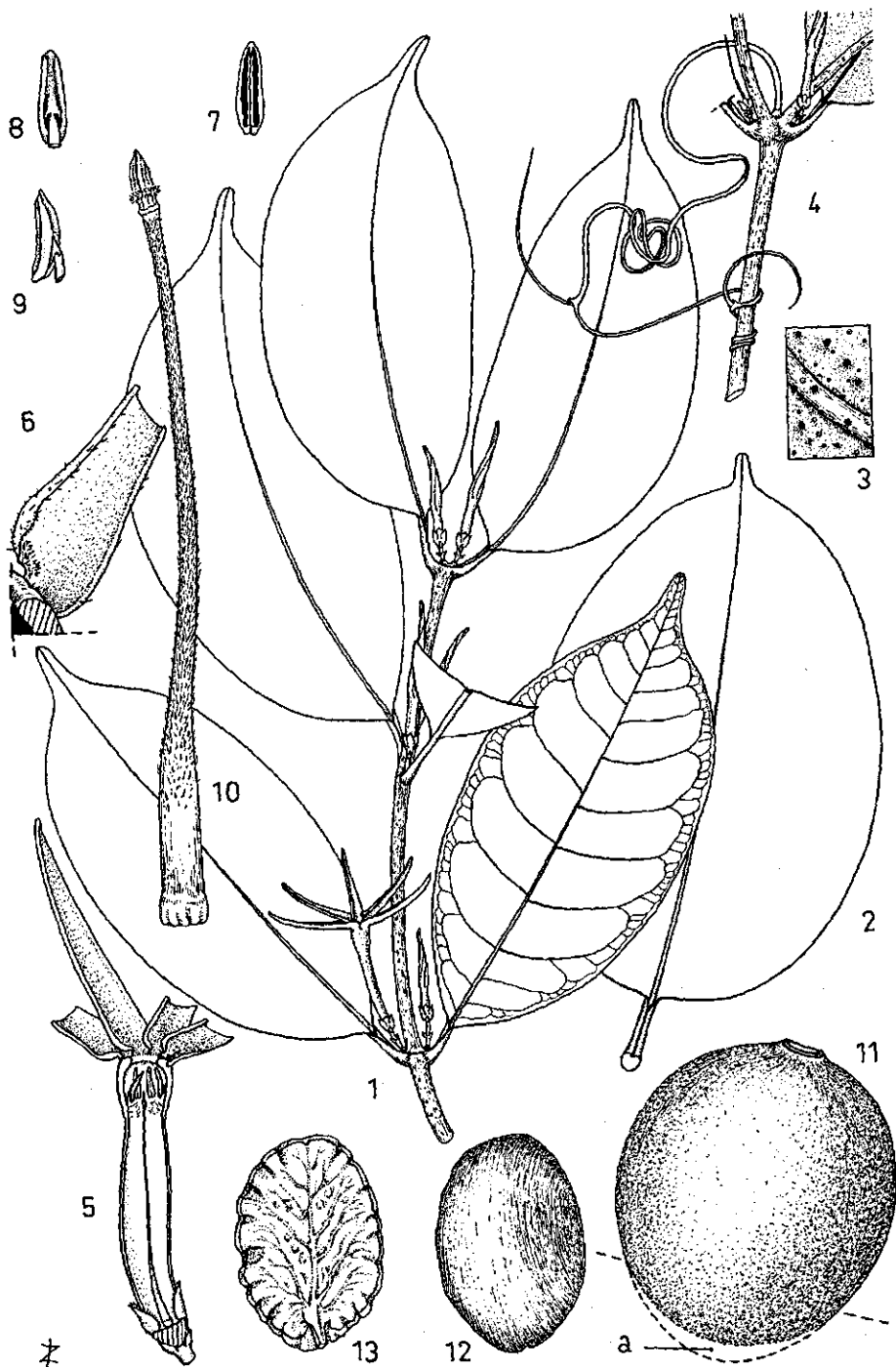
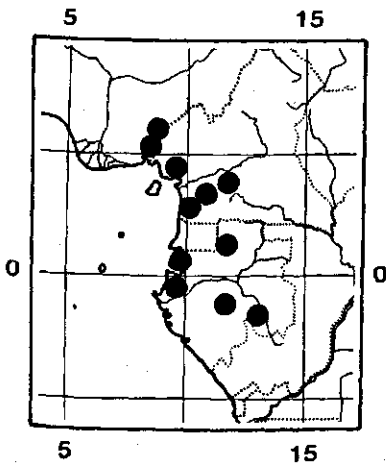


Fig. 39. *Landolphia stenogyna*. 1, habit ($\times 2/3$); 2, leaf ($\times 2/3$); 3, part of leaf beneath ($\times 10$); 4, branch with tendril ($\times 2/3$); 5, opened flower ($\times 2$); 6, basal part of corolla lobe inside ($\times 6$); 7-9, stamen in- and outside, and laterally ($\times 6$); 10, pistil ($\times 6$); 11, fruit ($\times 2/3$); 12, seed ($\times 2$); 13, section of seed with embryo ($\times 2$). 1 and 5-11 from Bos 5430; 2 from Bos 6649; 3-4 from W. de Wilde et al. 3888; 10 from Bos 5430 and Breteler 6992; 11 from Klaine 2124 and Leeuwenberg 10563; 12-13 from Leeuwenberg 10563.

at the throat 2.2-2.9 mm wide, with the widest part 15.0-19.0 mm from the base; lobes narrowly ovate or elliptic, 0.7-1.5 × as long as the tube, 6.3-11.2 × as long as wide, 13.8-32.2 × 1.7-3.2 mm, rounded or inconspicuously acuminate at the apex with a rounded acumen. *Stamens* 1.8-2.2 mm long, inserted 13.3-18.8 mm from the base of the corolla tube, at 0.82-0.90 of its length, 0.2 mm exerted to 1.0 mm included; filaments 0.5-0.7 mm long, glabrous; anthers with their base 13.3-18.9 mm from the base of the corolla tube, at 0.83-0.91 of its length, 2.3-5.0 × as long as wide, 1.3-2.2 × 0.3-0.8 mm, obtuse, acute or mucronate at the base, glabrous. *Pistil* 12.2-18.1 mm long; ovary cylindrical and/or conical, sometimes on an ellipsoid base 0.4-0.5 mm long and 1.0-1.4 mm wide, (2.0)4.3-7.1 × 0.7-1.4 mm, gradually narrowed towards the apex and with the widest part at the base, glabrous at the lower 1.2-4.5 mm, otherwise pilose or pubescent, more densely so towards the apex; ovules 50-80; style cylindrical, gradually widened towards the base, 8.4-10.8 × 0.15-0.5 mm, pilose or pubescent, more sparsely so or glabrous towards the apex; pistil head cylindrical (on an ellipsoid base), ellipsoid, slightly diaboloid-shaped, (ob)ovoid or slightly narrowed towards the apex, 0.25-0.5 × 0.25-0.4 mm, mostly ciliate at the upper margin, otherwise glabrous; stigmatic apex cylindrical or conical (on a cylindrical base), 0.5-0.9 × 0.2-0.4 mm, puberulent, often in ridges, rounded to acute at the apex. *Fruit* yellow, smooth or slightly bumpy, sometimes with small dark lenticels, (sub)globose or ovoid, 2.8-6.0 × 2.5-6.0 × 2.5-6.0 cm, rounded at the apex, probably approximately 5-15-seeded; wall 1.0-3.0 mm thick. Seed more or less irregularly ovoid or ellipsoid, mostly laterally compressed and/or with 1 or 2 flattened sides, 11-17 × 8-12 × 6-10 mm. Embryo almost straight; cotyledons irregularly ovate or elliptic, 9-15.5 × 7-11.5 mm, undulate; rootlet 1.5-2.3 × 0.8-1.2 mm.

Distribution: South-eastern Nigeria, Cameroun and Gabon.



MAP 43. *Landolphia stenogyna*

Ecology: Forests, often in swampy vegetations. Alt. 0-800 m. Flowering throughout the year, probably less in the middle of the rainy season. Mature fruits probably throughout the year.

Specimens examined:

NIGERIA: Cross River State: Ikom, Ariwaodo 862 (MO); Oban, Talbot 1055 (BM, type of *Carpodinus talbotii*).

CAMEROUN: near Kienke R., E of Kribi, Bos 5430 (BR, K, LD, P, UPS, WAG); 15 km SE of Kribi, Bos 6649 (BR, P, WAG); Mboro R., near Akonetye, S of Ebolowa, Koufani 227 (P, WAG); 8 km E of Awae, 67 km along Yaoundé-Ayos Rd., Leeuwenberg 5719 (BR, C, K, LISC, MO, P, WAG); SW of Compina, Leeuwenberg 10563 (WAG); ca. 15 km N of Eséka, W.J. de Wilde 3888 (BR, K, MO, P, WAG).

GABON: km 13 Moanda-Bakoumba Rd., Bretelet 6992 (WAG); Cristal Mts., E of Nkan, Hallé & Villiers 5243 (P); near Libreville, Klaine 2124 (P), Klaine 2259 (P, type); Mbigou-Masango, Le Testu 5978 (BM, G, P); Oyem, Le Testu 9275 (BM, P, WAG).

CULT.: The Netherlands: Greenhouse Wageningen, seedlings, Bos 7419 (WAG).

44. *Landolphia subrepanda* (K. Schum.) Pichon, Mém. IFAN 35: 184. 1953.

Fig. 40, p. 183; map 44, p. 185

Basionym: *Carpodinus subrepanda* K. Schum. in Engl. & Prantl, Nat. Pflanzenz. 4 (2): 132. 1895.

Type: Cameroun: Mokanje, Barombi(?), Preuss 187 (K, lectotype, designated by Pichon; isolectotype: BM).

Heterotypic synonyms: *Carpodinus trichanthera* Pierre ex Stapf in Fl. Trop. Afr. 4 (1): 82. 1902; Pierre, Bull. Soc. Linn. Paris, sér. 2: 38. 1898. (nomen). Type: Gabon: near Libreville, Klaine 336b (K, holotype; isotype: P).

Landolphia subrepanda var. *latifolia* Pichon, op. cit.: 186. Type: Gabon: Akondjo, along Ramboué R., Chevalier 27046 (P, holotype).

Slender liana, up to 20 m long or more and up to 6 m high or more. Stem up to 1.0 cm in diameter or more. Branches smooth, sparsely lenticellate, blackish, greyish, reddish or brown. Branchlets pubescent or pilose, often with orange indumentum. *Leaves*: petiole 3-15 mm long, pilose or glabrous, with 1 or several glands on each node; blade elliptic, oblong or obovate or narrowly so, 1.9-3.5 × as long as wide, 4.0-17.1(32.0)-1.5-6.5(-12.5) cm, coriaceous (papery when young) when fresh, coriaceous and often glaucous and shiny above when dried, more or less clearly acuminate at the apex with a 0.5-2.6 cm long rounded or acute acumen, auriculate to obtuse at the base, occasionally acute, glabrous on both sides or pilose beneath at the base, very young leaves sparsely pubescent; with 7-17 almost straight or slightly curved secondary veins with often different angles with the midrib and in the middle of the leaf 0.6-1.3 cm from each other; between 2 secondary veins sometimes 1 or 2 less conspicuous ones; tertiary venation reticulate, mostly inconspicuous beneath. *Inflorescence* 1-20-flowered, axillary, a more or less irregular and compound dichasial cyme, 1.2-1.7 × 0.7-1.8 cm; peduncle up to 2.0 mm long, pubescent or tomentose; pedicel up to 2.0 mm long, pubescent or tomentose. Bracts 1-3 along pedicel and peduncle, ovate, oblong or triangular, or broadly so, 0.6-1.3 × 0.7-1.1 mm, rounded or obtuse

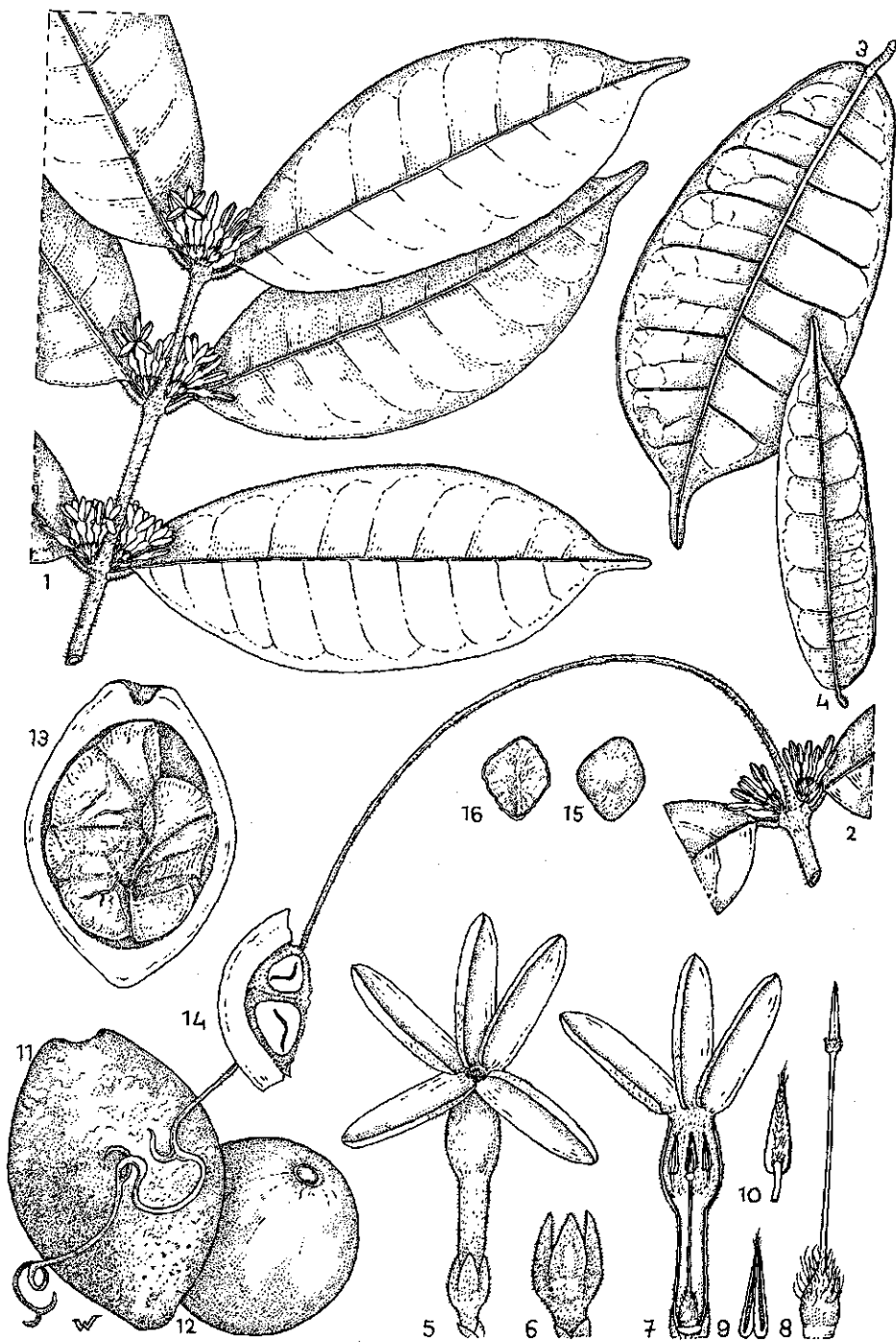
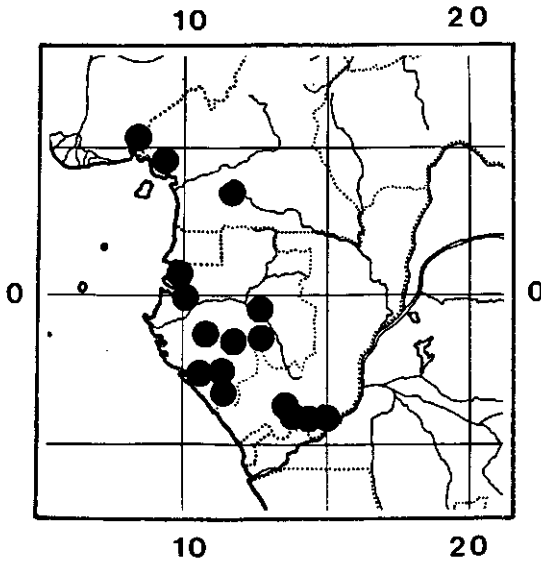


Fig. 40. *Landolphia subrepanda*. 1, habit ($\times 2/3$); 2, branch with tendril ($\times 2/3$); 3-4, leaves beneath ($\times 2/3$); 5, flower ($\times 4$); 6, calyx ($\times 6$); 7, opened flower ($\times 4$); 8, pistil ($\times 8$); 9-10, stamen in- and outside ($\times 8$); 11-12, fruits ($\times 2/3$); 13-14, fruit on section ($\times 2/3$); 15 seed ($\times 2/3$); 16, section of seed with embryo ($\times 2/3$). 1 from Le Testu 7554; 2 from Le Testu 6353; 3, 12 and 14 from de Wilde et al. 603; 4-10 from Breteler & de Wilde 7648; 11 and 13 from Breteler 1757; 15-16 from Klaine 152.

at the apex, mostly with 1 or 2 small triangular glands at the base of the ciliate margin, pilose or pubescent outside, glabrous or pilose inside at the apex, occasionally with several small triangular glands at the base. *Flowers* slightly fragrant. *Calyx* 1.5-2.0 mm wide; sepals 4 or 5, ovate, elliptic or triangular or broadly so, 1.0-1.9 × as long as wide, 0.8-1.9 × 0.5-1.4 mm, connate at the base for 0.2-0.4 mm, rounded to acute at the apex, occasionally with 1 or 2 small triangular glands at the base of the ciliate margin, pilose outside, glabrous inside. *Corolla* white or yellowish, tube sometimes darker, glabrous outside at the base for 1.0-2.0 mm and from that level pubescent or pilose, more sparsely so or glabrous towards the apex and the part of the ciliate lobes covered in bud, pilose or pubescent inside above, behind and up to 1.2 mm below the anthers or in ridges among them and at the auricle and/or apex, otherwise glabrous; tube 3.5-8.0 × as long as the calyx, 5.1-8.2 mm long, at the base 0.8-1.7 mm, in the middle 0.9-1.5 mm, around the anthers 1.7-2.2 mm and at the throat 1.1-1.9 mm wide, the widest point 4.0-5.8 mm from the base; lobes (narrowly) ovate to obovate, 1.7-5.0 × as long as wide, 0.4-0.9 × as long as the tube, 2.8-6.9 × 1.4-2.2 mm, rounded to acuminate at the apex with a rounded acumen. *Stamens* 2.0-2.7 mm long, inserted 3.2-5.3 mm from the base of the corolla tube, at 0.52-0.68 of its length, 0-1.3 mm included; filaments 0.35-1.2 mm long, glabrous; anthers with their base 3.6-6.0 mm from the base of the corolla tube, at 0.62-0.78 of its length, 2.8-7.2 × as long as wide, 1.3-2.5 × 0.25-0.45 mm, obtuse or acute at the apex, pilose outside. *Pistil* 5.1-7.2 mm long; ovary cylindrical, ellipsoid, (ob)ovoid, or conical with an acute to truncate apex, on a glabrous, 0.2-0.7 mm high and 0.4-0.7 mm wide cylindrical base, 0.8-1.4 × 0.7-0.8 mm, pilose or villose, indumentum longer and denser towards apex; ovules 30-80; style cylindrical or slightly widened towards the base and/or apex, 3.0-4.6 × 0.15-0.2 mm, glabrous or pilose at the base; pistil head cylindrical or tapering, often with an ellipsoid base, 0.3-0.45 × 0.2-0.5 mm, ciliate at the upper margin; stigmoid apex cylindrical or conical, 0.6-1.3 × 0.2-0.3 mm, acute or obtuse at the apex of the lobes, pubescent or puberulent. *Fruit* yellowish, orange or reddish, often with reddish longitudinal stripes, smooth or slightly bumpy, globose or (ob)ovoid, 2.8-6.9 × 3.0-6.0 cm, rounded or acuminate at the apex, with a rounded acumen, 8-22-seeded; wall 0.3-0.9 cm thick. *Seed* irregularly ovoid or ellipsoid, often laterally compressed, 9-16 × 8-13 × 6-12 mm; embryo almost straight, cotyledons ovate or elliptic, 8-14 × 7-12 mm, undulate; rootlet 1.0-1.1 × 0.6-1.0 mm.

Distribution: South-eastern Nigeria, south-western Cameroun, Gabon and Congo.

Ecology: Forests. Alt: 0-500 m. Flowering in the beginning of the rainy season. Mature fruits mainly in the rainy season.



MAP 44. *Landolphia subrepanda*

Vernacular names:

NIGERIA: Onton (Naliui).

GABON: L'leré (Maissa), N'gasa, Tresaka (both near Amontrobo).

A selection of the ca. 50 specimens examined:

NIGERIA: Cross River State: Cross R., MacLeod 26-5-1905 (K).

CAMEROON: Nyong R., 40 km SE of Yaoundé, Breteler 1757 (P, WAG); Mokanje, Barombi, Preuss 187 (BM, K, lectotype).

GABON: M'Passa Station, 10 km S of Makokou, along Ivindo R., Breteler 7648 (WAG); Stéphane Plantations, along Bokoué R., Chevalier 27001 (P); Akondjo, along Ramboué R., Chevalier 27046 (P, type of *Landolphia subrepanda* var. *latifolia*); near Libreville, Klaine 110 (BR, K, P, WAG), 121 (BR, P), 152 (P), 336 (BR, P), 336b (K, P, type of *Carpodimus trichanthera*), 1109 (P), 1132 (BR, K, P), 1157 (K, P), 2411 (P); near Amontrobo, Lecomte 5-3-1894 (P); km 21 timber exploitation Waka-Ngounié R. Rd. in SW direction, Leeuwenberg & Persoon 13679 (WAG); about 40 km SW of Ndendé, A.M. Louis et al. 1102 (WAG); Mongonyanga, Le Testu 1407 (BM, BR, P); Tchibanga, Le Testu 1475 (BM, BR, G, K, P), 2122 (BM, K, P, US); between Boutoumbi and Ipoungou, Le Testu 5742 (BM, G, LISC, MO, P, US, WAG); Dibaça, Le Testu 6353 (BM, BR, G, LISC, P, US, WAG); Lastoursville, Le Testu 7554 (BM, LISC, P, US, WAG), 8495 (BM, G, MO, P, WAG); about 100 km along Tchibanga-Voungou Rd., J.J. de Wilde et al. 603/1983 (LBV, WAG).

CONGO: 5 km from Moutampa, Bouquet 301 (P); M'Boumou, near Bouénza R., Bouquet 766 (P); Brazzaville, Chevalier 11398 (P); near Rénéville, Chevalier 27489 (P); Mbamou, Chevalier 27660 (P); I.R.H.O. Sibiti, Farron 4180 (P).

45. *Landolphia thollonii* Dew., Ann. Soc. Sci. Brux. 19(2): 142. 1895.

Fig. 41, p. 187; map 45, p. 188

Type: Congo: Brazzaville, Savorgnin de Brazza 145 (P, holotype).

Homotypic synonym: *L. parvifolia* var. *thollonii* (Dew.) Pichon, Mém. IFAN 35: 100 1953.

Heterotypic synonym: *Carpodinus chylorrhiza* K. Schum. ex Stapf in Fl. Trop. Afr. 4(1): 58. 1902; K. Schumann in Warburg, Kunene-Sambesi Exped.: 336. 1903. Type: Angola: Quiriri R., above Sakkamecho, Baum 714 (K, holotype; isotypes: BM, COI, E, G, HBG, M, MO, NY, S, W, Z). Homotypic synonym: *L. chylorrhiza* (K. Schum.) ex Stapf) K. Schum. ex De Wild. & Gentil, Lianes Caoutch. Et. Ind. Congo: 121. 1904.

