



The D. H. Hill Library



FORESTRY RESOURCES  
LIBRARY

North Carolina State University

Forestry

QK391

Ø4

v.4

pt.1

N.C. STATE UNIVERSITY D.H. HILL LIBRARY



S00427209 O

TRANSFER  
REMARK SLIP

NEW CALL NO.

Forestry  
QK391  
84  
u.4  
pt. 1

OLD CALL NO.

QK391  
84  
u.4  
pt. 1

Please leave Remark

B2 11-1

THIS BOOK IS DUE ON THE DATE  
INDICATED BELOW AND IS SUB-  
JECT TO AN OVERDUE FINE AS  
POSTED AT THE CIRCULATION  
DESK.

FOREST RESOURCES

LIBRARY







FLORA OF TROPICAL AFRICA.



OLIVER, DANIEL  
FLORA

OF

TROPICAL AFRICA.

EDITED BY

SIR W. T. THISELTON-DYER, K.C.M.G., C.I.E.,  
LL.D., Sc.D., F.R.S.

HONORARY STUDENT OF CHRIST CHURCH, OXFORD  
DIRECTOR, ROYAL BOTANIC GARDENS, KEW.

VOL. IV.—SECTION 1.

*OLEACEÆ TO GENTIANEÆ.*

PUBLISHED UNDER THE AUTHORITY OF THE SECRETARY OF STATE  
FOR FOREIGN AFFAIRS.



L. REEVE & CO., LTD.,  
THE OAST HOUSE, BROOK, ASHFORD, KENT.

1904.

DATES OF PUBLICATION OF THE SEVERAL PARTS  
OF THIS VOLUME.

- Part I. pp. 1-192 was published *July* 1902.  
„ II. „ 193-384 „ *December* 1902.  
„ III. „ 385-576 „ *March* 1903.  
„ IV. „ 577 to end „ *November* 1904.

*Reprinted 1958*

## PREFACE.

---

THE large and constantly increasing mass of material has exceeded the space allotted to it, and has made it necessary to divide the present volume of the "Flora of Tropical Africa" into two sections.

The concluding part of the present section has been delayed as far as practicable in order to include in the Addenda the most recent additions to our knowledge of the Orders described, and especially to bring up to date what has been ascertained with regard to the *Apocynaceæ*, which include most of the caoutchouc-producing plants of Tropical Africa, as well as others yielding medicinal products of great value.

For the amended definition of the regions into which the area of the flora is divided, reference may be made to the preface to the seventh volume.

In the prefaces to the first, fifth, seventh, and eighth volumes, will be found an enumeration of the materials employed up to 1868, and of the most important additions to them which have reached Kew since.

The further collections at Kew cited in the present volume are :

I. UPPER GUINEA.—T. B. Dawodu, plants from Lagos. Geheimrath Dr. A. Engler, a collection of Warnecke's plants from Togo. L. Kentish-Rankin, plants from Northern Nigeria. D. Sim, a collection from Liberia. A. Whyte, a collection from Liberia.

III. NILE LAND—A. F. Broun, a collection of plants from the Soudan. M. T. Dawe, a collection of plants from Uganda. W. G. Doggett, a collection of plants from Uganda. Sir H. H. Johnston, a collection of plants from Uganda. J. Mahon, a collection of plants from Uganda. C. E. Muriel, a collection of plants from the Blue and White Nile. Captain M. S. Wellby, a collection of plants from South Abyssinia and Lake Rudolph. A. Whyte, a collection of plants from Uganda and British East Africa.

IV. LOWER GUINEA.—J. Gossweiler, plants from Angola H. Hua,

a few species collected in the French Congo. Dr. L. Pierre, a set of plants collected by Klaine in Gaboon.

V. SOUTH CENTRAL.—Dr. Em. de Wildeman, plants from various collections made in the Congo Free State.

VI. MOZAMBIQUE.—R. N. Lyne, plants from Zanzibar and Pemba Island. J. M. Purves, plants from Nyasaland. Sir Alfred Sharpe, K.C.M.G., C.B., plants from Nyasaland.

I must again record my acknowledgments of the assistance given me by Mr. C. H. Wright in preparing the manuscript for the press and in checking the proofs, and to Mr. N. E. Brown for working out the geographical distribution.

For the detailed topography the third edition of the "Spezialkarte von Afrika," Gotha: Justus Perthes, 1893, has been chiefly used.

W. T. T.-D.

KEW, *October* 1904.

# CONTENTS.

---

	Page
CONSPECTUS OF THE ORDERS . . . . .	ix
Order LXXXII. Oleaceæ . . . . .	1
LXXXIII. Salvadoraceæ . . . . .	21
LXXXIV. Apocynaceæ . . . . .	24
LXXXV. Asclepiadeæ . . . . .	231
LXXXVI. Loganiaceæ . . . . .	503
LXXXVII. Gentianeæ . . . . .	544
Addenda . . . . .	588



CONSPECTUS OF THE ORDERS CONTAINED IN  
THE FOURTH VOLUME.—SECTION 1.

---

CLASS I. DICOTYLEDONES.

Sub-Class II. GAMOPETALÆ.

**Cohort VII.—Gentianales.** *Corolla regular. Stamens as many as the corolla-lobes and alternate with them, or if fewer alternate with the carpels. Leaves opposite, rarely alternate.*

LXXXII. OLEACEÆ. Stamens 2, alternate with the carpels, rarely 4. Corolla 4-5-∞-merous. Style simple; stigma terminal. Ovary 2-celled; ovules usually 2 in each cell, fixed to the septum. Stipules 0.

LXXXIII. SALVADORACEÆ. Stamens and corolla-lobes 4. Rudimentary stipules present. Otherwise as in *Oleaceæ*.

LXXXIV. APOCYNACEÆ. Stamens and corolla-lobes usually 5. Pollen loose, rarely cohering. Carpels free or united; style simple, at least above, with a stigmatic ring below or around the smooth apex. Fruit baccate, drupaceous, or of 2 distinct follicles.

LXXXV. ASCLEPIADEÆ. Corolla-lobes usually 5. Stamens 5; anthers free or united to the dilated part of the style; pollen granular or in waxy masses. Carpels separating; style simple, at least above, expanded at the apex into a flat or beaked disk with 5 stigmatic cavities. Follicles 2 or 1.

LXXXVI. LOGANIACEÆ. Stamens and corolla-lobes 4-5, rarely many. Ovary 2-celled; style simple. Leaves connected by a transverse line or by stipules.

LXXXVII. GENTIANEÆ. Stamens and corolla-lobes 4-5, rarely many. Ovary usually 1-celled; placentas parietal (except in *Exacum*). Leaves without a connecting line or stipules.



# FLORA OF TROPICAL AFRICA.

## ORDER LXXXII. **OLEACEÆ.** (By J. G. Baker.)

Flowers usually hermaphrodite, regular. Calyx inferior, small, campanulate, usually 4-toothed. Corolla gamopetalous, hypocrateriform, funnel-shaped or campanulate; lobes usually 4. Stamens usually 2, epipetalous; filaments short; anthers ovate-oblong, rarely linear, dorsifixed, dehiscing longitudinally. Disk 0. Ovary superior, 2-celled; style usually short; stigma usually capitate, often finally shortly 2-lobed; ovules usually 2 in a cell, attached by the base to the side or apex of the dissepiment, anatropous or amphitropous. Fruit capsular or indehiscent. Seeds 2-4, or by abortion solitary, erect or pendulous, albuminous or exalbuminous; testa usually thin; embryo straight, fleshy when the albumen is absent.—Erect or scandent unarmed shrubs or trees. Leaves usually opposite, simple or imparipinnate, entire or dentate, exstipulate. Inflorescence simple or compound, centripetal or centrifugal.

Species about 300, widely spread in the tropical and subtemperate regions of both hemispheres.

Corolla-tube cylindrical; lobes imbricate.

Fruit baccate . . . . . 1. JASMINUM.

Fruit hard, 2-valved . . . . . 2. SCHREBERA.

Corolla-tube short; lobes induplicate-valvate . . . . . 3. OLEA.

Petals nearly or quite free, very narrow . . . . . 4. LINOCIERA.

### 1. **JASMINUM**, Linn.; Benth. et Hook. f. Gen. Pl. ii. 674.

Calyx-tube campanulate; lobes 4, long or short. Corolla hypocrateriform; tube cylindrical; limb with 4-10 imbricate lobes. Stamens 2, inserted just below the throat of the corolla-tube; filaments short. Ovary 2-celled; style variable in length in the same species; stigma capitate or 2-lobed; ovules usually 2 in each cell, attached near the base of the dissepiment. Berry didymous or by abortion simple. Seeds solitary, erect; testa double; albumen 0; cotyledons plano-

convex; radicle inferior.—Shrubs, often more or less scandent. Leaves usually opposite, simple or compound. Flowers usually white or yellow, fragrant, arranged in simple or compound cymes.

Species about 100, spread through the tropical and temperate regions of the Old World.

Leaves simple, opposite.

Lobes of the corolla about half as long as the tube.

Calyx-teeth longer than the tube.

Calyx  $\frac{1}{4}$  in. long

Leaves glabrous beneath . . . . . 1. *J. Engleri*.

Leaves pubescent beneath . . . . . 2. *J. Schweinfurthii*.

Calyx  $\frac{1}{3}$ – $\frac{1}{2}$  in. long.

Calyx-teeth 6 . . . . . 3. *J. Smithii*.

Calyx-teeth about 10 . . . . . 4. *J. stenolobum*.

Calyx-teeth as long as the tube

Leaves acute . . . . . 5. *J. microphyllum*.

Leaves obtuse . . . . . 6. *J. obtusifolium*.

Calyx-teeth shorter than the tube.

Petiole very short, hairy . . . . . 7. *J. Schimperii*.

Petiole longer, glabrous . . . . . 8. *J. brevipes*.

Lobes of the corolla more than half as long as the tube.

Calyx-teeth twice as long as the tube.

Branches glabrous.

Leaves acute . . . . . 9. *J. brachyscyphum*.

Leaves obtuse . . . . . 10. *J. Meyeri-Johannis*.

Branchlets pubescent . . . . . 11. *J. tomentosum*.

Calyx-teeth as long as the tube.

Pedicels short.

Cymes 1-2-flowered . . . . . 12. *J. Kirkii*.

Cymes few-flowered . . . . . 13. *J. Eminii*.

Cymes 5-8-flowered . . . . . 14. *J. niloticum*.

Pedicels  $\frac{1}{2}$ – $\frac{3}{4}$  in. long.

Leaves ovate, glabrous . . . . . 15. *J. stenodora*.

Leaves oblong, pubescent . . . . . 16. *J. pauciflorum*.

Leaves obovate, pubescent . . . . . 17. *J. obovatum*.

Calyx-teeth shorter than the tube.

Calyx-tube campanulate . . . . . 18. *J. Welwitschii*.

Calyx-tube ovoid . . . . . 19. *J. Afu*.

Calyx-tube cylindrical . . . . . 20. *J. longipes*.

Lobes of the corolla as long as the tube.

Leaves obtuse . . . . . 21. *J. angolense*.

Leaves acute.

Leaves glabrous.

Calyx  $\frac{1}{4}$  in. long . . . . . 22. *J. oleocarpum*.

Calyx  $\frac{1}{3}$  in. long . . . . . 23. *J. gardeniodorum*.

Leaves pubescent

Leaves  $\frac{1}{2}$ –1 in. long . . . . . 24. *J. parvifolium*.

Leaves  $\frac{2}{3}$ – $1\frac{1}{4}$  in. long . . . . . 25. *J. dicranolepidiforme*.

Leaves 1-3 in. long . . . . . 26. *J. Walleri*.

Leaves with long hairs . . . . . 27. *J. Preussii*.

Leaves simple, ternately whorled.

- Cymes lax, few-flowered . . . . . 28. *J. dichotomum*.  
 Cymes dense, many-flowered.  
 Calyx-teeth oblanceolate . . . . . 29. *J. bukobense*.  
 Calyx-teeth ovate . . . . . 30. *J. ternifolium*.  
 Leaves trifoliate.  
 Side leaflets distinctly stalked.  
 Corolla-tube about an inch long.  
 Corolla-lobes more than half as long as the  
 tube . . . . . 31. *J. megalosiphon*.  
 Corolla-lobes less than half as long as the  
 tube . . . . . 32. *J. Pospischilii*.  
 Corolla-tube  $\frac{3}{4}$  in. long.  
 Leaves hairy . . . . . 33. *J. mauritianum*.  
 Leaves glabrous . . . . . 34. *J. somaliense*.  
 Corolla-tube  $\frac{1}{2}$ – $\frac{5}{8}$  in. long.  
 Branchlets subglabrous . . . . . 35. *J. abyssinicum*.  
 Branchlets pubescent.  
 Leaflets  $\frac{1}{4}$ – $\frac{1}{2}$  in. long . . . . . 36. *J. Hildebrandtii*.  
 Leaflets 1–2 in. long.  
 Leaflets acute . . . . . 37. *J. Holstii*.  
 Leaflets obtuse or subacute . . . . . 38. *J. schroterianum*.  
 Corolla-tube  $\frac{1}{4}$  in. long . . . . . 39. *J. Bakeri*.  
 Side leaflets subsessile . . . . . 40. *J. Steudneri*.  
 Leaves imparipinnate.  
 Leaflets oblong or oblong-lanceolate . . . . . 41. *J. getzeanum*.  
 Leaflets ovate or ovate-oblong.  
 End leaflet  $\frac{1}{2}$ –1 in. long . . . . . 42. *J. mossamedense*.  
 End leaflet 1–1 $\frac{1}{2}$  in. long . . . . . 43. *J. floribundum*.

1. **J. Engleri**, *Gilg in Engl. Jahrb.* xix. *Beibl.* 46. A shrub, with slightly pubescent branchlets. Leaves simple, opposite, very shortly petioled, ovate-oblong, 1–2 in. long, acute, rounded at the base, glabrous, shining on the upper surface. Cymes many-flowered, terminal; bracts setaceous. Calyx-tube campanulate,  $\frac{1}{12}$ – $\frac{1}{10}$  in. long; teeth 5–6, setaceous, twice as long as the tube. Corolla white; tube cylindrical, 1 in. long; lobes broadly ovate, acute, half as long as the tube.

**Mozamb. Dist.** German East Africa: Kilimanjaro; thick woods near Moschi (Moshi), 3500 ft., *Volkens*, 1589.

2. **J. Schweinfurthii**, *Gilg in Notizbl. Königl. Bot. Gart. Berlin*, i. 72. Branchlets slender, densely pubescent. Leaves opposite, oblong, acute, 1–2 $\frac{1}{2}$  in. long, pubescent beneath; petiole very short. Flowers 1–3-nate, terminal and axillary; pedicels long. Calyx  $\frac{1}{4}$  in. long; teeth subulate, longer than the tube. Corolla white; tube 1 in. long; lobes 6–7, lanceolate, half as long as the tube.—*J. dschuricum*, *Gilg*, l.c. 73.

**Nile Land.** British East Africa: Jur; Wau, *Schweinfurth*, 1668!

**South Central.** Congo Free State: Monbuttu; Munza, *Schweinfurth*, 9419!

3. **J. Smithii**, *Baker in Kew Bulletin*, 1895, 93. Branchlets slender, glabrous. Leaves simple, opposite, ovate or oblong, obtuse,

subcoriaceous, glabrous, shortly petioled, 1-1½ in. long. Flowers 1-3 at the end of the branchlets, on short pedicels. Calyx-tube campanulate, glabrous, ⅙ in. long; teeth 6, subulate, rather longer than the tube. Corolla-tube 1-1½ in. long; lobes 10, lanceolate, ½-⅝ in. long.

**Mozamb. Dist.** German East Africa: Kilimanjaro, *Smith!*

4. **J. stenolobum**, *Rolfe in Oates, Matabeleland, ed. 2, 403.* An erect shrub with slender pubescent branchlets. Leaves simple, ovate or oblong, obtuse or acute, shortly petioled, pubescent, ½-1½ in. long. Flowers solitary at the end of the branchlets, on very short peduncles. Calyx pubescent, ⅓-½ in. long; teeth about 10, setaceous, much longer than the campanulate tube. Corolla white; tube cylindrical, ¾-1 in. long; lobes 10-12, lanceolate, about ½ in. long.

**Mozamb. Dist.** British Central Africa: Nyasaland; Shire Highlands, *Buchanan, 225!* Mandala, *Scott-Elliott, 8447!* near Magomero, *Meller!* between Lake Shirwa and Lake Chiuta, *Cunningham, 21!* and without precise locality, *Buchanan, 429!* Rhodesia: Batoka Highlands, *Kirk!* Matabeleland; Matoppo Mountains, *Hon. Mrs. Evelyn Cecil, 113!* near Guelo, *Hon. Mrs. Evelyn Cecil, 132!* and without precise locality, *Elliott!* *Oates!* Lake Ngami, *McCabe, 33!* South African Gold Fields, *Baines!*

Also in South Africa.