Small woody rhizomatous shrub, 10-40 cm high, without tendrils. Rhizome smooth with transversal cracks, without lenticels, yellowish, often blackened by bush fire, 0.6-1.2 cm in diameter. Branches lenticellate, brown. Branchlets dark rusty-brown tomentose to pilose, with orange indumentum when young. *Leaves*: petiole 1-7 mm long, pilose, tomentose or lanate; blade oblong, elliptic or ovate or narrowly so, 1.4-5.3 × as long as wide, 0.9-7.8 × 0.4-2.5 cm, reddish-to yellowish-green, obtuse or acuminate at the apex with a hardly distinguishable acumen, acute or rounded at the base, pilose or glabrous, but pilose on midrib and margin above, sparsely pilose only at the basal part of midrib and margin or glabrous beneath; secondary veins in 7-19 pairs, straight or occasionally slightly curved, in the middle of the leaf 2-6 mm from each other, with or without 1-many less conspicuous secondary veins in between, often more conspicuous above; tertiary venation reticulate, sometimes labyrinth-like, not always visible. *Inflorescence* terminal, a more or less irregular dichasial cyme, 1.0-2.0 × 1.0-2.0 cm, 5-10-flowered, with 2-5 flowers open at a time. Peduncle 0.1-0.9(2.1) cm long, pilose; pedicel 0.5-2.8 mm long, pilose, pubescent or tomentose. Bract 1, occasionally more along pedicel, obovate or oblong, occasionally triangular or ovate, 1.6-2.8 × 1.4-2.5 mm, emarginate or truncate at the apex, less often rounded or mucronate, partly pilose, lanate or tomentose outside, glabrous or pubescent inside, sometimes ciliate. *Flowers* fragrant. *Calyx* 1.4-3.2 (3.9) mm wide, sepals unequal, ovate to obovate or narrowly so, emarginate to mucronate at the apex, 0.9-2.0 (2.5) × as long as wide, 1.8-3.3 × 1.1-3.0 mm, connate at the base for 0.1-0.2 mm, with indumentum as on bracts, margin often ciliate (cilia 0.2-0.5 mm long). *Corolla* white, yellow or (greenish-) cream, tomentose or pubescent outside from 0.9-3.8 mm from the base, sometimes part of the lobes covered in bud, glabrous or less hairy, villose inside behind and up to 1.8 mm below anthers, otherwise glabrous to pubescent in tube; tube 1.3-2.5 × as long as calyx, 3.8-5.1 mm long, 0.6-1.2 mm wide at the base, around the anthers 1.3-2.1 mm and at the throat 0.8-1.7 mm wide, with the widest part 2.7-3.7 mm from the base, throat with a thickened wall for 6-10 mm; lobes (narrowly) ovate or oblong, 1.1-1.9 × as long as tube, 2.4-4.7 × as long as wide, 4.2-8.5 × 1.4-3.2 mm, rounded or obtuse at the apex, often ciliate. *Stamens* 1.2-1.6 mm long, inserted 2.3-3.7 mm from the base of the corolla tube, at

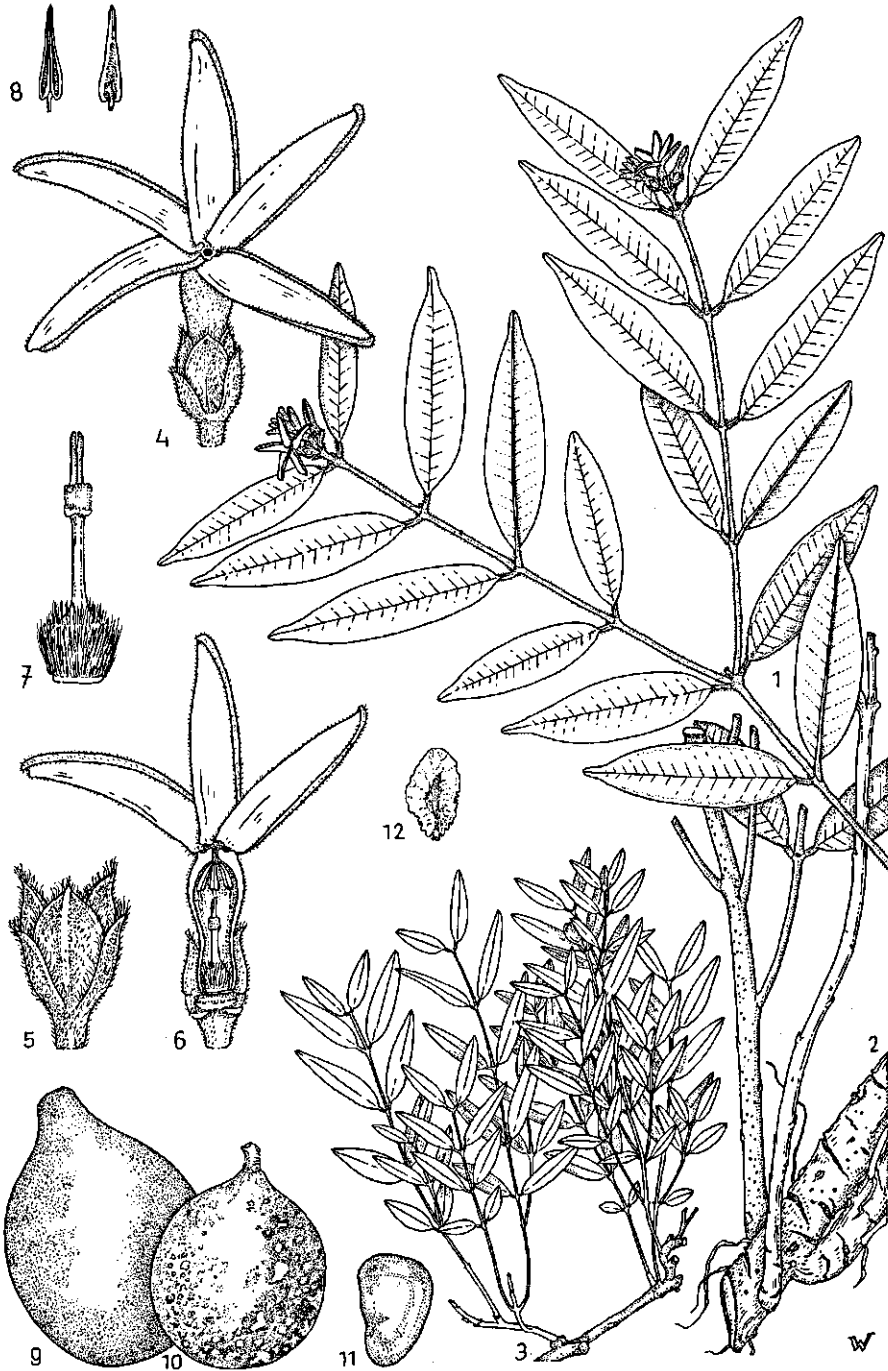
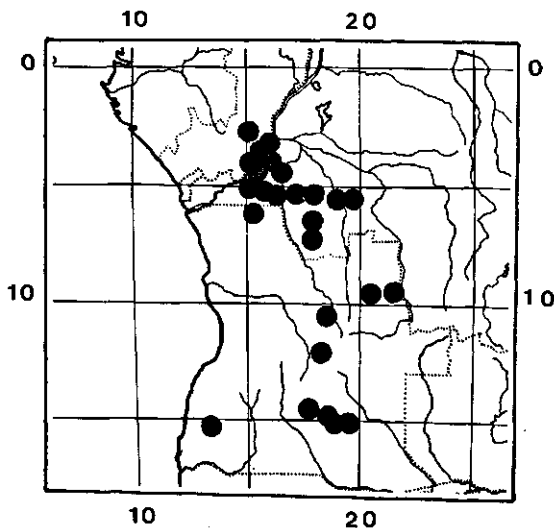


Fig. 41. *Landolphia thollonii*. 1, habit ($\times 2/3$); 2, rhizome with branch ($\times 2/3$); 3, habit ($\times 2/9$); 4, flower ($\times 4$); 5, calyx ($\times 6$); 6, opened flower ($\times 4$); 7, pistil ($\times 10$); 8, stamen in- and outside ($\times 10$); 9-10 fruits ($\times 2/3$); 11, seed ($\times 2/3$); 12, section of seed with embryo ($\times 2/3$). 1 from Mildbraed 3612; 2 from Gossweiler s.n.; 3 from Gossweiler 2759; 4-8 from Claessens 48; 9 and 11 from Serv. Agr. Dom. 701; 10 and 12 from Gossweiler 2653.

0.55-0.73 of its length, 0.3-0.9 mm included; filament 0.4-0.6 mm long, glabrous or with a few long hairs inside, often curved with the widening of the tube, anthers with the base 2.7-3.8 mm from the base of the corolla tube, at 0.62-0.77 of its length, $2.4-4.3 \times$ as long as wide, $1.0-1.3 \times 0.30-0.45$ mm. *Pistil* 2.8-4.3 mm long; ovary ellipsoid, cylindrical, ovoid, obovoid or obconical with a rounded or truncate apex, sometimes on a cylindrical or slightly widened base 0.1-0.5 mm high, $0.8-1.6 \times 0.5-1.1$ mm, glabrous at the lowest 0.1-0.5 mm, in this glabrous area often a sharply separated light (lower) and dark (upper) area, otherwise pilose or villose, indumentum longer and denser towards apex; ovules 30-60; style cylindrical often with a gradually widened base, $1.0-1.5 \times 0.15-0.3$ mm, glabrous, occasionally sparsely villose towards the base; pistil head cylindrical, obovate or ellipsoid, $0.25-0.4 \times 0.25-0.4$ mm, ciliate at the upper margin (cilia up to 0.5 mm long), glabrous; stigmatic apex cylindrical, ovoid to obovoid, $0.4-1.3 \times 0.15-0.25$ mm, with the lobes at the apex obtuse, acute or rounded, often unequal, pubescent or glabrous. *Fruit* rather smooth, lenticellate, often with rusty-brown or lighter circular or ovate spots and dots (0.01-3.0 mm in diameter), sometimes fused into large lighter areas, obovoid or globose, $2.8-7.0 \times 2.2-5.5 \times 2.2-5.5$ cm, rounded or obtuse at the apex, often narrowed at the base; 5-10-seeded; wall 0.3-3.7 mm thick; sclereid cell layer 0.2-0.7 mm thick. *Seed* irregularly ovoid or ellipsoid or broadly so, laterally compressed and often with 1 or 2 flattened sides, $12-22 \times 10-17 \times 6-12$ mm; embryo curved or straight; cotyledons more or less irregularly ovate or elliptic, $11-21 \times 6-15$ mm, clearly to hardly undulate; rootlet $0.2-0.8 \times 1.2-1.6$ mm.

Distribution: Congo to Angola.



MAP 45. *Landolphia thollonii*

Ecology: Savannas. Alt. 0-1300 m. Flowering probably at the end of the dry and fruiting during the rainy season.

Geographical selection of the ca. 125 specimens examined:

CONGO: Brazzaville, Savorgnin de Brazza 145 (P, type), Chevalier 4260 (BR, G, K, P), Thollon 960 (B, P); Batéké Plateau, Mbe Road, Descoings 5579 (P); Batéké Plateau, 100 km from Brazzaville, Descoings 6600 (P); km 47 Road from Brazzaville to the north, Makany 1974 (K).

ZAIRE: III: Kinshasa, Bequart 822 (BM, BR, S); Kisantu, Callens 4200 (BR, NY); Popokabaka, Gentil 99 (BR); 2 km E of Bationgo, Lejoly 82/733 (BR); Bombo Makuka, Pauwels 3134 (BR, MO, P, WAG); Kwango, Bienge, Sapin Oct. 1907 (BM, BR, US); Mpese, Vanderyst 14300 (BR). IV: Kinzenzege, Jernander 22 (BR); Lutshima, Sapin July 1907 (BR, US, WU); Mbau, Vanderyst 16384 (BR); between Panzi and Kipopo, Vanderyst 16535 (BR); Pami Region, Vanderyst 17018 (BR).

ANGOLA: Zomba Plateau, Dawe 167 (FHO, K); Quiriri R., above Sakkamecho, Baum 714 (BM, COI, E, G, HBG, K, M, MO, NY, S, W, Z, type of *Carpodinus chylorrhiza*); Lunda, Rio Luana, 140 km N of Nova Chaves, Carisso & Mendonça 223 (COI); between Vila Henrique de Carvalho and Camissambo, Exell & Mendonça 994 (BM, COI, LISJC); Ghana de Ompalai, Gossweiler 2653 (BM, COI, LISJC, Z); between Ompihiri and Cacuti Rs., Gossweiler 2654 (BM, COI, K, LISJC); between Cuito and Curiri Rs., Gossweiler 2579 (BM, COI, K, LISJC); Menangue-Bie, Gossweiler s.n. (LISJC); Cuango R., Mechov 510 (K, U, W, Z); Bie, Coemba, 17 km from Munhango, Mendes dos Santos R 1883 (LISC); Bie, road to Cuemba, Monteiro & Murta 1715 (LISC).

46. *Landolphia togolana* (Hall. f.) Pichon, Mém IFAN 35: 87. 1953.

Fig. 42, p. 190; map 46, p. 192

Basionym: *Cylindropsis togolana* Hall. f., Jahrb. Hamb. Wiss. Anst. 17, Beih. 3: 133. 1900. Homotypic synonym: *Clitandra togolana* (Hall. f.) Stapf in Fl. Trop. Afr. 4 (1): 64. 1902.

Type: Togo: Lomé, Warnecke 46 (B, holotype, n.v., destroyed; lectotype: K, designated here; isotypes: BM, BR, E, G, HBG, L, M, P).

Heterotypic synonym: *Clitandra alba* Stapf l.c. Type: Ghana: Okroase, Johnson 753 (K, holotype).

Liana or shrub, 0.30-5 m high. Trunk 3-15 cm in diameter. Bark smooth or narrowly fissured. Branches with bright grey lenticels, narrowly fissured; branchlets dark reddish brown to light grey-brown, glabrous to pilose. Young branchlets occasionally tomentose. *Leaves*: petiole 2-8 mm long, smooth or roughly fissured, glabrous or pilose, with colleters at the base and nodes; blade ovate or elliptic or broadly so, occasionally obovate, 1.7-2.8 × as long as wide, 3.5-13.3 × 1.9-6.7 cm, (sub)coriaceous when fresh, coriaceous or papyraceous when dried, obtuse or shortly acuminate at the apex with an obtuse or retuse acumen up to 0.3 cm long, attenuate, acute or rounded at the base, shortly decurrent into the petiole, sometimes slightly undulate when dried, glabrous on both sides; secondary veins in 6-12 pairs, straight or slightly curved near the margin, with distance in the middle of the leaf 1.0-1.5 cm, between 2 secondary veins often a less clear one; tertiary venation reticulate, often labyrinth-like and dark beneath; all veins impressed above. *Inflorescence* axillary or occasionally terminal, a dichasial cyme, 0.25-1.2 × 0.3-1.1 cm, 1-12-flowered. Peduncle 0-2.0 mm, glabrous or pilose. Pedicel 0-2.0 mm, glabrous or pilose. Bracts and bracteoles

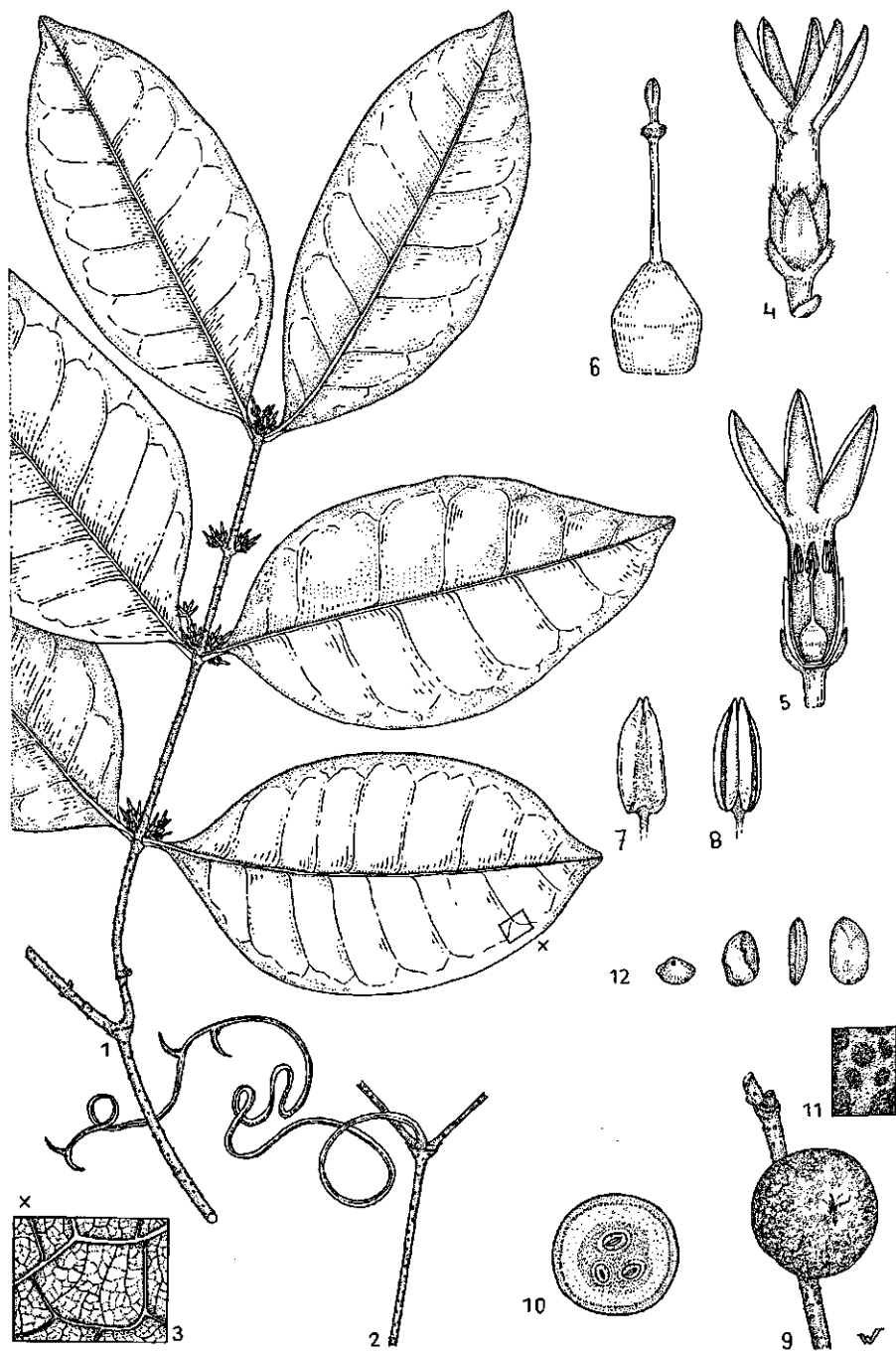


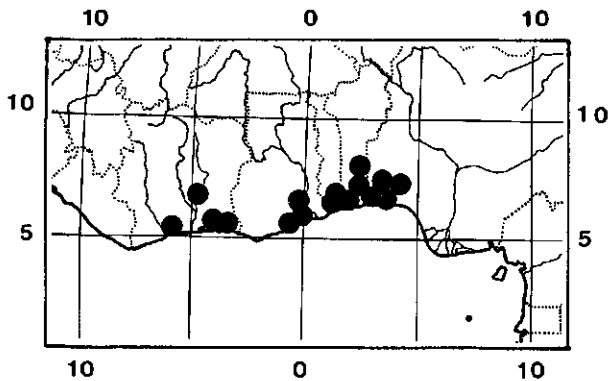
Fig. 42. *Landolphia togolana*. 1, habit ($\times 2/3$); 2, branch with tendril ($\times 2/3$); 3, part of leaf beneath ($\times 4$); 4, flower ($\times 6$); 5, opened flower ($\times 6$); 6, pistil ($\times 18$); 7-8, stamen out- and inside ($\times 18$); 9, fruit ($\times 2/3$); 10, section of fruit ($\times 2/3$); 11, part of fruit outside ($\times 4$); 12, seeds from various sides ($\times 2/3$). 1, 3 and 12 from Le Testu 114; 2 and 4-8 from v. Eijnatten 1384; 9-11 from P. Wit 2329.

ovate, triangular or widely so, 0.6-2.1 × 0.5-1.2 mm, rounded or obtuse at the apex, ciliate, glabrous or pilose outside, glabrous inside, occasionally with small colleters in the axil. *Flowers* fragrant. *Calyx*: sepals unequal, ovate, elliptic, oblong or triangular or broadly so, 0.9-2.0 × as long as wide, 0.9-1.8 × 0.7-1.2 mm, connate at the base for 0.1-0.25 mm, acute to slightly emarginate at the apex, ciliate, pilose or glabrous outside, glabrous inside, occasionally colleters at the base of the margin. *Corolla* white or yellow(ish), occasionally in- and outside of different colour, glabrous or occasionally with some hairs behind or just below the anthers inside; tube 1.2-2.6 × as long as the calyx, 1.9-3.2 mm long, at the throat 0.6-0.9 mm, around the anthers 0.9-1.4 mm and at the base 0.6-0.8 mm wide, widest part 1.2-2.0 mm from base, wall thickened above anthers; lobes equal or nearly so, ovate or elliptic, 0.47-0.9 × as long as the tube, 1.5-3.5 × as long as wide, 1.5-2.2 × 0.7-1.2 mm, obtuse or rounded at the apex, occasionally mucronate with a rounded acumen, often a rounded tooth at the base of the auricle at each lobe inside, 0.1-0.2 × 0.1-0.2 mm. *Stamens* inserted 1.0-1.6 mm from the base of the corolla tube, at 0.39-0.65 of its height, 0.3-1.6 mm included, 0.8-1.0 mm long; filament 0.2-0.6 mm long, glabrous; anther with the base 1.0-1.9 mm from the base of the corolla tube, at 0.5-0.65 of its length, 2-4 × as long as wide, 0.55-1.0 × 0.2-0.3 mm, acute or obtuse at the apex, glabrous. *Pistil* 1.6-2.0 mm long; ovary ovoid or pyriform, 0.6-0.95 × 0.4-0.65 mm, sometimes on a short cylindrical base (0.1-0.2 mm high), with (25)40-60 ovules, glabrous or puberulent; style cylindrical, 0.4-0.7 × 0.1-0.15 mm, glabrous; pistil head cylindrical, 0.05-0.2 × 0.1-0.2 mm, often with ciliate upper margin, otherwise glabrous; stigmatic apex cylindrical or ellipsoid, 0.35-0.5 × 0.15-0.2 mm, with the lobes acute to rounded at the apex. *Fruit* brown, yellow, orangish or greenish with brown or greyish powdery-verrucose lenticellate spots, when dried greyish-yellow-brown with light orange-brown powdery spots, globose or somewhat depressed-globose, 2.0-6.0 × 2.5-6.0 cm, 3-20(40)-seeded; wall 3-6 mm thick, sclereid cell layer 0.05-0.3 mm thick; pulp fleshy, juicy, orange. *Seed* 9.5-14 × 5-10 × 3-6 mm, (irregularly) ovoid or ellipsoid, often with 1 or 2 flattened sides; testa 0-0.1 mm thick; embryo straight or slightly curved; cotyledons ovate or elliptic, 8.7-13.3 × 4.6-9.5 mm, not or hardly undulate; rootlet 0.2-0.4 × 0.9-1.2 mm.

Distribution: West Africa from Côte d'Ivoire eastward to western Nigeria.

Ecology: Secondary forests and riverine and coastal forests. Alt. 0-100 m. Flowering mainly at the beginning of the rainy season, but also at the end of the dry season; mature fruits throughout the year.

Use: None, however the rubber of *Landolphia togolana* is said to be of good quality in Bénin.



MAP 46. *Landolphia togolana*

Vernacular name:

NIGERIA: Agba (near Lagos).

A selection of the ca. 30 specimens examined:

CÔTE D'IVOIRE: Lomo Nd., Audru 4356 (P); Grand-Bassam, Chevalier 17909 (P), Thollon 167 (P); Sassandra Port, Chevalier 17938 (K, MO, P, WAG); Abidjan, Chevalier s.n. (P); Louga, near Sassandra R., de Koning 5219 (WAG); between Abidjan and Grand-Bassam, de Wilde 508 (WAG).

GHANA: Biriwa, Hall 266 (K); Okroase, Johnson 753 (K, type of *Clitandra alba*); Accra-Mankessim Rd., 2 km E of Ampa junction, Leeuwenberg 11104 (WAG); 12 km from Mankrong (Kwahu), Morton A540 (K).

TOGO: Lomé, Warnecke 46 (BM, BR, E, G, HBG, K, L, M, P, type), 331 (BM, K, L, P); Mino Rd., Brunel 7611 (B).

BÉNIN: Adja-Ouéré, Le Testu 114 (BM, BR, COI, LISC, MO, P, WAG); Zounou For., Zagnanado, Poisson 35 (P); Ouémé R., on road to Savé, Poisson 52 (P).

NIGERIA: Ogun R., FHI 4913 (FHO, K). Oyo: Ibadan For. Res., Chevalier 13941 (P); km 3 Omi-lugun Rd., FHI 38326 (FHO, K, WAG); Ogun R., ca. 50 km NW of Ibadan, Wit et al. 2329 (WAG). Ogun: Alokemeji For. Res., FHI 21199 (FHO, K). Lagos: Marmu For. Res., Foster 2 (K); Lagos, Foster 42 (K).

47. *Landolphia uniflora* (Stapf) Pichon, Mém. IFAN 35: 178. 1953.

Fig. 43, p. 193; map 47, p. 195

Basionym: *Carpodinus uniflora* Stapf, Kew Bull. 1894: 19. 1894.

Type: Gabon, Sibang, Soyaux 269 (K, holotype; isotypes: BP, P).

Liana, up to 5 mm long or more. Trunk up to 3 cm in diameter or more. Branches shallowly and narrowly fissured, with yellowish lenticels up to 2 mm in diameter, light yellowish-brown, occasionally reddish- or greyish-brown; branchlets shallowly and narrowly fissured, mostly with large light lenticels up to 2 mm in diameter, light yellowish-brown or occasionally reddish- or greyish-brown, pilose or glabrous, when young more densely pilose. *Leaves*: petiole 4-18 mm long, with 1 or several small glands on each node, narrowly fissured, shortly pilose or glabrous; blade (narrowly) elliptic, oblong or obovate, sometimes

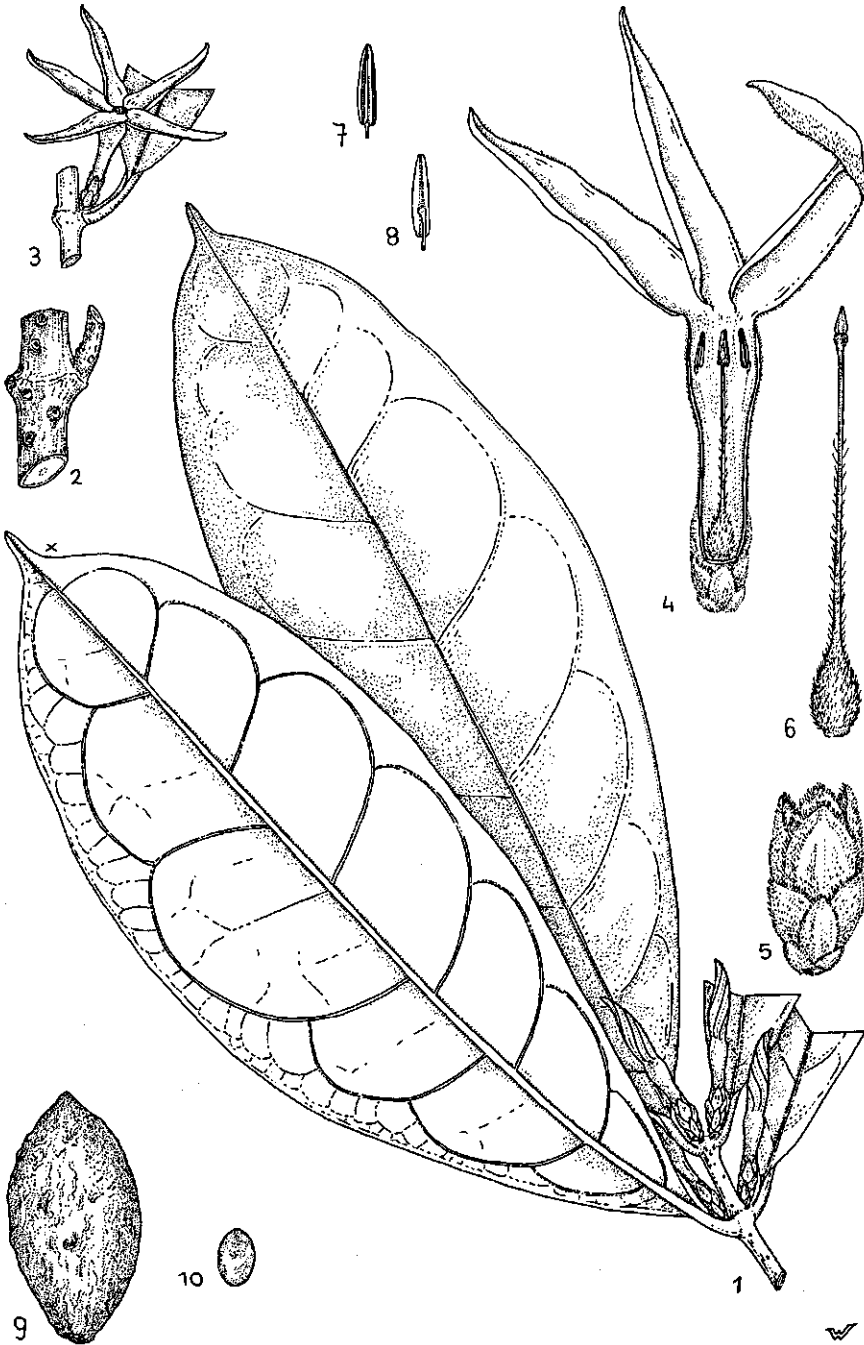
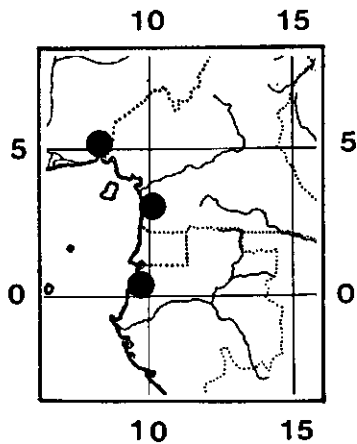


Fig. 43. *Landolphia uniflora*. 1, habit ($\times 2/3$); 2, branch ($\times 2/3$); 3, flower ($\times 2/3$); 4, opened flower ($\times 2$); 5, calyx ($\times 4$); 6, pistil ($\times 4$); 7-8, stamen in and outside ($\times 4$); 9, fruit ($\times 2/3$); 10, seed ($\times 2/3$). 1-2 from Bos 6803; 3-6 from Soyaux 269; 7-10 from Kleine 910.

ovate, 2.3-5.0 × as long as wide, 9.0-26.5 × 2.5-9.5 cm, thinly coriaceous when fresh, more or less thickly coriaceous when dried, apex more or less clearly acuminate with a rounded, acute or emarginate acumen, 0.3-2.8 mm long, auriculate, acute or attenuate at the base, glabrous or pilose above at the base or on the midrib, pilose on midrib and secondary veins beneath, otherwise glabrous, margin towards the base ciliate, otherwise glabrous, when young indumentum more dense and not restricted to venation; with 7-14 strongly curved secondary veins, in the middle of the leaf 1.3-4.5 cm from each other and conspicuous when parallel with the margin and at the junction with next secondary vein; between 2 secondary veins several less clear ones; tertiary venation scabrous or more or less reticulate, rather conspicuous beneath. *Inflorescence* 1-2-flowered, axillary; pedicel 1.5-5.0 mm long, pilose. Bracts 4-8 along pedicel, mostly in pairs, the higher sepal-like, triangular, ovate, oblong or obovate or broadly so, 0.3-3.0 × 0.5-3.1 mm, acute to emarginate and/or apiculate, mostly with 1 or several glands in the axil and at the base of the ciliate margin, pubescent or pilose outside, with long hairs inside at the apex. *Flowers* faintly sweet-scented. *Calyx* 2.9-3.8 mm wide; sepals 4 or 5, ovate to obovate, subequal, 0.9-1.6 × as long as wide, 2.6-5.0 × 2.4-3.0 mm, connate at the base for 0.2-0.5 mm, acute to rounded and/or apiculate at the apex, occasionally with glands at the base of the ciliate margin, pilose or pubescent outside, usually glabrous inside. *Corolla* white, purple or violet, the lobes and inside often lighter and the middle of the tube often darker, from glabrous (the lowest 2.0-4.0 mm) to pubescent or tomentose outside at the throat, from that level often only partly so, otherwise glabrous, pilose inside among and up to 3.5 mm below anthers and on the auricle towards the margin, otherwise glabrous; tube (3.2)3.8-5.4 × as long as the calyx, 12.9-18.0 mm long, at the base 2.5-3.1 mm, around the anthers 3.4-3.9 mm and at the throat 3.3-3.7 mm wide; lobes 3.5-8.5 × as long as wide, 0.9-1.6 × as long as the tube, 13.5-23.3 × 4.2-5.5 mm, acute or obtuse at the apex. *Stamens* 3.0-3.2 mm long, inserted (9.6)12.4-13.4 mm from the base of the corolla tube, at 0.71-0.88 its length, (0.1)0.9-1.2 mm included; filaments (0.4)0.9-1.0 mm long; anthers with their base (9.6)12.5-13.5 mm from the base of the corolla tube, at 0.72-0.89 its length, 3.2-4.8 × as long as wide, 2.5-2.9 × 0.6-0.8 mm, rounded to apiculate at the apex, glabrous. *Pistil* 9.8-14.6 mm long, ovary ovoid on a glabrous 0.1-0.2 mm high cylindrical base, villose, 2.3-3.3 × 1.4-1.6 mm; ovules 100-220; style cylindrical, gradually widened towards the base, 6.1-10.0 × 0.15-0.4 mm, from villose at the base to glabrous at the upper 2.0-3.0 mm; pistil head cylindrical or tapering towards the base 0.3-0.45 × 0.4-0.6 mm; stigmatic apex tapering towards the apex or ovoid, 0.5-1.1 × 0.35-0.5 mm, pubescent in ridges, with the lobes obtuse, rounded or apiculate at the apex. *Fruit* yellow, rather smooth, with or without verrucose lenticels, oblong or ovoid with a rounded or obtuse apex, rounded or truncate at the base, 4.1-8.0 × 2.1-4.0 × 2.1-4.0 cm, 12-15-seeded; wall 0.1-2.0 mm thick. *Seed* irregularly ovoid or ellipsoid, often laterally compressed, 10-13(-16) × 6.3-9(10) × 5-7 mm. Embryo slightly curved or straight; cotyledons irregularly ovate or elliptic 8.9-11.2 × 3.5-8.2 mm; rootlet 0.8-1.0 × 1.0-1.2 mm.



MAP 47. *Landolphia uniflora*

Distribution: South-western Nigeria, Cameroun and north-eastern Gabon, not far from the coast.

Ecology: (Riverine) forests. Alt. 0-100 m. Flowering and fruiting throughout the year.

Use: *Landolphia uniflora* is reported to yield a very fine India rubber in Gabon.

Specimens examined:

NIGERIA: Cross River State: Oban, Talbot 298 (BM), 1480 (BM, K, Z).

CAMEROON: Lokoundje Falls, at Ebéa, Bos 6803 (BR, K, LD, M, P, WAG), Dinklage 231 (HBG), 872 (HBG).

GABON: sin loc., Thollon 1236 (P); near Libreville, Klaine 453 (K, P), 910 (BR, K, P), 1110 (P), 1112 (P), 2138 (P), 2410 (P); Sibang, Soyaux 269 (BP, K, P, type).

48. *Landolphia villosa* Persoon, nom. nov.

Fig. 15, p. 91; 17, p. 99; map 48, p. 197

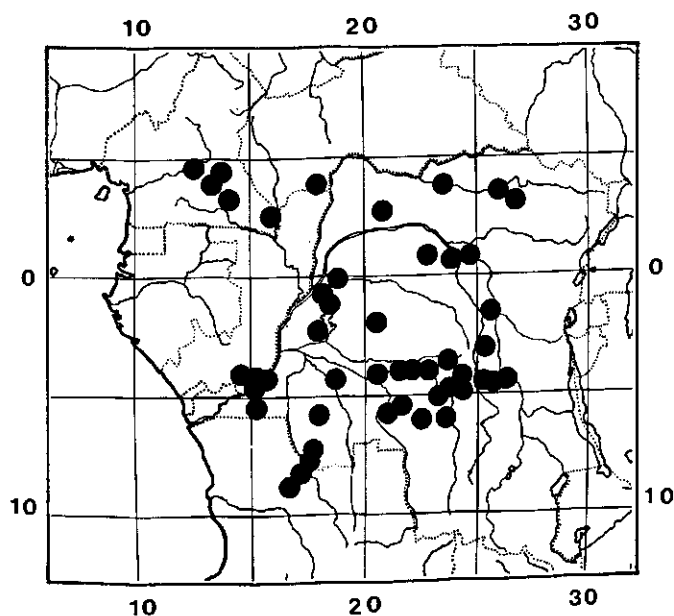
Basionym: *Carpodinus gentilii* De Wild., Obs. Apoc. Latex Rec. Gentil: 26. 1901, non *L. gentilii* De Wild. (1901). Type: Zaire: VI: between Mai Ndombe and Tumba Lake, Gentil 5 (BR, holotype).

Liana, up to approximately 40 m high climbing and 7-100 m long or more. Trunk 2.5-55 cm in diameter. Bark roughly corky, brownish or greyish. Branches smooth, fissured or ridged, with white or light brown lenticels, brown or greyish. Branchlets sparsely to densely hirsute, more densely so when young and with brown indumentum. *Leaves:* petiole 0.4-2.5 mm long, pilose or hirsute; blade elliptic or obovate or broadly so, occasionally almost circular or ovate, 1.2-2.7 × as long as wide, 4.5-18.5 × 2.7-12.0 cm, coriaceous or occasionally papery

when fresh, more or less coriaceous and often orange-brown when dried, acuminate or mucronate at the apex with an acute, 3-13 mm long acumen, often very abruptly narrowed towards the apex, occasionally rounded or retuse, cordate, auriculate or acute at the base, with a ciliate margin, pilose above, densely so on the veins, especially on the midrib, hirsute beneath on the midrib, less densely on the secondary and tertiary veins and otherwise pilose or almost glabrous; with 5-11 pairs of more or less curved secondary veins, in the middle of the leaf 1.2-2.3 cm from each other; between 2 secondary veins often 1 or several less conspicuous and shorter, straight, horizontal secondary veins; tertiary venation scalariform or coarsely reticulate, smaller veins reticulate. *Inflorescence* axillary or occasionally cauliflorous, a very compact irregular dichasial cyme, 0.5-1.5 × 0.7-2.0 cm, 5-40-flowered; pedicel up to 3.0 mm long, tomentose. Bracts ovate or triangular or broadly so, 1.3-2.2 × 1.5-2.0 mm, rounded or obtuse, tomentose outside, glabrous inside or with a ciliate base. *Flowers* fragrant. *Calyx* 1.8-3.0 mm wide; sepals (broadly) ovate, unequal, 0.6-1.1 × as long as wide, 1.5-2.2 × 1.4-2.6 mm, connate at the base for 0.2-0.5 mm, rounded to acuminate or mucronate at the apex, auriculate at the base, tomentose outside, glabrous inside or often with some hairs at the base, often with an up to 0.3 mm wide membranaceous margin. *Corolla* white, yellow, orange or brownish, often lighter inside, from 1.5-1.8 mm from the base tomentose or pilose outside with the part of the lobes covered in bud less densely so or glabrous and/or with longer indumentum towards the margin, otherwise glabrous, pilose inside behind the anthers and occasionally also up to 1.2 mm below that level and pilose at and around the auricle, otherwise glabrous, long-ciliate on the margin covered in bud and shortly ciliate on the margin not covered in bud; tube thickened just below the anthers and at the throat, 1.8-2.9 × as long as the calyx, (4.0)5.0-5.5 mm long, at the base 1.1-1.7 mm, in the middle 0.8-1.2 mm, around the anthers, 1.4-1.6 mm, and at the throat 1.1-1.5 mm wide; lobes ovate or elliptic or narrowly so, 1.8-3.4 × as long as wide, 0.7-1.3 × as long as the tube, 4.2-6.5 × 1.9-2.3 mm, rounded to acute at the apex. *Stamens* 1.5-1.7 mm long, inserted 2.8-3.1 mm from the base of the corolla tube, at 0.56-0.57 of its length, 0.2-0.7 mm included; filaments 0.6-0.9 mm long, glabrous; anthers with their base 3.2-3.8 mm from the base of the corolla tube, at 0.64-0.72 of its length, 2.8-5.0 × as long as wide, 1.0-1.2 × 0.2-0.35 mm, acute or acuminate with an up to 0.2 mm long acumen, glabrous. *Pistil* 4.2-4.6 mm long; ovary obconical, cylindrical, ovoid or ellipsoid on a glabrous, 0.2-0.3 mm high and 0.6-0.7 mm wide cylindrical or slightly diaboloid-shaped base, 0.8-1.0 × 0.8-0.9 mm, truncate or rounded at the apex, densely pilose; ovules 30-80; style cylindrical 2.3-2.8 × 0.1-0.2 mm, glabrous or with some hairs at the base; pistil head cylindrical or slightly conical, 0.2-0.4 × 0.3-0.4 mm, glabrous or sometimes ciliate at the upper margin; stigmatic apex conical, cylindrical or ovoid, 0.6-0.8 × 0.2-0.3 mm, acute to rounded at the apex, puberulent. *Fruit* yellow or orange or greenish, occasionally with brown veins, the surface rough with warts and bumps or smooth, lenticellate or not, irregularly ovoid to obovoid, conical, broadly so or subglobose, obtuse to retuse at the apex, auriculate to cuneate

at the base, often with several bumps around the pedicel, 6.5-20 × 4.0-15 × 4.0-15 cm, 6-80-seeded; wall 0.5-4.1 cm thick, pulp yellow, whitish or orange, surrounded by a hard layer. *Seed* irregularly ovoid or ellipsoid, often laterally compressed or with 1 or 2 flattened sides, 12-30 × 10-29 × 7-15 mm. Embryo strongly curved; cotyledons irregularly (broadly) ovate or elliptic, 10-27 × 9-27 mm, strongly and irregularly undulate; rootlet 1.3-3.0 × 1.3-2.1 mm.

Distribution: Central Africa inclusive of République Centrafricaine, exclusive of Gabon.



MAP 48. *Landolphia villosa*

Ecology: Primary, secondary and gallery forests. Alt. 0-700 m. Flowering throughout the year, with a peak in the rainy season. Mature fruits throughout the year.

Use: The latex of *Landolphia villosa* is used as a glue for catching birds, although it is also recorded that the rubber is of no value; it is not exploited on any substantial scale. The fruit is edible.

Vernacular names:

CAMEROON: Abam (near Yaoundé), Acamba (near Yaoundé), Akwa (Bamuele).

RÉPUBLIQUE CENTRAFRICAINE: Masenza (name for the fruit, Lissongo), Molo-moto(-)mondo (name for the flower, Lissongo).

ZAIRE: Asindja (near Lubebu), Atu (name of the fruit, Kingoli), Babua (near Bambesa), Bagbongo (near Kulu), Bapenongbwala (near Poko), Basendja (near Iboko), Bolombo (near Likimi), Bondu (Bwoke), Bongende (Mongo), Businda (Bangala), Busindja (near Mai Ndombe), Bussins(i)a (Bangala), Didi (near Niakala), Kin zenzé (near Kisantu), Kpinge (near Bambesa), Ligende (Lomango), Lisenga (near Bokuma), Lokiki (near Bikoro), Madimbi (Tshibuba and near Kondu), Malembe or Malembe-Marungu (near Luebo), Malembe-Masinga (name for the fruit, near Luebo), Mampoto (near N'Sélé), Manzenga (near Tua), Masindja (near Equatur, near Iboko, near Kasai, near Kutu and near Mai Ndombe), Masindjo (Eala), Masindu (near Mondombe), Masinga (near Mbâu), Masisi (Kwilu), Matsigna (near Mai Ndombe), Matién (near Mbâu), Meojia (near Bokala and near Tua), Mindi (near Makaba), Ngundu (Ngwaka), Obi or Oobi (Turumbu), Olende (Turumbu), Osigna (Kingoli), Osindja (near Katakombé), Ozendja (near Ganda), Pingue (near Bomokandi).

A selection of the ca. 90 specimens examined:

CAMEROUN: km 6 Bertoua-Batouri Rd., Breteler 1194 (BR, K, LISC, M, P, WAG); near Dimako, between Bertoua and Doumé, Breteler 2158 (BR, K, P, LISC, WAG); km 6 Libongo-Béla Rd., along Sangha R., de Kruiif 840 (WAG); near Mpan, Letouzey 5615 (P); 7 km from Ene de Mesoka, Letouzey 5636 (P).

RÉPUBLIQUE CENTRAFRICAINE: near Mbaïki, Tisserant 1178 (BR, BM, LISC, P); Boukoko, Tisserant 2075bis (P).

CONGO: Brazzaville, Chevalier 4257 (P), 11258 (BR, G, K, P); Mpila, Chevalier 4278 (K, P); rd. of chantier Boungolo, near Pointe-Noire (seedling) Farron 4891 (P).

SUDAN: Nunz, Monbuttuland, Schweinfurth 3482 (K).

ZAIRE: III: Kisantu, Gillet 1516 (BR); Kimpako, Vanderyst 14558 (BR); along N'Sélé R., Anonym. 24 (BR); Sabuka, Anonym. 25 (BR). IV: Mai Ndombe, van den Broeck anno 1909 (BR); Kisungu, Callens 2500 (BR, P); Bena-Dibele, Flamigni 107/6 (BR), 108/6 (BR), 110/6 (BR); Luebo, Gentil 59 (BR); Kutu, E. & M. Laurent 1-11-1903 (BR); Djoko-Punda, Lescauwaet 292 (BR); near Lubefu, lettre 161 (27-2-1908) (BR), Flamigni 32 (BR); Mbau, Jans 835 (BR); Tshimbao, Liben 2325 (BR, C, MO, WAG); Kondue, Luja 1 (BR); Ipamu, Vanderyst 12485 (BR); Madibi, Sapin 28-6-1906 (BR); Kasongo Batalala, Sapin 20-10-1906 (BR); Nioki, Anonym. anno 1900 (BR); Tua, Anonym. 10-5-1907 (BR); Bokala, Anonym. 15-1-1907 (BR). V: Malela, E. Laurent Dec.1925 (BR); Benakabindi, Liben 1826 (BR). VI: Ganda, Body anno 1906 (BR); Kulu R., van den Brande Dec.1930 (BR); Bolima de Likote, Collart 65 (BR); Bodala, Coulon 1 (BR); Boyakoko, Evrard 1633 (BR); Iboko, between Mai Ndombe and Tumba Lake, Gentil 5 (BR, type); Bambesa, Gerard 2847 (BR); Yandjali, Germain 8078 (BR, K); Bongabo, Gilbert 1672 (BR, K, MO); Bokuma, Hulstaert 1587 (BR); Mondombe, Jespersen Nov.1907 (BR); near Bomokandi, Lamboray anno 1907 (BR); Tumba Lake, E. & M. Laurent 16-2-1903 (BR); Likimi, Lemaire 158 (BR); Bikoro, lettre 284 (BR); Poko, lettre 881 (BR); Kisangani, Kabondo, Lisowski 47351 (BR); km 55 Kisangani-Bafwasende Rd., Lisowski 49902 (POZG); km 7-8 Yangambi-Ngazi Rd., Louis 751 (BR, UC), 2942 (BR, S, U); Yangambi, Louis 2676 (BR, BM, K); 12 km NE of Yangambi, Louis 4223 (BR, C, F, M, NY, S); km 6 Yangambi-Lusambila Rd., Louis 6106 (BR, C, K, MO, P); source of Mbutu R., Louis 6351 (BR); km 5 Yangambi-Yaosuka Rd., Louis 10919 (BR, K, MO, P); Isalowe R.-Yakusu Rd., Louis 12532 (BR, K, MO, P); Katakombé, Sermeus 13 (BR). VIII: Dungu, Seret 4 (BR); Sana Bata, Baldwin 14116 (K).

CULT.: Zaire: Kitobola, E. & M. Laurent 11-10-1903 (BR); Jardin Colonial de Laeken, Jardin Colonial de Laeken 115 and 230 (BR).

Note. *Landolphia villosa* has been confused with *L. jumellei* by Pichon. The two species differ from each other as is shown in fig. 15 and in the key to the species.

49. *Landolphia violacea* (K. Schum. ex Hall. f.) Pichon, Mém. IFAN 35: 157. 1953. Fig. 44, p. 200; map 49, p. 201

Basionym: *Carpodinus violacea* K. Schum. ex Hall. f., Jahrb. Hamb. Wiss. Anst. 17, Beih. 3: 112. 1900.

Type: Cameroun: Yaoundé, Zenker & Staudt 433 (B, holotype, not seen, destroyed; K, lectotype, designated here; isotypes: BM, BR, COI, P, S, UC, US, WU).

Heterotypic synonym: *Carpodinus bequaertii* De Wild., Pl. Bequaert. 1: 394. 1922. Type: Zaire: VI: Avakubi, Bequaert 1988 (BR, holotype).

Liana 3-10 m high, or more. Trunk 3-15 cm in diameter. Bark with large lenticels. Branches smooth or rough with pale brown or whitish lenticels up to 1.5 mm in diameter, brown. Branchlets smooth or shallowly fissured, lenticellate, dark, light or reddish brown, or green, glabrous. *Leaves*: petiole 5-17 mm long, glabrous; blade ovate to obovate, or narrowly so, 1.9-4.4 × as long as wide, 5.5-24.5 × 2.4-10.0 cm, more or less coriaceous and dull or glossy above when fresh, coriaceous when dried, often with conspicuous small black glandular dots 0.1-0.2 mm in diameter beneath, apex acuminate with an obtuse or rounded, acumen 0.4-1.5 cm long, shortly attenuate to truncate at the base, glabrous; with 4-17 pairs of slightly curved secondary veins, in the middle of the leaf 0.6-3.1 cm from each other; tertiary venation reticulate and often directly connecting the smaller secondary veins, conspicuous beneath, less so or inconspicuous above. *Inflorescence* a more or less regular dichasial cyme, 1-8-flowered, axillary; peduncle 0-0.5 mm long, glabrous or sparsely pubescent, pedicel 0.1-2.0 mm, glabrous or sparsely pubescent. Bracts 1 or 2, broadly triangular or ovate, 0.6-1.0 × 1.0-1.6 mm, rounded or obtuse at the apex, ciliate, pilose or pubescent outside, glabrous inside. *Flowers*: calyx 1.8-2.4 mm wide; sepals 4 or 5, ovate or broadly so, unequal, 0.7-1.6 × as long as wide, 1.2-2.3 × 1.1-2.5 mm, connate at the base for 0.1-0.6 mm acute to rounded at the apex, often auriculate at the base, ciliate, partly pilose or pubescent outside, glabrous inside. *Corolla* light or dark red, bluish or violet, occasionally whitish or in a combination of these colours and the tube often darker and more red than the lobes, partly pilose or pubescent outside, pilose inside behind and up to 2.0 mm below anthers, otherwise from pilose on the auricle to sparsely pubescent, pilose or glabrous at the apex and the part of the lobes not covered in bud; tube 8.3-15.1 × as long as the calyx, 12.2-22.7 mm long, at the base 1.0-1.8 mm, at the middle 0.9-1.4 mm, around the anthers 1.6-2.3 mm and at the throat 1.4-2.0 mm wide; lobes 0.4-1.29 × as long as tube, 3.8-11 × as long as wide, 5.9-23.0 × 1.3-3.3 mm, rounded at the apex. *Stamens* 1.8-2.5 mm long, inserted 10.7-17.4 mm from the base of the corolla tube, at 0.76-0.89 of its length, 0-2.0 mm included; filaments 0.3-0.7 mm long; anthers with the base 10.8-17.8 mm from the base of the corolla tube, at 0.78-0.88 of its length, 3.4-7.3 × as long as wide, 1.6-2.3 × 0.3-0.6 mm, acute or obtuse at the apex, glabrous. *Pistil* 12.6-16.4 mm long;

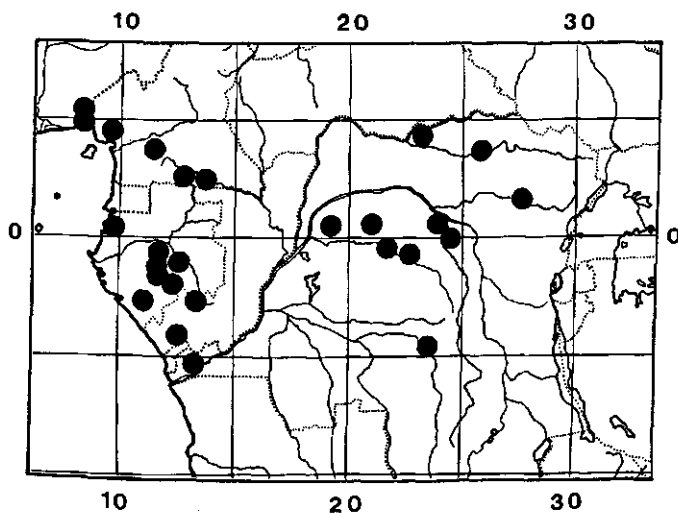
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Fig. 44. *Landolphia violacea*. 1, habit ($\times 2/3$) with part of leaf beneath ($\times 2$); 2, branch ($\times 2/3$); 3, opened flower ($\times 2$); 4, calyx ($\times 4$); 5, pistil ($\times 6$); 6-7, stamen out- and inside ($\times 6$); 8, fruit ($\times 2/3$); 9, section of fruit ($\times 2/3$); 10, section of seed with embryo ($\times 2/3$). 1 from Le Testu 5915; 2 from Seret 1011; 3, 5-7 from Le Testu 7101; 4 from Donis 2160; 8-10 from Germain 5129.

ovary ovoid, ellipsoid or conical on a cylindrical or slightly widened 0.5-0.7 mm high, (almost) glabrous base, densely pilose or pubescent, 1.05-1.9 × 0.7-1.0 mm, ovules 50-100; style cylindrical, 10.0-13.8 × 0.1-0.2 mm, pubescent and/or pilose, mostly less so or glabrous towards the apex, occasionally indumentum only at the base; pistil head cylindrical, diabolo-shaped or conical, 0.4-0.7 × 0.2-0.4 mm, glabrous and more or less clearly ciliate at the upper margin; stig-moid apex (ob)ovoid, ellipsoid, conical or cylindrical, 0.4-0.8 × 0.2-0.3 mm, puberulent, with obtuse or rounded lobes at the apex. *Fruit* more or less dark blue or violet with green, yellow or whitish longitudinal spots, rather smooth, often with orange-brown lenticels up to 3 mm in diameter, oblong, conical, ovoid or subglobose, rounded or slightly retuse at the apex, 3.4-12 × 2.5-12 × 2.5 × 12 cm, 10-25-seeded; wall 0.4-1.8 cm thick. *Seed* more or less irregularly ovoid or ellipsoid, mostly laterally compressed, 10-22 × 7-17 × 6-10 mm. Embryo curved or almost straight; cotyledons irregularly ovate, oblong or elliptic, 8-21 × 5-16 mm, undulate; rootlet 0.7-1.5 × 1.1-1.4 mm.