5. **J. microphyllum**, *Baker in Kew Bulletin, 1895, 93.* A slender erect or climbing shrub. Branchlets densely pubescent. Leaves opposite, ovate, moderately firm, ¾-1 in. long, pubescent beneath, all but the lowest acute. Flowers 1-3-nate, terminal; pedicels short. Calyx ⅙ in. long; teeth lanceolate, as long as the tube. Corolla-tube white, ¾ in. long; lobes 8-10, lanceolate, half as long as the tube.—*Hiern in Cat. Afr. Pl. Welw. i. 654.*

**Lower Guinea.** Angola: Huilla; by the River Lopollo, rather rare, *Welwitsch, 932!*

6. **J. obtusifolium**, *Baker in Kew Bulletin, 1895, 93.* Branchlets pubescent. Leaves opposite, oblong, obtuse, 1-1½ in. long, finely pubescent beneath; petiole very short. Cymes terminal, few-flowered; pedicels short. Calyx ⅙ in. long; teeth lanceolate, as long as the tube. Corolla-tube 1-1¼ in. long; lobes about 8, lanceolate, half as long as the tube.

**Upper Guinea.** Niger Territory: common at Kawgan, near the Niger, *Barter, 3435!*

7. **J. Schimperii**, *Vatke in Linnaea, xl. 210.* Branchlets slender, angled, pubescent. Leaves suborbicular or broad oblong, cuspidate, 1½-2 in. long, moderately firm, pubescent beneath; petiole very short, very hairy. Flowers few, terminal; pedicels very short. Calyx ⅙ in. long; teeth ovate, shorter than the tube. Corolla-tube ¾-1 in. long;

lobes 6-8, lanceolate, half as long as the tube.—Engl. Hochgebirgsfl. Trop. Afr. 334.

**Nile Land.** Abyssinia: Begemeder; by the River Reb, 6000 ft., *Schimper*, 1112!

8. **J. brevipes**, *Baker in Kew Bulletin*, 1895, 93. A robust climber. Branchlets slender, glabrous. Leaves opposite, oblong, 2-3 in. long, acute or obtuse, subcoriaceous, glabrous; petiole  $\frac{1}{2}$  in. long. Cymes few-flowered, terminal; pedicels very short. Calyx  $\frac{1}{6}$  in. long; teeth linear, rather shorter than the tube. Corolla white; tube 1 in. long; lobes 6, lanceolate, half as long as the tube. Berry small, oblong.—*J. ternum*, *Knobl. in Engl. Jahrb. xvii.* 535 partly; *Hiern in Cat. Afr. Pl. Welw. i.* 654.

**Lower Guinea.** Angola: Golungo Alto; Mangue Forests among the mountains of Alto Queta, and between Ponte de Luiz Simões and Camilungo, *Welwitsch*, 926! Ambaca; in thickets between Izanga and Ngombe, *Welwitsch*, 929.

The typical *J. ternum* of *Knobl.* has ternate leaves and is *J. dichotomum*, *Vahl*.

9. **J. brachyscyphum**, *Baker in Kew Bulletin*, 1895, 93. Branchlets glabrous. Leaves opposite, ovate, acute or acuminate, glabrous, 1-2 in. long; petiole  $\frac{1}{4}$ - $\frac{1}{2}$  in. long. Cymes few-flowered, terminal; pedicels short, glabrous. Calyx  $\frac{1}{4}$  in. long; teeth subulate, twice as long as the tube. Corolla-tube  $\frac{3}{4}$  in. long; lobes 5-6, oblong-lanceolate,  $\frac{1}{2}$  in. long.

**Mozamb. Dist.** British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 224! Mount Malosa, 4000-6000 ft., *Whyte*! Mount Mlanji, plains and up to 4000 ft., *McClounie*, 4B! 17!

10. **J. Meyeri-Johannis**, *Engl. Hochgebirgsfl. Trop. Afr.* 334. A climbing shrub, with slender glabrous branchlets. Leaves simple, ovate, obtuse,  $1\frac{1}{2}$  in. long, shining above, glabrous on both surfaces, ciliate on the margin; petiole very short. Cymes many-flowered; bracts linear,  $\frac{1}{4}$  in. long, shorter than the pedicels. Calyx-tube ovoid,  $\frac{1}{8}$  in. long; teeth linear, twice as long as the tube. Corolla-tube  $\frac{4}{5}$  in. long; lobes lanceolate, shorter than the tube. Berry black,  $\frac{1}{3}$  in. in diam.

**Mozamb. Dist.** German East Africa: Kilimanjaro; Marangu, 4000-5000 ft., *Meyer*, 371.

11. **J. tomentosum**, *Knobl. in Engl. Jahrb. xvii.* 536. A shrub 5-6 ft. high, with flexuose branches; branchlets slender, densely pubescent. Leaves opposite, shortly petioled, ovate, obtuse, 1- $1\frac{1}{2}$  in. long, pubescent, especially beneath. Flowers 1-2-nate; peduncle and pedicels pubescent. Calyx-tube campanulate, densely pubescent,  $\frac{1}{8}$  in. long; teeth setaceous, twice as long as the tube. Corolla white; tube cylindrical,  $\frac{3}{4}$  in. long; lobes lanceolate,  $\frac{1}{2}$  in. long.

**Nile Land.** British East Africa: coast land near Mombasa, *Hildebrandt*, 1941.

12. **J. Kirkii**, *Baker in Kew Bulletin*, 1895, 94. Branchlets slender, densely pubescent. Leaves opposite, oblong, thin, 1-1½ in. long, finely pubescent beneath; petiole very short, very hairy. Cymes 1-2-flowered, terminal; pedicels very short. Calyx ⅙ in. long; teeth lanceolate, as long as the tube. Corolla-tube ¾ in. long; lobes 6-7, lanceolate, ½ in. long.

**Mozamb. Dist.** Portuguese East Africa: Lower Zambesi; between Lupata and Tete, *Kirk!* Sh'ramba, *Kirk!* British Central Africa: Nyasaland; Mount Mlanji, *Scott-Elliot*, 8659!

13. **J. Eminii**, *Gilg in Engl. Pfl. Ost-Afr. C.* 309. A compact shrub. Leaves simple, opposite, with a short petiole articulated near the apex, ovate, 1-1½ in. long, acute, rounded at the base, chartaceous, clothed thinly with brown hairs on the upper surface, densely beneath. Cymes few-flowered, terminal and axillary; peduncles and pedicels densely clothed with brown hairs. Calyx-tube subcylindrical; lobes linear-deltoid, as long as the tube. Corolla glabrous; tube terete, ½ in. long; lobes lanceolate, acute, more than half as long as the tube.

**Nile Land.** Uganda; Manjonjo (Manyonyo), *Stuhlmann*, 1381.

14. **J. niloticum**, *Gilg in Engl. Pfl. Ost-Afr. C.* 309. A climbing shrub, with pubescent glabrescent branchlets. Leaves simple, opposite, with a slender pubescent petiole, ovate or ovate-oblong, 1-2 in. long, acute or acuminate, rather rounded at the base, slightly pubescent on the upper surface, densely hairy on the ribs beneath. Cymes usually terminal, 5-8-flowered; pedicels pubescent, ⅙-⅓ in. long. Calyx-tube urceolate, ⅓ in. long; lobes linear-triangular, equalling or rather shorter than the tube. Corolla glabrous; tube above ½ in. long; lobes 6-7, lanceolate, more than half as long as the tube.

**Nile Land.** Madi, *Baker*, 222 (ex *Gilg*).

15. **J. stenodon**, *Baker in Kew Bulletin*, 1895, 94. Branchlets slender, glabrous. Leaves opposite, ovate, obtuse, glabrous, 1½-2 in. long, broadly rounded at the base; petiole ¼ in. long. Cymes terminal, 3-4-flowered; outside pedicels ½ in. long. Calyx ¼ in. long; teeth subulate, as long as the tube. Corolla pure white; tube 1 in. long; lobes about 10, lanceolate, rather shorter than the tube.

**Lower Guinea.** Angola: Ambriz, *Monteiro!*

Very near to *J. multipartitum*, Hochst., from Natal.

16. **J. pauciflorum**, *Benth. in Hook. Niger Fl.* 443. Branchlets very slender, densely pubescent. Leaves opposite, oblong, acute, 2-3 in. long, thin, pubescent beneath; petiole very hairy, ⅙-¼ in. long. Cymes few-flowered, very lax, axillary and terminal; pedicels ⅓-¾ in. long. Calyx ⅙ in. long; teeth linear, as long as the tube. Corolla-tube ¾ in. long; lobes 6-10, ½ in. long. Berry small, globose.

**Upper Guinea.** Sierra Leone: Bagru River, *Mann*, 849! near Bafodeya, *Scott-Elliott*, 5556! 5639! and cultivated specimen, *Whitfield*! Gold Coast: Cape Coast Castle, *Vogel*, 10! Lagos, *Rowland*! Niger Territory; Nupe, *Barter*!

**Lower Guinea.** Loango: near Chinchoclo, *Soyaux*, 50!

17. **J. obovatum**, *Baker in Kew Bulletin*, 1895, 94. A wide-climbing shrub. Branchlets very hairy. Leaves opposite, thin, very pubescent, the upper obovate, cuspidate, 2-3 in. long, the lower ovate; petiole very short, very hairy. Cymes few-flowered, terminal and axillary; pedicels hairy,  $\frac{1}{2}$  in. long. Calyx densely pubescent,  $\frac{1}{8}$  in. long; teeth as long as the tube. Corolla-tube very slender, above 1 in. long; lobes 6-7, linear,  $\frac{3}{4}$  in. long.—Hiern in *Cat. Afr. Pl. Welw. i.* 654.

**Lower Guinea.** Angola: Pungo Andongo; moist rocky thickets of Barancos de Catete, near the Præsidium, *Welwitsch*, 928!

18. **J. Welwitschii**, *Baker in Kew Bulletin*, 1895, 94. A wide-climbing shrub. Branchlets pubescent. Leaves opposite, ovate or oblong, 1-2 in. long, pubescent beneath, the upper acute and rounded at the base, the lower obtuse and slightly cordate; petiole very short. Cymes few-flowered, simple, terminal; pedicels  $\frac{1}{4}$ - $\frac{1}{2}$  in. long. Calyx  $\frac{1}{8}$  in. long; teeth lanceolate, much shorter than the tube. Corolla white; tube  $\frac{5}{8}$ - $\frac{3}{4}$  in. long; lobes 5-6, more than half as long as the tube.—*J. obovatum*, var. *Welwitschii*, Hiern in *Cat. Afr. Pl. Welw. i.* 654.

**Lower Guinea.** Angola: Pungo Andongo; in thickets on the outskirts of forests near the Præsidium, *Welwitsch*, 927! near Catete, *Welwitsch*, 5934! Golungo Alto; Queta Mountains, *Welwitsch*, 5933A, B and C!

19. **J. Afu**, *Gilg in Engl. Pfl. Ost-Afr. C.* 308. A shrub with long slender branches. Leaves simple, opposite, with a petiole jointed at the middle, ovate or ovate-oblong,  $1\frac{1}{2}$ -3 in. long, acute, rounded at the base, subcoriaceous, smooth, glabrous. Cymes terminal, many-flowered; bracts linear-subulate. Calyx-tube ovoid; lobes setaceous, ciliate, much shorter than the tube. Corolla-tube subcylindrical; lobes linear-lanceolate, acute, rather shorter than the tube.

**Mozamb. Dist.** German East Africa: Usambara; Tanga, *Holst*, 2162b, *Folkens*, 152! Pangani, Bagamoyo and Usaramo, *Stuhlmann* (ex *Gilg*).

20. **J. longipes**, *Baker in Kew Bulletin*, 1895, 94. A wide climbing shrub. Branchlets very slender, pubescent. Leaves opposite or lower alternate, oblong, very acute, moderately firm,  $1\frac{1}{2}$ -3 in. long, slightly pubescent beneath; petiole very hairy,  $\frac{1}{8}$ - $\frac{1}{3}$  in. long. Cymes few-flowered, terminal and axillary; pedicels very slender, sometimes 1 in. long. Calyx  $\frac{1}{3}$  in. long; teeth linear, shorter than the subcylindrical tube. Corolla-tube  $\frac{3}{4}$  in. long; lobes 9-10, lanceolate,  $\frac{1}{2}$  in. long.—Hiern in *Cat. Afr. Pl. Welw. i.* 655.

**Lower Guinea.** Angola: Golungo Alto; in bushy places on the outskirts of the forests of Alto Queta, about Sange, and at the River Cate in Sobato de Bumba, *Welwitsch*, 925!

21. **J. angolense**, *Welw. ex Baker in Kew Bulletin*, 1895, 95. A much-branched erect shrub, 2-3 ft. high. Branchlets glabrous. Leaves small, opposite, firm, glabrous, orbicular or ovate, obtuse; petiole very short. Cymes terminal on axillary branches, 4-8-flowered; pedicels short. Calyx  $\frac{1}{4}$ - $\frac{1}{3}$  in. long; teeth subulate, much longer than the campanulate tube. Corolla purplish outside, milk-white inside; tube 1 in. long; lobes 9-10, lanceolate, as long as the tube.—Hiern in *Cat. Afr. Pl.* Welw. i. 655.

**Lower Guinea.** Angola: Loanda; sandy places near Loanda, *Welwitsch*, 924! 924B!

22. **J. oleæcarpum**, *Baker in Kew Bulletin*, 1895, 95. Branchlets glabrous. Leaves opposite, ovate, acute, thin, glabrous, 1-1½ in. long; petiole  $\frac{1}{4}$  in. long. Cymes few-flowered, terminal on axillary branches; pedicels short. Calyx  $\frac{1}{4}$  in. long; teeth subulate, much longer than the campanulate tube. Corolla-tube  $\frac{3}{4}$  in. long; lobes 8-9, lanceolate, as long as the tube. Berry large, oblong.

**Mozamb. Dist.** German East Africa: Kilwa, *Kirk!* Rovuma River, *Kirk!* Portuguese East Africa: Lower Zambesi; Tete, *Kirk!* opposite Sena, *Kirk!*

23. **J. gardeniodorum**, *Gilg MSS.* Branchlets glabrous. Leaves simple, opposite, ovate, 2-3½ in. long, subacute, rounded at the base, glabrous on both surfaces. Flowers in dense terminal cymes; pedicels short; bracts large, linear-subulate. Calyx glabrous,  $\frac{1}{8}$  in. long; teeth lanceolate-deltoid, shorter than the campanulate tube. Corolla-tube  $\frac{1}{2}$ - $\frac{5}{8}$  in. long; lobes 9, oblanceolate, obtuse, as long as the tube.

**Upper Guinea.** Togo, *Warnecke*, 15!

24. **J. parvifolium**, *Knobl. in Engl. Jahrb.* xvii. 537. Branchlets pubescent when young, glabrous when mature. Leaves opposite, ovate or oblong, usually acute, very shortly petioled, pubescent on both sides,  $\frac{1}{2}$ -1 in. long. Flowers usually solitary, rarely 2-4-nate; pedicels subglabrous. Calyx-tube campanulate; lobes ovate or ovate-lanceolate, about as long as the tube. Corolla-tube above  $\frac{1}{2}$  in. long; lobes 8-10, linear-lanceolate, acute, nearly as long as the tube.

**Nile Land.** British East Africa: Ukamba; Kitui, *Hildebrandt*, 2733.

25. **J. dicranolepidiforme**, *Gilg in Engl. Jahrb.* xxviii. 450. A climbing shrub. Leaves opposite, simple, shortly petioled, obovate-oblong,  $\frac{2}{3}$ -1¼ in. long, acuminate, rounded at the base, slightly hairy above, densely hairy beneath. Flowers solitary, usually terminal; peduncle long, slightly hairy. Calyx  $\frac{1}{6}$  in. long; sepals 6, glabrous, united into a short cup at the base. Corolla white; tube  $\frac{1}{2}$  in. long; lobes 8, linear-lanceolate, very acute,  $\frac{1}{10}$  in. broad.

**Mozamb. Dist.** German East Africa: Uhehe; Muhinde Steppe, *Goetze*, 518.

26. **J. Walleri**, *Baker in Kew Bulletin*, 1895, 95. Branchlets very slender, finely pubescent. Leaves opposite, oblong, acute, thin, 1-3 in. long, pubescent beneath; petiole very short. Cymes terminal and axillary, few-flowered; pedicels  $\frac{1}{4}$  in. long. Calyx  $\frac{1}{4}$  in. long; teeth subulate, twice as long as the campanulate tube. Corolla-tube slender,  $\frac{3}{4}$  in. long; lobes 7-8, linear, as long as the tube.

**Mozamb. Dist.** Portuguese East Africa: Lower Zambesi; near Sena, *Kirk!* British Central Africa: Nyasaland; Manganja Hills, *Waller!* Magomero, *Waller!*

27. **J. Preussii**, *Engl. & Knobl. in Engl. Jahrb.* xvii. 536. A climbing shrub with branchlets and leaves clothed with long brown hairs. Leaves opposite, obovate-oblong, rarely ovate, rounded or subcordate at the base,  $2\frac{1}{2}$ -4 in. long. Cymes 3-6-flowered. Calyx-tube campanulate; teeth 6-8, subulate, 3-5 times the length of the tube. Corolla-tube  $\frac{3}{4}$ -1 in. long; lobes linear-lanceolate, acute, as long as the tube.

**Upper Guinea.** Cameroons: northern slopes of Barombi Ravine, *Preuss*, 122! Bipinde, *Zenker*, 963! 1213!

28. **J. dichotomum**, *Vahl; DC. Prod.* viii. 307. Branchlets glabrous. Leaves mostly in whorls of three, oblong or ovate-oblong, subcoriaceous, glabrous, 2-3 in. long; petiole  $\frac{1}{2}$  in. long. Cymes compound, terminal and axillary; pedicels short. Calyx  $\frac{1}{8}$  in. long; teeth ovate, shorter than the tube. Corolla white; tube  $\frac{3}{4}$ -1 in. long; lobes 6-8, oblong,  $\frac{1}{3}$  in. long. Berry oblong,  $\frac{1}{2}$  in. long.—*Benth. in Hook. Niger Fl.* 443. *J. guineense*, *G. Don; DC. Prod.* l.c. *J. noctiflorum*, *Afzel.*; *DC. Prod.* l.c. 309. *J. ternum*, *Knobl. in Engl. Jahrb.* xvii. 535 partly.