Distribution: Central Africa inclusive of south-eastern Nigeria.



MAP 49. *Landolphia violacea*

Ecology: Forests often on sandy soils. Alt. 0-800 m. Flowering mainly towards the end of the rainy season. Mature fruits throughout the year.

Use: *Landolphia violacea* is not commercially used for its rubber which is said to be of low quality.

Vernacular names:

CAMEROUN: Comgam (near Yaoundé and Libreville).

ZAIRE: Adiapatu or Adiapatuwe (Babua), Bonongonse (Lovundo), Bonsele

(Lokundu), Elekodji (Bankutshu) Inaolo a Elongo (Turumbu), Libetebete (Turumbu), Lundukila (near Kimpelo), Mabindasé (Azonde), Pomilo (Babua).

A selection of the ca. 40 specimens examined:

NIGERIA: Cross River State: ca. km 85 Calabar-Mamfe Rd., FHI 54007 (K); Oban Group For. Res. W block, van Meer 1375 (WAG); Ekinta R. For. Res. N part, van Meer 1506 (WAG); Oban, Talbot 1445 (BM, K).

CAMEROUN: km 9 Yaoundé-Makak Rd., Bretelet 1961 (BR, K, LISC, M, P, UC, WAG); km 59 Ndo-Mujuka railroad, Chevalier 33436 (P); Akonetye, Koufani 118 (K, WAG); near Yanebot, 30 km SSE of Ngoïla, Letouzey 12001 (K, P, WAG); Yaoundé, Zenker & Staudt 433 (BM, BR, COI, K, P, S, UC, US, WU, type).

GABON: near Libreville, Klaine 13 (P), 2738 (P); Mondah For., 2 km S of Cap Esterias, Leeuwenberg & Persoon 13489 (WAG); Tchibanga, Le Testu 1854 (BM, BR, K, LISC, P); Lidyembo, Le Testu 5965 (BM, BR, G, LISC, P, WAG); Ghenzambwé, Le Testu 6433 (BM, BR, P); Mandji-Batchangui, Le Testu 6529 (BM, BR, LISC, P); Lastoursville, Le Testu 7101 (BM, BR, LISC, MO, P, WAG); Mitsic, Périquet 121 (P).

CONGO: Zanaga-Batéké, along Komono-Zanaga Rd., Bouquet 1120 (P); Dimonika, N. Hallé 1537 (P).

ZAIRE: III: Kimpelo, Donis 2160 (BR). IV: Lonkala, Laurent 24-11-1903 (BR). VI: Avakubi, Bequaert 1988 (BR, type of *Carpodinus bequartii*); Lower Uele R., Dewulf 951 (BR); Befale-Tolongote, Evrard 4151 (BR); Bokone, near Tshuapa R., Evrard 5570 (BR, K); Bambesa, Gerard 1078 (BR), 1591 (BR, WAG), 2873 (BR, WAG); Ifulu, Germain 4513 (BR, WAG); Yahisiri, Germain 5129 (BR); Yabahondo, Germain 8135 (BR, P); Wema, Gorbatoff 315 (BR); Mondjo on Ikelemba R., J. Léonard 540 (BR); Uele, Seret 1010 (WAG), 1011 (BR).

50. *Landolphia watsoniana* Romburgh in Treub, Bot. Gart. s'Lands Plantentuin te Buitenzorg, Java: 375. 1892(?); Vogtherr in Köhler's *Medizinal-Pfl.* 3: 245. 1898; Pichon, *Mém. IFAN* 35: 85. 1953. **Fig. 45, p. 203; map 50, p. 205**

Type: Cult.: Indonesia, Java, garden at Tjikeumeuh near Bogor Botanical Garden, Schiffner 50 (L, holotype or lectotype, designated here; HBG, Z, isotypes).

Homotypic synonyms: *Carpodinus watsoniana* (Romburgh) Vogtherr in Köhler's *Medizinal pfl.* 3: 246. 1898. *Cylindropsis watsoniana* (Romburgh) Hall. f., *Jahrb. Hamb. Wiss. Anst.* 17, Beih. 3: 134. 1900.

Slender liana 5-25 m high. Branches light, dark or greyish-brown, with light brown or orange lenticels forming a rough bark, narrowly fissured. Branchlets dark reddish-brown, glabrous. *Leaves*: pairs often alternated by one or several pairs of bracts; petiole 2.0-7.0 mm long, glabrous, with colleters in axils; blade ovate to obovate, narrowly so or occasionally broadly so, 1.3-3.8 × as long as wide, 2.5-10.6 × 1.5-5.6 cm, coriaceous when fresh, coriaceous or membranaceous when dried, acuminate at the apex, with acumen rounded or emarginate and 0.2-1.7 mm long, rounded to acute at the base and often decurrent into the petiole, occasionally somewhat cordate, glabrous; secondary veins in 6-12 pairs, nearly straight to slightly curved, with distance in the middle of the leaf: 0.6-1.9 mm; between 2 secondary veins an inconspicuous one; tertiary venation reticulate, often dark and labyrinth-like beneath, occasionally inconspicuous beneath. *Inflorescence* axillary and/or terminal, a lax, more or less compound dichasial cyme, 2-11-flowered. Peduncle 2-45 mm, glabrous; pedicel 1.0-7.0 mm

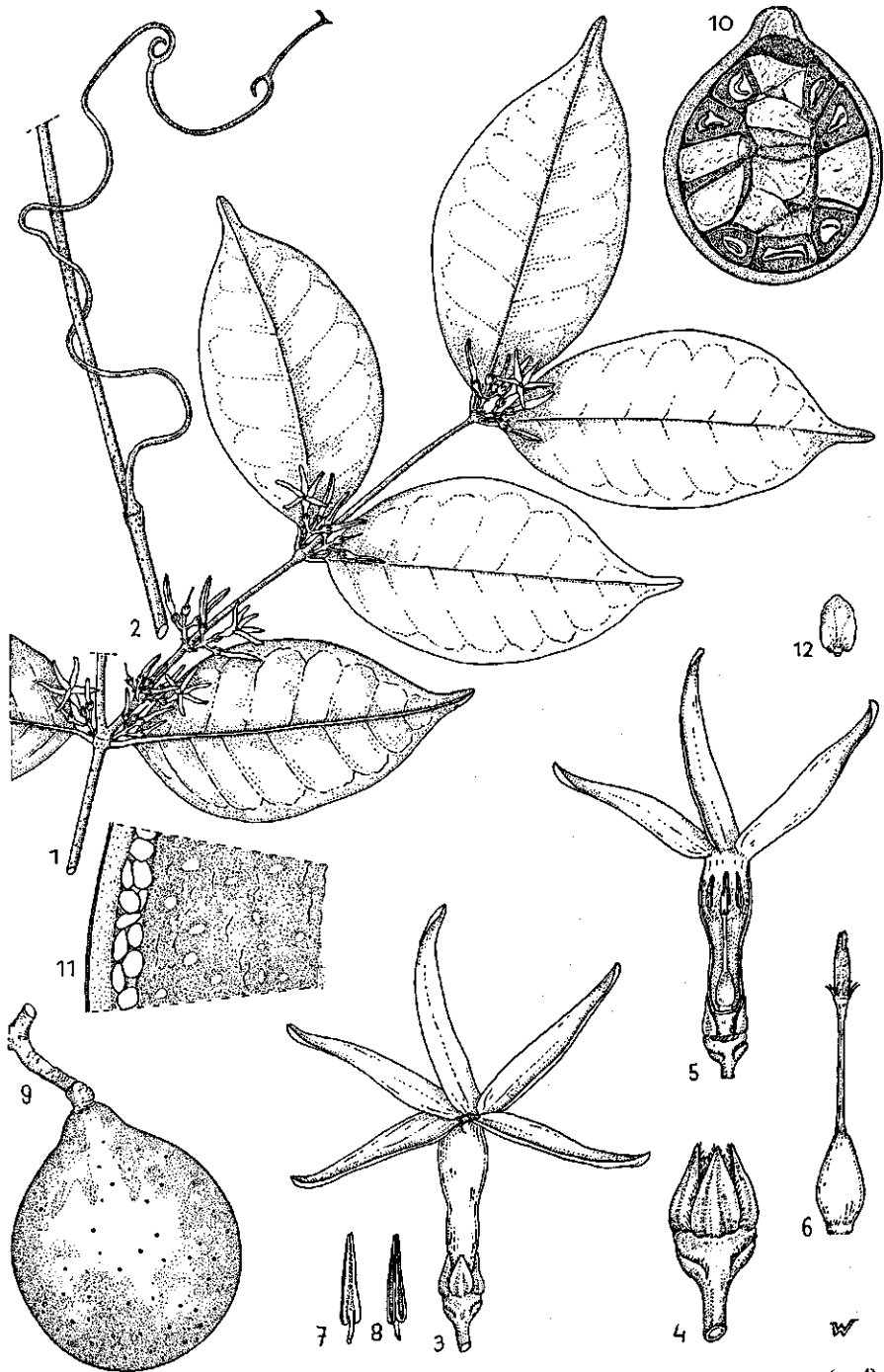


Fig. 45. *Landolphia watsoniana*. 1, habit ($\times 2/3$); 2, branch with tendril ($\times 2/3$); 3, flower ($\times 4$); 4, calyx ($\times 8$); 5, opened flower ($\times 4$); 6, pistil ($\times 10$); 7-8, stamen out- and inside ($\times 10$); 9, fruit ($\times 2/3$); 10, section of fruit ($\times 2/3$); 11, section of fruit wall ($\times 10$); 12, embryo ($\times 2/3$). 1 from Bourne 2446; 2 from Vollesen 4361; 3 and 5-8 from Schiffner 50; 4 from Spire C 81; 9-12 from Dawe 530.

long, glabrous. Bracts triangular or broadly so, 0.4-1.1 × 0.3-0.9 mm, obtuse or slightly acuminate at the apex, membranaceous, long-ciliate, glabrous or occasionally with some hairs outside. *Flowers*: *Calyx* 1.3-1.6 mm wide; sepals ovate or triangular, subequal, 0.9-2.1 × as long as wide, 0.9-1.5 × 0.7-1.1 mm, connate at the base for 0.1-0.25 mm, obtuse or occasionally acute at the apex, ciliate, glabrous outside, occasionally with some hairs inside, just below the apex, otherwise glabrous. *Corolla* white or greenish-white, glabrous outside, behind and up to 1.2 mm below the anthers pilose inside, glabrous above the anthers, from the throat to the base of the lobes and sometimes to the auricle and adjacent parts pilose, otherwise glabrous or occasionally sparsely pilose; tube 2.8-4.3 × as long as the calyx, 2.6-4.8 mm long, at the base 0.6-1.4 mm, around the anthers 1.2-1.7 mm and at the throat 1.0-1.5 mm wide; lobes equal or not, narrowly ovate, 0.8-2.0 × as long as the tube, 3.0-6.7 × as long as wide, 3.2-7.4 × 1.1-1.6 mm, rounded or obtuse at the apex, occasionally slightly acuminate. *Stamens* inserted 2.0-2.8 mm from the base of the corolla tube, at 0.5-0.7 of its length, 0.2-0.7 mm included, 1.2-1.9 mm long; filament 0.3-0.7 mm long, glabrous; anthers with the base 2.4-3.2 mm above the base of the corolla tube, at 0.6-0.8 of its length, 2.5-5.5 × as long as wide, 1.1-1.3 × 0.2-0.4 mm, acute to obtuse at the apex, glabrous. *Pistil* 2.4-3.8 mm long; ovary ovoid or obpyriform, 0.9-1.4 × 0.5-0.7 mm, the base (0.1-0.25 mm high) of slightly different structure, with 20-40 ovules, glabrous; style cylindrical, 0.5-1.4 × 0.1-0.15 mm, glabrous; pistil head cylindrical or obconical, 0.1-0.3 × 0.15-0.25 mm, with an often ciliate upper margin; stigmatic apex cylindrical, 0.5-1.0 × 0.15-0.2 mm, with acute or obtuse lobes at the apex, shortly pubescent. *Fruit* yellowish or green with scattered lenticels (up to 1 mm, occasionally 2 mm in diameter), globose or more or less pyriform, (1.4)2.3-5.5 × (1.1)2.2-4.7 cm, 3-20-seeded; wall 0.7-3.5(7.0) mm, sclereid cell layer 0.1-0.3(0.5) mm. *Seed* 6.8-14.0 × 5.2-9.0 × 3.0-6.5 mm, irregularly ovoid or ellipsoid, often laterally compressed; embryo nearly straight; cotyledons irregularly ovate or elliptic or broadly so, 5.5-11.0 × 3.5-7.0 mm, slightly undulate; rootlet 0.5-0.8(1.5) × 0.7-1.1 mm.

Distribution: Coastal areas of southern Kenya, Tanzania and Mozambique, frequently cultivated in botanical gardens all over the world.

Ecology: Open secondary or riverine forests. Alt 0-1500 m. Flowering throughout the year probably with a peak in the dry season. Mature fruits throughout the year.

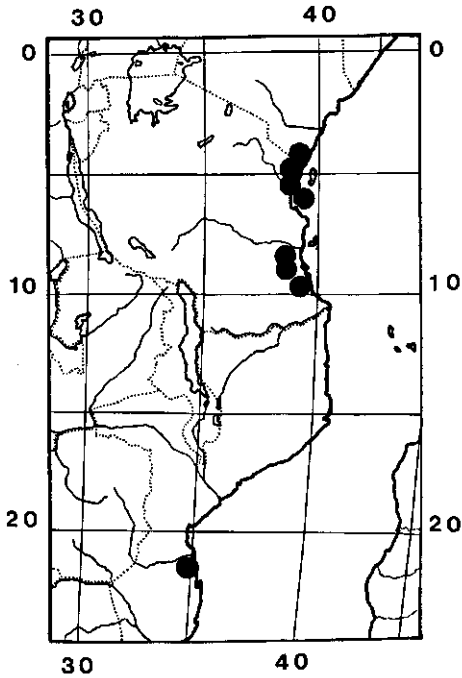
Use: In Asia (Singapore and Java) *Landolphia watsoniana* is called a rubber vine giving rubber of a low quality.

Vernacular name:

MOZAMBIQUE: Musamera (near Govuro).

A selection of the ca. 30 specimens examined:

KENYA: K7: Just E of Kwale, Lecuwenberg 10806 (WAG).



MAP 50. *Landolphia watsoniana*

TANZANIA: T3: Lutindi For., Holst 3443 (HBG, W, Z); E Usambara Mts., Sigi Rd., Peter 40035 (B); Kigombe, Peter 39680 (B). T6: Dar-es-Salaam, Kirk s.n. (K). T8: Namgaru Valley, Busse 2937 (BM, BR, G, HBG), 2954 (BM, BR, G, HBG); 10-12 km NNW of Kingupira For., Vollesen 3977 (C), 4361 (C). Zanzibar: sin. loc. H., Sacleux 1868 (P).

MOZAMBIQUE: Govuro, Dawe 530 bis (K).

CULT.: Singapore: Botanical Garden, Botanical Garden Singapore 9469 (K). Trinidad: Botanical Garden, Botanical Gardens Herbarium Trinidad 3678 (K, US). India: Madras, Bourne 2446 (K). Grenada: Botanic Station St. George, Broadway s.n. (K). France: Godefroy Garden, Paris, Godefroy s.n. (P). Germany: Botanical Garden, Hamburg, Hallier s.n. (HBG). Indonesia: Java: Bogor Botanical Garden, Bogor, Hallier C68 (G, L), Nyman s.n. (UPS), sub. XVI C71, Leeuwenberg 13170 (WAG), Spire s.n. (P), sub. XVI C81, s.n. (P), sub. XXI C71, s.n. (P); at Tjikeumeuh near Bogor Botanical Garden, Bogor, Schiffner 50 (HBG, L, Z, type). Great Britain: Royal Botanical Garden, Kew, Anonym. s.n. (K).

Hybrid

L. utilis (Chev.) Pichon, Mém. IFAN 200. 1953. Basionym *Carpodinus utilis* Chev., Vilbouchevitch Journ. Agric. Trop. 6: 159. Type: Côte d'Ivoire, Dabou, Chevalier 15617 (P, holotype) = *L. dulcis* (Sabine) Pichon × *L. foretiana* (Pierre ex Jum.) Pichon. As this specimen is intermediate between these two clearly distinct species, it is considered as a hybrid.

Nomina nuda

- Carpodinus decipiens* Pierre, Bull. Soc. Linn. Paris sér. 2: 37. 1898 = *Landolphia uniflora* (Stapf) Pichon.
C. flava Pierre, l.c. = *L. dulcis* (Sabine) Pichon.
Clitandra laurifolia Chev., Agr. Prat. Pays Chauds 8(2): 71. 1908 = *L. foretiana* (Pierre ex Jum.) Pichon.
C. semlikensis Robyns & Boutique, Bull. Jard. Bot. Brux. 18: 259. 1947; in Park Nat. Albert II: 75. 1947. Specimen cited: Zaire, Djalele valley, de Wilde 2 (BR) = *L. buchananii* (Hall.f.) Stapf.
L. godefroyana Pierre ex Pichon, Mém. IFAN 35: 325. 1953, doubtful.
L. hildebrandtii Engl. & Busse, Reisen in Deutsch-Ost. Afr. n. 2954. 1903, based on Busse 2594 (BM, BR, G, HBG) = *L. watsoniana* Romburgh.
L. martreti Chev. ex De Wild., Not. Pl. Ut. Int. Congo 2: 187. 1908 = *Saba comorensis* (Boj.) Pichon.
L. spireana Pierre ex W. Guynet, Spécif. Princ. Qual. Caoutch. Gabon Congo Fr.: 13. 1904. = *L. owariensis* P. Beauv.?
Lithophilum album Sèbire, Pl. U t. Sénégal: 224. 1899 = *L. heudelotii* A.DC.

Excluded species

- Aphanostylis mammosa* (Pierre) Th. & H. Dur, Bull. Jard. Bot. Etat Brux. 2:330. 1910 = *Ancylobotrys scandens* (Schum. & Thonn.) Pichon.
Aphanostylis robusta (Pierre) Th. & H. Dur., l.c. = *Ancylobotrys pyriformis* Pierre.
Carpodinus macrophylla Chev. ex Hutch. & Dalz., Fl. W. Trop. Afr. 2: 35. 1931 = *Dictyophleba leonensis* (Stapf) Pichon.
Carpodinus nigerina Chev., Expl. Bot. Afr. Oc. Fr. 1: 411. 1920 = *Dictyophleba leonensis* (Stapf) Pichon.
Carpodinus parvifolia Pierre, Bull. Soc. Linn. Paris sér. 2: 38. 221. 1898 = *Cylindropsis parvifolia* Pierre.
Carpodinus umbellata K. Schum. in Engl. Bot. Jahrb. 23: 221. 1896 = *Hunteria umbellata* (K. Schum.) Hall. f.
Landolphia amoena (Hua) Hua ex Hua & Chev. in Morot, Journ. Bot. 15: 8. 1901 = *Ancylobotrys amoena* Hua.
L. angustifolia K. Schum. ex Engl., Abh. Kön. Akad. Wiss. Berlin 1: 34. 1894 = *Ancylobotrys petersiana* (Klotzsch) Pierre.
L. amazonica Ducke ex Kuhl., Arg. Jard. Bot. Rio Jan. 9: 98. 1949 = *Pacouria boliviensis* (Mgf.) Chev.
L. boliviensis Mgf., Notizb. Bot. Gart. Berlin 9: 1041. 1926 = *Pacouria bolivien-sis* (Mgf.) Chev.
L. caillei Chev. in Vilbouchvitch, Journ. Agr. Trop. 6: 159. 1906 = *Vahadenia callei* (Chev.) Stapf ex Hutch. & Dalz.

- L. capensis* Oliv. in Hooker, Icon. 13: pl. 1228, 22. 1877 = *Ancylobotrys capensis* (Oliv.) Pichon.
- L. comorensis* (Boj.) K. Schum. in Engler, Bot. Jahrb. 15: 402. 1893 = *Saba comorensis* (Boj.) Pichon.
- L. comorensis* var. *florida* (Benth.) K. Schum., op. cit. 404 = *Saba comorensis* (Boj.) Pichon.
- L. dubreucquiana* De Wild. in De Wild. & Gentil, Lianes Caoutch. Et. Indép. Congo: 92. 1904 = *Dictyophleba lucida* (K. Schum.) Pierre.
- L. echinata* Chev., Mém. Soc. Bot. Fr. 8:45. 1908 = *Ancylobotrys scandens* (Schum. & Thonn.) Pichon.
- L. edulis* (Roxb.) Baill. ex K. Schum. in Engler & Prantl. Nat. Pflanzenf. 4(2): 130. 1895 = *Willughbeia edulis* Roxb.
- L. ferruginea* (Hall. f.) Stapf in Fl. Trop. Afr. 4(1): 46. 1902 = *Ancylobotrys amoena* Hua.
- L. florida* Benth in Hooker, Nig. Fl.: 444. 1849 = *Saba comorensis* (Boj.) Pichon.
- L. florida* var. *comorensis* (Boj.) Chev., Rev. Int. Bot. Appl. 28: 395. 1948 = *Saba comorensis* (Boj.) Pichon.
- L. florida* var. *leiantha* Oliv., Trans. Linn. Soc. London 29: 107. 1875 = *Saba comorensis* (Boj.) Pichon.
- L. florida* var. *senegalensis* (A.DC.) Hall. f., Jahrb. Hamb. Wiss. Anst. 17. Beibl. 3: 94. 1900 = *Saba senegalensis* (A.DC.) Pichon.
- L. guianensis* (Aubl.) Pulle, Enum. Vasc. Pl. Surinam: 379. 1906 = *Pacouria guianensis* Aubl.
- L. henriquesiana* (K. Schum. ex Warb.) Hall. f., op. cit. 97 = *Chamaecлитandra henriquesiana* (K. Schum. ex Warb.) Pichon.
- L. laurentii* De Wild., Rev. Cult. Col. 8: 229. 1901 = *Vahadenia laurentii* (De Wild.) Stapf.
- L. laurentii* var. *grandiflora* De Wild., op. cit. 11: 76. 1902 = *Vahadenia laurentii* (De Wild.) Stapf.
- L. leonensis* Stapf in op. cit. 36. = *Dictyophleba leonensis* (Stapf) Pichon.
- L. lucida* K. Schum., Notizbl. Bot. Gart. Berlin 1: 24. 1895 = *Dictyophleba lucida* (K. Schum.) Pierre.
- L. lucida* var. *hispida* Hall. f., op. cit. 86. = *Dictyophleba lucida* (K. Schum.) Pierre.
- L. monteiroi* Monteiro, Delagoa Bay: 160, 163, 178. 1891 = *Ancylobotrys peter-siana* (Klotzsch) Pierre.
- L. nitida* Lebrun & Taton, Expl. Parc. Nat. Kagera: 105. 1948 = *Ancylobotrys amoena* Hua.
- L. ochracea* K. Schum. ex Hall. f., op. cit. 86 = *Dictyophleba ochracea* (K. Schum. ex Hall. f.) Pichon.
- L. ochracea* var. *breviflora* De Wild., Miss. Laurent: 486. 1907 = *Dictyophleba ochracea* (K. Schum. ex Hall. f.) Pichon.
- L. ochracea* var. *glabrata* Hall. f., op. cit. 87 = *Dictyophleba ochracea* (K. Schum. ex Hall. f.) Pichon.
- L. pachyphylla* Stapf, op. cit. 45 = *Ancylobotrys tayloris* (Stapf) Pichon.

- L. paraënsis* Huber, Bol. Mus. Goeldi 6: 88. 1910 = *Pacouria guianensis* Aubl.
- L. petersiana* (Klotzsch) Dyer, Report Roy. Gard. Kew 1880: 42. 1881 = *Ancylobotrys petersiana* (Klotzsch) Pierre.
- L. petersiana* var. *angustifolia* (K. Schum.) Stapf, op. cit. 48 = *Ancylobotrys petersiana* (Klotzsch) Pierre.
- L. petersiana* var. *crassifolia* K. Schum. in Engler, Bot. Jahrb. 15: 408. 1893 = *Ancylobotrys scandens* (Schum. & Thonn.) Pichon.
- L. petersiana* var. *mucronata* Dew., Ann. Soc. Sci. Brux. 19: 122. 1895 = *Ancylobotrys scandens* (Schum. & Thonn.) Pichon.
- L. petersiana* var. *rotundifolia* Dew, l.c. = *Ancylobotrys petersiana* (Klotzsch) Pierre.
- L. petersiana* var. *rufa* Stapf, op. cit. 48, partly = *Ancylobotrys amoena* Hua.
- L. petersiana* var. *schweinfurthiana* (Hall. f.) Stapf, l.c. = *Ancylobotrys amoena* Hua.
- L. petersiana* var. *tubeufii* Busse ex Stapf, op. cit. 49 = *Ancylobotrys petersiana* (Klotzsch) Pierre.
- L. pyriformis* (Pierre) Stapf, op. cit. 60 = *Ancylobotrys pyriformis* Pierre.
- L. robusta* (Pierre) Stapf, op. cit. 43 = *Ancylobotrys pyriformis* Pierre.
- L. sapida* Kuhlman, Arq. Jard. Bot. Rio Jan. 9: 95. 1949 = *Pacouria boliviensis* (Mgf.) Chev.
- L. scandens* (Schum. & Thonn.) Didr., Vidensk. Meddel. Naturh. Foren. Kjöbenhavn 1853: 190. 1854 = *Ancylobotrys scandens* (Schum. & Thonn.) Pichon.
- L. scandens* var. *angustifolia* (K. Schum. ex Engl.) Hall. f., op. cit. 84. = *Ancylobotrys petersiana* (Klotzsch) Pierre.
- L. scandens* var. *coriacea* Hall. f., op. cit. 81. = *Ancylobotrys scandens* (Schum. & Thonn.) Pichon.
- L. scandens* var. *ferruginea* Hall. f., op. cit. 80. = *Ancylobotrys amoena* Hua.
- L. scandens* var. *floribunda* Pellegr. Mém. Soc. Linn. Normandie sér. 2 Bot. 1.3: 24. 1928 = *Ancylobotrys scandens* (Schum. & Thonn.) Pichon.
- L. scandens* var. *genuina* Hall. f., op. cit. 80. = *Ancylobotrys scandens* (Schum. & Thonn.) Pichon.
- L. scandens* var. *petersiana* (Klotzsch) Hall. f., op. cit. 82. = *Ancylobotrys petersiana* (Klotzsch) Pierre.
- L. scandens* var. *rigida* Hall. f., op. cit. 81. = *Ancylobotrys amoena* Hua.
- L. scandens* var. *rotundifolia* (Dew.) Hall. f., op. cit. 82. = *Ancylobotrys petersiana* (Klotzsch) Pierre.
- L. scandens* var. *schweinfurthiana* Hall. f., op. cit. 81. = *Ancylobotrys amoena* Hua.
- L. scandens* var. *stuhmannii* Hall. f., op. cit. 83. = *Ancylobotrys petersiana* (Klotzsch) Pierre.
- L. scandens* var. *tubeufii* (Busse ex Stapf) Busse in Engler, Bot. Jahrb. 32: 171. 1902 = *Ancylobotrys petersiana* (Klotzsch) Pierre.
- L. senegalensis* (A. DC.) Kotschy & Peyr, Pl. Tinn.: 31. 1867 = *Saba senegalensis* (A. DC.) Pichon.