**Upper Guinea.** Senegambia, *Perottet, Heudelot*, 578! Sierra Leone, *Afzelius, Smeathman! Morson! Hart! Vogel*, 182! *Scott-Elliott*, 3949! 4032! 4421! 5377! 5485! 5689! Gold Coast: Shai Plains, *Johnson*, 528! Cape Coast Castle, *Don!* Lagos, *Millen*, 160!

**Lower Guinea.** Loango: near Chinchocho, *Soyaux*, 62! Lower Congo, *Smith!*

29. **J. bukobense**, *Gilg in Engl. Pfl. Ost-Afr. C.* 308. A shrub, with long slender branchlets. Leaves simple, ternate, ovate-oblong,  $1\frac{1}{4}$ - $2\frac{1}{2}$  in. long, very acuminate at the apex, rounded to a cuneate base, chartaceous, glabrous, opaque; petiole articulated near the base. Cymes many-flowered, dense. Calyx-tube obovoid; lobes deltoid, acute. Corolla-tube terete, above  $\frac{1}{2}$  in. long; lobes oblanceolate, acute, shorter than the tube.

**Mozamb. Dist.** German East Africa: Karagwe; Bukoba, 3700 ft., *Stahlmann*, 3275.

30. **J. ternifolium**, *Baker in Kew Bulletin*, 1895, 95. Branchlets slightly pubescent. Leaves in whorls of three, oblong or ovate, all but the lowest acute, glabrous, subcoriaceous,  $1\frac{1}{2}$ -2 in. long; petiole

$\frac{1}{3}$ – $\frac{1}{2}$  in. long. Cymes forming a very dense, very compound flat-topped terminal panicle; pedicels very short, pubescent. Calyx  $\frac{1}{8}$  in. long; teeth ovate, shorter than the tube. Corolla not seen.

**Nile Land.** British East Africa: Bongo; near Sabbi, *Schweinfurth*, 2665!

31. **J. megalosiphon**, *Gily in Engl. Pfl. Ost-Afr. C.* 309. A climbing shrub; branchlets, peduncles and calyx densely clothed with brown hairs. Leaves 3-foliolate; leaflets ovate, shortly stalked, acuminate, rounded at or narrowed to the base, the end one  $1\frac{1}{2}$ –3 in. long, the side ones rather smaller. Inflorescence thyrsoid; flowers crowded; pedicels  $\frac{1}{8}$ – $\frac{1}{6}$  in. long. Calyx-tube campanulate; teeth 5, triangular, setaceous. Corolla-tube cylindrical, glabrous, and rather more than 1 in. long; lobes 6–7, reflexed, ovate-oblong, acute, more than half as long as the tube.

**Mozamb. Dist.** German East Africa: Karagwe; Kafuro, on laterite, 4400 ft., *Stuhlmann*, 1756. Bukumbi, on Sinyth Sound, Lake Victoria, *Stuhlmann*, 818.

32. **J. Pospischilii**, *Gily in Notizbl. Königl. Bot. Gart. Berl.* i. 183. Branchlets terete, densely clothed with grey velvety pubescence. Leaves trifoliolate; petiole short, densely pubescent; leaflets shortly petioled, ovate,  $\frac{1}{2}$ – $\frac{3}{4}$  in. long, acute, rounded at the base. Cymes terminal, dense, many-flowered; pedicels very short. Calyx  $\frac{1}{12}$  in. long; teeth deltoid. Corolla-tube 1 in. long; lobes 5, oblong or ovate-oblong, acute, less than half as long as the tube.

**Mozamb. Dist.** British East Africa: Athi Plain, *Pospischil*.

33. **J. mauritanum**, *Bojer; DC. Prod.* viii. 310. Branchlets densely pubescent. Leaves opposite, trifoliolate; leaflets ovate, acute, subcoriaceous, pubescent or subglabrous, the end one 2–3 in. long, the side ones but little smaller, all three distinctly stalked; petiole  $\frac{1}{4}$ – $\frac{3}{4}$  in. long. Cymes terminal and axillary, forming an ample panicle at the end of the branchlets; pedicels very short, pubescent. Calyx  $\frac{1}{12}$  in. long; teeth minute. Corolla white; tube  $\frac{3}{4}$ –1 in. long; lobes 6–8, oblong or linear-oblong, half as long as the tube. Berry small, glabrous. —Hiern in *Cat. Afr. Pl. Welw.* i. 655. *J. auriculatum*, DC. l.c. 309 partly; Baker, *Fl. Maur.* 220, not of Vahl. *J. tettense*, Klotzsch in Peters, *Reise Mossamb. Bot.* i. 284. *J. zanzibariense*, Bojer ex Klotzsch, l.c. 283. *J. gratissimum*, Desfers, *Voy. Yemen Bot.* 162.

**Nile Land.** Eritrea: near Acrur, 6200 ft., *Schweinfurth & Riva*, 1064! Keren, 4500 ft., *Beccari*, 89! British East Africa: Leikipia, 6000–8000 ft., *Thomson!* Ukamba, *Scott-Elliott*, 2359! Ribe, near Mombasa, *Wakefield!*

**Lower Guinea.** Island of St. Thomas, *Rattray!* Angola: Ambriz, *Monteiro*, 1! Huilla, *Welwitsch*, 931! Loanda, *Welwitsch*, 923! Messamedes, *Welwitsch*, 930.

**Mozamb. Dist.** Zanzibar, *Bojer!* German East Africa: Karagwe; Weran-yange, *Scott-Elliott*, 8137! Lake Tanganyika, *Cameron!* Lower plateau north of Lake Nyasa, *Thomson!* Usambara; Ambeni, *Holst*, 2671! Zanguebar, *Kirk*,

54! and without precise locality, *Fischer*, 421! Portuguese East Africa: Mozambique, *Forbes*! Luabo River, *Kirk*! Tete, *Kirk*! Lower Shire Valley, *Meller*! British Central Africa: Nyasaland; Murchison Falls, *Meller*! Monkey Bay, Lake Nyasa, *Whyte*! Masuku Plateau, *Whyte*! Rhodesia; Leshumo Valley and Shesheke, *Holub*!

Also in Mauritius and the Seychelles.

34. **J. somaliense**, *Baker in Kew Bulletin*, 1895, 218. A climbing shrub, with pubescent branchlets. Leaves petioled, trifoliolate, glabrous; leaflets ovate, 1-1½ in. long, deltoid at the apex, broadly rounded at the base. Flowers in dense compound terminal cymes; pedicels short, pubescent; bracts minute, lanceolate. Calyx pubescent, ½ in. long; tube campanulate; teeth deltoid, shorter than the tube. Corolla-tube cylindrical, ¾ in. long; lobes 5-6, oblanceolate-oblong, ½ in. long.

**Nile Land.** Somaliland; Golis Range at Daria-as, *Mrs. Lort Phillips*! Aalaya, *Miss Edith Cole*!

35. **J. abyssinicum**, *R. Br.; DC. Prod.* viii. 311. Branchlets subglabrous. Leaves opposite, trifoliolate; leaflets ovate, usually acute, the end one long-stalked, 1½-2 in. long, the side ones smaller, short-stalked; petiole ½ in. long. Cymes many-flowered, terminal and axillary; pedicels very short. Calyx ½ in. long; teeth shorter than the tube. Corolla white, very fragrant; tube ½ to ⅝ in. long; lobes 5, oblong, half as long as the tube.—A. Rich. Tent. Fl. Abyss. ii. 26; Engl. Hochgebirgsfl. Trop. Afr. 333.

**Nile Land.** Abyssinia: near Abbena, *Steudner*, 1349! Adowa, *Schimper*, 169! *Quartin-Dillon*, Tacaze Valley, *Quartin-Dillon*, and in the provinces of Wojerat and Shoa, *Petit* (ex *Richard*); Amba Sea, *Schimper*, 915! Ankober, *Roth*, 404! British East Africa: Mau, *Scott-Elliot*, 6856! 6910! Leikipia, 600-8000 ft. *Thomson*!

**Mozamb. Dist.** German East Africa: Kilimanjaro; Marangu, 5200 ft., *Volkeus*, 770! Kinga Mountains, near Lake Nyassa, 7000 ft., *Goetze*, 934.

Nearly allied to *J. mauritianum*, of which it may be not more than a variety.

36. **J. Hildebrandtii**, *Knobl. in Engl. Jahrb.* xvii. 538. Branchlets pubescent, at first tomentose. Leaves trifoliolate; leaflets suborbicular, ¼-½ in. long and broad, usually obtuse and shortly mucronate, subcordate or truncate at the base; side leaflets distinctly stalked. Cymes 3-6-flowered, sessile or subsessile. Calyx-tube campanulate; teeth deltoid, ½ the length of the tube. Corolla-tube ½ in. long; lobes usually 6, oblong, obtuse, ¼-½ in. long.

**Nile Land.** British East Africa: Taita; Ndara Mountain, 2700 ft., *Hildebrandt*, 2500.

37. **J. Holstii**, *Gilg in Engl. Pf. Ost-Afr. C.* 309. A climbing shrub, branchlets, leaves, peduncles and calyx densely clothed with brownish-yellow hairs. Leaves trifoliolate; leaflets ovate-deltoid, acute, rounded or subtruncate at the base, the side ones about 1 in., the end one 1½-2 in. long. Cymes dense, many-flowered; pedicels very short.

Calyx-tube campanulate; teeth 5, deltoid, very short. Corolla-tube almost funnel-shaped,  $\frac{1}{2}$  in. long; lobes usually 5, obovate-oblong,  $\frac{1}{3}$  in. long.

**Mozamb. Dist.** German East Africa: Usambara; Kwa Mshuza, 4900 ft., *Holst*, 8966! 5200 ft., *Holst*, 9121A (ex *Gilg*).

38. **J. schroterianum**, *Schinz in Verhand. Bot. Ver. Brandenb.* xxx. 256. Branchlets pubescent. Leaves trifoliolate; leaflets suborbicular or subovate, obtuse or subacute, truncate or slightly cordate at the base, petioled, the end one  $1-1\frac{1}{2}$  in. long. Flowers white, corymbose; peduncle hairy. Calyx campanulate, 5-toothed,  $\frac{1}{8}$  in. long. Corolla-tube  $\frac{1}{2}-\frac{5}{8}$  in. long; lobes 5-9, oblong, half as long as the tube, obtuse or cuspidate.

**Lower Guinea.** German South-west Africa: Amboland: at Ukuambi, Ombandja and Onkuubi, *Schinz*.

39. **J. Bakeri**, *Scott-Elliot in Journ. Linn. Soc.* xxx. 86. A climbing shrub, with slender stems, pubescent when young, glabrescent when mature. Leaves trifoliolate; leaflets broad-ovate, subcoriaceous, glabrous, broadly cuneate at the base, the end one  $3-3\frac{1}{2}$  in. long; petiolules  $1-1\frac{1}{2}$  in. long. Cymes dense, many-flowered, axillary and terminal; peduncles and short pedicels densely pubescent. Calyx pubescent,  $\frac{1}{12}$  in. long; teeth 5, ovate-lanceolate, as long as the campanulate tube. Corolla-tube funnel-shaped,  $\frac{1}{4}$  in. long; lobes 5, orbicular, cuspidate, half as long as the tube. Berry broad oblong, glabrous, under  $\frac{1}{2}$  in. long.

**Upper Guinea.** Sierra Leone: near Berria (Beria), *Scott-Elliot*, 5409!

40. **J. Steudneri**, *Schweinf. MSS.* Branchlets densely pubescent. Leaves opposite, the upper trifoliolate, the lower simple; leaflets ovate, acute, pubescent, the end one the largest ( $1-1\frac{1}{2}$  in. long) and shortly stalked, the side ones smaller, subsessile; petiole  $\frac{1}{4}$  in. long, very pubescent. Cymes few-flowered, terminal and axillary; pedicels  $\frac{1}{8}-\frac{1}{3}$  in. long. Calyx  $\frac{1}{6}$  in. long; teeth linear, exceeding the tube. Corolla-tube  $\frac{3}{4}$  in. long; lobes 5, oblong, half as long as the tube. Berries small, subglobose.

**Nile Land.** Nubia: Erkowit Mountain, near Suakin, *Schweinfurth*, 282!

41. **J. goetzeanum**, *Gilg in Engl. Jahrb.* xxviii. 451. An erect shrub 2-3 yards high, glabrous in all its parts. Leaves alternate, imparipinnate, distinctly petioled,  $1\frac{1}{2}-3$  in. long; leaflets usually 5, the end one oblong or oblong-lanceolate, very acute, the lateral ones obliquely ovate, shorter. Cymes terminal, 2-3 times forked; pedicels long. Corolla yellow; tube above  $\frac{1}{2}$  in. long; lobes 5, round-obovate,  $\frac{1}{3}$  in. long and broad.

**Mozamb. Dist.** German East Africa: Uhehe; north Uchuungwe Mountains, in the Higulu Plateau, 5900 ft., *Goetze*, 562.

42. **J. mossamedense**, *Hiern in Cat. Afr. Pl. Welw.* i. 655. A glabrous shrub, 8-12 ft. high, with long slender branchlets. Leaves

opposite, imparipinnate,  $1\frac{1}{2}$ –2 in. long; leaflets 1–3-jugate, ovate-oblong, rounded or emarginate at the apex, cuneate at the base, subglaucescent on both surfaces, very narrowly revolute on the margin, the end one  $\frac{1}{2}$ –1 in. long, the side ones smaller, very shortly stalked. Inflorescence axillary.

**Lower Guinea.** Angola: Mossamedes; in bushy, sandy places on the banks of the River Maiombo near Pomangala, *Welwitsch*, 3022.

43. **J. floribundum**, *R. Br.*; *DC. Prod.* viii. 313. Branchlets glabrous. Leaves opposite, imparipinnate; leaflets 5, ovate, glabrous, the end one the largest, stalked,  $1-1\frac{1}{2}$  in. long, the side ones smaller, opposite, nearly sessile. Cymes few-flowered, terminal and axillary; pedicels long. Calyx  $\frac{1}{4}$  in. long; teeth subulate, longer than the campanulate tube. Corolla white, fragrant; tube  $\frac{5}{8}-\frac{3}{4}$  in. long; segments 5, oblong,  $\frac{1}{2}$  in. long.—*A. Rich. Tent. Fl. Abyss.* ii. 27; *Schweinf. Beitr. Fl. Aethiop.* 134, 281; *Engl. Hochgebirgsfl. Trop. Afr.* 334.

**Wile Land.** Eritrea: Keren, *Steudner*, 1352, and between Keren and Adowa, *Steudner*, 1353 (ex *Engler*). Upper Sennar: Fazoki, ex *Schweinfurth*. Abyssinia: Mountains of Samen province, *Schimper*, 924! near Adowa, *Dillon & Petit* (ex *Richard*), near Axum, *Schimper*, 1515, near Addi Geffa, *Schimper*, 675, and Gondar, *Steudner*, 1351 (ex *Engler*). Shoa; Aliu Amba, *Roth*, 403! and without precise locality, *Parkyn*! Somaliland: Darra-as, 5000 ft., *Mrs. Lort Phillips*!

Nearly allied to the commonly-cultivated *J. officinale*, Linn.

A plant collected by *Schweinfurth & Riva* (997) in Eritrea, between Saganeiti and Acroun, 6000–7000 ft., resembles *J. officinale*, Linn.; but has only 3 leaflets.

## 2. SCHREBERA, Roxb.; Benth. et Hook. f. Gen. Pl. ii. 675.

Calyx campanulate, truncate or shortly toothed. Corolla hypocrateriform; tube cylindrical; lobes 4–7, spreading, imbricate. Stamens 2, inserted just below the throat of the corolla-tube; filaments very short. Ovary 2-celled; style long, filiform; stigma faintly 2-lobed; ovules 3–4 in a cell, pendulous from the top of the dissepiments. Capsule pyriform or oblong, loculicidally 2-valved down to the base. Seeds pendulous, expanded into a large wing above the nucleus, exalbuminous; cotyledons plano-convex; radicle inferior.—Trees or erect shrubs. Leaves opposite, entire or imparipinnate. Inflorescence a flat-topped panicle with cymose branches; bracts minute. Flowers smaller than in *Jasminum*, white or pink.

Species 16; also in South Africa, with 1 in India, and 1 in Peru.

Leaves simple.

Branchlets glabrous.

- |  |                            |
|--|----------------------------|
| Corolla-tube $\frac{1}{2}$ in. long . . . . .    | 1. <i>S. oligantha</i> .   |
| Corolla-tube $\frac{3}{4}$ –1 in. long . . . . . | 2. <i>S. golungensis</i> . |

Branchlets pubescent.

Leaves shortly petioled.

- |  |                            |
|--|----------------------------|
| Leaves obtuse, 1–2 in. long . . . . .              | 3. <i>S. Buchanani</i> .   |
| Leaves acute, $1\frac{1}{2}$ –4 in. long . . . . . | 4. <i>S. platyphylla</i> . |
| Leaves with a longer petiole . . . . .             | 5. <i>S. trichoclada</i> . |

Leaves imparipinnate.

Leaves glabrous.