- L. senegalensis* var. *genuina* Hua & Chev. in Morot, Journ. Bot. 15: 8. 1901 = *Saba senegalensis* (A. DC.) Pichon.
- L. senegalensis* var. *glabriflora* Hua, Bull. Mus. Hist. Nat. Paris 5: 185. 1899 = *Saba senegalensis* (A. DC.) Pichon.
- L. sennensis* (Klotzsch) K. Schum. in Engler, Pflanzenw. Ost-Afr. B: 453. 1895 = *Ancylobotrys petersiana* (Klotzsch) Pierre.
- L. stipulosa* S. Moore ex Wernh., Cat. Talbot Nigerian Pl.: 59. 1913 = *Dictyophleba stipulosa* (S. Moore ex Wernh.) Pichon.
- L. tayloris* Stapf, op. cit. 45 = *Ancylobotrys tayloris* (Stapf) Pichon.
- L. thompsonii* Chev., Mém. Soc. Bot. Fr. 8: 182. 1912 = *Saba thompsonii* (Chev.) Pichon.
- L. treacheri* (Dyer) Baill. ex K. Schum. in Engler & Prantl, Nat. Pflanzenf. 4(2): 130. 1895 = *Willughbeia sarawacensis* (Pierre) K. Schum.
- L. welwitschii* Dyer fide Stapf ex De Wild. & Th. Dur., Ann. Mus. Congo Bot. sér. 3.1: 146. 1901 = *Ancylobotrys scandens* (Schum. & Thonn.) Pichon.
- Sclerodictyon griffonianum* Pierre, Bull. Soc. Linn. Paris sér. 2.11: 93. 1898. Erroneously cited as synonym of *Aphanostylis leptantha* (K. Schum.) Pierre by Pichon, Mém. IFAN 35: 237. 1953 = *Memecylon* sp. (*Melastomataceae*).

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- Adam, J.G. & Kerkaw, 1306 (dulc).
- Adams, B.R., 108 (kirk).
- Adamson, J., 215 (kirk).
- Adamson, G., 167 (buch).
- Adjanooun, E.J., 1417b (micr).
- Adjanooun, E.J. & Aké Assi, L., 195 (heud).
- Afzelius, A., 5 (ow), 97 (dulc), 98 (macr), s.n. 22-5-1895 (dulc), s.n. (cal), s.n. (dulc), s.n. (macr), s.n. (macr), s.n. (ow).
- Agnew et al., 7917 (buch), 8799 (buch).
- Aké Assi, L., 6873 (micr), 7680 (for), 7919 (nit), 8096 (dulc), 8913 (dulc), 10093 (dulc), 11848 (inc), 12068 (nit), 13601 (ow), 13850 (hirs), 14463 (heud), 15785 (ow), s.n. 22-4-1958 (cal).
- Akpabla, G.K., 905 (cal).
- Alemayehu et al., 680 (buch).
- Alexander, J.A., s.n. 1907 (kirk), s.n. (kirk).
- Allard, J., 221 (tholl), 314 (cong), 335 (ow), 424 (ow), 463 (ruf).
- Allinson, E.M., H67/42 (buch), H66/42 (ow).
- Allorge, L., 272 (heud).
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- Almeida, J.J. d', s.n. 1902 (buch).
- Alves Pereira, 2817, 2894 (inc).
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- Andersen, 373 (buch).
- Andoh, J.E., 5007 (ow), 5475 (micr).
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- Andrade, A. d., 2 (lanc), s.n. (camp), s.n. (lanc).
- Andrews, F.W., 1635 (ow), 2005 (buch).
- Angus, A., 198 (parv), 241 (kirk), 257 (parv), 388 (buch), 479 (ruf), 479A (ruf), 643 (camp), 3030 (camp).
- Ankei, Y. & T., 79/0375 (ow), 79/1097 (cong), 79/1150 (for).
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- Attims, Y., 72 (subr), 179 (ow).
- Aubréville, A., 245 (ow), 1384 (hirs), 1455 (heud), 3052 (heud).
- Aubry-Lecomte, s.n. 1854 (for).
- Audru, J., 966 (ow), 3385 (ow), 3428 (ow), 3479 (ow), 4224 (ow), 4356 (tog), 5031 (heud), 5211 (ow), 6007 (heud).
- Audru-Boudet, 2067 (ow), 2288 (ow).
- Auquier, P., 4138 (ow), 4323 (em).
- Autran, s.n. (for), s.n. (ow), s.n. (subr), in Heckel 9 (pyr). Babet, V., s.n. 5-9-1930 (lanc), 5-9-1930 (ow), 10-11-1930 (tholl).
- Badré, F., 7 (ow), 161 (cong).
- Bagshawe, A.G., 583 (ow), 1184 (buch), 1513 (buch).
- Bainbridge, W.R., 21/53 (parv), 227 (parv).
- Baker, 303 (buch).
- Baldwin, J.T., 6628 (mem), 6782 (mem), 9156 (dulc), 9233 (ow), 9331 (mem), 9453 (dulc), 9911 (dulc), 10012 (dulc), 10122 (dulc), 10252 (cal), 10408 (dulc), 10411 (nit), 10437 (micr), 10556 (dulc), 10602 (dulc), 10666 (hirs), 10750 (dulc), 10763 (dulc), 10980 (dulc), 10981 (dulc), 11059 (dulc), 11109 (dulc), 13081 (dulc), 13622 (cal), 13770 (hirs), 13820 (hirs), 14026 (cal), 14074 (dulc), 14116 (vil), 14163 (lanc).
- Ball, T.S., 29 (kirk).
- Bally P.R.G.B., H25/44 (buch), 3115 (buch), 4516 (buch), 8856 (kirk). Bamps, P., 255 (buch), 393 (ow), 1520 (brun), 1631 (max), 2095 (hirs), 2201 (dulc), 2343 (mem), 2344 (dulc), 2489 (heud), 1521 (mem), 7042 (kirk), 7795 (heud).
- Bamps, P. & Malaisse, F., 8040 (ow).
- Bamps, P. & Martins, S. & Matos, C., 4310 (ow), 4575 (parv).
- Banda, E.A., 693 (kirk).
- Baptista, M.M., 145 (heud).
- Barbosa, L.A.G., 855 (kirk), 2103 (kirk), 11086 (camp).
- Barbosa, L.A.G., & Henriques, C., 9191 (ow).
- Barbosa, L.A.G., & Lemos, F. de, 7784 (kirk).
- Barbosa, L.A.G., & Moreno, F., 9878 (camp), 9882 (camp).
- Barker, 477 (parv).
- Baronin van Nolde, 283 (ow), 367 (lanc), 622 (dew), 803 (ow).

- Barros Machaco, A., 18 (camp).
 Barter, C., 1773 (ow), 1810 (ow), 20138 (dulc).
 Bates, G.L., 45 (hirs), 202 (dulc), 464 (inc), 584 (cong), 1174 (brun), 1297 (buch), 1311 (man), 1354 (glab), 1581 (buch), 1684 (inc), 1733 (man), 1882 (brun), 1952 (cong), s.n. 1900 (man).
 Battiscombe, E., 12 (buch).
 Baum, H., 669 (camp), 714a (tholl).
 Baumann, C., 304 (dulc), 514 (inc).
 Becquet, A.B., 100 (ow), s.n. 9-1932 (buch).
 Beentje, H.J., 1605 (glab), 2192 (buch), 2228 (buch).
 Bellamy, s.n. (heud). Ben, D. van der, 1716 (em), 2143 (em), 2280 (em), 2392 (em).
 Benedetto, P., (buch).
 Benson, F.M., 97 (parv), 485 (buch).
 Bequaert, J.C., 369 (kirk), 402 (kirk), 440 (kirk), 821 (lanc), 822 (tholl), 834 (tholl), 857 (ow), 1798 (man), 1819 (cong), 1855 (rob), 1912 (ow), 1988 (viol), 2123 (man), 2148 (ow), 2185 (man), 2486 (ow), 6558 (ow), 6784 (cong), 6832 (lig), 7132 (ow), 7232 (ow), 7234 (tholl), 7405 (camp), 7583 (lanc), 7646 (ow), s.n. 16-2-1914 (ow).
 Berger, s.n. 1900 (for), s.n. 1900 (dew).
 Berghen, C. van den, 1182 (heud), 1307 (heud), 1553 (heud), 1644 (heud), 2055 (heud), 2230 (heud), 2261 (dulc), 2296 (heud), 2343 (dulc), 2451 (heud), 4131 (heud), 4137 (heud), 4307 (heud), 4317 (heud), 4441 (heud), 4532 (dulc), 4533 (heud), 4542 (heud), 4621 (dulc), 4647 (heud), 4663 (dulc), 4715 (dulc), 5066 (heud), 5074 (heud), 5077 (heud), 5086 (dulc), 5166 (heud), 5566 (heud), 5690 (heud), 5723 (heud), 6238 (heud), 7625 (heud), 7714 (dulc), 7726 (dulc), 7735 (heud), 7854 (hirs).
 Berhaut, R.P., 894 (heud), 1472 (dulc), 2167 (heud), 5091 (heud), 5256 (heud), 5733 (dulc), 5857 (hirs), 5858 (ow), 5864 (dulc), 5938 (hirs), 5957 (hirs), 5981 (hirs), 5982 (hirs), 6206 (hirs), 6625 (hirs), 6792 (dulc), 6806 (hirs), 6888 (dulc), 6937 (ow), 7073 (hirs), 7074 (hirs), 7160 (dulc), 7359 (dulc).
 Bernardi, L., 8129 (micr), 8595 (micr), 8701 (micr), 8702 (micr).
 Bezirksamt, 5599 (parv).
 Bieler, s.n. 1904 (ow).
 Biholong, M., 237 (ow), 270 (man).
 Billiet, F., & Jadin, B., 4287 (lanc).
 Bille, J.C., 1705 (ow).
 Birch, W.R., 61/146 (buch).
 Bjrntstad, A., 2325 (parv), 2625 (parv).
 Blot, 251 (heud).
 Blyden, F., 907 (ow).
 Bock, K., 27 (parv).
 Body, H., 3 (for), s.n. 1906 (vil), s.n. 1906 (lanc).
 Bogdan, V., 430 (buch).
 Boivin, B., s.n. (kirk).
 Bokdam, J., 3270 (ow), 3366 (ow), 4220 (cong), 4221 (cong), 4225 (lig), 4415 (man), 4527 (cong).
 Bolema, D., 40 (cong).
 Bongbo, J.J., 29 (camp).
 Boom, 14307 (inc).
 Boone, 90 (for), s.n. 1-1940 (land).
 Borges, A., 307 (parv).
 Borle, J., 29 (kirk), 171 (kirk).
 Bos, J.J., 3408 (ow), 3513 (lig), 3586 (lig), 3759 (max), 3838 (rob), 4132 (lep), 4205 (fla), 4248 (dulc), 4501 (dulc), 4828, 4941 (rob), 5013 (lep), 5224 (rob), 5323 (glab), 5399 (lig), 5430 (sten), 5560 (lig), 6114 (glab), 6146 (inc), 6649 (sten), 6803(un), 7125 (for), 7419 (lig).
 Bossche, L. van den, 9 (buch).
 Botanic Gardens Herbarium Trinidad, 3678 (wats).
 Botanic Gardens Singapore, 9469 (wats).
 Boucher, 1 (heud).
 Boudet, G., 2231 (ow).
 Bouquet, A., 61 (ow), 127 (ow), 129 (lanc), 162 (ow), 301 (subr), 766 (subr), 779, 1088 (inc), 1120 (viol), 1456 (for).
 Bourne, R., 121 (parv), 2446 (wats).
 Boutique, 140 (ow).
 Bouysson, s.n. (subr).
 Branden, van den, 63 (ow), 230 (cong), 456 (ow), s.n. 12-1930 (vil).
 Brasnett, N.V., 1315 (buch).
 Brass, L.J., 16935 (buch), 17535 (parv).
 Brass, N96 (cal).
 Braun, K.P.G.J., 1196 (kirk), 2195 (buch).
 Brazza, J. de, 145 (tholl).
 Brédo, H.J.A.E.R., 3740 (parv), 4096 (parv), 5229 (kirk), 5250 (kirk), 5740 (kirk).
 Bremer, K., 662 (heud).
 Brenan, J.P.M., 8707 (dulc), 9082 (ow), 9322 (fla).
 Brenan, J.P.M. & Greenway, P.J., 8033 (parv).
 Brenan, P.J.M. & Onochie, C.F.A., 9431 (jum).
 Brenan, J.P.M. & Trapnell, C.G., 7903 (kirk).
 Brent, R.W., (ow).
 Breteler, F.J., 586 (ow), 903 (cong), 1194 (vil), 1333, 1433 (inc), 1549 (land), 1585 (dew), 1600 (glab), 1757 (subr), 1800 (cong), 1861 (glab), 1961 (viol), 1998 (ow), 2158 (vil), 2226 (land), 2228 (ow), 2605 (lep), 2622 (hirs), 2860 (land), 2914 (inc), 3019 (man), 5195 (inc), 5825 (ow), 5994 (nit), 6066 (inc), 6122 (ow), 6137 (let), 6316 (ow), 6487 (inc), 6649 (ow), 6775 (rob).

- 6953 (brev) 6992 (sten), 6997 (ang), 7268 (ow), 7339 (dulc), 7394 (mem), 7514 (mem), 7558 (kirk), 7648 (subr).
- Breteler, F.J., & Lemmens, R., 8024 (lig), 8030 (glab), 8195 (let), 8201 (lec), 8411 (dulc).
- Breteler, F.J., & Wilde, J.J.F.E. de, 63 (inc), 79 (dew), 88 (ow), 210 (ow), 225 (lec), 230 (brev), 232 (lig), 244 (ret), 474 (dew), 484 (dew), 520 (noct), 524 (rob), 627 (ow), 703 (inc), 778 (ow).
- Breteler, F.J., et al., MC 294 (land), s.n. (ow).
- Breyne, H., 2 (ow), 7 (lanc), 145 (rob), 617 (man), 678 (rob), 769 (ow), 782 (parv), 979 (cong), 2317 (lig), 2374 (ow), 2884 (rob), 3182 (parv), 3403 (lig), 3686 (parv), 4126 (ow).
- Brisac, s.n. 22-1-1904 (cong).
- Broadway, W.E., 2870 (kirk), 2894 (man), s.n. 15-6-1906 (wats), s.n. 17-2-1911 (ow), s.n. 1-7-1922 (kirk), s.n. 27-4-1929 (kirk).
- Broeck, van den, s.n. (cong), s.n. (lanc), s.n. (ow), s.n. (vil).
- Brown, E., 357 (buch).
- Brown, H., 4 (ow), 5 (ow), s.n. 2-2-1899 (buch), s.n. 18-2-1902 (ow), s.n. 30-3-1902 (ow).
- Brown, I.U., 354 (ow), 391 (cal).
- Brown, W.T.S., 2214 (hirs).
- Brummitt, R.K., 10578 (parv), 10955 (parv).
- Brummitt, R.K., & Polhill, R.M., 13779 (parv), 13866 (parv).
- Bruneel, E., 36 (brun), s.n. 11-1906 (cong).
- Brunel, J.F., 7611 (tog).
- Brunthaler, s.n. (heud).
- Bruse, A.W., 407 (kirk).
- Bruijn, J. de, s.n. (man).
- Bryce, J.M., (kirk).
- Buchanan, J.C.M.G., 44 (buch), 95 (buch), 138 (buch), 182 (kirk), 220 p.p. (buch), 220 p.p. (kirk), 268 (buch), 1126 (parv), s.n. 1891 (buch), s.n. 1891 (parv), s.n. 1896 (buch), s.n. (kirk).
- Bullock, A.A., 1082 (kirk), 1122 (kirk), 1350 (parv), 2991 (parv), 3342 (kirk), 3971 (kirk).
- Bunting, R.H., 80 (ow), 88 (hirs).
- Burbridge, K., 143 (ow).
- Burg, H.C. van den, 76 (hirs).
- Burger, W., 3636 (buch).
- Burt, B.D., 107 (kirk), 6346 (kirk), 6356 (parv).
- Burt-Davy, J., 17978 (kirk), 20444 (kirk), 21223 (buch), 21519 (buch), 21616 (buch), 22397 (kirk), 22405 (kirk).
- Busse, W., 584 (kirk), 585 (parv), 829 (buch), 1249 (parv), 1250 (parv), 1251 (parv), 1252 (parv), 1253 (parv), 2568 (parv), 2907 (kirk), 2937 (wats), 2954 (wats), 3074 (kirk).
- Büttner, 480 (camp), 497 (ow).
- Caballé, G., 194 (dew), 239 (inc), 326 (rob), 334 (noct), 369, (ow), 370 (ow), 379 (ow), 391 (ow), 400, 401 (rob), 419 (ow).
- Cabra A.F.F., 16 (cong), 45, 73 (rob), 120 (cong).
- Cabra-Michel, 42 (lanc).
- Cafry, s.n. (camp).
- Caille, O., s.n. 1909 (man), s.n. (heud).
- Callens, H., 1790 (ow), 1849 (lanc), 2500 (vil), 3248 (inc), 3480, 3860 (rob), 4200 (tholl), 25060 (lig), s.n. 7-1958 (camp).
- Cameron, K.J., 1 (buch), 2 (buch), 108 (buch).
- Capuano, D., 2442 (buch).
- Carisso, L.W., & Mendonça, F.A., 201 (lanc), 223 (tholl), 322 (camp), 533 (ow), 552 (camp).
- Carlier, A., 24 (ow), 158 (lanc), 159 (camp), 281 (tholl), 302 (lig).
- Carmichael, W., 994 (kirk).
- Carrington, J.F., 4 (lanc), 29 (camp), 73 (parv).
- Carvalho, M.F. de, 728 (kirk), 822 (kirk).
- Carver, J.E.A., (buch).
- Casier, P., 295 (cong).
- Cavaco, A., 1263 (lanc), 1371 (lanc).
- Chaffey, D.R., 882 (buch), 999 (buch).
- Chalot, 2 (ow), 8 (lanc), 33 (ow).
- Chandler, P., 2722 (ow).
- Chapman, J.D., 1289 (buch), 1722 (buch), 4159 (ow), 5189 (land), 6443 (buch).
- Chapman, J.D., & Tawakali, E.J., (buch).
- Chase, N.C., 497 (buch), 567 (buch), 1512 (buch), 4594 (buch), 5116 (kirk), 7855 (kirk), 7861 (kirk), 8055 (kirk).
- Chesters, D.F., 181 (cal), 197 (ow).
- Chevalier, A., 108, 188, 304, 317, 385, 438, 447 (heud), 458 (dulc), 516, 816 (heud), 860 (dulc), 2004, 2005, 2008, 2009, 2010, 2011, 2012, 2031bis (heud), 2068 (hirs), 2073 (heud), 2701 (ow), 4257 (vil), 4259, 4260, 4261 (tholl), 4262, 4263, 4264, 4265 (ow), 4266 (dew), 4267, 4268, 4269, 4270, 4271 (ow), 4272 (lanc), 4273 (tholl), 4274, 4275 (lanc), 4277, 4278 p.p. (vil), 4278 p.p. (lanc), 4279 (for), 4280, 4281, 4282 (lig), 4285 (man), 4287, 4288 (lanc), 4289 (man), 4290 (dew), 4292, 4293 (man), 4295, 4295bis (ow), 4296 (lanc), 4411, 4414 (man), 5010 (dew), 5011 (tholl), 5012 (man), 5034, 5034bis (ow), 5039 (lanc), 5040bis, 5040ter (ow), 5041 (cong), 5042 (lig), 5071 (man), 5144, 5207 (ow), 5224 (inc), 5225 (inc), (cong), 5319, 5320, 5320bis, 5321, 5321bis, 5386, 5462, 5566, 5592, 5607, 5872, 5872bis, 5998, 6101, 6201, 6291, 6314, 6451, 6532, 6557, 6583, 6583bis, 6583ter, 6606, 6635, 7001, 7002, 7003, 7004, 7005, 7006, 7067bis, 7068, 7070, 7072, 7073, 7074, 7075, 7076, 7127,

7128, 7129, 7129bis, 7129ter, 7131, 7132, 7133, 7136, 7137, 7138, 7139, 7140, 7141, 7142, 7144, 7145, 7146, 7147, 7148, 7149, 7149bis, 7150, 7153, 7154, 7155, 7156, 7163, 7164, 7166, 7166bis, 7168, 7169, 7171, 7185, 7209, 7231, 7334, 7357, 7390, 7392, 7574, 7575, 7783, 7784, 7784bis, 7924, 7925bis, 7926, 7927, 7928, 7929, 7930, 7930bis, 7931, 7931, 7932, 7932bis, 8104, 8126, 8132bis, 8132ter, 8132quat, 8264, 8305, 8572, 10388, 10589, 10709 (ow), 10836 (cong), 11074 (ow), 11077 (dew), 11080 (lig), 11109 (dew), 11113, 11118 (lig), 11257, 11258, 11259 (vil), 11260 (lig), 11261 (ow), 11263 (man), 11264 (parv), 11265 (for), 11268 (lanc), 11269 (ow), 11269bis (ow), 11273bis (tholl), 11392 (vil), 11393 (lig), 11395 (vil), 11396 (lanc), 11397 (lig), 11398 (subr), 11398bis (lig), 12023, 12024 (man), 12175 (hirs), 12198, 12223, 12231bis (heud), 12276 (ow), 12277 (heud), 12313 ow), 12316 (heud), 12346, 12346bis, 12362 (ow), 12432 (hirs), 12471, 12478, 12489bis (ow), 12492, 12552, 12555 (heud), 12560 (dulc), 12561, 12562, 12563 (ow), 12564, 12565, 12568 (dulc), 12592, 12726 (heud), 12745, 12746 (dulc), 12775 (hirs), 12829 (heud), 12917, 13064, 13136 (ow), 13159, 13171, 13171bis (dulc), 13212 (ow), 13252 (heud), 13433, 13502, 13510 (dulc), 13534, 13569 (ow), 13627 (dulc), 13630 (for), 13631 (cal), 13632, 13632bis, 13632ter, 13633, 13633bis (land), 13635 (heud), 13636 (dew), 13638 (kirk), 13817 (dulc), 13870 (cal), 13873 (dulc), 13875 (ow), 13876 (hirs), 13920 (ow), 13931 (dulc), 13936, 13940 (ow), 13941 (tog), 13943 (dulc), 13944 (cal), 13945 (ow), 13971 (dulc), 14025 (dulc), 14086 (ow), 14129bis, 14132 (cal), 14867 (hirs), 15117, 15118 (for), 15119, 15120 (hirs), 15124, 15125, 15126, 15127, 15132 (ow), 15135, 15136, 15137 (cal), 15146 (hirs), 15147, 15148, 15149 (dulc), 15150 (ow), 15151 (cal), 15184 (ow), 15185 (cal), 15187, 15188 (ow), 15189 (cal), 15549 (for), 15552 (for), 15573, 15577 (dulc), 15615 (cal), 15617 (dulcXfor), 15618 (hirs), 15619 (micr), 15621 (dulc), 16049 (mem), 16330 (dulc), 16352, 16359 (ow), 16370, 16386 (dulc), 16391 (micr), 16424 (dulc), 16474, 16491, 16512, 16599 (ow), 16632 (for), 16731, 16732 (mem), 16733 (ow), 16735 (dulc), 16790, 16799, 16805, 16870 (ow), 16922 (dulc), 16931 (hirs), 16946 (for), 16991 (ow), 17036 (dulc), 17285ter, 17322, 17340bis (ow), 17374 (dulc), 17396 (micr), 17515 (hirs), 17578 (inc), 17691 (micr), 17732 (ow), 17761

(inc), 17852 (dulc), 17909, 17938 (tog), 17961 (micr), 17964 (ow), 17966 (for), 18027, 18200 (heud), 18819, 18820 (ow), 18828, 18907, 18907bis, 18907ter (heud), 19006, 19017 (dulc), 19019 (for), 19029 (micr), 19037 (inc), 19044 (ow), 19241bis (hirs), 19265 (inc), 19329, 19337 (mem), 19438 (micr), 19440, 19546 (ow), 19664 (mem), 19739, 19767 (for), 19838 (inc), 19841 (micr), 19856 (for), 19873, 20096, 20263, 20268, 20455 (ow), 20459 (heud), 20494 (ow), 20619bis (land), 20704 (dulc), 20957 (hirs), 20967, 20969, 20982 (dulc), 21364 (hirs), 21623, 21856, 22270 (ow), 22272 (inc), 22472, 22629 (ow), 22770 (dulc), 22861 (ow), 22867 (cal), 22873 (inc), 22909 (ow), 22910 (inc), 22945 (ow), 23230bis, 23231 (cal), 23240, 23325 (ow), 23391 (man), 23406 (cal), 23803, 23804, 23883 (ow), 23884, 23922 (hirs), 24176, 24206bis, 24223 (ow), 24992 (heud), 25595 (inc), 25811, 25813, 25815 (ow), 26433 (brev), 26434 (ow), 26437 (for), 26732 (man), 26761 (dulc), 26778 (ow), 26796 (glab), 26843 (rob), 26845ter (brev), 26920 (ow), 26959 (rob), 26976bis (ow), 26998 (glab), 26999 (ow), 27000 (inc), 27001 (subr), 27002 (lig), 27003 (glab), 27033 (ow), 27033bis (ow), 27034 (lep), 27038 (ow), 27040, 27041 (dulc), 27046 (subr), 27070, 27132 (pyr), 27184, 27208 (tholl), 27280, 27305 (ow), 27317 (tholl), 27317bis (glab), 27318 (lig), 27332 (for), 27379 (lig), 27462 (tholl), 27489 (subr), 27496 (lanc), 27503 (subr), 27643bis (lig), 27660 (rob), 27665 (tholl), 27670 (subr), 27741, 27726 (ow), 27857 (lig), 28051 (dew), 28052 (man), 28054 (ow), 28057 (land), 28058, 28059, 28060, 28061 (ow), 28063, 28064 (man), 28065, 28067, 28068, 28069, 28069bis, 28072 (heud), 28075, 28076, 28080 (ow), 28081 (land), 28084 (ow), 28085 (man), 28086, 28097, 28098, 28099, 28100, 28101, 28102 (ow), 28103 (lig), 28122 (ow), 33054 (hirs), 33427 (rob), 33436 (viol), 34123, 34393, 34429 (ow), s.n. 1-1900 (heud), s.n. 7-1902 (lanc), s.n. 1902.351 (tholl), s.n. 1902.353, s.n. 1902.358 (ow), s.n. 1902 (tholl), s.n. 3-1903, s.n. 3/5 1905, s.n. 4-1905 (ow), s.n. 5-1905 (heud), s.n. 8-1905 (dulc), s.n. 1905 (for, hirs, land, mem), s.n. 2-1948 (ow), s.n. 3-1948 (tog), s.n. 2-2-1951 (ow), s.n. (heud, ow, vil).