- Petiole and rhachis broadly winged . . . . 6. *S. Welwitschii*.  
 Petiole and rhachis narrowly winged.  
 Corolla-lobes  $\frac{1}{2}$  as long as the tube . . . . 7. *S. alata*.  
 Corolla-lobes  $\frac{1}{3}$  as long as the tube . . . . 8. *S. obliquifoliolata*.  
 Petiole and rhachis not winged . . . . 9. *S. gœtzeana*.

Leaves pubescent.

- Lateral leaflets sessile . . . . . 10. *S. tomentella*.  
 Lateral leaflets shortly stalked . . . . . 11. *S. Holstii*.

1. ***S. oligantha***, *Gilg in Engl. Jahrb.* xxx. 71. A tall shrub, glabrous in all its parts. Leaves simple, oblong or ovate-oblong, 2–3 in. long by half as broad, subcoriaceous, acute, rounded at the base, opaque; petiole short, stout: veins closely reticulated. Flowers 3 together in lax terminal cymes with long peduncle and pedicels. Calyx campanulate,  $\frac{1}{8}$  in. long, scarcely toothed. Corolla-tube cylindrical,  $\frac{1}{2}$  in. long, scarcely dilated at the throat; lobes obovate, half as long as the tube. Fruit pyriform, woody,  $1\frac{1}{2}$  in. long.

**Mozamb. Dist.** German East Africa: Pori Steppe, near the Ugalla River, Böhm, 35A!

2. ***S. golungensis***, *Welw. in Trans. Linn. Soc.* xxvii. 40, t. 15. A tree reaching a height of 20–30 ft., with glabrous branchlets. Leaves simple, opposite, obovate or oblong, acute, cuneate at the base, 2–5 in. long, subcoriaceous, glabrous, bright green above, slightly glaucous, with raised parallel main ribs beneath. Panicle terminal, composed of a few lax cymes; pedicels glabrous, erect,  $\frac{1}{4}$ – $\frac{3}{4}$  in. long. Calyx campanulate,  $\frac{1}{8}$  in. long, entire or obscurely toothed. Corolla-tube  $\frac{3}{4}$ –1 in. long; lobes obovate-oblong,  $\frac{1}{6}$  in. long. Capsule pyriform, 2 in. long, narrowed to the base through the lower half; valves turgid, very thick and woody.—*Gilg in Engl. Jahrb.* xxx. 72. *Nathusia golungensis*, O Kuntze, *Rev. Gen. Pl.* ii. 412; Hiern in *Cat. Afr. Pl.* Welw. i. 657.

**Lower Guinea.** Angoia: Golungo Alto; in forests among the mountains of Alto Queta, *Welwitsch*, 933!

**Mozamb. Dist.** Portuguese East Africa: Lower Zambesi; Shupanga, *Kirk!* Lower Shire; at the base of Morambala Mountain, 300 ft., *Kirk!* British Central Africa: Boruma on the Zambesi, *Menyharth*, 1166!

3. ***S. Buchanani***, *Baker in Kew Bulletin*, 1895, 95. A tree about 20 ft. high, with slender pubescent branchlets. Leaves opposite, simple, oblong, obtuse, 1–2 in. long, broadly rounded at the base, subcoriaceous, glabrous above, strongly ribbed beneath, pubescent principally on the midrib. Flowers not seen. Capsule pyriform,  $1\frac{1}{4}$ – $1\frac{1}{2}$  in. long, 1 in. diam., narrowed to the base from the middle; valves turgid, very thick and woody. Seeds ovate, 1 in. long, the chartaceous wing occupying the upper two-thirds.—*Gilg in Engl. Jahrb.* xxx. 72.

**Mozamb. Dist.** British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 418! Zomba, 3500 ft., *Mahon!*

4. **S. platyphylla**, *Gilg in Engl. Jahrb.* xxviii. 449. A shrub 6–10 ft. high. Leaves shortly petioled, ovate or obovate,  $1\frac{1}{2}$ –4 in. long, acute, rounded at the base, entire, chartaceous, glabrous above, slightly pubescent beneath. Cymes terminal, 2–3-flowered; peduncles densely hairy; pedicels very short. Calyx campanulate,  $\frac{1}{8}$  in. long; lobes ovate-deltoid,  $\frac{1}{4}$  the length of the tube. Corolla whitish; tube narrow, 2–3 times the length of the orbicular lobes, which are  $\frac{1}{4}$  in. long and broad. Anthers reaching the throat of the corolla-tube.—*Gilg in Engl. Jahrb.* xxx. 72.

**Mozamb. Dist.** German East Africa: Uhehe; Iringa, on an undulating plateau near Rugaro, 4900 ft., *Goetze*, 549.

5. **S. trichoclada**, *Welw. in Trans. Linn. Soc.* xxvii. 41. A shrub, or low tree, reaching a height of 15 ft., with slender pubescent branchlets. Leaves opposite, simple, oblong, acute, 2–3 in. long, moderately firm, green on both sides, glabrous above when mature, pubescent beneath; petiole  $\frac{1}{2}$  in. long. Cymes few-flowered, terminal, slightly compound; pedicels erect, very pubescent,  $\frac{1}{2}$  in. long. Calyx campanulate, pubescent, minutely and obtusely toothed,  $\frac{1}{6}$  in. long. Corolla-tube  $\frac{1}{2}$ – $\frac{3}{4}$  in. long; lobes obovate,  $\frac{1}{4}$  in. long. Capsule oblong-pyriform, obtusely 4-angled, 2 in. long.—*Gilg in Engl. Jahrb.* xxx. 72. *Nathusia trichoclada*, O. Kuntze, *Rev. Gen. Pl.* ii. 412; *Gilg in Engl. Pf. Ost-Afr. C.* 308; *Hiern in Cat. Afr. Pl. Welw. i.* 657.

**Lower Guinea.** Angola: Ambaca; among bushes at the great cave of Puri Cacambola, rather rare, *Welwitsch*, 934; Pungo Andongo; Panda forests, between the River Lutete and the Præsidium, and between Cazella and the Præsidium, rather rare, *Welwitsch*, 935, 936!

6. **S. Welwitschii**, *Gilg in Engl. Jahrb.* xxx. 73. A small or middle-sized tree, with glabrous branchlets. Leaves 5-foliolate, with a long broadly winged petiole and rhachis; leaflets oblanceolate-oblong or oblong, acute, thin, glabrous, the end one 3–4 in. long, narrowed very gradually to the base, the side ones shorter, unequal towards the base. Cymes very compound, terminal; pedicels very short. Calyx campanulate, pubescent,  $\frac{1}{6}$  in. long, distinctly toothed. Corolla-tube cylindrical,  $\frac{1}{2}$  in. long; lobes obovate-cuneate, half as long as the tube. Fruit hard, pyriform, glabrous, 1 in. long.—*S. alata*, *Welw. in Trans. Linn. Soc.* xxvii. 41, partly. *Nathusia alata*, *Hiern in Cat. Afr. Pl. Welw. i.* 656, partly.

**Lower Guinea.** Angola: Pungo Andongo; in woods on the southwest of the Præsidium, *Welwitsch*, 937! Huilla; in forests in Morro de Lopollo, *Welwitsch*, 938!

7. **S. alata**, *Welw. in Trans. Linn. Soc.* xxvii. 41, partly. A moderate sized tree with very hard wood and slender glabrous branchlets. Leaves 5-foliolate, with a long narrowly-winged petiole and rhachis; leaflets oblong or oblanceolate-oblong, acute, firm but thin, glabrous on both surfaces, the end one 4–5 in. long, narrowed very gradually to the base, the side ones much shorter, sessile, rather unequal at the base. Cymes

lax, terminal, very compound, peduncled; pedicels short; bracts lanceolate. Calyx campanulate,  $\frac{1}{6}$  in. long, glabrous or pubescent, minutely toothed. Corolla white tinged with lilac; tube more than twice as long as the calyx; lobes obovate-cuneate,  $\frac{1}{6}$  in. long. Fruit glabrous, pyriform, 1 in. long.—Gilg in Engl. Jahrb. xxx. 73; Engl. Hochgebirgsl. Trop. Afr. 333, partly. *Nathusia alata*, Hochst. in Flora, 1841, ii. 672; DC. Prod. viii. 282, 674; A. Rich. Tent. Fl. Abyss. ii. 29; Gilg in Engl. Pf. Ost-Afr. C. 308, partly; Hiern in Cat. Afr. Pl. Welw. i. 656, partly.

**Nile Land.** Abyssinia: in valleys near Gennia, in Memsach district, *Schimper*, 245! mountains of the district of Shoata, *Schimper*, 540! Adowa, *Petit*, 320! and without precise locality, *Schimper*, 700!

**Mozamb. Dist.** British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 91!

8. ***S. obliquifoliolata***, *Gilg in Engl. Jahrb.* xxx. 72. A small shrub, with glabrous branchlets. Leaves 5-foliolate, with a long narrowly winged petiole and rhachis; leaflets oblong, subacute or obtuse, glabrous on both surfaces, the end one 3–4 in. long by  $1\frac{1}{2}$ –2 in. broad, the side ones shorter, sessile, rather oblique at the base. Cymes lax, terminal, very compound; pedicels  $\frac{1}{4}$ – $\frac{1}{3}$  in. long; bracts small, lanceolate. Calyx campanulate, glabrous,  $\frac{1}{6}$  in. long, minutely toothed. Corolla-tube cylindrical,  $\frac{1}{3}$  in. long; lobes obovate-cuneate,  $\frac{1}{3}$  the length of the tube.—*Nathusia alata*, Gilg in Engl. Pf. Ost-Afr. C. 308, partly.

**Nile Land.** British East Africa: Taita; Ndi Mountain, *Hildebrandt*, 2532!

Doubtfully distinct from *S. alata*, Welw.

9. ***S. goetzeana***, *Gilg in Engl. Jahrb.* xxviii. 450, t. 8. A shrub 9–13 ft. high. Leaves imparipinnate,  $1\frac{1}{2}$ –3 in. long; leaflets 2–jugate, obovate-oblong, acute, chartaceous or subcoriaceous, glabrous; rhachis and petiole not winged, acutely angled. Cymes 3–5 times forked, dense, terminal; peduncle and pedicels short, subglabrous. Calyx campanulate,  $\frac{1}{6}$  in. long, irregularly 2–5-lobed. Corolla white; tube cylindrical,  $2\frac{1}{2}$ –3 times the length of the calyx; lobes small, obovate. Anthers at throat of corolla-tube. Ovary globose; style long. Capsule obovoid, woody, nearly 1 in. long, splitting down to the base.—Gilg in Engl. Jahrb. xxx. 72.

**Mozamb. Dist.** German East Africa: Ukami; Uluguru Mountains, 3200 ft., *Goetze*, 210.

10. ***S. tomentella***, *Gilg in Engl. Jahrb.* xxx. 74. A shrub or small tree, with densely pubescent branchlets. Leaves 5-foliolate, with a short densely pubescent petiole and narrowly winged rhachis; leaflets oblong, obtuse, thinly pubescent on the upper surface, densely pubescent beneath, the end one 2–3 in. long, narrowed very gradually to the base, the side ones shorter, sessile, slightly oblique at the base. Cymes dense; pedicels short, pubescent; bracts obovate, obtuse, membranous.

Calyx campanulate, pubescent,  $\frac{1}{6}$  in. long, minutely toothed. Corolla-tube twice as long as the calyx; lobes obovate-cuneate,  $\frac{1}{6}$  in. long.—*S. alata*, var. *tomentella*, Welw. in Trans. Linn. Soc. xxvii. 42. *Nathusia alata*, var. *tomentella*, Hiern in Cat. Afr. Pl. Welw. i. 657.

**Lower Guinea.** Angola: Huilla; in the rocky higher parts of Morro de Lopollo, 5200–5500 ft., *Welwitsch*, 939! Foot of the Keputu Mountains, 5800 ft., *Antunes & Dekindt*, 198.

11. **S. Holstii**, *Gilg in Engl. Jahrb.* xxx. 72. A shrub, with lenticellate pubescent young branches. Leaves imparipinnate, 4–7 in. long, distinctly petioled, rigidly membranous, pubescent on both surfaces; leaflets 5, oblong, 2–3 in. long, narrowed to both ends, the side ones very shortly stalked, the end one largest. Cymes dense, terminal, many-flowered; pedicels about as long as the calyx. Calyx campanulate, densely tomentose,  $\frac{1}{6}$  in. long. Corolla glabrous; tube  $\frac{1}{3}$ – $\frac{1}{2}$  in. long; lobes obovate-oblong, obtuse, nearly as long as the tube.—*Nathusia Holstii*, *Engl. & Gilg in Engl. Pfl. Ost-Afr. C.* 308.

**Mozamb. Dist.** German East Africa: Usambara; Mlalo, *Holst*, 361, and Wambuguland, 5500 ft., *Buchwald*, 413 (ex *Gilg*).

### 3. OLEA, Linn.; Benth. et Hook. f. Gen. Pl. ii. 679.

Calyx small, campanulate, truncate or 4-lobed. Corolla-tube short, campanulate; segments 4, ovate, valvate. Stamens 2, inserted in the tube of the corolla; filaments short. Ovary 2-celled; style short; stigma capitate or emarginate. Fruit drupaceous; endocarp thick and bony, or thinner and crustaceous. Seeds usually solitary, pendulous, albuminous; albumen fleshy, sometimes slightly ruminant; cotyledons flat; radicle superior.—Trees or erect shrubs. Leaves opposite, simple, usually entire. Flowers small, paniced, hermaphrodite, diœcious or polygamous.

Species about 40, spread through the warmer regions of the Old World.

Leaves nearly naked beneath; petiole long . . . . 1. *O. Hochstetteri*.

Leaves thinly coated beneath; petiole short

Drupe very small, globose or turbinate . . . . 2. *O. somaliensis*.

Drupe larger, ellipsoid . . . . 3. *O. europæa*.

Leaves densely lepidote beneath; petiole short . . . . 4. *O. chrysophylla*.

1. **O. Hochstetteri**, *Baker*. A tall tree with naked branchlets. Leaves oblong, 3–4 in. long, 1–1½ in. broad at the middle, deltoid at the apex and base, minutely cuspidate, subcoriaceous, bright green above, paler green and nearly or quite naked beneath; petiole  $\frac{1}{2}$ – $\frac{3}{4}$  in. long. Panicles lateral and terminal, sparsely compound, 1½–2 in. long; flowers clustered at the tip of the branches; bracts small, ovate. Calyx campanulate,  $\frac{1}{2}$  lin. long, obscurely toothed. Corolla white,  $\frac{1}{6}$  in. long; lobes ovate, much longer than the tube.—*O. laurifolia*, *Hochst.* ex *A. Rich. Tent. Fl. Abyss.* ii. 28; *Engl. Hochgebirgsfl. Trop. Afr.* 333; *Knobl. in Engl. Jahrb.* xvii. 533 part 1, not of *Lam.*

**Nile Land.** Abyssinia: Samen; Mount Aber above Adesila, *Schimper*, 871!

The South African *O. laurifolia*, Lam. (*O. undulata*, Jacq. Hort. Schœnbr. t. 2) has a much more compound inflorescence and a deeply-lobed calyx.

2. ***O. somaliensis*, Baker.** A small tree with obscurely white-lepidote branchlets. Leaves oblanceolate or oblanceolate-oblong,  $1-1\frac{1}{2}$  in. long, narrowed from the middle to the base, subcoriaceous, bright green above, covered with a thin persistent whitish coat beneath; petiole very short. Panicles short, all axillary, not seen in the flowering stage. Calyx deeply lobed. Drupe subglobose or turbinate, not more than  $\frac{1}{5}$  in. long and broad when dry.—*O. chrysophylla*, Engl. Hochgebirgssfl. Trop. Afr. 333 partly.

**Nile Land.** British Somaliland: Ahl Mountains, near Maid, 3200–5200 ft., *Hildebrandt*, 1524!

3. ***O. europæa*, Linn., var. *nubica*, Schweinf. MSS.** A stunted bush with congested branchlets and oblong or orbicular leaves,  $\frac{1}{4}-\frac{1}{2}$  in. long, subcoriaceous, green and glabrous on both surfaces, or taller with thinly lepidote branchlets and short-petioled oblong obtuse minutely cuspidate leaves, 1–2 in. long, green and glabrous above when mature, covered with a thin persistent coat of brownish-white lepidote scales beneath. Flowers and fruit not seen.

**Nile Land.** Nubia: Erkowit Mountain, near Suakin, *Schweinfurth*, 249!

The typical *O. europæa*, Linn., is cultivated in the island of Cazanga, near Loanda, in Angola, *Welwitsch*, 940! but is regarded by Hiern (Cat. Afr. Pl. Welw. i. 658) as var. *sativa*, DC. The Nubian plant is regarded by Schweinfurth as the unaltered primitive stock of the cultivated plant: see *Heart of Africa*, i. 26.

4. ***O. chrysophylla*, Lam.; DC. Prod. viii. 285.** A tree, with slender branchlets, densely lepidote upwards. Leaves lanceolate, 2–4 in. long,  $\frac{1}{2}-\frac{3}{4}$  in. broad at the middle, narrowed gradually to each end, subcoriaceous, bright green and glabrous above when mature, conspicuously coated with drab or ferruginous lepidote scales beneath; petiole very short. Panicles copious, sparsely compound, all axillary,  $1-1\frac{1}{2}$  in. long; rhachises lepidote; bracts very minute. Calyx under  $\frac{1}{2}$  lin. long, campanulate, obscurely toothed. Corolla  $\frac{1}{8}$  in. long; lobes ovate-oblong. Drupe globose or turbinate,  $\frac{1}{4}$  in. long when dried.—A. Rich. Tent. Fl. Abyss. ii. 27; Schweinf. Beitr. Fl. Aethiop. 134; Baker, Fl. Maurit. 219; Engl. Hochgebirgssfl. Trop. Afr. 333 partly; Knobl. in Engl. Jahrb. xvii. 531; xxviii. 450.

**Nile Land.** Eritrea: Marakhat Valley near Saganeiti, 7200–8800 ft., *Schweinfurth & Riva*, 1676! Abyssinia: Agame district, *Schimper*, 918! 945! near Gondar, *Steudner*, 1316! near Fares-Saber, *Steudner*, 1315! and without precise locality, *Schimper*, 24! *Quartin-Dillon & Petit*, 290! *Roth*, 402! Uganda Protectorate: Butagu, *Scott-Elliott*, 8024! Mau, 7000 ft., *Scott-Elliott*, 6896! British East Africa: Machakos, 5000–6000 ft., *Scott-Elliott*, 6583! 6618!

**Mozamb. Dist.** German East Africa: Usambara; Ambóni, *Holst*, 2580! Kwa Mshuza, *Holst*, 9133! Uhehe; on a hilly plateau near Bweni, 5500 ft., *Goetze*, 730 (ex *Gilg*).

Also in Arabia, Mauritius and Bourbon.

4. **LINOCIERA**, Sw.; Benth. et Hook. f. Gen. Pl. ii. 678.

Calyx small, campanulate, deeply 4-lobed. Petals 4, linear-oblong, induplicate-valvate, nearly free. Stamens 2, inserted at the base of the petals; filaments very short. Ovary 2-celled; style very short; stigma capitate, entire or emarginate; ovules 2 in a cell, pendulous from the apex of the dissepiment. Fruit drupaceous; pericarp bony or crustaceous. Seeds usually solitary, pendulous, albuminous or ex-albuminous; testa thin or moderately thick; cotyledons flat or fleshy; radicle superior.—Trees or erect shrubs. Leaves simple, opposite, entire. Flowers small, usually paniced.—*Maypea*, Aubl. Pl. Guin. i. 81.

Species 40, spread through the tropics of both hemispheres, 1 each in Natal and Bourbon.

Corolla-tube very short.

Flowers in terminal panicles . . . . .	1. <i>L. urophylla</i> .
Flowers both in lateral and terminal panicles . . . . .	2. <i>L. Mannii</i> .
Flowers all in lateral panicles.	
Rhachis of panicle glabrous . . . . .	3. <i>L. nilotica</i> .
Rhachis of panicle pubescent.	
Leaves oblanceolate-oblong . . . . .	4. <i>L. angolensis</i> .
Leaves oblong . . . . .	5. <i>L. Johnsoni</i> .
Flowers in axillary clusters . . . . .	6. <i>L. congesta</i> .
Corolla-tube half as long as the lobes . . . . .	7. <i>L. Welwitschii</i> .

1. **L. urophylla**, Gilg in *Engl. Jahrb.* xxx. 373. A tall tree, glabrous in all its parts, with smooth grey bark. Leaves distinctly petioled, lanceolate, 2–3 in. long,  $\frac{1}{2}$ – $\frac{2}{3}$  in. broad, conspicuously acuminate, narrowed gradually to the base, entire, subcoriaceous, shining on the upper surface, opaque beneath; veins few, conspicuous on the underside of the leaf. Panicles lax, terminal. Calyx subcampanulate, nearly entire,  $\frac{1}{2}$  lin. long. Petals ovate or oblong, twice as long as the calyx, spreading. Anthers sessile.

**Mozamb. Dist.** German East Africa: Upper Kondeland; Usenga Mountains, at Umalila, 6500 ft., *Goetze*, 1864.

*L. gilgiana*, Volkens, from Mount Kilimanjaro, mentioned by Gilg in *Engl. Jahrb.* xxx. 374, has also a terminal inflorescence, but has not further been described.

2. **L. Mannii**, *Solereder in Bot. Centralb.* xlvii. (1891) 17. A small tree, with glabrous branchlets. Leaves simple, opposite, oblong, subacute, subcoriaceous, glabrous, 2–4 in. long, cuneate at the base; petiole very short. Panicles very abundant, lateral and terminal, 1–2 in. long; rhachises pubescent; bracts oblong-navicular, minute, persistent; pedicels very short. Calyx pubescent,  $\frac{1}{2}$  lin. long; tube very short; segments ovate. Petals  $\frac{1}{6}$  in. long. Style very short.—*Maypea Mannii*, *Knobl. in Engl. Jahrb.* xvii. 529.

**Upper Guinea.** Sierra Leone: near the Scarcies River, *Scott-Elliot*, 4717!

**Lower Guinea.** Gaboon: banks of the Gaboon River, *Mann*, 949!

3. **L. nilotica**, *Oliv. in Trans. Linn. Soc.* xxix. 106, t. 117. A tall tree, with a trunk 6–8 ft. in girth; branchlets glabrous, whitish.

Leaves simple, opposite, oblong, obtuse or subacute, 2-5 in. long, cuneate at the base; petiole  $\frac{1}{3}$ - $\frac{1}{2}$  in. long. Panicles lateral, erectopatent, 1-2 in. long, often produced from leafless nodes, sparsely compound; bracts ovate, minute, persistent; pedicels very short. Calyx  $\frac{1}{2}$  lin. long; lobes deep, ovate. Petals  $\frac{1}{6}$  in. long. Style very short.—*Mayepea nilotica*, Knobl. in Engl. Jahrb. xvii. 528.

**Upper Guinea.** Togo: Jegge Wasser, *Buettner*, 411, Fasugu, *Buettner*, 663.

**Nile Land.** White Nile, *Petherick*! Dar Ferti, *Schweinfurth*, ser. iii. 231! Bongo: near Ngoli (Nyoli), *Schweinfurth*, 2914! Madi, *Speke & Grant*, 701!

**Lower Guinea.** Congo Free State: Upolo, *Laurent*.

4. **L. angolensis**, *Baker*. A small tree; branchlets whitish, glabrous. Leaves simple, oblanceolate-oblong, shortly cuspidate, subcoriaceous, glabrous, 4-6 in. long; main veins raised on the lower surface; petiole  $\frac{1}{2}$  in. long. Panicles an inch long, all sessile in the axils of the leaves; rhachises very pubescent; bracts ovate, minute. Calyx pubescent,  $\frac{1}{2}$  lin. long; tube very short; segments suborbicular. Petals linear-oblong, nearly  $\frac{1}{4}$  in. long. Drupe oblong.—*Mayepea africana*, Knobl. in Engl. Jahrb. xvii. 529; Hiern in Cat. Afr. Pl. Welw. i. 658.

**Upper Guinea.** Gold Coast: base of Aburi Hills, *Johnson*, 234.

**Lower Guinea.** Angola: Pungo Andongo; Mata de Pungo and Cabonda, *Welwitsch*, 941! and without precise locality, *Mechow*, 152.

5. **L. Johnsoni**, *Baker*. A tree, reaching 60 ft. in height; branches grey, glabrous. Leaves shortly petioled, oblong, the largest 6-8 in. long,  $2\frac{1}{2}$ - $3\frac{1}{2}$  in. broad, acute, narrowed to the base, subcoriaceous, glabrous on both surfaces; main veins rather ascending and becoming nearly parallel to the margin. Flowers all in short axillary panicles with pubescent branches, crowded at the tip of the branchlets. Calyx very small, campanulate, pubescent. Petals  $\frac{1}{4}$  in. long, free nearly to the base, lanceolate from a broad base, yellow or creamy-white, fragrant. Stamens  $\frac{1}{4}$  the length of the petals.

**Upper Guinea.** Gold Coast: Aburi Hills, *Johnson*, 148! 453!

6. **L. congesta**, *Baker*. A shrub or low tree, 12-15 ft. high; branchlets glabrous. Leaves simple, opposite, oblong, acuminate, glabrous, 4-6 in. long, 1-2 in. broad, cuneate at the base; petiole  $\frac{1}{4}$ - $\frac{1}{3}$  in. long. Flowers few, in sessile or nearly sessile clusters in the axils of the leaves; bracts minute. Calyx  $\frac{1}{2}$  lin. long; segments ovate; tube very short. Petals nearly  $\frac{1}{4}$  in. long, united at the base into a very short tube. Drupe oblong,  $\frac{3}{4}$  in. long.

**Upper Guinea.** Cameroons: Cameroon River, *Mann*, 2214!

**Lower Guinea.** Spanish Gaboon: Muni (Dauger) River, *Mann*, 1747!

7. **L. Welwitschii**, *Baker*. A tree 50-80 ft. high; branchlets and leaves at first pubescent, soon glabrescent. Leaves oblong or lanceolate, acuminate, subcoriaceous, above an inch long. Panicles

half as long as the leaves; bracts oblong, deciduous. Calyx-tube campanulate; teeth 4, obtuse,  $\frac{1}{3}$  the length of the tube. Corolla-tube half as long as the orbicular lobes.—*Mayepea Welwitschii*, Knobl. in Engl. Jahrb. xvii. 530; Hiern in Cat. Afr. Pl. Welw. i. 658.

**Lower Guinea.** Angola: Golungo Alto; in dense forests by the cataracts of the River Cuango, near Sange, *Welwitsch*, 945! 946.

### ORDER LXXXIII. SALVADORACEÆ. (By J. G. Baker.)

Flowers regular, hermaphrodite or polygamo-dioecious. Calyx campanulate, 3–5-lobed. Corolla-segments 4–5, imbricate, free or united. Stamens usually 4, hypogynous or inserted on the corolla-tube; filaments short, free or monadelphous, sometimes alternating with small scales; anthers short, dorsifixed. Ovary 1–2-celled; style very short; stigma capitate or emarginate; ovules 1–2 in a cell, basal, anatropous. Berry fleshy or subdrupaceous; endocarp thin. Seed usually solitary, exalbuminous; cotyledons thick; radicle inferior.—Shrubs or trees, sometimes spiny. Leaves opposite, entire, coriaceous; rudimentary stipules sometimes present. Flowers small, arranged in panicles or axillary fascicles.

Species 7, confined to the warmer regions of Africa and Asia.

Petals free.

Branches unarmed. Stamens monadelphous . . . . . 1. DOBERA.

Branches spinose. Stamens free . . . . . 2. AZIMA.

Petals united into a short tube . . . . . 3. SALVADORA.

#### 1. DOBERA, Juss.; Benth. et Hook. f. Gen. Pl. ii. 680.

Calyx campanulate, irregularly 3–5-lobed. Petals 4–5, free, oblong, spreading. Stamens 4–5, hypogynous; filaments dilated and united at the base, with small glands alternating with them; anthers oblong. Ovary 1-celled; style short; stigma capitate; ovules 1–2, basal, erect. Drupe ellipsoid. Seed erect; testa cartilaginous.—Unarmed trees, with broad coriaceous opposite leaves. Flowers small, polygamous, in axillary panicles.

Species 2, 1 extending to India.

Ovule 1 . . . . . 1. *D. Roxburghii*.

Ovules 2 . . . . . 2. *D. loranthifolia*.

1. **D. Roxburghii**, *Planch. in Ann. Sc. Nat. sér. 3, x. 191*. A large tree, with branchlets finely pubescent upwards. Leaves coriaceous, very variable in shape, 2–3 in. long, ovate or obovate, acute or obtuse, deltoid at the base, glabrous above when mature, thinly clothed with obscure whitish pubescence beneath; petiole very short. Panicles all axillary, erecto-patent, shorter than the leaves; rhachis white-tomentose; pedicels 0. Calyx pale green,  $\frac{1}{2}$ – $\frac{3}{8}$  in. long. Petals twice as long as the calyx, spreading. Filaments united more than halfway up. Drupe ellipsoid,  $\frac{1}{2}$ – $\frac{3}{4}$  in. long, obtuse or pointed.—*D. glabra*,

A.DC. and *D. coriacea*. A.DC. in DC. Prod. xvii. 31. *Schizocalyx coriaceus*, Hochst. ex A. Rich. Tent. Fl. Abyss. i. 108, partly.

**Nile Land.** Eritrea: near Amba Forkhan, *Schweinfurth & Riva*, 620! near Ginda, 2900-3400 ft., *Schweinfurth & Riva*, 2241! Kordofan: Katul Gombara, *Pfund*, 208! Helba, *Pfund*, 692! near Homra, *Muriel*, 178! Abyssinia; Modat Valley, *Schimper*, 1744! British East Africa; Mombasa, *Wakefield*!

**Mozamb. Dist.** German East Africa: in mangrove swamps opposite Zan-zibar, *Kirk*!

Also in Arabia and India.

2. **D. loranthifolia**, Warb. in *Engl. & Pruntl, Pflanzenfam. Nachtr. zu ii.-iv.* 282. A tree 18-34 ft. high; branches terete, ashy-white, glabrous. Leaves broadly obovate or elliptic,  $1\frac{1}{3}$ -2 in. long, 10-14 lin. broad, subcuneate and obtuse at the base, apex scarcely acute; midrib prominent beneath, thick at the base, thinner upwards; veins 3-4 on each side, the basal very obliquely ascending, very prominent (as well as the tertiary) on both surfaces; petiole 2-2 $\frac{1}{3}$  in. long. Inflorescence many-flowered, axillary and terminal, half as long as the leaves; peduncles, pedicels and calyx minutely tomentose; bracts very small; flowers 1-1 $\frac{1}{2}$  lin. long. Calyx about 1 lin. long,  $\frac{1}{2}$  lin. in diam.; lobes very short, broad, obtuse. Petals twice as long as the calyx, glabrous. Stamens 4, glabrous; filaments connate into a tube; anthers sagittate. Disk of 4 glands alternating with the stamens. Ovary 1-celled, glabrous; ovules 2, basal, or from a short ascending placenta, anatropous.—*Platymitium loranthifolium*, Warb. in *Engl. Pf. Ost-Afr. C.* 279, t. 31; Solereder in *Bericht. Deutsch. Bot. Gesell.* xiv. (1896) 264.

**Mozamb. Dist.** German East Africa: Usambara; Masheua, 1600 ft., *Holst*, 8796! Lake Yipe, near Kilimanjaro, 2200 ft., *Volkens*.

This plant was originally referred to *Flacourtiaceæ*.

## 2. AZIMA, Lam.; Benth. et Hook. f. Gen. Pl. ii. 681.

Calyx-tube campanulate; lobes short, obtuse, usually 4. Petals 4, free, linear. Stamens 4, free, alternate with the petals; filaments free, filiform; anthers ovoid; glands 0. Ovary ovoid, 2-celled; style scarcely any; stigma large, emarginate; ovules 1-2 in a cell, subbasal, erect. Berry globose, often by abortion 1-seeded; endocarp membranous. Seed globose; testa thick, coriaceous.—Shrubs with sarmentose branches, armed with large pungent spines. Leaves opposite, coriaceous, entire. Flowers very small, diœcious, arranged in axillary clusters or congested panicles.

Species 3; also in South Africa, the Mascarene Islands and Tropical Asia.

Petals twice as long as the calyx . . . . . 1. *A. tetracantha*.

Petals half as long again as the calyx . . . . . 2. *A. spinosissima*.

1. **A. tetracantha**, Lam.; A.DC. in DC. Prod. xvii. 29. A shrub with long sarmentose tetragonal branches; spines 2-4 from a node,

straight, woody, often 1 in. or more long. Leaves oblong, mucronate, 1-2 in. long; petiole very short. Flowers in clusters or short panicles with congested branches in the axils of the leaves; bracts ovate, acute. Calyx  $\frac{1}{2}$  in. long; teeth short. Petals greenish-white, linear, twice as long as the calyx. Berry whitish,  $\frac{1}{4}$  in. diam.—Hiern in Cat. Afr. Pl. Welw. i. 659. *Monetia barlerioides*, L'Herit.; Harv. & Sond. Fl. Cap. i. 474

**Nile Land.** Uganda, *Scott-Elliot*, 7219!

**Lower Guinea.** Lower Congo, *Smith*! Angola: along the coast region of Loanda, *Rattray*! *Welwitsch*, 942! 4649, 5493! Icolo e Bengo; near Dafunda, *Welwitsch*, 943.

**Mozamb. Dist.** German East Africa: Dar-es-Salaam, *Kirk*! Portuguese East Africa: Zambesi Delta; Vicente, *Scott*! Lower Zambesi; Tete, *Kirk*! Shigogo, *Kirk*!

Also in South Africa, the Mascarene Islands and Tropical Asia.

2. **A. spinosissima**, *Engl. Jahrb.* xix. 147. Branchlets and young leaves shortly pubescent, mature glabrescent. Stipular spines  $1\frac{1}{2}$ -2 in. long. Leaves coriaceous, elliptic-lanceolate, conspicuously mucronate,  $1\frac{1}{2}$  in. long. Inflorescence a spike composed of sessile 3-flowered congested cymes; bracts lanceolate, mucronate. Calyx  $\frac{1}{2}$  in. long; teeth half as long as the tube. Petals lanceolate, half as long again as the calyx.