Chillou, J., 8 (ow), 144 (dulc), 216 (ow), 384 (inc), 486 (macr), 1186, (heud), 1227 (heud), 1311 (heud), 2266 (hirs), 2424 (heud).

Chipp, T.F., GC83 (hirs), GC147 (ow).

Cissé, A., 58C (heud).

- Claessens, J., 48 (tholl), 84 (ow), 174 (rob), 252 (viol), 253 (glab), 254 (ruf), 302 (cong), 380 (parv), 386 (ow), 1921 (ow).
 Clayphan, T.W., 51 (kirk).
 Clements, J.B., 651 (kirk).
 C.N.A., 848 (ow).
 Cochet, G., 33 (heud).
 Codd, L.E., 1994 (kirk), 6814 (kirk), 7277 (camp), 8343 (kirk).
 Codd, L.E. & Dyer, R.A., 4500 (kirk), 5447 (kirk).
 Cole, E.A., 126 (ow).
 Cole, E.A., 101 (dulc).
 Collart, E., 2 (cong), 14 (cong), 60 (rob), 65 (vil).
 Collenette, C.N., 32 (dulc).
 Collins, G.N., 134 (kirk), 145 (kirk).
 Comité Spécial Katanga, 102 (kirk), 529 (kirk).
 Compère, P., 134 (ow), 487 (ow), 569 (lanc), 915 (man), 977 (ow), 1054 (lec), 1133 (rob), 1281 (ow), 1437 (camp), 1571 (dew), 1574 (lig), 1695 (cong), 1805 (tholl), 1806 (lanc), 2001 (camp), 2061 (lig).
 Cooper, G.P., 43 (nit), 235 (micr), s.n. (micr).
 Cormaus, s.n. 1-1899 (kirk), s.n. 4-1901 (kirk).
 Corner, E.J.H., s.n. 28-6-1936 (ow).
 Corner, S.G., s.n. 14-9-1952 (buch).
 Correia, M.F., 96 (buch), 445 (buch).
 Correia, M.F., & Marques, A., 562 (kirk), 2271 (kirk), 2411 (buch), 2500 (buch), 3313 (kirk).
 Correia, R., 1240 (parv).
 Cottes, 8 (inc), 10 (ow), 11 (inc), s.n. 1906 (man).
 Coulon, 1 (vil), s.n. (ow).
 Courboin, s.n. (ow).
 Courtet, s.n. 6-1913 (dulc, man, subr, un), s.n. 1907 (ow).
 Couteaux, G., 104 (lig), 1026 (thol).
 Craene, De, 124bis (buch).
 Cranshoff, 23 (ow), 24 (ow), 25 (ow), 26 (man), 27 (man), 28 (land), 28bis (land), 31bis (parv), 33 (cong), 34 (lanc), 1224 (ow).
 Cremers, C., 522 (dulc), 617 (dulc), 840A (dulc), 860 (dulc).
 Croockewit, H.W.E., 733 (camp).
 Cruse, A.W., 407 (kirk).
 Curson & Irvine, 41 (kirk).

 Dale, I.R., 2432 (buch), s.n. (buch).
 Dalziel, J.M., 100 (ow), 992 (dulc), 8242 (land).
 Dandy, J.E., 711 (ow).
 Daramola, B.O., & Osanyinkisi, 24 (= FHI 90132) (dulc).
 Davies, J., EA 16720 (kirk).
 Davio, C., 52 (lanc).
 Dawe, A., 2 (camp).
 Dawe, M.T., 8 (heud), 13 (land), 23 (buch), 29 (heud), 37 (camp), 38 (parv), 47 (land), 47bis (ow), 85 (land), 103 (man), 151 (camp), 153 (camp), 167 (thol), 175 (man), 204 (ow), 223 (land), 253 (ow), 254 (ow), 304 (rob), 306 (lec), 309 (lec), 348 (kirk), 371 (kirk), 419 (kirk), 464 (land), 471 (kirk), 482 (buch), 504 (land), 512 (buch), 513 (heud), 530bis (wats), 709 (ow).
 Deaw, J., SP385 (dulc).
 Deighton, F.C., 1041 (hirs), 2416 (heud), 2481 (dulc), 2842 (dulc), 2899 (dulc), 2932 (mem), 3111 (hirs), 3608 (hirs), 3617 (ow), 3789 (ow), 3947 (cal), 3989 (heud), 4087 (macr), 5046 (hirs), 5324 (inc), 5483 (dulc), 5736A (hirs), 5736B (hirs), 5823 (hirs), 6153 (cal).
 Deistel, 144 (land), 550 (land), 556 (land), s.n. 1906 (land).
 Dekindt, E., 206 (buch), 425 (parv), 3035 (parv).
 Dekker, A.J.F.M., 200 (dulc).
 Delhaye, R.E., 400 (lanc), 491 (thol).
 Delpierre, s.n. 1904 (ow).
 Demonge, R., 4297 (heud).
 Demeuse, J., 106 (man), 110 (lanc), s.n. (ow).
 Dennett, R.E., (ow).
 Département des Finances, 683 (ow), 684 no 3 (man).
 Descamps, s.n. 22-12-1895 (ow).
 Descoings, B., 5579 (thol), 6005 (lanc), 6600 (thol(?)), 7018 (glab), 9628 (ow), 10201 (ow), 11014 (ow), 11598 (ow).
 Desenfans, R., 1807 (ow), 1950 (camp).
 Detilleux, E., 746 (kirk), 998 (ow).
 Devred, R., 456 (lanc), 685, 849 (rob), 1033 (ow), 1078 (camp), 1173 (rob), 1233 (ow), 1425 (camp), 1556 (thol), 1819 (camp), 1924 (lanc), 2073 (ow), 2254 (thol), 2525 (camp), 3184 (camp).
 Dewèvre, A., 311 (cong), 362 (man), 364 (ow), 489 (lanc), 516 (camp), 540 (cong), 590 (glab), 608 (ow), 698 (ow), 709 (lig), 721A (man), 737A (ow), 811A (ow), 886A (ow), 888 (dew), 1158 (ow), 1167C (ow), s.n. lettre 807 of Département des Finances (ow), s.n. (heud), s.n. (kirk).
 Dewulf, A., 166 (ow), 367 (cong), 623 (ow), 951 (viol).
 Dilmy, A., s.n. 5-9-1959 (man).
 Diniz, M.A., & Boane, (kirk).
 Dinklage, M., 231 (un), 575 (jum), 710 (max), 872 (un), 1060 (for), 1162 (lig), 1270 (dulc), 1366 (dulc), 1457 (for), 1507 (jum), 2693 (dulc).
 Dingle, H.E., 367 (buch).
 Don, G., s.n. (dulc, ow).
 Donis, C., 10 (lec), 217 (rob), 1681 (ow), 1707 (ow), 1837 (rob), 1903 (ow), 2059 (lec), 2122

- (glab), 2159 (cong), 2160 (viol), 2223 (glab), 2369 (man), 2385 (rob), 2428 (cong).
Dowsett-Lemaire, F., 412 (em), 816 (buch), 880 (kirk), 907 (kirk), 987 (buch), 1050 (kirk).
Drummond, R.B., 8299 (cun), 8329 (ruf).
Drummond, R.B. & Cookson, A.J., 6241 (camp).
Drummond, R.B., & Hemsley, J.H., 2590 (buch), 4574 (buch).
Drummond, R.B., & Rutherford-Smith, R.O.B., 6960 (parv), 7025 (cun), 7226 (camp).
Drummond, R.B., & Williamson, G., 9362 (camp), 9478 (ruf), 9482 (inc), 9577 (camp).
Dubois, L., 77 (cong), 780 (ow).
Dubois, R., 40 (dulc), 42 (heud).
Dudgeon, G.C., s.n. (heud).
Duff, C.E., 33 (camp).
Dümmer, R.A., 669 (land), 670 (land), 2431 (land), 2639 (ow).
Dumont, A., 16 (lanc), 62 (lanc), 275 (ow).
Duparquet, C.V.A., s.n. (glab).
Dupuis, P., s.n. (cong, ow).
Durant, V., s.n. 1904 (cong).
Dutton, et al. s.n. (thol).
Dybowski, J., 71 (for), 72 (rob), 160 (man).
Eahns, KF91 (buch).
Eala, A.B.C., 1868 (man).
Earthy, E.D., 36 (kirk).
Edwards, D., 2550 (kirk).
Edwards, I.B., 565 (camp), 792 (parv).
Eichelbaum, s.n. 1903 (kirk).
Eggeling, W.J., 259 (ow), 283 (ow), 6356 (kirk).
Ekwuno et al. 109 (= FHI 87431) (dulc).
Ellenberger, F., 113 (heud), 163 (ow).
Elliott, W.R., 96 (hirs), 99 (ow), 101 (ow), 102 (ow), 104 (ow), 218 (hirs).
Elskens, O., 2 (ow), 22 (em).
Enti, A.A., SP533 (micr), SP584 (cal), SP586 (micr), SP600 (micr), R1096 (dulc).
Enti, A.A., & Awaok, P.K., R1115 (micr), R1125 (dulc).
Espirito Santo, J.V. da Graça do, 631 (dulc), 692 (inc), 742 (dulc), 1759 (dulc), 1827 (dulc), 1831 (heud), 2072 (hirs), 2080, 2136 (inc), 2254 (hirs), 2373 (hirs), 2988, 3000 (inc), 4485 (land), 4494 (land), s.n. (heud).
Etesse, 9 (heud).
Étuge, M., & Thomas, D.W., 109 (land).
Evans, A.E., 1 (ow), 2b (heud).
Evrard, C., 38 (lig), 1184 (cong), 1633 (vil), 1636 (rob), 1648 (for), 1745 (inc), 1770 (for), 2046 (inc), 2125 (ow), 2238 (ruf), 2545 (ow), 2686 (ow), 2750 (inc), 3041 (cong), 3100 (lig), 3201 (brun), 3271 (cong), 3437 (ow), 3534 (cong), 3547 (rob), 3563 (ow), 3897 (brun), 3944 (lig), 4151 (viol), 4193 (brun), 4325 (cong), 4391 (rob), 4412 (glab), 4600 (ow), 4634 (lig), 4719 (rob), 4765 (inc), 4794 (glab), 4808 (rob), 4837 (ruf), 4924, 4956, 5055, (inc), 5129 (cong), 5168 (glab), 5216 (glab), 5533 (cong), 5570 (viol), 5588 (glab), 5774 (ow), 5933 (ow), 5989, 6187 (rob), 6229 (inc), 6315 (ow), 6779 (ow).
Exell, A.W., & Mendonça, F.A., 193 (ow), 248 (camp), 994 (thol), 1508 (camp), 2009 (parv).
Exell, A.W. et al. 1208 (parv).
Eijnatten, C.L.M. van, 2249 (dulc).
Exposition Coloniale, s.n. (dulc).
Eyles, F., 8347 (parv), 8348 (parv).
Faden, R.B., 852 (buch).
Faden, R.B., & Beentje H.J., 85/15 (kirk).
Faden, R.B. et al. 509 (buch).
Fairchild, D., 1178 (land), s.n. 21-1-1927 (dulc).
Fanshawe, D.B., 908 (kirk), 1431 (kirk), 2187 (parv), 3534 (buch), 3547 (ow), 3987 (parv), 4627 (ow), 5891 (camp), 6330 (camp), 7561 (buch), 7562 (buch), 7582 (ow), 8210 (camp), 8626 (camp), 8852 (cun), 9061 (camp), 10932 (em), 11384 (parv), 11605 (buch), 11734 (parv), 14473 (parv).
Farmar, L., 121 (heud), 149 (hirs), 163 (heud), 164 (man), 194 (dulc), 274 (dulc), 298 (heud), 318 (heud), 321 (dulc), 488 (ow), 490 (ow), 491 (hirs), 456 (ow), s.n. 1906 (heud, hirs, ow).
Farquhar, J.H.J., 75 (for).
Farron, C., 4091 (ow), 4180 (subr), 4380, 4548 (inc), 4653 (lanc), 4745 (ig), 4746 (lig), 4891 (vil), 4965 (rob), 7473 (dulc).
Faulkner, H.G., 1769 (kirk), 1798 (kirk), 3763 (kirk), K89 (kirk), s.n. (kirk).
Fay, J.M., 1812 (ow), 4130 (ow), 4185 (ow).
Fernandes, A., et al., 32 (kirk), 287 (kirk).
FHI, 648 (dulc), 755 (ow), 761 (dulc), 767 (ow), 804 (ow), 955 (ow), 1433 (cal), 3198 (ow), 4913 (hirs), 7436 (ow), 8233 (inc), 18220 (hirs), 20585 (inc), 21199 (tog), 22807 (man), 25505 (dulc), 25513 (ow), 28218, 28266 (rob), 29806 (fla), 29815 (jum), 30848 (dulc), 30864 (jum), 32768 (dulc), 32771 (cal), 33359 (cal), 34051 (dulc), 34237 (ow), 35095 (rob), 35268 (dulc), 35960 (dulc), 38326 (tog), 38338 (cal), 38420 (dulc), 38436 (ow), 40273 (dulc), 41226 (inc), 41398 (for), 41407 (ow), 42333 (dulc), 43871 (dulc), 51361 (tog), 54007 (viol), 54069 (lep), 55177 (ow), 55230 (dulc), 57615 (cal), 60021 (rob), 60232 (glab), 65787 (ow), 65927 (ow), 67516 (ow), 67606 (ow), 67660 (cal), 67673 (cal), 69938 (cal), 70243 (cal), 72921 (ow),

- 73032 (dulc), 87431 (dulc), 88644 (dulc), 90132 (dulc).
 Fidao, s.n. 12-1916 (ow).
 Fisher, B.S., 1275 (buch).
 Fitzgibbon, H., & Barcock, J., 26 (em), 98 (em), 98A (em).
 Flamigni, A., 4 (man), 8 (man), 14bis (lig), 32 (vil), 35 (inc), 36 (glab), 37 (ruf), 41 (lig), 45 (lanc), 57 (rob), 107 (man), 119 (glab), 155 (ow), 157 (lanc), 268 (lig), 275 (ow), 284 (man), 285 (ow), 286 (lig), 299 (lanc), 300 (cong), 312 (lig), 313 (glab), 314 (lig), 1036 (ow), 6044 (ow), 10369 (ow), 1/1 (ow), 5/1 (ow), 7/1 (ow), 8/1 (ow), 10/1 (ow), 11/1 (ow), 25/3 (man), 27/3 (man), 30/3 (man), 33/3 (man), 34/3 (man), 36/3 (man), 37/3 (man), 38/3 (man), 39/3 (man), 40/3 (man), 41/3 (man), 42/3 (man), 43/3 (man), 44/3 (man), 45/3 (man), 46/3 (man), 47/3 (man), 78/3 (glab), 79/3 (glab), 80/3 (glab), 83/3 (glab), 84/3 (glab), 107/6 (vil), 108/6 (vil), 110/6 (vil), 111/7 (cong), 112/7 (cong), 113/7 (cong), 114/7 (cong), 115/7 (cong), 117/8 (for), 119/8 (for), 121/8 (for), 124/8 (for), 17/9 (for), 126/9 (lanc), 127/9 (lanc), 128/9 (lanc), 129/9 (lanc), 14/11 (ow), 16/11 (ow), 21/11 (ow), 22/11 (ow), 23/11 (ow), 26/11 (ow), 142/11 (lig), 143/11 (lig), 148/11 (lig), s.n. 2-7-1906 (man), s.n. 26-2-1907 (ow), s.n. 3-1907 (man), s.n. (ruf).
 Flock, O., 132 (kirk).
 Florence, J., 1797 (dulc), 2001 (dew).
 Florestais, B.E., 331 (heud).
 Ford, J., 808 (em).
 Foré, s.n. (ow).
 Forest Department Herbarium, s.n. (buch).
 Forêt, s.n. 20-1-1897 (jum), s.n. 21-08-1897 (for), s.n. (man).
 Foster, E.W., 2 (tog), 3 (ow), 42 (tog), 197 (ow), 200 (cal), 217 (dulc).
 Fotius, G., 2606 (heud).
 Fourneau, s.n. 6-1905 (ow), s.n. 20-7-1905 (man), s.n. (ow).
 Fras, 28 (heud).
 Fredoux, A., 524 (heud).
 Fries, R.E., 322 (parv), 333 (parv), 712 (kirk), 720 (parv), 1233 (buch).
 Fries, R.E. & Th.C.E., 1728 (buch).
 Friis, I., & Vollesen, K., 925 (buch).
 Friis, I. et al., 223 (buch), 1777 (buch), 1964 (buch).
 Furon, s.n. (heud).
 Furuya, K., 253 (buch).
 Fyffe, R., 58 (buch), 91 (buch).
 F., A.C., 488 (parv).
 Gardner, H.M., 1299 (buch).
 Gathy, A.L., 2063 (kirk), 2094 (kirk), 2094b (kirk), 2260 (kirk).
 Gauchotte, 1900 (ow).
 Geerling, C., & Bokdam, J., 1367 (heud), 2059 (heud), 2355 (nit), 2442 (inc), 2525 (heud).
 Gentil, L., 1 (ow), 2 (ow), 4 (cong), 5 (vil), 23 (ow), 36 (lanc), 41 (cong), 42 (lig), 43 (ow), 46 (ow), 47 (lig), 59 (vil), 60 (for), 62 p.p. (for), 62 p.p. (ow), 63 (ow), 72 (ow), 92 (ow), 94 (lanc), 94bis (ow), 99 (thol), s.n. 7-1902 (ow), s.n. 8-1902 (man), s.n. 1903 (man), s.n. 1905 (thol, ow), s.n. (ow).
 Gentry, A., 33077 (ow), 33081 (ow), 33097 (noct), 33121 (noct), 33133 (noct), 33155 (inc), 33257 (ow), 33328 (inc), 33404A (ow), 33439 (ow), 33687 (ow).
 Gentry, A., & Pilz, G., 32856 (glab).
 Gentry, A., & Thomas, D., 52779 (cong).
 Geraldes, C.M., 1 (camp).
 Gerard, P., 641 (rob), 1078 (viol), 1132 (ow), 1580 (inc), 1591 (viol), 1841 (inc), 1866 (cong), 2185 (ow), 2653 (ow), 2847 (vil), 2873 (viol), 2924 (ow), 2925 (cong), 3236 (cong), 3237 (viol), 3531 (ow), 4347 (ow), 4362 (ow), 4431 (ow), 4468 (rob), 4788 (viol), 4808 (inc), 4876 (rob), 4911 (ow), 5111 (ow), 5175, 5299 (inc), 5329 (cong), 5360, 5779 (inc).
 Germain, R., 1768 (lig), 2113 (glab), 2208 (thol), 2464 (camp), 2493 (camp), 2557 (for), 2579 (camp), 2580 (lanc), 2604 (thol), 2661 (rob), 3798 (buch), 4513 (viol), 4671 (lig), 4675 (rob), 4765 (ruf), 4890 (glab), 5129 (viol), 5157 (ruf), 5173, 5444 (inc), 7036 (parv), 7190 (dew), 7455 (ruf), 7971 (lanc), 7999 (ow), 8078 (vil), 8095 (inc), 8108 (ruf), 8135 (viol).
 Gerstner, J., 5916 (kirk).
 Ghesquière, J., 3363 (lig), 3388 (rob), s.n. 1921 (vil).
 Gier, A. de, & Goll, W., 243 (dulc), 259 (mem).
 Gilbert, G., 45 (ow), 211 (ow), 421 (cong), 1672 (vil), 7502 (man), 7634 (vil), 7686 (vil), 7898 (for), 14579 (ow).
 Gilbert, V.C., 5252 (parv).
 Gilbert, M.G., & Kuchar, P., 5852 (kirk).
 Gilges, W., 193 (camp), 237 (camp), 932 (camp).
 Gillet, J., 71 (camp), 180 (ow), 226 (ow), 769 (thol), 1216 (ow), 1721 (lig), 1764 (ow), 1899 (ow), 1984 (cong), 2022 (for), 2023 (lig), 2051 (rob), 2082 (ow), 2171 (rob), 2184 (lig), 2218 (camp), 2220, 2222 (rob), 2223 (camp), 2315 (rob), 2525 (man), 2666 (ow), 2857 (inc), 3071 (thol), 3410 (lig), 3516 (camp), 3600 (camp), 3701 (cong), 3748 (ow), s.n. 9-1900 (vil), s.n. 1900 (ow, thol), s.n. 1901 (ow, thol, vil), s.n.

- 8-1902 (for, lig, thol), s.n. 7-1903 (thol).
 Gillman, H., 1048 (parv), 1048b (parv), 1072 (parv), 1211 (kirk), 1294 (parv), 1320 (kirk), 1372 (kirk).
 Gillososa, 79 (ow).
 Giorgi, S. de, 149 (ow), 202 (ow), 1519 (cong), 1663 (rob), 1692 (ow).
 Gledhill, D., 291 (dulc), 943 (dulc).
 Glover, et al., 1835 (buch), 1939 (buch), 2409 (buch).
 Goetze, W., 5 (kirk).
 Goldsmith, B., 78/66 (buch).
 Gomes e Sousa, A.F., 38 (heud), 1902 (kirk), 1910 (kirk), 3771 (kirk).
 Gonçalves-Sanches, J., 3 (kirk), 4 (kirk).
 Goossens, V., 4291 (ow), 4640 (rob), 4975 (ow).
 Gorbatoff, S., 62 (cong), 298 (cong), 315 (viol).
 Gossweiler, J., 1 (camp), 579 (ow), 681 (ruf), 709 (ow), 729 (ruf), 1137 (buch), 1813 (camp), 1813a (camp), 1813c (camp), 1890 (parv), 1890B (parv), 1895 (camp), 2143 (camp), 2243 (parv), 2568 (camp), 2592 (gos), 2621 (gos), 2653 (thol), 2654 (thol), 2759 (thol), 2874 (parv), 2875 (camp), 3049b (thol), 3217 (thol), 3222 (parv), 3249 (thol), 3702 (camp), 4086 p.p. (lanc), 4086 p.p. (thol), 4396 (parv), 4905 (parv), 4919 (ow), 4920 (rob), 4955 (dew), 5634 (ow), 6033 (rob), 6061 (man), 6143 (inc), 6146 (cong), 6154 (inc), 6456 (cong), 6441 (lec), 6644 (ow), 6728 (man), 6749 (let), 6829 (let), 6854 (lec), 6987 (for), 7616 (ow), 7673 (inc), 7795 (dew), 7920 (rob), 7934 (ow), 8035 (lec), 8037, 8069 (inc), 8245 (man), 8521 (parv), 8584 (parv), 8646 (parv), 9013 (dew), 9101 (parv), 9149 (rob), 9423 (ow), 10554 (lanc), 10567 (inc), 11444 (thol), 11718 (camp), 11719 (thol), 11729 (thol), 13075 (man), 13076 (buch), 13079 (camp), 13634 (camp), 13662 (lanc), 13701 (dew), s.n. 1904 (thol), s.n. 1906 (thol) s.n. 1907 (parv), s.n. 15-1-1919 (ow), s.n. 5-1919 (lec), s.n. 11-1946 (man), s.n. June (lec), s.n. 3208 (parv) s.n. (camp, dew, gos, lanc, thol).
 Graer, P.A.M. de, 339bis (ow), 343 (ow).
 Graham, R.M., (kirk).
 Greenway, P.J., 1479 (kirk), 1583 (man), 2341 (buch), 2794 (buch), 2827 (ow), 4109 (kirk), 5357 (kirk), 6662 (buch), 6663 (heud), 6666 (ow), 6667 (man), 6668 (man).
 Greenway, P.J., & Miller R.G., 5663 (kirk).
 Greenway, P.J. & Polhill, R.M., 11596 (parv).
 Greggio, s.n. 1911 (lanc).
 Griffon du Bellay, 4 (man), 36 (man), 101 (for), 102 (for), s.n. 1864 n.4 (dulc), s.n. 1864 (man).
 Groenendijk, E.M.C., & Dunge, J., 613 (kirk).
 Groenendijk, E.M.C., & Koning, J. de, 312 (kirk).
 Grote, 3765 (kirk).
 Gründler, H., s.n. 8-1900 (parv), s.n. 13-10-1904 (parv).
 Gruys, P., s.n. 1958 (hirs).
 Guerra, M. & P., 425 (kirk).
 Guignonis, 633 (em).
 Guigliarelli, D., 563 (buch), 778 (buch).
 Gullan-Thompson, G.W., s.n. 5-4-1932 (parv).
 Gurgouês, 2578 (dew).
 Gutzwiller, R., 540 (cong), 1434 (ow), 1844 (ow), 2043 (inc).
 Hacquart, 9 (ow).
 Haerdi, F., 199/0 (kirk), 339 (kirk).
 Haile, A., 1174 (buch).
 Hakanson, J.W., s.n. 21-9-1931 (lanc), s.n. 17-9-1931 (ow).
 Hakki, M. et al., 821 (ow).
 Hall, J.B., 266 (tog), 1444 (inc), 2299 (buch), 2318 (cal), GC 42363 (cal), GC 43101 (ow), GC 43444, GC 45147, GC 46743 (inc).
 Hall, J.B., & Enti, A.A., GC38285 (dulc), GC38366 (micr).
 Hall, J.B., & Lock, GC 43665 (dulc).
 Hallé, F., 1537 (viol).
 Hallé, N., 661 (let), 0915 (dulc), 1756 (man), 1774 (man), 1813 (man), 2120 (land), 2730 (noct), 3228 (lig), 3318 (glab), 3367 (brev), 3826 (brun).
 Hallé, N., & Le Thomas, A., 28 (ow), 207 (man), 334 (inc), 662 (cong).
 Hallé, N., & Villiers, J.F., 4322 (inc), 4343 (lig), 4703 (glab), 4787 (glab), 5243 (sten).
 Hallier, H., C68 (wats), s.n. 29-4-1903 (wats).
 Hamilton, A., 691 (ow).
 Hansen, O.J., 434 (kirk).
 Harger, R.L., 32 (parv).
 Harley, R.M., 9195 (buch), 9293 (buch).
 Harley, W.J., 13A (dulc), 1255 (dulc), 1444 (hirs), s.n. 5-1932 (dulc).
 Harreveld, P. van, 6562 (kirk).
 Harris, B.J., 376 (parv), 905 (kirk), 911 (kirk), 1039 (buch), 1387 (kirk), 2575 (kirk).
 Harris, B.J., & Gardiner, N., 2805 (kirk), 3595 (kirk).
 Harris, W., 143 (ow), s.n. 4-11-1902 (kirk).
 Hart, T., 558 (land).
 Harten, A.M. van, 328 (micr).
 Hasegawa, T.D.M., 7 (ow), 26 (ow).
 Haut, J.A., 6988 (kirk).
 Hay, W., 19 (parv).
 Head, D., 54 (dulc).
 Hédin, L., 11 (dulc), 12 (dulc), 66 (vil), 291 (inc).