**Lower Guinea.** German South-west Africa: Damaraland; Otyimbingue, *Gurich*, 60.

### 3. SALVADORA, Linn.; Benth. et Hook. f. Gen. Pl. ii. 681.

Calyx-tube broadly campanulate; segments 4, ovate, obtuse. Corolla-tube very short; segments 4, broad, obtuse. Stamens 4, inserted in the corolla-tube; filaments free, very short, slightly flattened; anthers orbicular; glands sometimes present. Ovary ovoid, 1-celled; style very short; stigma capitate; ovule 1, basal, erect. Drupe globose; endocarp chartaceous. Seed erect, globose; testa thin.—Shrubs or small trees, with unarmed branches. Leaves opposite, entire, coriaceous. Flowers very small, subunisexual, paniced.

A second species in Arabia and India.

1. **S. persica**, *Garcin*; *DC. Prod.* xvii. 28. A much-branched shrub or small tree, glabrous in all its parts, covering sometimes an area of 80 ft.; branchlets white, terete. Leaves oblong, coriaceous, 2-3 in. long, rarely ovate or suborbicular, pale green; petiole  $\frac{1}{4}$ - $\frac{1}{3}$  in. long. Panicles copiously produced from the end of the branchlets and axils of the upper leaves; pedicels very short; bracts minute. Calyx pale green, under  $\frac{1}{2}$  lin. long. Corolla greenish-white,  $\frac{1}{2}$  in. long. Stamens shorter than the corolla. Drupe the size of a pea.—Hiern in Cat. Afr. Pl. Welw. i. 659; Schweinf. Beitr. Fl. Aethiop. 163; Oliver in Trans. Linn. Soc. xxix. 106. *S. crassinervia*, Hochst. in Schimp. Pl. Abyss.

Exsicc. 2218; T. Anders. in Journ. Linn. Soc. v. Suppl. i. 30. *S. paniculata*, Hochst. in Schimp. Pl. Abyss. Exsicc. 2325.

**Upper Guinea.** Senegambia, *Perrottet!* *Dollinger!* *Heudelot!* Bornu: region of Lake Chad, *Vogel!*

**Nile Land.** Red Sea: Harnish Island, *Slade*, 15! Nubia: Coast region, *Bent!* Ethiopia, *Kotschy*, 289! Kordofan, *Pfund*, 272! Eritrea: Hamfila Bay, *Terracciano!* Abyssinia; Agowa district near Errea, *Schimper*, 2218! near Gageros, *Schimper*, 2325! Sennar, *Cienkowsky!* Soma'iland, *Miss Edith Cole!* on the White Nile, *Schweinfurth*, 267! *Speke & Grant*, 770! Dongola, *Ehrenberg!* British East Africa: Kismayu, near the mouth of the River Juba, *Kirk!*

**Lower Guinea.** Angola, *Welwitsch*, 944! *Curror!* German South-west Africa: Hereroland, *Pechuel-Loesche.*

**Mozamb. Dist.** Portuguese East Africa: Lower Zambesi; Shupanga, *Kirk!* near Sena, *Kirk!* British Central Africa: Boruma, on the Zambesi, *Menyharth*, 820! Nyasaland, *Buchanan*, 1032! 1100!

Also in North Africa, Arabia and India.

#### ORDER LXXXIV. APOCYNACEÆ. (By Otto Stapf.)

Flowers hermaphrodite, regular. Calyx inferior; sepals 5 (very rarely 4) free or slightly (rarely more) united, more or less imbricate, equal or more or less unequal, often with (usually scale-like) glands near the base inside. Corolla salver- or funnel-shaped, rarely campanulate, urceolate or subglobose, glabrous or more or less hairy within, sometimes with scales or callous protuberances or ridges in the tube or mouth; lobes usually convolute, overlapping and frequently also twisted to the right or to the left, very rarely valvate. Stamens 5 (very rarely 4), inserted in the corolla-tube or mouth; filaments filiform or more often flattened and short or reduced to a callous swelling, often passing at the base into more or less decurrent ridges projecting into the tube (filamental ridges); anthers frequently conniving in a cone, either linear or oblong (rarely elliptic), shortly and obtusely 2-lobed at the base with the anther-cells parallel polliniferous and dehiscing to the base, or sagittate with barren tails (very frequently formed by the continuation of the outer halves of the cells), leaving the front basal part of the connective (foot) free; foot of the connective smooth or with various shaped projections or regular groups of spreading hairs. Pollen nearly always spherical with 3 pores, loose or rarely more or less cohering. Disc if present annular or cupular, 5-lobed or consisting of 2-5 scales, sometimes more or less adnate to the ovary. Ovary superior, or slightly inferior, of 2 (very rarely 3-5) united or distinct carpels, if syncarpous, 1-celled with parietal or 2-celled with central placentas, if apocarpous with ventral placentas. Style 1, entire or divided at the base; stigma various, with or without a usually bifid apiculus and frequently with a ring or other appendages, viscous on the surface or exuding much glutinous matter and agglutinated to the anthers or adnate to the projections of the foot of the connective. Ovules anatropous, usually pendulous, few or many in each carpel.

Fruit entire, baccate, drupaceous, samaroid or consisting of 2 (rarely 3-5) baccate or follicular mericarps, rarely breaking up into 2 or 4 valves. Seeds various, frequently compressed, very often with a tuft of hairs (coma) at one or both ends, or winged, rarely with a plumose apical or basal awn; testa coriaceous, crustaceous or membranous. Endosperm, if present, cartilaginous or fleshy. Embryo straight; cotyledons usually flat, rarely convolute or contortuplicate; radicle superior.—Trees, erect or scandent shrubs or perennial (very rarely annual) herbs, more or less laticiferous. Leaves simple, generally opposite, sometimes whorled, rarely spirally arranged, entire, pinnately-nerved. Stipules, if present, short, intrapetiolar, and often joining around the stem in a transverse ridge, very rarely one on each side of the petiole, or represented by spines. Inflorescences made up of (often much reduced) cymes, terminal or pseudolateral or truly axillary; cymes solitary or clustered or gathered in loose or congested, often 2-3-tomous, panicles, corymbs or pseudo-umbels; bracts usually small and deciduous. Flowers small to large and then often very showy.

The number of new genera and species of this order described since the publication of Bentham and Hooker's *Genera Plantarum* (1876) is very great. This has entailed the revision of the genera and of their arrangement, and the introduction of a more detailed description of the remarkably polymorphic fertilisation apparatus. Of the 3 tribes here admitted, the *Tabernamontanoideæ* and *Echitoideæ* correspond almost exactly to the subtribe of *Tabernamontaneæ*, Benth. (*Tabernamontaninæ*, K. Schum.) and the tribe of *Echitideæ*, Benth. (*Echitoideæ*, K. Schum.) respectively. Both are very homogeneous groups. The remainder of the genera are much less obviously connected. Bentham referred these to *Carisseæ* and *Plumeriæ*, in which latter he included also the *Tabernamontaneæ*, whilst Schumann united both tribes in his *Plumerioideæ*. As the principal character (namely, the syncarpous or apocarpous ovary) separating *Carisseæ* and *Plumeriæ* has lost, in the light of new discoveries, much of the importance formerly attributed to it, I have preferred to abandon it as a primary distinction, and to adopt Schumann's tribe *Plumerioideæ*, excluding his *Tabernamontaninæ*. Among the *Tabernamontanoideæ* the genus *Tabernamontana* had grown, by the addition of numerous (often imperfectly known) species, into an assembly of most incongruous types. With the alternatives of reducing all the *Tabernamontanoideæ* to one genus or breaking up *Tabernamontana* into several genera, as already proposed by Perre and Schumann, I decided in favour of the latter as being the only way of obtaining genera approximately equivalent to those composing the two other tribes. One result of the study of the *Tabernamontanoideæ* of both hemispheres was the exclusion of *Tabernamontana* from the Old World.

TRIBE I. **Plumerioideæ**. — *Corolla salver-shaped, rarely funnel-shaped; lobes overlapping to the left, rarely to the right. Anthers linear, oblong or elliptic, shortly and obtusely 2-lobed (rarely sub-sagittate) at the base; anther-cells polliniferous and dehiscing to the base or nearly so, not diverging below. Ovary syncarpous, 1-2-celled, or apocarpous with 2 (rarely 3-5) free or partly connate carpels; stigma various, usually distinctly apiculate, rarely hairy or with frill-like appendages, often exuding more or less glutinous matter and then sometimes sticking to the anthers in the dry state, otherwise free. Fruit baccate, drupaceous or dry and follicular. Seeds not comose, exarillate; endosperm (if any) smooth, rarely grooved and ruminant. Cotyledons flat.*

\*Ovary syncarpous. 1-2-celled.

Corolla salver-shaped; fruit baccate.

FOREST RESOURCES

- Ovary 1-celled (or imperfectly 1-celled in some species of *Clitandra*, 2-celled in *Clitandra orientalis*); stigma glabrous.
- Style short, not or shortly exerted from the calyx, filiform or columnar, mostly glabrous.
- Inflorescences terminal or sometimes pseudo-axillary.
- Calyx 4-5 lin. long, multiglandular within . . . . . 1. VAHADENIA.  
    Calyx  $\frac{3}{4}$ -3 lin. long, eglandular within . . . . . 2. LANDOLPHIA.
- Inflorescences axillary or axillary and terminal . . . . . 3. CLITANDRA.
- Style usually long and much exerted from the calyx, almost capillary, mostly more or less hairy . . . . . 4. CARPODINUS.
- Ovary 2-celled; stigma tips hairy
- Armed shrubs with simple or forked spines . . . . . 5. CARISSA.  
    Unarmed shrubs . . . . . 6. ACOKANTHERA.
- Corolla funnel-shaped; fruit breaking up into 2 spinous valves . . . . . 13. ALLAMANDA.
- \*\*Ovary apocarpous, rarely imperfectly syncarpous (species of *Rauwolfia*).
- Sepals 3 lin. long, broad, obtuse, subcoriaceous; ovules very numerous . . . . . 7. PICRALIMA.
- Sepals  $\frac{1}{2}$ -1 lin. long, or if longer, narrow and herbaceous; ovules few or many.
- †Mericarps baccate, or if follicular with only 2-4 winged seeds
- Inflorescences axillary (rarely pseudo-terminal), sessile or compact, more or less umbelliform; stigma not apiculate . . . . . 8. PLEIOCARPA.
- Inflorescences terminal, paniculate or corymbose, rarely much congested or clustered and pseudo-axillary; stigma distinctly apiculate.
- Inflorescences rather dense and rigid; calyx glandular within, coriaceous, more or less resinous; stigma oblong-ellipsoid.
- Ovules 10-24 in each cell . . . . . 9. POLYADOA.  
        Ovules 2 in each cell . . . . . 10. HUNTERIA.
- Inflorescences rather lax; calyx eglandular within, submembranous, not resinous; stigma depressed, capitate . . . . . 11. DIPLORRHYNCHUS.
- ††Mericarps drupaceous; carpels 2-ovuled . . . . . 12. RAUWOLFIA.
- †††Mericarps follicular; carpels many-ovuled.
- Herbs . . . . . 14. LOCHNERA.  
        Trees or shrubs.
- Leaves alternate; flowers rather large and showy . . . . . 15. PLUMERIA.  
            Leaves opposite or verticillate; flowers small . . . . . 16. ALSTONIA.

TRIBE II. *Tabernæmontanoideæ*.—Corolla salver-shaped, rarely funnel-shaped or campanulate with a cylindrical basal tube; lobes overlapping to the left, very rarely to the right. Anthers linear, oblong, or sagittate; anther-cells not or very slightly diverging below, and polliniferous and dehiscent to the base or nearly so, or diverging below and passing into barren tails leaving the glabrous foot of the connective free. Ovary apocarpous, rarely syncarpous; carpels 2;

*stigma various, often exuding more or less glutinous matter and sticking tightly to the anthers at least in the dry state, otherwise free. Fruit baccate or follicular (but more or less fleshy). Seeds not comose, arillate in follicular fruits; endosperm ventrally grooved and more or less ruminat. Cotyledons flat.*

\*Sepals almost or quite free, not circumscissile at the base.

Ovary syncarpous, imperfectly 2-celled; fruit a simple berry . . . . . 17. TABERNANTHE.

Ovary apocarpous, or carpels united only near the base; mericarps baccate or follicular.

Anthers linear-oblong, shortly 2-lobed or subsagittate; stigma oblong, ellip-oid or capitate, not appendiculate at the base.

Corolla salver-shaped; disc 0.

Stigma capitate, exapiculate, entire; small-flowered shrub; mericarps 3-keeled or 3-winged, baccate or very tardily dehiscent . . . . . 18. PTEROTABERNA.

Stigma oblong to ellipsoid with a bifid slender apiculus; flowers small to middle-sized (corolla-tube 3-12 lin. long, very slender); mericarps follicular often beaked and finally flattened out, not winged . . . . . 19. ERVATAMIA.

Corolla campanulate-funnel-shaped, large; disc distinct, adnate to the ovary.

Flowers not involucrate; cylindric part of the corolla-tube short . . . . . 20. CALOCRATER.

Flowers involucrate by large foliaceous bracts; cylindric part of the corolla-tube long and slender . . . . . 21. CROCERAS.

Anthers more or less linear-lanceolate, sagittate (rarely subsagittate); stigma cylindric or capitate, always apiculate and with a basal appendage.

Corolla widened above the insertion of the stamens.

Supra-staminal part of the corolla-tube cylindric or funnel-shaped towards the mouth; corolla 2-3 in. long . . . . . 22. CALLICHILIA.

Supra-staminal part of the corolla-tube wide, campanulate; corolla about  $\frac{1}{2}$  in. long . . . . . 23. CARVALHOA.

Corolla gradually constricted above the insertion of the stamens.

Corolla-lobes overlapping to the right; disc distinct; mericarps multistriate . . . . . 24. SCHIZOZYGIA.

Corolla-lobes overlapping to the left; disc 0; mericarps smooth or 2-3-keeled, rarely warty.

Corolla-tube slender, stamiferous close to the base . . . . . 25. GABUNIA.

Corolla-tube inflated and stamiferous at the middle . . . . . 26. CONOPHARYNGIA.

\*\*Sepals united into a tubular or subcampanulate, 5-lobed calyx, circumscissile at the base or splitting longitudinally . . . . . 27. VOACANGA.

TRIBE III. *Echitoidesæ*.—*Corolla* various; lobes overlapping to the right, very rarely to the left, or induplicate-valvate or valvate. *Anthers* usually sagittate; anther-cells diverging below, the outer halves passing into barren tailed appendages; foot of the connective free, generally provided with projections and regularly arranged groups of spreading hairs. *Ovary* apocarpous, rarely syncarpous; stigma various, exuding a glutinous matter and tightly agglutinated or adnate to the foot of the connective, very rarely to the base of the filaments. *Fruit* dry, follicular. *Seeds* comose, very rarely not; or with a basal or apical plumose awn; endosperm smooth, often scanty. *Cotyledons* flat, semiterete, convolute or contortuplicate.

\*Leaves opposite, rarely whorled; trees or shrubs with woody stems.

Anthers not sagittate; outer halves of the cells usually more or less (sometimes minutely) decurrent on and adnate to the glabrous foot of the connective; leaves deciduous . . . . . 28. HOLARRHENA.

Anthers distinctly sagittate; empty tails free; leaves persistent, rarely deciduous.

Corolla with numerous appendages in the throat, partly opposite and partly alternate with the lobes; seeds covered all over with long silky wool . . . . . 29. PLEIOCERAS.

Corolla with paired or solitary appendages alternate with the lobes, or (usually) naked; seed glabrous, pubescent or shortly tomentose.

Corolla funnel-shaped or campanulate from a cylindric basal tube with paired appendages between the usually long-tailed lobes . . . . . 30. STROPHANTHUS.

Corolla salver-shaped or funnel-shaped to campanulate without a cylindric basal tube or paired appendages.

Corolla-lobes very asymmetric; anther-cone exerted from the corolla-tube . . . . . 31. ISONEMA.

Corolla-lobes not or slightly asymmetric; anther-cone included, rarely more or less exerted  
Intracalycular glands numerous.

Corolla fleshy; tube stout; lobes overlapping to the right; seeds with a plumose basal awn . . . . . 32. FUNTUMIA.

Corolla not fleshy; tube generally slender; lobes induplicate-valvate; seeds with a sessile apical coma . . . . . 33. MASCARENHASIA.

Intracalycular glands 5-0.

Anther-cone exerted; seeds without a coma or awn . . . . . 34. MALOUETIA.

Anther-cone included; seeds with a sessile apical coma.

Corolla-mouth much constricted.

Ovary apocarpous . . . . . 35. ALAFIA.

Ovary syncarpous . . . . . 36. HOLALAFIA.

Corolla-mouth wide.

Leaves extremely closely nerved; carpels 4-ovuled . . . . . 37. PYCNOBOTRYA.

Leaves loosely nerved; carpels many-ovuled.

Corolla funnel-shaped, campanulate or urceolate, usually with transverse scales or swellings above the insertion of the stamens; anther-tails acute, straight or nearly so.

Flowers in terminal and axillary panicles or corymbs, rarely in few-flowered subsessile cymes; corolla-lobes as long as, or more often very much longer than, the tube 38. *BAlSSEA*

Flowers in dense, small, subsessile axillary cymes; corolla-lobes as long as or shorter than the tube . . . 39. *ZYGODIA*.

Corolla more or less salver-shaped, without transverse scales or swellings above the insertion of the stamens; anther-tails very obtuse, strongly recurved.

Corolla with 5 ligulate scales in the mouth; anther-tips acute, glabrous . . . 40. *ONCINOTIS*.

Corolla without scales in the mouth; anther-tips bearing a minutely plumose mucro 41. *MOTANDRA*.

\*\*Leaves spirally arranged; stem succulent.

Unarmed . . . . . 42. *ADENIUM*.

Armed with spines at the base of the leaves . . . 43. *PACHYPODIUM*.

### 1. *VAHADENIA*, Stapf.

Calyx 4-5 lin. long; sepals 5, broad-ovate, glabrous, with a fringe of short filiform glands within at the base, spreading or reflexed in fruit. Corolla salver-shaped, fleshy; tube subcylindric, slightly widened and staminiferous, at the middle, 7-8 lin. long, mouth naked; lobes 5, overlapping to the left. Stamens included; filaments filiform, very short; anthers linear-oblong, bilobed at and dehiscent to the base. Disc 0. Ovary entire, truncate, pubescent except at the glabrous base, 1-celled; placentas 2, parietal, very much projecting; style filiform; stigma conical from a thickened base, minutely 2-lobed, at the level of the anthers; ovules numerous, pluriseriate. Fruit a globose berry; pericarp very hard, woody. Seeds about 20.—A semi-candent glabrous shrub. Leaves opposite, petioled; secondary nerves distant; axillary stipules 0. Flowers middle-sized, stout, shortly pedicelled, in few-flowered corymbs at the ends of the distant branches of an elongate panicle, which (like the rhachis) are sensitive and act as hook-tendrils.

Species 1, endemic.

Allied to the sections *Mesandrocia* and *Ancylobotrys* of *Landolphia*, but differing

from all the species of this genus in the large, persistent, ultimately reflexed or spreading sepals, the very numerous intracalyceular glands, the stout, fleshy corolla and the woody pericarp. I have not seen any seeds, and state their number from De Wildeman's description.

1. **V. Laurentii**, *Stapf*. A perfectly glabrous, semiscandent shrub; young branches shining, very rough from numerous pale brown lenticels. Leaves obovate-elliptic or obovate, very shortly acuminate or obtuse, rounded or subcordate at the base, 3-6 in. long,  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. broad, coriaceous with thickened margins, glossy on both sides, reddish-brown below when dry; midrib finely channelled above, prominent below; secondary nerves about 8 on each side, oblique, conspicuously prominent below, finely channelled above, connected by bold submarginal arches, reticulation distinct below. Panicle glabrous; branches very rough; bracts broad, apiculate, up to 1 lin. long, ciliolate. Calyx quite glabrous, eciliolate; sepals 4-5 lin. long, 3- $3\frac{1}{2}$  lin. broad, subcoriaceous, reddish-brown, spreading or reflexed in fruit. Corolla brownish-red when dry, glabrous; tube 7-8 lin. long; lobes 10 lin. long, 2 lin. broad, ciliate, fleshy, longitudinally sulcate on the back in bud. Anthers  $1\frac{1}{4}$  lin. long. Fruit  $1\frac{1}{2}$ - $1\frac{3}{4}$  in. diam. (mature?)—*Landolphia Laurentii*, De Wild. in *Rév. Cult. Colon.* viii. (1901) 229.

**Lower Guineæ.** Lower Congo: Kimuenza, *Gillet*, 1666!

**South Central.** Congo Free State: Muchipila, *Laurent*!

2. **LANDOLPHIA**, Beauv.; Benth. et Hook. f. *Gen. Pl.* ii. 692.

Calyx  $\frac{3}{4}$ - $1\frac{1}{2}$  lin. long (or  $2\frac{1}{2}$ -3 lin. in § *Mesandraceia*); sepals 5, free or connate below, usually more or less ovate, hairy or glabrous, eglandular. Corolla salver-shaped; tube more or less cylindric,  $1\frac{1}{2}$ -12 lin. long, slender or rather stout, widened and staminiferous near the base or mouth or between them without correlation to the length of the corolla, but usually just above the calyx (higher up by  $\frac{1}{2}$ -2 calyx-lengths in §§ *Vahea* and *Mesandraceia*); mouth naked, sometimes much constricted by a callous ring; lobes 5, narrow or broad, overlapping to the left. Stamens included; anthers ovate to lanceolate, minutely 2-lobed at and dehiscing to the base. Disc 0. Ovary entire, hairy or glabrous, 1-celled; placentas 2, parietal; style filiform or subcolumnar, usually short to very short, or longer and very slender (in §§ *Vahea* and *Mesandraceia*); stigma at a level with the base of the anthers, conical from a slightly thickened base, 2-lobed; ovules numerous, pluriseriate. Fruit a globose or pear-shaped berry, sometimes of large size. Seeds few or many, embedded in a juicy pulp, ovoid or oblong, smooth; endosperm horny; cotyledons foliaceous, very thin; radicle short.—Hairy or glabrous shrubs, often of large size, usually climbing by flagelliform hook-branched terminal or pseudo-axillary tendrils (modified inflorescences), or by sensitive inflorescences, rarely dwarf shrubs or undershrubs with partly herbaceous branches. Leaves opposite, of varying size; secondary nerves usually distant, rarely very close; axillary stipules 0; axillary glands minute, obscure, or (in § *Ancylobotrys*) subulate to filiform. Flowers small to middle-sized, rarely 2 in. long in bud, pedicelled or

sessile in few- or many-flowered corymbs at the ends of the branches (sometimes overtopped by barren shoots and then occasionally pseudo-axillary), or gathered in more or less elongate panicles at the ends of their distant branches which are (like the rhachis) sensitive, and act as hooks or tendrils.

About 40 species, in tropical Africa, extratropical South-east Africa, and the Mascarene Islands.

The plant described by Aublet as *Pacouria* is very probably a species of *Landolphia*, § *Ancylobotrys*. It was found in French Guiana by Aublet, but has never been collected again, and is perhaps not indigenous there. The seeds of several species have been described as being covered with a dense coat of hairs. Lecomte has pointed out in Journ. de Bot. 1901, 86-88, that this appearance is due to the presence of a great number of laticiferous cells in the pericarp, the inner parts of which go to form the pulp. This closely envelops the seeds, and, as the orientation of the laticiferous cells is more or less at right angles to the surface of the seed and their refractive power differs from the rest, produces the impression of the presence of a coat of hairs.

\***JASMINOCHYLA.**—Flowers few, in terminal corymbs, short racemes or small panicles. Calyx 1-1½ lin. long, ciliate or perfectly glabrous. Corolla-tube 2½-5 lin. long, cylindrical, slightly widened from the middle upwards; lobes 3½-8 lin. long, not ciliate, as long as or longer than the tube. Stamens inserted about the middle of the corolla-tube. Ovary glabrous; style not or slightly exceeding the calyx. Fruit globose with a coriaceous rind, having no sclerenchymatic layer. Endosperm coarsely pitted.

Sepals conspicuously ciliate; secondary nerves of leaves 8-10 on each side . . . . . 1. *L. watsoniana*.

Sepals eciliate; secondary nerves of leaves 10-18 on each side.

Flowers on pedicels up to 3 lin. long, in lax racemes or small panicles . . . . . 2. *L. kilimandjarica*.

Flowers on very short pedicels, in small rather dense corymbs.

Corolla-lobes 3-5½ lin. long . . . . . 3. *L. Buchananii*,

Corolla-lobes up to 8 lin. long . . . . . 4. *L. Cameronis*.

\*\***VAHEA.**—Flowers many, in dense terminal corymbs, or the corymbs gathered in elongate sensitive panicles. Calyx 1-1½ lin. long, hairy or glabrous. Corolla-tube 6-11 lin. long, slightly inflated below the middle, otherwise very slender; lobes 8-15 lin. long, not ciliate. Stamens inserted at the lower ⅓ of the corolla-tube. Ovary glabrous or hairy; style distinctly exceeding the calyx, sometimes by more than 1 calyx-length. Fruit more or less globose with a thick hard rind, having a sclerenchymatic layer. Endosperm smooth.

Corolla-lobes much shorter than the tube . . . . . 5. *L. leonensis*.

Corolla-lobes at least as long as the tube.

Calyx ¾-1 lin. long; corolla-tube 6-6½ lin. long; ovary glabrous . . . . . 6. *L. senegalensis*.

Calyx 1½ lin. long; corolla-tube 8-11 lin. long; ovary densely tomentose . . . . . 7. *L. florida*.

\*\*\***MESANDRÆCIA.**—Flowers many, in dense conspicuously bracteate corymbs at the ends of the branches or several of them gathered in elongate terminal panicles. Calyx 2½-3 lin. long, hairy; sepals similar to the bracts, usually with reflexed tips. Corolla-tube 6-9 lin. long, spindle-shaped; lobes 5-10 lin. long, ciliate. Stamens inserted at or just above the middle of the corolla-tube. Ovary villous or glabrous;

style distinctly exceeding the calyx. Fruit oblong, with a thin hard rind, having a sclerenchymatic concentric layer. Endosperm smooth.

Leaves 8-14 in. long, 4-7 in. broad, pulverulentotomentellous and cinnamon-coloured below; ovary glabrous . . . . . 8. *L. ochracea*.

Leaves under 5 in. long, hirsute or villous; ovary densely hairy.

Branches and inflorescences densely fulvo- or rufo-hirsute with spreading hairs; leaves permanently hirsute or pubescent at least on the midrib below.

Secondary nerves of leaves 11-13 on each side; corolla-lobes 5-6 lin. long, 2-3 lin. broad . . . . . 9. *L. eminiiana*.

Secondary nerves of leaves 5-7 on each side; corolla-lobes 9 lin. long, 1½-2 lin. broad . . . . . 10. *L. bracteata*.

Branches and inflorescences more or less adpressedly rufo-tomentose; adult leaves quite glabrous . . . . . 11. *L. Lecointei*.

\*\*\*\*\*ANCYLOBOTRYS.—Flowers sessile in dense clusters on the ends of the branches of terminal, mostly elongate, more or less sensitive panicles. Calyx up to 1½ lin. long, hairy all over. Corolla-tube 3-12 lin. long, slender, cylindric, slightly widened and stamiferous just above the calyx; lobes 3-11 lin. long, ciliate along the outer edge. Ovary hairy; style not or very slightly exceeding the calyx. Fruit globose or obovoid, with a leathery rind, having no sclerenchymatic layer. Endosperm smooth.

Corolla-lobes much shorter than the tube.

Leaves ovate to broad-oblong; secondary nerves 8-11 on each side, curved, much raised below; reticulation lax . . . . . 12. *L. robusta*.

Leaves lanceolate to oblong; secondary nerves 11-13 on each side, almost straight, very slender; reticulation dense and fine . . . . . 13. *L. scandens*.

Corolla-lobes at least as long as the tube.

Leaves oblong- or ovate-lanceolate to oblong, about 3 times longer than broad; secondary nerves 18-20 on each side, straight and more or less horizontal.

Leaves thinly coriaceous, shortly and obtusely acuminate . . . . . 14. *L. Tayloris*.

Leaves very coriaceous, very acutely acuminate . . . . . 15. *L. pachyphylla*.

Leaves ovate- or elliptic-oblong, about twice as long as broad; secondary nerves 6-12 on each side, oblique, more or less curved.

Leaves acutely and shortly acuminate; secondary nerves 9-12; corolla-lobes as long as the tube.

Leaves rigidly papery; petiole 2 lin. long; corolla-tube 5-6 lin. long . . . . . 16. *L. amæna*.

Leaves coriaceous; petiole 3-5 lin. long; corolla-tube 6½-7 lin. long . . . . . 17. *L. ferruginea*.

Leaves subacute or obtuse (rarely subacuminate); secondary nerves 6-8; corolla-lobes longer than the tube . . . . . 18. *L. petersiana*.

\*\*\*\*EULANDOLPHIA.—Flowers many or few in dense terminal corymbs, rarely in elongated panicles. Calyx up to 2 lin. long, hairy or almost glabrous; sepals usually very broad. Corolla-tube 1½-3 lin. long, inflated and stamiferous between the

middle and the mouth, rarely at the middle; lobes  $1\frac{1}{2}$ –3 lin. long, not ciliate. Ovary hairy or glabrous. Style very short, not or scarcely exceeding the calyx. Fruit globose to pear-shaped, with a hard rind, having a concentric sclerenchymatous layer.

Leaves 3–6 in. by  $1-2\frac{1}{2}$  in.

Tall shrubs or climbers; secondary nerves 10–15 on each side.

Calyx fulvo-tomentose; corolla over 2 lin. long; ovary-top very finely tomentose.

Leaves abruptly or obscurely acuminate; corolla-tube 3 lin. long; fruit 1–3 in. in diam. . . . . 19. *L. owariensis*.

Leaves gradually tapering into a distinct acumen; corolla-tube  $2\frac{1}{2}$  lin. long; fruit 6–10 in. in diam. . . . . 20. *L. Klainei*.

Calyx glabrous except on the ciliolate margins, shining; corolla-tube 2 lin. long; ovary-top long villous . . . . . 21. *L. Dewevrei*.

Dwarf shrubs, often with subherbaceous shoots; secondary nerves 6–7 on each side . . . . . 22. *L. humilis*.

Leaves  $\frac{3}{4}$ –3 in. (rarely more) by  $\frac{1}{3}$ – $1\frac{1}{4}$  in.

Erect tall shrubs, long climbers or ramblers; leaves 1–3 in. (rarely more) by  $\frac{4}{5}$ – $1\frac{1}{4}$  in.

Secondary nerves 7–10 on each side; corolla-tube 3– $3\frac{1}{2}$  lin. long; ovary finely tomentose . . . . . 23. *L. Heudelotii*.

Secondary nerves 10–12 on each side; corolla-tube  $1\frac{1}{2}$ –3 lin. long; ovary glabrous . . . . . 24. *L. Kirkii*.

Dwarf shrubs; leaves  $\frac{3}{4}$ – $2\frac{1}{2}$  in. by  $\frac{1}{2}$ – $\frac{3}{4}$  lin.

Secondary nerves 10–12 on each side, very faint; calyx almost glabrous, shining . . . . . 25. *L. parvifolia*.

Secondary nerves 17–20 on each side, distinct; calyx pubescent or tomentose . . . . . 26. *L. Thollonii*.

1. **L. watsoniana**, *Vogtherr in Köhler, Mediz. Pfl. iii. No. 14, with plate*. A very long climbing shrub with long, hook-branched tendrils from the branch-forks, quite glabrous; young branches brown, rough with numerous lenticels. Leaves ovate to ovate-lanceolate, more or less obtusely acuminate, subacute or rounded at the base, 2–4 in. long,  $\frac{4}{5}$ – $2\frac{1}{2}$  in. broad, chartaceous or thinly coriaceous, glossy above; midrib very slightly channelled or flat, moderately prominent below; secondary nerves 8–10 on each side, very slender, rather spreading, straight, connected by fine arches  $1-1\frac{1}{2}$  lin. within the margins; reticulation delicate, inconspicuous, faintly impressed above; petiole  $1\frac{1}{2}$  lin. long. Corymbs few-flowered, rather loose, very shortly peduncled, terminal, shorter than the leaves; bracts small, ciliate; pedicels up to  $1\frac{1}{2}$  lin. long. Calyx  $\frac{3}{4}$  to almost 1 lin. long; sepals ovate, subacute, conspicuously ciliate. Corolla yellowish-white; tube subcylindric, widest just above the middle,  $2\frac{1}{3}$ –3 lin. long, villous within above the stamens; lobes narrow, linear-lanceolate,  $3\frac{1}{2}$  lin. long. Stamens inserted above the middle; anthers lanceolate, acute. Ovary subglobose, sulcate, glabrous; style filiform; stigma cylindric from a thickened base.—Van Romburgh in 's Lands Pl. Buitenz. 1892, 438 (name only); Dewèvre, Cautch. Afr. Monogr. Landolph. 57 (description of sterile cultivated specimens);

Warb. in Tropenpfl. iii. (1899) 314 and Kautschukpfl. 120. *L. Watsoni*, Notizbl. Königl. Bot. Gart. Berlin, i. 13 & 84; Chimani in Bot. Centralbl. lxi. (1895) 457; Warb. in Notizbl. Königl. Bot. Gart. Berlin, ii. 170; Morris in Journ. Soc. Arts, xlv. 781; Dyer ex Kew Gardens, Tender Dicotyl. List, 1899, 403. *L. petersiana*, K. Schum. in Engl. Glied. Veg. Usambara, 55, not elsewhere, ex Hallier f. *Carpodinus watsonianus*, Vogtherr in Köhler, l.c. *Cylindropsis watsoniana*, Hallier f. Kautschukpflanzen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3 Beih. 134.

**Mozamb. Dist.** German East Africa: Usambara; Mlalo, river woods, 4500 ft., *Holst*, 2458! Lutindi, Hunda forest, 5000 ft., *Holst*, 3443! Usaramo; Dar es Salaam, seedling plant, *Kirk*! and cultivated specimen grown at Kew from seeds sent by *Kirk* from Dar es Salaam!

The description of the inflorescences and flowers has been drawn up from specimens grown in the Tjikömö Gardens in Java (Schiffner, Trop. Kultur-u. Heilpfl. No. 50!) These plants were brought to Java from Ceylon, where seeds had been received from Kew. The Usambara specimens are imperfect and their determination will have to be tested when flowering specimens come to hand. Vogtherr also figures and describes fruits; but they are evidently quite young, and his statement that the seeds are exalbuminous is certainly erroneous. *L. watsoniana* is very closely allied to *L. crassipes*, Radlk., of Madagascar and to *L. Buchananii*, Stapf, which has large fruits and rather large seeds of the ordinary *Landolphia* type, and it has no particular resemblance to *Clitandra parvifolia*, Stapf (*Cylindropsis parvifolia*, Pierre, the type of the genus *Cylindropsis*).