- 775 (cong), 1101 (glab), 1112 (land), 1868 (rob), 1868bis (ow), 1880 (land), 1881 (rob), 1902 (land).
- Hendrickx, F.L., 3093 (camp), 3922 (buch).
- Hendriques, C., 92 (parv), 848 (parv).
- Hens, F., 31 (ow).
- Hepper, F.N., 1517 (ow), 2216 (dulc), 2226 (ow).
- Hepper, F.N., et al., 7547 (dulc).
- Herring, H.R., H34/35 (kirk), H57/42 (buch), H69/42 (kirk).
- Heudelot, 29 (heud), 602 (heud), 606 p.p. (heud), 606 p.p. (ow), 624 (dulc), 698 (dulc), s.n. 1935 (heud), s.n. 1937 p.p. (dulc), s.n. 1937 p.p. (heud), s.n. 1938 (dulc).
- Hildebrandt, J.M., 1222 (kirk), 1999 (kirk).
- Hitchins, P., 58 (kirk).
- Hladik, A., 2033 (dew), 2345(A) (dew), 2345(C) (dew), 2585 (noct).
- Hock, A., s.n. 1911 (kirk).
- Holland, J.H., 3 (dulc), 148 (dulc), 212 (hirs).
- Hollis, D., A19/5/B (kirk).
- Holmes, W.D., 462 (parv), 463 (parv), 464 (kirk), 465 (kirk), 466 (kirk), 467 (kirk), 637 (buch), 638 (ow), 772 (ow), 904 (cun), 932 (buch), 1253 (camp), 1254 (cun), 1256 (ruf), 1260 (inc), 1364 (camp).
- Holst, C.H.E.W., 2458 (buch), 2475 (kirk), 3443 (wats), 4336 (kirk), 8844 (kirk).
- Holtz, J.F.L., 1073 (kirk).
- Homblé, H.A., 344 (kirk), 740 (cun).
- Hooper, S.S., & Townsend, C.C., 287 (cun).
- Hornby, 507 (buch), 657 (parv), 961 (kirk).
- Horton, M.D., 9/67 (hirs).
- Hossain, M., & Agyabwa, GC38207 (ow).
- Hossain, M., & Opayemi, J., 1298 (dulc), 1367 (cal).
- Hoyle, A.C., 382 (ow), 560 (ow), 1237 (kirk), 1238 (kirk).
- Huber, H., 54 (kirk).
- Hulstaert, 268 (rob), 625 (cong), 651 (lig), 993 (ow), 1081 (ow), 1559 (ow), 1587 (vil).
- Humbert, H., 7279 (parv), s.n. (kirk, parv).
- Humicke, F.H., s.n. (lanc).
- Hutchins, D.E., 438 (buch), s.n. (buch).
- Hutchinson, J., & Gillett, J.B., 3230 (kirk), 3601 (parv), 3762 (parv), 3949 (parv).
- Hutchinson, J., & Metcalfe, C.R., 108 (land).
- Ichikawa, M., 841 (buch).
- Imperial Forestry Institute Herbarium 10 (dulc).
- Irvine, F.R., 765 (ow), 2495 (hirs), 2602 (ow).
- Itani, J., & Izawa, 20 (em).
- Jackson, G., 1344 (ow).
- Jackson, J.K., 598 (buch).
- Jackson, S., s.n. 5-1930 (dulc).
- Jackson, T.H.E., 363 (buch).
- Jacques-Félix, H., 32 (ow), 2597 (ow), 2921 (cong), 4513 (for), 4801 (ob), 5210 (dew), 8679 (ow), s.n. 18-1-1931 (dulc).
- Jaeger, P., 1415 (ow), 1448 (ow), 8987 (inc), 9056 (hirs), 9129 (inc), 9801 (land), 9910 (dulc).
- Jans, E., 159 (camp), 160 (camp), 361 (ow), 399 (lig), 401 (man), 413 (lanc), 414 (ow), 438 (thol), 598 (cong), 598bis (cong), 610 (for), 833 (rob), 835 (vil).
- Jansen, J.W.A., 1743 (dulc), 1777 (micr), 1849 (dulc), 1956 (ow), 2041 (dulc), 2166 (ow), 2313 (dulc), 2402 (dulc), 2553 (ow).
- Jansen, P.C.M., 2165 (buch), 5455 (buch), 5540 (buch).
- Jansen, P.C.M., & Boone, C., 8005 (parv).
- Jansen, P.C.M., & Koning, J. de, 7431 (kirk).
- Jansen et al. 85 (parv).
- Janssens, s.n. 6-1909 (ow).
- Jardin Colonial de Camayenne, s.n. 1-1900 (heud).
- Jardin Colonial de Laeken, 53 (man), 115 (vil), 164 (man), 187 (ow), 191 (ow), 215 (man), 230 (vil), 248 (man), 256 (man).
- Jarrett, T., 105 (buch), 315 (buch).
- Jeffrey, G.W., K114 (kirk), K158 (kirk).
- Jenik, & Hall, J.B., 1162 (hirs).
- Jenman, 4118 (kirk).
- Jensen, K., 168 (lanc).
- Jernander, 22 (thol), 25 (lanc).
- Jespersen, 4 (lig), 7 (ow), 15 (ruf), 45 (inc), 50 (rob), 60 (dew), 68 (ruf), 69 (dew), 92 (inc), s.n. 1-1907 (ow), s.n. 3-1907 (cong), s.n. 25-5-1907 (for), s.n. 11-1907 (glab, lig, man, vil), s.n. 6-1924 (camp, lanc, thol).
- Johnson, H.H., 28 (kirk), 43 (kirk), 281 (kirk), s.n. (buch).
- Johnson, W.H., 282 (ow), 524 (ow), 753 (tog), 811 (ow).
- Johnson, W.P., 13 (kirk).
- Johnson-Stewart, N.G.B., 224 (buch).
- Johnston, H.H., 1 (dew).
- Jolly, A., 64 (dulc), 65 (jum), 298 (ow), 299 (ow), 320 (ow).
- Jones, A.P.D., see FHI.
- Jones, T.S., 309 (hirs).
- Jungner, J.R., 337 (hirs).
- Junod, H.A., 101 ((kirk), 151 (kirk), 21577 (kirk).
- Kafuli, D., 1 (kirk).
- Karmann, s.n. 9-1921 (lig).
- Kassner, T., 28 (kirk), 2383 (parv), 3384 (camp), 3385 (thol).

- Katz, S.S., 75/36 (kirk).
 Kawede, G.B., 4372 (parv).
 Keil, 176 (em).
 Kennedy, J.D., 155 (hirs), 2116 (ow), 3145 (dulc).
 Kerfoot, O., 2746 (buch), 4857 (buch).
 Kesteleyn, s.n. 1904 (lec, man).
 Kiener, s.n. (cal).
 Killick, H.J., 262 (dulc).
 Kirimuni, S.S., s.n. (ow).
 Kirk, J., 12 (kirk), 37 (dulc), s.n. 12-5-1861 (kirk), s.n. 9-1868 (kirk), s.n. 10-1868 (kirk), s.n. 5-1879 (wats), s.n. 2-1881 (kirk).
 Kitson, A.E., 785 (heud), s.n. 1909 (cal), s.n. 27-8-1911 (dulc), s.n. 27-1-1916 (ow).
 Klaine, 13 (viol), 21 (cong), 110 (subr), 121 (subr), 152 (subr), 192 (dulc), 286 (ow), 291 (dulc), n-291 (dulc), 333 (for), 336 (subr), 336b (subr), 400 (for), 453 (un), 454 (ow), 544 (ow), 650 (glab), 728 (for), 730 (lep), 841 (man), 850 (man), 867 (ow), 910 (un), 926, 940 (ow), 941 (dulc), 942, 946, 947 (ow), 948 (dulc), 948bis (sten), 949b (for), 950 (ow), 955 (glab), 970 (fer), 971 (subr), 972 (fer), 1100 (for), 1101 (subr) 1103 (dulc), 1109 (subr), 1110 (un), 1111 (jum), 1112 (un), 1132 (subr), 1155 (dulc), 1156 (subr), 1157 (subr), 1158, 1159 (lep), 1259 (glab), 1260 (jum), 1269, 1270 (ow), 1271 (glab), 1273 (viol), 1357, 1389, 1390 (ow), 1391 (fer), 1400 (jum), 1467 (man), 1500 (glab), 1619 (for), 1655 (lep), 1728 (fer), 1861 (man), 1862 (inc), 1930bis, 1972 (ow), 2016 (dulc), 2123 (lig), 2124 (sten), 2138 (un), 2259 (sten), 2410 (un), 2411 (subr), 2524 (dulc), 2538 (viol), 2607 (dulc), 2626 (for), 2738 (viol), 2785 (dulc), 2818 (cong), 3002 (ow), 3104 (jum), 3166 (cong), 3214 (jum), 3229 (fer), 3266 (fer), 3307 (glab), 3359, 3500 (ow), s.n. 7-6-1895 (man), s.n. (ow).
 Kling, 7 (inc), 57 (dulc).
 Koechlin, J., 2408 (ow).
 Kokwaro, J.O., 3958 (kirk), 3960 (kirk).
 Koning, J. de, 32 (micr), 38 (ow), 1073 (mem), 1087 (mem), 1090 (ow), 1195 (micr), 1327 (inc), 1487 (dulc), 1834 (mem), 1880 (dulc), 1964 (micr), 2033 (ow), 2191 (ow), 2344 (micr), 2412 (ow), 2448 (dulc), 2620 (micr), 2740 (micr), 2867 (dulc), 2980 (ow), 3104 (dulc), 3429 (micr), 3466 (ow), 3567 (ow), 3643 (ow), 3907 (mem), 4440 (heud), 4859 (hirs), 5219 (tog), 5271 (for), 5409 (ow), 5601 (mem), 5647 (ow), 5687 (dulc), 5748 (ow), 5775 (mem), 5973 (ow), 6093 (micr), 6364 (dulc), 6421 (ow), 6517 (micr), 6698 (dulc), 6893 (ow), 6894 (ow), 6898 (hirs), 6901 (micr), 6905 (for), 7307, 7791, 8547 (kirk), s.n. (micr).
 Koning, J. de et al., 9574 (kirk).
 Koufani, A., 118 (viol), 227 (sten).
 Krause, L., s.n. 11-1929 (kirk).
 Kruij, A.P.M. de, 840 (vil), 1039 (lig), 1059, 1060 (glab).
 Krukoff, B.A., 033, 034, 035, 036, 037, 038, 039, 040, 042, 043, 044, 047 (jum), 048 (max), 060 (for), 065, 068 (jum), 070 (for), 073, 077 (jum), 080 (for), 205, 210 (jum), s.n. 1949 (hirs), s.n. (cong).
 Kuchar, P., 12881 (kirk).
 Küster, 268 (buch).
 Laan, F. van der, 658 (nit), 1185 (buch), 1238 (buch).
 Lacuto, s.n. (tog).
 Lamb, P.H., s.n. 24-11-1912 (ow).
 Lambinon, J., 74/1627 (em).
 Lamboray, s.n. 1907 (vil).
 Lamto, & Portères, R., 395 (cal), 400 (tog).
 Landale-Brown, I., 2616 (heud).
 Lane Poole, C.E., 60 (heud), 250 (macr), 312 (dulc), 442 (ow).
 Lap, L.J., 160 (kirk), 164 (kirk), 307 (em).
 Laurent, E., all s.n.: 25-10-1895 (lanc), 10-1895 (ow), 1-11-1895 (camp), 11-1895 (lanc, man), 2-12-1895 (man), 8-12-1895 (cong), 14-2-1896 (glab), 19-3-1896 (lanc, thol), 20-3-1896 (lanc), 12-1925 (vil), 14-12 (ow), s.d. (camp, lanc, lig, ow, thol).
 Laurent, E., & Laurent, M., all s.n.: 9-1903 (ow), 1-10-1903 (lec), 11-10-1903 (vil), 18-10-1903 (camp, thol), 19-10-1903 (lanc), 20-10-1903 (thol), 27-10-1903 (man), 31-10-1903 (ow), 10-1903 (lanc, ow), 1-11-1903 (vil), 6-11-1903 (ow), 8-11-1903 (ow), 10-11-1903 (man, ow), 14-11-1903 (cong), 20-11-1903 (lanc), 21-11-1903 (ow), 22-11-1903 (ow, man), 24-11-1903 (ow, ruf, viol), 27-11-1903 (dew), 30-11-1903 (ow), 2-12-1903 (ow), 5-12-1903 (ow), 8-12-1903 (man), 15-12-1903 (cong), 16-12-1903 (ow, vil), 19-12-1903 (ow), 23-12-1903 (ow, for), 29-12-1903 (ow), 1903 (ow), 13-1-1904 (cong, ow), 29-1-1903 (ow), 23-11-1904 (cong), 1903-1904 (camp, cong, ow, thol), 1904 (ow), 11-11-1905 (ow), s.d. (ow).
 Laurent, M., 3 (cong), 59 (ow), 127 (ow), 174 (ow), 175 (ow), 176 (ow), 217 (ow), 411 (man), 471 (ow), 537 (parv), 548 (camp), 592 (thol), 618 (lanc), 843 (cong), 1044bis (ow), 1110 (camp), 1245 (lig), 1869 (lig), 1771 (dew), 1872 (ow), 1874 (cong), 1875 (cong), 1878 (lig), 1879 (lig), 1889 (lig), 1890 (ow), 1891 (ow), 1892 (camp), 1893 (ow), 1899bis (cong).

- Lawton, R.M., 55 (kirk), 573 (parv), 863 (ow).
 Lebrun, J., 120 (lanc), 261 (ow), 709 (man), 1045 (cong), 1247 (inc), 1256 (cong), 1473 (lig), 2183 (ow), 2361 (ow), 3333 (cong), 4699 (buch), 6091 (dew), 6173 (cong), 6203 (lanc), 6204 (glab), 6309 (cong), 6355, 6424 (inc), 6433 (lanc), 6605 (ow), 6787 (lig), 6811 (lig).
 Lecerf, s.n. 15-6-1900 (hirs), s.n. 1-1900 (hirs), s.n. 1900 (hirs), s.n. (hirs).
 Leclere, 201 (ow).
 Lecomte, H., D78 (man), C97 (man), B100 (lec), s.n. 5-3-1894 (subr), s.n. (ax, lec, man).
 Lecomte, H., & Finet, 342 (heud), 343 (heud).
 Ledermann Ramorum, 2325 (hirs).
 Ledoux & Huyge, 40 (cong).
 Leemans, J., 166 (man), 466 (for), 525 (ow), 557 (ow).
 Leeuwenberg, A.J.M., 2549 (inc), 2559 (ow), 3057 (mit), 3092 (micr), 3770 (hirs), 3878 (inc), 4325 (heud), 5333 (for), 5623 (man), 5719 (sten), 5844 (land), 6219 (cong), 6712 (cong), 7929 (ow), 8052 (ow), 8337 (ow), 8431 (inc), 8906 (brun), 9027, 9065 (inc), 9074 (rob), 9567 (land), 9709 (jum), 9891, 9993 (inc), 10563 (sten), 10792 (kirk), 10806 (wats), 11104 (tog), 11199 (cal), 11212 (dulc), 11309 (dulc), 11388 (glab), 11439 (inc), 11535 (jum), 11537 (ow), 11539 (for), 11587 (man), 12053 (dulc), 12070 (hirs), 12080 (micr), 12102 (dulc), 12110 (inc), 12118 (micr), 12135 (inc), 12137 (dulc), 12147 (micr), 12160 (mem), 12161 (mem), 12165 (dulc), 12217 (micr), 12227 (dulc), 12233 (inc), 12247 (heud), 12271 (hirs), 12273, 12283 (inc), 12292 (for), 12295 (dulc), 12307 (micr), 12331 (ow), 12337 (for), 12338 (hirs), 12339 (ow), 12343 (micr), 12345 (dulc), 12361 (hirs), 12363 (micr), 12364 (mem), 12399 (nit), 12408 (pyr), 12466 (dulc), 12482 (glab), 12491 (glab), 12497 (dulc), 12512 (ret), 12522 (glab), 12538 (inc), 13141 (ow), 13148 (kirk), 13166 (man), 13170 (wats).
 Leeuwenberg, A.J.M., & Berg, C.C., 9845 (ow).
 Leeuwenberg, A.J.M., & Persoon, J.G.M., 13489 (viol), 13507 (noct), 13509 (noct), 13524 (fer), 13535 (dew), 13548 (dew), 13549 (gland), 13553 (lig), 13560 (fer), 12566 (noct), 13567 (dew), 13568 (ow), 13571 (dew), 13572 (ow), 13574 (dew), 13582 (fer), 13587 (ow), 13588 (gland), 13593 (brev), 13605 (lig), 13606 (dew), 13615 (fer), 13618 (ow), 13623 (ret), 13634 (dew, lig), 13636 (lig), 13639 (fer), 13640 (glab), 13643 (ow), 13646 (ow), 13653 (lec), 13658 (glab), 13660 (man), 13661 (fer), 13662 (cong), 13667 (ow), 13669 (jum), 13678 (dulc), 13679 (subr), 13682 (ow), 13694 (lig), 13699 (brev), 13704 (dulc), 13705 (max), 13705a (max), 13708 (lig), 13710 (glab), 13711 (ret), 13712 (noct).
 Leeuwenberg, A.J.M., & Voorhoeve, A.G., 4969 (mem).
 Lejoly, J., 82/773 (thol), 82/774 (lanc), 82/791 (camp), 82/938A (lig), 83/190 (dulc), 84/792 (ow), 86/1107 (gland), 3943 (ow), 4135 (dew), 5035 (dew).
 Leleup, N., 6 (thol).
 Lemaire, B., 113 (rob), 157 (ow), 158 (vil), 159 (ow), 166 (for), 170 (inc).
 Lemos, F. de, & Balsinhas, A., 257 (kirk).
 Léonard, A., 702 (inc), 738 (cong), 870 (cong), 1960 (inc), 2312 (land), 2802 (inc), 2818 (ow), 2921 (ow), 3093 (buch), 3277 (buch), 3918 (buch), 4954 (dew), 5405 (buch), 5512 (buch).
 Léonard, J., 540 (viol), 853 (cong).
 Leprieur, s.n. 4-1826 (heud), s.n. 2-1829 (heud), s.n. 1830 (heud), s.n. (heud).
 Lescrauwaet, E., 253 (man), 272 (lanc), 292 (vil), 317 (ow), 359 (ow).
 Le Testu, G., 99 (dulc), 114 (tog), 170 (ow), 318 (kirk), 337 (kirk), 464 (kirk), 1407 (subr), 1475 (subr), 1715 (ow), 1822 (inc), 1843 (let), 1847 (ax), 1854 (viol), 1968 (gland), 2008 (dulc), 2035 (dew), 2037 (for), 2057 (ow), 2058 (cong), 2122 (subr), 2158 (jum), 2212 (man), 2116 (lec), 2220 (lec), 2259 (man), 2351 (cong), 2410 (ow), 2597 (land), 3825 (land), 4125 (cong), 4211 (cong), 4290 (for), 5091 (inc), 5027 (ax), 5089 (lec), 5156 (for), 5231 (brun), 5471 (rob), 5742 (subr), 5951 (rob), 5965 (viol), 5978 (sten), 6353 (subr), 6390 (gland), 6414 (let), 6433 (viol), 6464 (brun), 6528 (brun), 6529 (viol), 6531 (rob), 7043 (let), 7101 (viol), 7102 (man), 7526 (lec), 7554 (subr), 7948 (let), 7950 (let), 7963 (brun), 8026 (fer), 8079 (ow), 8258 (lec), 8495 (subr), 8683 (for), 8723 (man), 8730 (fer), 8733 (glab), 8857 (for), 9063 (land), 9190 (rob), 9275 (sten), 9360 (jum), 9589 (dew), s.n. 21-10-1901 (hirs), s.n. (buch, for, kirk).
 Letouzey, R., 2417 (ow), 2911 (ow), 2917 (hirs), 2961 (man), 3618 (dew), 3756 (ow), 4393 (dew), 4394 (ow), 5615 (vil), 5636 (vil), 5744 (ow), 8227 (inc), 8397 (man), 9416 (inc), 9914 (rob), 10729 (dulc), 11153 (gland), 11278 (glab), 11527 (vil), 12001 (viol), 12023 (glab), 12123 (cong), 13579 (glab), 13611 (dulc), 13831 (cong), 14032 (inc), 14060 (dulc), 14135 (dulc), 14148 (glab), 14149 (cong), 14171 (for), 14519 (brun), 14834 (jum), 15238 (for).
 Letouzey, R., & Villiers, J.F., 10514 (man).
 Lettre, 161 (ow), 161 27-2-1908 (vil), 229 (vil),

- 284 (vil), 533 (for), 633 (ow), 807 (vil), 881 (vil), 2701 (ow).
- Lewalle, J., 1295 (ow), 2637 (parv), 3359 (ow), 3487 (parv), 3915 (buch), 4568 (parv), 5623 (parv), 6117 (em), 6235 (ow).
- Lewis, T.W., 228 (buch).
- Liben, L., 1349 (em), 1713 (inc), 1740 (cong), 1826 (vil), 2169 (cong), 2231, 2283 (rob), 2310 (lig), 2325 (vil), 2353 (for), 2505 (ow), 2581 (for), 2920 (cong), 3269 (ow), 3371 (lanc), 3465 (lanc), 3741 (ruf), 3765 (camp), 3914 (ow).
- Lindeman, H.A., 357 (parv).
- Linder, D.H., 89 (inc), 761 (ow), 937 (dulc), 942 (ow), 963 (dulc), 1081 (dulc), 1683 (ow).
- Linton, A., 119 (buch), 120 (buch), 146 (kirk), s.n. 1-1905 (kirk), s.n. (buch).
- Lisowski, S., 15901 (dulc), 16603 (inc), 16754 (ow), 16878 (ow), 17030 (cong), 17104 (rob), 17655 (inc), 17816 (glab), 18187 (camp), 18419 (cong), 18541 (ow), 41593 (thol), 41635 (thol), 42662 (inc), 43373 (cong), 43457 (cong), 45200, 46621 (inc), 46921 (cong), 47233 (for), 47351 (vil), 49902 (vil), 50098 (ow), 50161 (man), 51647 (dulc), 51697 (ow), 52292 (dew), 52318 (ow), 52373 (dew), 55132 (kirk), 55133 (kirk), 55134 (parv), 55135 (parv), 55136 (parv), 55137 (heud), 55138 (heud), 55139 (heud), 55140 (dulc), 55141 (dulc), 55142 (dulc), 55143 (dulc), 56745 (lanc), 60085 (buch), 60086 (kirk), 60094 (kirk), 60095 (parv), 60096 (parv), 60097 (parv), 60098 (kirk), 60099 (kirk), 60252 (kirk), 60254 (kirk), 60255 (parv), 60260 (buch), 60261 (buch), 60262 (buch), 60266 (dulc), 60267 (dulc), 60268 (dulc), 60269 (dulc), 60788 (buch), 60789 (buch), 60791 (ow), 85031 (lanc), B3587 (gland).
- Lisowski, S., et al., 4052 (buch), 9203 (buch), 11421 (buch).
- Lissouba, P., 5 (thol).
- Lloyd, H.B., 1 (cong).
- Lock, S., GC43538 (micr), GC43967 (ow), GC44117 (micr).
- Louis, A.M. et al., 264 (jum), 271 (ow), 292 (ow), 307 (ow), 378 (rob), 447 (jum), 599 (let), 693 (fer), 734 (noct), 1102 (subr), 1107 (ow), 1111 (inc), 1176 (noct), 1180 (cong), 1291 (dulc), 1390 (lig), 1405 (pyr), 1472 (dew).
- Louis, J., 394 (ow), 751 (vil), 999 (ow), 1327 (ow), 1578 (ow), 2111 p.p. (cong), 2111 p.p. (lig), 2433 (inc), 2676 (vil), 2879 (for), 2939 (ow), 2942 (vil), 3009 (ow), 3146, 3170 (rob), 3400 (ow), 3715 (rob), 3727 (cong), 3756 (man), 3812 (for), 3841, 4202 (rob), 4223 (vil), 4244 (for), 4321 (glab), 4322 (dew), 5589 (vil), 5597 (rob), 5623 (vil), 5659 (for), 5685 (inc), 5692 (cong), 5730 (ow), 5744 (ow), 5815 (rob), 5879 (man), 5911 (inc), 6058 (rob), 6106 (vil), 6164 (dew), 6175 (man), 6255 (for), 6351 (vil), 6433 (rob), 6531 (vil), 6532 (cong), 6550 (glab), 6819 (cong), 7251 (dew), 7452 (cong), 7672 (cong), 8216 (rob), 8376 (cong), 8381 (dew), 8571 (ow), 8618 (glab), 8695 (ow), 8840 (inc), 9581 (ow), 9980 (cong), 10369 (ow), 10724 (for), 10919 (vil), 11193 (inc), 11318 (cong), 11649 (lig), 11862 (ruf), 11898 (rob), 11908, 12052, 12093 (inc), 12394 (for), 12512 (cong), 12532 (jum), 12537 (glab), 13107 (for), 13131, 13580, 13615, 13658 (rob), 13660 (ow), 13687 (ow), 13814 (lig), 13844 (ow), 13865 (inc), 13949 (cong), 14158 (lig), 14202 (ow), 14456 (ow), 14572 (man), 14580 (inc), 15170 (lig), 15617 (cong), 15650 (cong), 15700 (vil), 15729 (ruf), 15793 (for), 15844 (for), 15849 (lig), 15865 (inc), 15887 (rob), 15872 (cong), 16037, 16171 (inc), 16392 (cong), 16544 (man), 16571 (dew), 16572 (vil), 16573 (ow), 16575 (rob), 16658 (man), 16713 (lig), 16894 (lig), 16968 (rob).
- Luc, s.n. 1901 (man).
- Lucas, A., 2 (land).
- Ludanga, R.I., 1780 (em).
- Luja, E., 1 (vil), 1 8-1906 (ow), 2 (ow), 3 (ow), 4 (ow), 5 (ow), 6 (cong), 7 (ow), 124 (rob), 144 (cong), 158 (vil), 163 (man), 164 (man), 168 (man, ow(?)), 169 (camp), 170 (ow), 170a (ow), 170b (ow), 181 (man), 196 (ow), 201 (ow), 266 (lanc), 267a (ow), 267c (ow), 290a (cong), 345 (dew), 363 (buch), 419 (buch), 434 (buch), 443 (buch), 477 (buch), s.n. 19-4-1904 (ow), s.n. 11-1904 (man), s.n. 12-1904 (ow), s.n. 1-1905 (ow).
- Lukuesa, M., 951 (parv).
- Lye, K.A., 4184 (parv), 6944 (buch).
- Lynes, H., 4 (buch), 100 (lanc), 100bis (lanc), 136B (lanc), 238 (lanc), 640bis (parv).
- Maas Geesteranus, R.A., 5318 (buch).
- Macêdo, A., & Macuácuá, L., 3659 (kirk).
- Macgregor, W.D., 340 (dulc).
- Mackay, J.H., s.n. 1940 (hirs).
- Maclauid, 101 (heud), 242 (heud), 344 (heud), s.n. 1898 (heud).
- Macleod, s.n. 26-5-1905 (subr).
- Macuácuá, L., 12 (kirk).
- Maelwijn, W.D., 314 (ow).
- Magogo, F., 88 (kirk), 376 (buch).
- Mahommedi, Y., 9101 (kirk).
- Maitland, T.D., 75 (ow), 305 (buch), 426 (ow).

- Makany, L., 373b (lanc), 606 (lanc), 1067 (inc), 1076 (cong), 1651 (lig), 1974 (thol).
- Malaisse, F., 4556 (buch), 6472 (kirk), 6685 (kirk), 7869 (kirk), 7955 (kirk), 8663 (kirk), 8673 (ow), 9949 (kirk), 9938 (em), 11859 (parv), 11860 (ow), 12382 (kirk), 12532 (kirk), 14152 (cum).
- Malaisse, F., & Robbrecht, E., 2314 (camp).
- Malchair, I (rob), 32 (ow), 71 (rob), 191 (ow), 192 (rob), 393 (for), s.n. 1910 (for).
- Mangenot, G., 2125 (dulc), 2126 (dulc).
- Mann, G., 848 (inc), 2242 (cal), 2261 (dulc), 2311 (ow), s.n. 1862 (man).
- Markström, C., 059B (ow), 076 (lanc).
- Marques, S., 240 (camp).
- Marques, A., & Balsinhas, A., 64 (kirk).
- Martin, J.D., 866 (parv), 910 (parv).
- Martin, s.n. (land, ow).
- Martins, V., 69A (ow).
- Massa, L., 195 (buch).
- Matsui, T., 1351 (ow), 1696 (ow), 1715 (buch).
- Maudoux, E., 209 (lec).
- Mavi, S., 640 (kirk).
- Mazade, M., 64 (ow).
- Mbailwa, 24 (buch).
- McGregor, G.M., 61/39 (kirk), 87/39 (kirk).
- MConlêh, A.G., 3 (ow).
- McKey, D., 9 (dulc).
- Mechov, A. von, 510 (thol), 520 (lanc).
- Meer, P.P.C. van, 70 (ow), 388 (micr), 767 (dulc), 896 (ow), 906 (dulc), 1027 (dulc), 1082 (inc), 1203 (cal), 1206 (cal), 1375 (viol), 1376 (glab), 1415 (dulc), 1451 (dulc), 1506 (viol), 1580 (dulc), 1600 (ow), 1610 p.p. (dew), 1610 p.p. (glab), 1620 (dulc), 1635 (for), 1683 (dulc), 1770 (buch), 1800 (inc).
- Meikle, R.D., 1252 (dulc), 1396 (cal).
- Melville, F.A., & Hooker, T., 207 (dulc).
- Mendes, E.J., 280 (parv), 459 (parv), 938 (buch), 1399 (parv), 2026 (parv), 2194 (camp), 2368 (lanc), 2766 (lanc), 2910 (lanc), 2973 (camp), 3164 (lanc), 3283 (parv), 3415 (parv).
- Mendes dos Santos, R., 1656 (camp), 1693 (camp), 1878 (camp), 1883 (thol), 2088 (camp), 2129 (camp), 2140 (camp), 2174 (gos), 2274 (gos), 2393 (gos), 2509 (gos).
- Mendonça, F.A., 28 (kirk), 83 (kirk), 583 (buch), 856 (parv), 1227 (parv), 1231 (kirk), 1864 (kirk), 1874 (kirk), 1875 (kirk), 1976 (kirk), 2511 (kirk), 2632 (kirk), 3258 (kirk), 3763 (kirk).
- Menezes, A. de, 2722 (parv), 3892 (camp).
- Merk, 2322 (kirk).
- Merker, J., 224 (buch).
- Merrill, E.D., C-86 (wats), s.n. 11-1902 (ow).
- Meurillon, A., 848 (ow).
- Meyer, F.G., 8830 (buch), 8866 (buch), 8990 (buch).
- Meijer, W., 15120 (man).
- Mgaza, C.D., 748 (kirk).
- Michel, G., 2742 (ow), 3862 (em).
- Michelin, anno 1828 (heud).
- Michelmores, A.P.G., 356 (parv), 512 (kirk), 560 (kirk).
- Michelson, A., 552 (ow), 640 (ow), 680 (dew), 1325 (em).
- Miège, J., s.n. 20-5-1965 (dulc).
- Milchersich, R., 92 (buch).
- Mildbread, J., 3596 (ow), 3611 (camp), 3612 (thol), 3613 (lanc), 3614 (ow), 4714 (man), 5106 (cong), 5367 (dulc), 5432 (inc), 7392 (dulc), 8430 (hirs), 8719 (ow), 9414 (ow), s.n. (ow).
- Millen, H., 155 (dulc), 168 (ow), 169 (dulc).
- Miller, R.G., 151 (kirk), 343 (kirk), 345 (kirk), 346 (parv), 347 (buch), 348 (parv), 349 (parv), 350 (parv), 352 (kirk), 353 (kirk), 356 (kirk), 357 (kirk) 359 (kirk), 360 (kirk), 361 (buch).
- Milne-Redhead, E., 502 (parv), 2619 (camp), 3410 (parv), s.n. 14-9-1930 (buch).
- Milne-Redhead, E., & Taylor, P., 8441 (parv).
- Miquel, 12 (heud).
- Missão de Huila, 35 (parv), s.n. (parv).
- Mitchell, B.L., 17/89 (parv).
- Mogg, A.O.D., 26991 (kirk), 27277 (kirk), 27289 (kirk), 27518 (kirk), 27567 (kirk), 30027 (kirk), 30280 (kirk), 30295 (kirk), 31896 (buch).
- Moloney, X1 (dulc), s.n. 4-1883 (hirs), 10-1883 (hirs, ow).
- Monteiro, J.J., 2/3 (kirk).
- Monteiro, C., s.n. 4-1873 (ow).
- Monteiro, A. da S., 7 (parv).
- Monteiro, R., & Murta, 291 (rob), 1523 (camp), 1709 (camp), 1715 (thol).
- Moon, J.L., 580 (buch).
- Mooney, H.F., 5720 (buch), 6731 (buch).
- Mortehan, 538 (inc), 777 (cong), 943 (rob), 1032 (ow), 1036, 1041 (rob).
- Morton, J.K., A447 (dulc), A455 (dulc), A540 (tog), A3980 (inc), GC9409 (ow).
- Mosango, 445 (ow).
- Moss, & Cohen, E., 730 (kirk).
- Mossop, M.C., 13483 (kirk).
- Moura, A. et al., 46 (kirk), 451 (kirk).
- Moutsamboté, J.-M. 100 (fer), 222 (for).
- Movan, s.n. 7-1903 (ow).
- Muambi, F., 55 (lanc), 72, (thol), 156 (ow).
- Muchiri, J., 517 (kirk).
- Mullenders, W., 1237 (inc), 1643 (ow).

- Müller, T., & Biegel, H., 1285 (buch).
Mullin, L.J., 109/63 (buch).
Mundenda, E., 9 (parv).
Mungai, G.M., 151 (buch).
Mungwe, H.E., 9 (parv).
Murta, 363 (buch).
Mutimushi, J.M., 3180 (ow), 3188 (inc), 3379 (ow).
Mwasumbi, et al., 10977 (kirk).
- Namur, C. de, 1424 (micr), 1427a (dulc).
Nana, P., 450 (ow), 469 (ow).
Nel, J.P., 379 (kirk).
Néré, de, 152 (lanc), 188 (lig), 751 (rob), 1279 (lanc), 1294 (thol).
Netshiungani, E., 668 (kirk).
Newton, F., 229 (parv).
Ngoundai, 415 (buch).
Nishida, T., 101 (ow), 111 (buch), 160 (buch), 346 (ow), 370 (ow).
Nobbs, E.A., 716 (kirk).
Noel, A.R.A., 72 (kirk).
Nozeran, s.n. 8-1955 (micr).
Nsimundele, 371 (ow), 604 (camp), 802 (ow), 852 (lig).
Nur, s.n. 26-3-1918 (ow).
Nyman, E., s.n. 1897-1900 (wats).
- Obeng-Darko, K., 5093 (dulc).
Obermeyer, A.A., 2308 (kirk), 2323 (buch), s.n. (kirk).
Obermeyer, A.A., et al., 68 (kirk), 172 (kirk), 304 (kirk).
Odewo, & Oni, TKO 208 = FHI 79746 (ow).
Oldeman, R.A.A., 467, 708 (inc), 919 (heud), 959 (micr), 1002 (micr).
Opajemi, J., 37 (dulc).
Orey, J. d', 13 (kirk), 89 (heud).
Overlaet, 1236 (ow).
- Palaijjer, 400 (ow).
Palisot de Beauvois, s.n. (ow).
Pardy, A.A., & Armitage, F.B., 19 (kirk).
Paroisse, G., 5 (heud), 7 (heud), 8 (hirs), 10 (hirs, heud), 14 (heud), 16 (dulc), 17 (heud), 18 (heud), 19 (heud), 20 (heud), 21 (heud), 22 (heud), 27 (heud), 31 (dulc), 70 (heud), 214 (heud).
Parry, M.S., 61 (em).
Paterson, K.R., 1 (buch), 2 (parv).
Pauwels, L., 86 (camp), 92 (camp), 132 (lanc), 257 (lanc), 341 (camp), 615 (lanc), 685 (camp), 1098 (lanc), 1120 (lanc), 1331 (lig), 1338 (rob), 1365 (camp), 1403 (for), 1407 (rob), 1545 p.p. (ow), 1792 (for), 1873 (dew), 2019 (camp), 2065 (ruf), 2127 (inc), 2308 (ow), 2408 (ow), 2432 (ow), 2439 (cong), 2471 (thol), 2532 (camp), 2805 (thol), 3134 (thol), 3377 (lig), 3392 (brun), 3430 (cong), 3441 (ow), 3442 (brun), 3452 (ow), 3592 (cong), 3682 1-7-1959 (lig), 3682 8-7-1959 (glab), 3790 (for), 3911 (for), 3981 (vil), 4064 (for), 4119 (for), 4121 (ow), 6100 (ow), 6185 (rob), 6224 (ow), 6234 (lig), 6420 (camp).
Pawek, J., 1334 (parv), 1682 (parv), 1693 (parv), 3054 (parv), 3328 (buch), 5648 (parv), 5931 (buch), 6963 (parv), 6870 (ow), 7651 (parv), 9676 (buch), 10107 (parv), 10803 (parv), 11904 (ow), 11988 (ow).
Pedro, E., 2023 (kirk).
Pedro, J. Gomes, & Pedrogão, 1523 (kirk), 5398 (kirk).
Perdue, R.E., & Kibuwa, S.P., 8090 (buch), 10024 (kirk).
Pereira, A. & Marques, A., 763 (kirk).
Pereira, A. Gomes, s.n. 7-1967 (camp).
Pereira, J. Alves, 1007 (dulc), 1297 (heud), 1502 (heud), 1532 (heud), 1544 (dulc), 1683 (dulc), 2058 (heud), 2580 (heud), 2658 (hirs), 2939 (heud), 3645 (dulc), 3670 (heud), 3714 (heud).
Périquet, L., 37 (ow), 57 (for), 98 (ow), 121 (viol), s.n. (ow).
Perrottet, 491 (heud).
Peter, A., 30522 (parv), 31390, 31567, 31594 (kirk), 35234, 35325 (parv), 39598 (kirk), 39680, 40035 (wats), 45401 (kirk), 56977 (wats), 56982 (heud), 56983, 56987 (buch), 56988 (wats), 56993 (cong), 56995, 57001 (kirk), 57011 (ow), 57020, 57022 (kirk), 57024 (ow), 57026 (wats), 57027, 57029 (kirk), 57030 (buch), 57035 (kirk), 57040 (wats), 57041, 57043 (kirk), 57044 (buch), 57045 (kirk), 57046 (parv), 59328 (buch).
Phillips, E.P., 410 (em), 2430 (buch), 2453 (parv), 3095 (parv), 3149 (em), 4160 (buch), 4241 (buch), 4479 (parv).
Piedboeuf, L., 201, 201bis, 202, 202bis, 203bis, 205, 205bis, 206, 208bis, 209, 209bis, 210bis, 823 (ow).
Pierlot, R., 429 (ow), 1874, 2793, 7993 (buch).
Pilz, G.E., 2133, 2137 (dulc).
Pimento, A.A., 35 (kirk).
Pitt, J., 510 (em).
Pittery, 172 (cong), 173 (rob), 174 (cong).
Plowes, D.C.H., 2359 (kirk).
Pobéguin, H., 6 (dulc), 8, 38 (heud), 75 (ow), 84 (heud), 92 (dulc), 166 (man), 167, 175 (ow), 187 (man), 191 (lanc), 194 (ow), 703 (dulc), 1438 (ow), 1530 (macr), 1618 (hirs), 1929, 2051 (ow), s.n. 6-1907, s.n. 11-1909 (ow), s.n.

- (dulc, heud, ow).
Pocock, M.A., 439 (camp).
Pogge, 1015 (rob), 1074 (lanc).
Poisson, E., 35 (tog), 51 (tog), 52 (tog), 98 (ow),
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01.3.26 (cal), s.n. 01.3.60 (tog), s.n. 1-1900
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(dulc, ow).
Pole-Evans, I.B., 2870 (parv), 3759 (kirk).
Pooley, E.S., 797 (kirk).
Pope, G., & Muller, T., 1759 (kirk).
Portères, R., 3003 (heud), 3049 (heud).
Powell, H., 16 (buch).
Prain, s.n. 24-8-1895 (kirk).
Preuss, R., 187 (subr), 804 (fla).
Prittwitzii, 176 (buch).
Prittwitzii, & Gaffron, 175 (buch).
Procter, J.E.A., 79 (em), 182 (buch), 1032 (em),
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Purseglove, J.W., 3585 (ow).
Pynaert, L., 52 (dew), 92 (dew), 96 (lig), 104
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Pyne, C.T., 106 (dulc).
Quarré, 291 (kirk), 500 (parv), 529 (kirk), 632
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3812 (kirk), 4661 (kirk), 6183 (ow), 7049 (em).
Queen Victoria Memorial Herbarium, 8347
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Questiaux, L., 1 (camp), 2 (parv).
Quintas, F., 141 (kirk).
Raimundo, A.F., & Guerra, J.A., 86 (heud), 95
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581 (dulc), 615 (heud), 623 (heud), 707 (heud),
822 (ow), 861 (heud), 905 (heud), 952 (heud).
Raimundo, F., et al., 472 (camp), 497 (lanc), 899
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Ramsey, 4 (cal), 4 (1-1882) (ow).
Raynal, J., 20677 (em), 20948 (heud).
Raynal, J. & A., 10356 (land).
Reekmans, M., 548 (parv), 1031 (em), 1079
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3070 (em), 3562 (ow), 3786 (em), 5117 (buch),
5482 (ow), 5837 (parv), 6361 (buch), 6533
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Rees, A.F., T20 (parv).
Reitsma, J.M., 106 (kirk), 160 (kirk), 841 (fer),
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1422 (ow), 1450 (ow), 1496 (dew), 1589 (fer),
1664 (ow), 1738 (ow), 1812 (ow), 1969 (ret),
1976 (fer), 2044 (ow), 2284 (man), 2437 (ow),
2676 (ow), 2927 (dew), 2934 (gland), 3034
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3170 (viol), 3172 (glab), 3206 (ow).
Renier, M., 115 (ruf), s.n. 13-6-1946 (ow).
Rensburg, H.J. van, Z3060 (parv).
Richard, s.n. (dulc).
Richards, H.M., 390 (parv), 404 (ow), 563
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10646 (parv), 10980B (parv), 11015 (parv),
11091 (parv), 11148 (kirk), 11240 (kirk),
11502 (kirk), 11786 (buch), 13195 (kirk),
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Richards, H.M., & Arasululu, S., 25811 (parv).
Richards, P.W., 5120 (ow).
Ringoet, A., s.n. 10-10-1916 (kirk).
Risopoulos, S., 877 (camp), 920 (buch), 994
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Ritschard, F., 1496 (kirk), 1698 (ow).
Robertson, D.C., 622 (kirk).
Robertson, R.G., 137 (kirk).
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Roberty, G., 7078 (heud), 7104 (heud), 7196
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Robinson, E.A., 3946 (kirk), 5890 (camp), 6048
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Robson, N.K.B., 501 (ow), 588 (buch).
Robyns, W., 261 (lanc), 262 (thol), 281 (man),
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Rodgers, W.A., 95 (parv), 249 (parv), 354
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Rodin, R.J., 4698 (kirk).
Rodrigues, J.E. et al., 352 (kirk).
Rogee, J.F., 55 (heud).
Roders, F.A., 8152 (parv), 8388 (kirk), 8932
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Rogers, J.W., H30/43 (kirk).
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- 21 (glab), lettre 534 (man), s.n. (vil).
 Rossignol, 66 (inc).
 Rouy, s.n. 1904 (thol).
 Rowland, J.W., s.n. 4-1890 (dulc).
 Rudier, M., s.n. 4-1899 (ow).
 Ruffo, C.K., 6 (parv), 293 (kirk), 1565 (buch).
 Ruigvet, 17793 (kirk).
 Runyinya, B., 867 (em).
 Sacleux, H.J., 1868 (wats).
 Sacleux, R.P., 532 (kirk), s.n. (kirk).
 Saint Clair-Thompson, G.W., s.n. (hirs, ow).
 Salésiens, R.P., 191 (kirk), 299 (kirk), 300 (ow),
 934 (em).
 Salubeni, A.J., 616 (buch).
 Sanane, M., 679 (parv), 950 (kirk), 1380 (kirk).
 Sangai, G.W., EA15734 (kirk).
 Sanjinje, AV191 (camp), AV190 (camp).
 Santos, R.M., 815 (buch).
 Sapin, A., s.n. 2-7-1902 (parv), s.n. 23-5-1906
 (lanc), s.n. 5-1906 (thol) s.n. 11-6-1906 (lanc),
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 (ow), s.n. 23-11-1906 (dew), s.n. 15-12-1906
 (cong), s.n. 11/15-1-1907 (dew), s.n. 17-1-1907
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 7-1907 (camp, ow, thol), s.n. 9-8-1907 (camp),
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 (cong), s.n. 10-1910 (dew, ow), s.n. 12-1910
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 Satabié, B., 216 (buch), 275 (cong), 554 (ow),
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 Sayalel, P.O., 5135 (parv).
 Schayes, M., 1592 (camp), 1637 (parv), 1801
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 Schiffner, 50 (wats).
 Schlechter, R., 11619 (kirk), 12447 (lanc), 12544
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 Schlieben, H.J., 34 (em), 59 (em), 1296 (kirk),
 2504 (parv), 5271 (kirk), 5889 (parv), 7359
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 Schmitz, A., 411 (kirk), 578 (kirk), 752 (buch),
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 2575 (kirk), 2586 (kirk), 2612 (kirk), 3068
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 Schnell, R., 563 (ow), 722 (dulc), 2287 (heud),
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 Schweinfurth, G., 3842 (vil).
 Scott Elliot, G.F., 3878 (ow), 4249 (dulc), 4275a
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 4773 (heud), 4924 (macr), 5091 (dulc), 5127
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 Semsei, S.R., 3717 (kirk).
 Senni, L., 39 (buch).
 Seret, F., 1 (ow), 3 (ow), 4 (vil), 11 (for), 675
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 Shabani, S., 321 (buch), 477 (kirk).
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 Siame, W., 210 (kirk).
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 Silva, C. da, et al., 138 (kirk).
 Sim, D., 1 (mem), 3 (ow), 6 (ow), 7 (dulc), 9
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 Simão, J., 380 (kirk), 436 (kirk), 478/48 (kirk),
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 Simon, B.K., & Williamson, G., 1856 (parv).
 Sita, P., 1180 (lanc), 1303, 1839 (rob), 1840
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- Soares, J., s.n. (heud).
- Solheid, J., 126 (man).
- Soyaux, H., 184 (dulc), 219 (dulc), 233, 250 (lep), 269 (dulc).
- Sparano, 24 (ow).
- Spichiper, s.n. 23-4-1972 (ow).
- Spire, 1 (ow), 3 (lanc), 4 (ow), XVI (wats), s.n. 5-1904 (kirk, wats).
- Spjut, R.W., 3938 (kirk).
- Spjut, R.W., & Ensor, P.D., 2623 (kirk).
- Staner, F., 865 (lig), 1413 (man), 1502 (lig), 1517 (man).
- Starin, E.O., 131 (heud).
- Station de l'Ivoloina, 3 (man).
- Staudt, A., 108 (rob), 883 (ow).
- Stephen, J., 847 (kirk).
- Stevenson, D., 89 (parv), 349 (kirk).
- Stolz, A., 94 (ow), 175 (ow), 176 (buch), 177 (buch), 299 (buch), 300 (buch), 301 (kirk), 7719 (ow), s.n. 1910 (ow).
- Stoop van de Kasteel, F.S.C., 228 (dulc).
- Strey, R.G., 6288 (kirk), 6810a (kirk), 6810b (kirk).
- Streel, M., 948 (parv).
- Strid, A., 2366 (camp), 2782 (parv).
- Story, R., 5944 (kirk).
- Struhsaher, T., s.n. 28-3-1968 (for).
- Stuhlmann, 930 (em).
- Surcouf, s.n. 28-10-1926 (kirk).
- Suzuki, A., 292 (ow).
- Swynnerton, C.F.M., 81 (kirk), 81a (kirk), 82 (buch), s.n. (buch).
- Symoens, J.J., 9653 (parv), 11289 (parv).
- Synnot, T.J., 311 (buch), 407 (buch), 510 (ow).
- Szafranski, F., 1251 (cong).
- Talbot, P.A., 62 (max), 234 (dulc), 297 (dulc), 298 (un), 299 (for), 999 (max), 1038 (dew), 1055 (sten), 1304 (max), 1441 (cong), 1443 (cong), 1445 (viol), 1480 (un), 1526 (lep), 1617 (ow), 1655 (ow), 1658 (ow), 2030 (for), 2047 (lep), 2049 (ow), 3055 (cal), 3126 (cal), 3190 (lep), 3195 (dulc), 3832 (ow), s.n. 1911 (dew), s.n. 1911-1912 (dew), s.n. 1912-1913 (dew, dulc), s.n. 1913 (dulc).
- Tanner, R.E.S., 6010 (ow).
- Taylor, L.E., 3329 (kirk).
- Taylor, W.E., s.n. 2-1886 (parv).
- Teissonnier, s.n. 1899 (heud).
- Teixeira, J.B., 6 (camp), 198 (camp).
- Teixeira, J.B. et al., 12563 (parv).
- Terashima, H., 42 (ow).
- Tessmann, G., 593 (cong), 799 (inc).
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