2. ***L. kilimandjarica*, Stapf.** A scandent, perfectly glabrous shrub. Young branches slender, greyish-brown when dry; lenticels not very conspicuous. Leaves oblong to broadly lanceolate, obtusely subacuminate, subacute or slightly rounded at the base, 2-4 in. long, 1-1½ in. broad, thinly coriaceous or papery, glossy above, green on both sides, but paler beneath; midrib channelled above, much raised below; lateral nerves about 15-18, subhorizontal, fine, faintly raised below; reticulation delicate, but distinct below; marginal arches rather close to the margin; petiole 1½-2 lin. long. Flowers in terminal short racemes, or small panicles; peduncles very short or up to 1 in. long, slender; bracts ovate, subacute, membranous, ½ lin. long; pedicels up to 3 lin. long, horizontally spreading. Calyx scarcely 1½ lin. long, quite glabrous; sepals broad, ovate, obtuse or subacute, more or less membranous. Corolla up to 6 lin. long in bud; tube 2½ lin. long, slightly (if at all) widened at the middle, rather stout; lobes oblong, subobtuse, 3 to almost 4 lin. long, 1¼ lin. broad, slightly silky at the base. Stamens inserted at the middle of the corolla-tube; anthers ovate-oblong, subobtuse, slightly over ½ lin. long. Ovary ovoid, quite glabrous; style and stigma somewhat over 1 lin. long. Fruit globose, up to 2 in. in diameter, dark brown (when dry) mottled with yellow and dotted with minute raised warts; seeds up to 7½ lin. long, 2½-3½ lin. broad; testa reddish-brown, irregularly pitted.—*Clitandra kilimandjarica*, Warb. in Tropenpfl. iv. (1900) 614, and in Rév. Cult. Colon. viii. (1901) 45.

**Mozamb. Dist.** German East Africa: Kilimanjaro; Moshi, received from the Foreign Office! and without precise locality, *Merker*!

This yields according to Warburg very good rubber.

3. **L. Buchanani**, *Stapf*. A climbing shrub, perfectly glabrous in all its parts; young branches slender, dark reddish-brown, dotted and often rough with numerous lenticels. Leaves oblong or subovate-oblong, obscurely (rarely distinctly) and obtusely acuminate or obtuse, rounded at the base, 2-4 in. long,  $\frac{4}{5}$ -1 $\frac{1}{2}$  in. broad, chartaceous, glossy above; midrib slender, channelled above, slightly raised below; secondary nerves extremely slender, 11-16 on each side, rather spreading, straight, connected rather close to the margins by flat equally fine arches; network of veins delicate, very inconspicuous, faintly impressed above; petiole 2 $\frac{1}{2}$  lin. long. Corymbs small, few-flowered, dense, glabrous, very shortly peduncled or sessile, much shorter than the leaves; bracts small, ovate, obtuse; pedicels up to 1 lin. long. Calyx slightly over 1 lin. long, quite glabrous, dark brown, with pale thin margins when dry; sepals ovate, broad, obtuse. Corolla dark-reddish when dry, quite glabrous; tube subcylindric, somewhat stout, slightly widened from the middle upwards, 2 $\frac{1}{2}$ -3 $\frac{1}{2}$  lin. long; lobes oblong, obtuse, 4 $\frac{1}{2}$ -5 $\frac{1}{2}$  lin. long, rather straight. Stamens inserted at the middle of the corolla-tube. Ovary depressed ovoid, sulcate, glabrous; style and stigma about 1 lin. long; stigma shortly cylindric from a thickened base, bifid. Fruit globose, 1 $\frac{1}{2}$ -1 $\frac{3}{4}$  in. in diam.; rind thin, leathery, without a sclerenchymatous layer; seeds oblong, in a fibrous juicy pulp, up to 7 lin. long; albumen horny, coarsely pitted; cotyledons very thin, foliaceous.—*Clitandra Buchanani*, Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xiv. (1899), 3. Beih. 118.

**Mozamb. Dist.** British Central Africa: Nyasaland; Shire Highlands, *Buchanan*! Mount Mlanji, *Brown*! Masuka Plateau, in forests, 6500-7000 ft., *Whyte*! and without precise locality, *Buchanan* (coll. 1891 without number)! and 220 and 286 partly!

This is said to yield india-rubber. A barren specimen collected by Buchanan (138), at 5000 ft., near Blantyre, may be a slightly hairy form of this species. The leaves are exactly like those of *L. Buchanani*, but the petioles of some of them, as well as some of the very young branches and tendrils, are more or less covered with short, stiff, fine hairs. Buchanan describes it also as an india-rubber plant. The tendrils are very slender, long and branch-hooked.

4. **L. Cameronis**, *Stapf*. A climbing shrub with long slender hook-branched tendrils from the branch-forks, quite glabrous; young branches brown or reddish-brown, dotted and often rough with numerous lenticels. Leaves oblong, subovate-oblong or oblong-lanceolate, obscurely and obtusely acuminate or subobtuse, rounded (rarely subacute) at the base, 2-3 in. long,  $\frac{4}{5}$ -1 $\frac{1}{2}$  in. broad, chartaceous or thinly coriaceous, faintly glossy above; midrib slender, channelled above, slightly raised below; secondary nerves extremely slender, 10-15 on each side, rather spreading, straight, connected close to the margin by flat equally fine arches; network of veins delicate, very inconspicuous, faintly impressed above; petiole 1 $\frac{1}{2}$  lin. long. Corymbs small, 4-8-flowered, moderately dense, glabrous, shortly peduncled, much shorter than the uppermost leaves; bracts small, oblong or ovate, or the uppermost rotundate, obtuse; pedicels up to 1 $\frac{1}{2}$  lin. long. Calyx slightly over 1 lin. long,

quite glabrous; sepals broad, ovate, obtuse, brown with pale thin margins when dry. Corolla dirty whitish when dry, quite glabrous; tube sub-cylindric, slightly widened at or just below the middle, 4-4½ lin. long; lobes linear-oblong, obtuse, up to 8 lin. long, 1½ lin. broad, often twisted. Stamens inserted just below the middle of the corolla-tube; anthers ovate-lanceolate, subacute, 1 lin. long. Ovary depressed-ovoid, 10-sulcate, glabrous; style and stigma about 1 lin. long; stigma shortly cylindric with a thickened base, bifid.

**Mozamb. Dist.** British Central Africa: Nyasaland; Namasi, *Cameron*, 1!

11!

This differs from *L. Buchananii* in the slightly smaller leaves, the somewhat looser corymbs and larger flowers with proportionately longer corolla-lobes. These are much whiter when dry than in *L. Buchananii* and more or less twisted instead of straight as in the latter.

5. ***L. leonensis*, Stapf.** A scandent shrub with sensitive inflorescences acting as tendrils; young branches rather stout, densely covered with a delicate fulvous tomentum, intermixed with short stiff spreading hairs which soon rub off. Leaves obovate-oblong, abruptly and acutely acuminate, minutely cordate at the base, 6-7 in. long, about 3 in. broad, thinly coriaceous, densely fulvo-tomentose in bud, nearly glabrous when adult, dark brown above, reddish-brown below when dry; midrib and secondary nerves channelled above, prominent below; secondary nerves about 6 on each side, rather oblique, almost straight, connected by more or less conspicuous arches rather close to the margin; transverse veins distinct, rather distant; network of veins very delicate, faintly raised on both sides; petiole stout, 3 lin. long. Corymbs dense, many-flowered, at the ends of the remote divaricate or recurved short rather slender branches of long narrow peduncled panicles, lower parts of the panicle finely fulvo-tomentose, upper more or less minutely hirsute to glabrous; peduncle about 3 in. long, moderately stout; rhachis up to 9 in. long; lower branches up to 1½ in. long; bracts minute, rounded, ciliate; pedicels glabrous, up to 1½ lin. long, rather slender. Calyx 1½ lin. long; sepals ovate or oblong, obtuse, rigidly ciliolate, otherwise glabrous or almost so. Corolla glabrous without or with a few scattered hairs in the upper part; tube sub-cylindric, gradually and slightly widened from the base to a little above the lower third of its length, then much attenuated, over 10 lin. long; lobes ovate-oblong, obtuse, 4 lin. long. Stamens inserted about 3 lin. above the base; anthers oblong, acute, over 1 lin. long. Ovary shortly ovoid, glabrous, abruptly contracted into the style; style and stigma 3½ lin. long; the latter cylindric from a thicker base which exudes a waxy substance.

**Upper Guinea.** Sierra Leone, *Barter!*

6. ***L. senegalensis*, Kotschy & Peyr. Pl. Tinn. 31.** A dense shrub up to 24 ft. high, or more commonly a strong climber, glabrous except the inflorescences; tendrils long, branched; young branches pale or almost black when dry, dotted with minute lenticels. Leaves oblong,

shortly and rather abruptly acuminate, subacute or rather obtuse at the base, 3-4 in. long,  $1\frac{1}{4}$ - $1\frac{3}{4}$  in. broad, thinly coriaceous, glossy and dark above, much paler beneath; midrib flat or slightly convex above, distinctly raised below; lateral nerves 8-10 on each side, oblique, very fine above, somewhat stouter and more distinctly raised beneath; marginal arches inconspicuous; veins neatly anastomosing and raised on both sides; petiole 3-5 lin. long. Flowers in terminal shortly peduncled many-flowered rather dense fulvo-pubescent corymbs or short semi-globose panicles; peduncle rather slender,  $\frac{1}{4}$ -1 in. long; bracts ovate, obtuse, like the pedicels fulvo-pubescent, the latter up to  $1\frac{1}{2}$  lin. long. Calyx fulvo-pubescent,  $\frac{3}{4}$ -1 lin. long; sepals ovate, obtuse. Corolla sweet-scented; tube yellowish, slender, slightly widened below the middle, pubescent without, hairy within, 6- $6\frac{1}{2}$  lin. long; lobes linear-oblong, obtuse, pure white with a yellow base, 8- $9\frac{1}{2}$  lin. long,  $2\frac{1}{2}$  lin. broad, glabrous. Anthers linear-oblong. Ovary subtruncate, glabrous except for a few very minute adpressed hairs in the upper part. Style and stigma  $1\frac{1}{2}$  lin. long, the latter cylindric, shortly bifid. Fruit orange-coloured with grey patches, ovoid to globose,  $2\frac{1}{2}$  to almost 4 in. long, top slightly depressed, pericarp elastic; seeds 15-20, embedded in a yellow watery pulp.—Radlkofer in Abh. Naturwiss. Ver. Bremen, viii. 396; K. Schum. in Engl. Jahrb. xv. 407; Dewèvre, Caoutch. Afric. Monogr. Landolph. 34; Sadebeck in Jahrb. Hamburg. Wissensch. Anstalt. xiv. (1896), 3. Beih. 121; Moller in Tropenpfl. i. (1897) 187; Jumelle, Pl. à Caoutch. et à Gutta, 50; Warb. in Tropenpfl. iii. (1899) 313, 'Kautschukpfl. 119-121; Morris in Journ. Soc. Arts, xlv. 775; Hua in Bull. Mus. Hist. Nat. Paris v. (1899) 183-185, vi. (1900) 311, not iii. (1897) 325; Mikosch in Wiesner, Rohstoffe, ed. 2, i. 362; Henriques, Kautschuk, Tab. iii.; Hua & Chevalier in Journ. de Bot. xv. (1901), 79, fig. 4. B. *L. florida*, var. *senegalensis*, Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899) 94. *Landolphia* sp., Bentham in Hook. Niger Fl. 445. *L. comorensis*, and var. *florida*, Dewèvre, l.c. 16, 18 (partly). *Vahea senegalensis*, A. DC. Prod. viii. 328; Benth. in Hook. Niger Fl. 445; Collins, Caoutch. Rep. 26; F.v. Mueller in Wittstein, Org. Constit. Plants, 258, 268; L. Planch. Prod. Apocyn. 307.

**Upper Guinea.** Senegambia: forests of Albređa, *Leprieur*; Ile aux Chiens and Casamanze, *Leprieur*; Kombo (Gombo?), *Heudelot*, 29! Gambia, *Skues*! common near Kan and Kousann by the Gambia, *Perrotet*, 792! Senegal, *Roger*! *Bellamy*, 309, 459, 474, 522. Portuguese Guinea: Bissão, *Traun*. French Guinea: Marigot de Collumini, between Niagasola and Kita, *Paroisse*, 35; banks of the Niger, near Kouroussa (Kurusa), *Paroisse*, 19; Bakhoy Valley; *Lecard*, 74! Futa Jallon; near Kouroufi, *Paroisse*, 13 partly; Dandoum, *Noury*.

Var. *glabriflora*, Hua, l.c. v. 185. Inflorescence perfectly glabrous.

**Upper Guinea.** Gambia: by the Gambia River, *Whitfield*! French Guinea: banks of the River Niger, near Kouroussa (Kurusa), *Paroisse*, 13 partly; Sikoto, between Kita and Niagasola, *Paroisse*, 32, 83; banks of the Bakhoy River, near Tokoto, *Paroisse*, 38; near Farana on the Niger, *Scott-Elliot*, 5345!

Hallier also refers to *L. senegalensis*, a plant from Accra, on the Gold Coast, sent to Traun in 1892, with the habit of that species, but with a densely, though minutely, hairy ovary. The species is certainly closely allied to *L. florida*; but it is smaller

in all parts, and has a glabrous or almost glabrous ovary. This species is very common throughout Senegambia and French Guinea, extending east- and northwards almost as far as Timbuctu, according to Hua and Chevalier, l.c. 79; it yields no rubber.

7. **L. florida**, *Benth. in Hook. Niger Fl.* 444. A very tall, powerful, climbing shrub, glabrous except the inflorescences; tendrils long, flagelliform, branched, pseudo-axillary or distinctly terminal; young branches dark red- or black-brown, dotted with numerous small lenticels. Leaves very variable, usually elliptic to elliptic-oblong, or ovate or oblong, obtuse, rarely shortly acuminate (in barren shoots very rarely caudate), rounded at the base, 3-7 in. long,  $2\frac{3}{4}$ -3 in. broad, coriaceous, glossy, and dark green above, paler beneath, brown when dry; midrib flat or slightly convex above, much raised beneath; lateral nerves 8-10 on each side, oblique, fine above, stouter and more distinctly raised beneath; marginal arches usually inconspicuous; veins loosely anastomosing and slightly raised beneath; petiole rather stout, 4-8 lin. long. Flowers in terminal, shortly peduncled, many-flowered, dense, tomentose or pubescent corymbs (very rarely in elongate panicles with the habit of the tendrils); peduncle stout, rarely more than a few lines long; bracts small, ovate, acute or obtuse, like the very short pedicels densely pubescent to tomentose. Calyx pubescent to tomentose, about  $1\frac{1}{2}$  lin. long; sepals ovate, subacute or obtuse. Corolla yellow near the mouth, otherwise white, sweet-scented, rather variable in size; tube slender, slightly widened below the middle, densely pubescent to tomentose without, usually 8-11 lin. long; lobes linear-oblong or more or less spatulate, as long as the tube or slightly longer (rarely to 15 lin. long),  $2\frac{1}{2}$ -5 lin. wide, pubescent without towards the base. Anthers linear-oblong. Ovary truncate, densely tomentose in the upper part. Style and stigma  $2\frac{1}{2}$  lin. long, the latter cylindrical, shortly bifid. Fruit more or less globose, sometimes with mammillate tips, yellow, citron-like, up to 4 in. in diam.; pericarp 3 lin. thick with a thin concentric sclerenchymatous layer; pulp yellow; seeds 6-7 lin. long.—Walp. Ann. iii. 29; Kotschy & Peyr. Pl. Tinn. 30, t. 13, A.; Collins, Rep. Caoutch. 27; Schweinf. in Corresp. Blatt Afrik. Gesellsch. ex Just, Jahresb. 1876, 1127; Christy, New Comm. Plants, i. 8, and New Comm. Plants and Drugs, vi. 54; Dyer in Kew Report, 1880, 39; Moloney, Forestry West Afr. 382; Radlkofer in Abhandl. Naturw. Ver. Bremen, viii. 396; Ficalho, Pl. Uteis Afr. Portug. 216-219; Sadebeck in Jahrb. Hamburg. Wissensch. Anstalt. iii. (1886), lxxvi. and in Kulturg. Deutsch. Kolon. 273; Kew Bulletin, 1892, 68; K. Schum. in Engl. Jahrb. xv. 402 and in Engl. & Prantl, Pflanzenfam. iv. ii. 121; Millen in Kew Bulletin, 1893, 183; L. Planch., Prod. Apocyn. 140, 314-316; Chimani in Bot. Centralb. lxi. (1895) 456; J. R. Jackson in Bull. of Pharm. xi. (1897) 255; Jumelle, Pl. à Caoutchouc et à Gutta, 54-56, fig. 8; Morris in Journ. Soc. Arts, xlvi. 774, 780; Warb. in Tropenpf. iii. (1899), 311, fig. G. and Kautschukpf. 117, fig. G; Liebet in Tropenpf. iv. (1900) 367; Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 89; Henriques, Kautschuk,

1899, Tab. iii. iv. ; Schlechter, Westafrik. Kautschuk-Expéd. 67, 81, fig. on p. 68 ; De Wild. & Durand, Reliq. Dewevr. in Ann. Mus. Congo, Bot. sér. iii. fasc. 2, 145. *L. comorensis*, var. *florida*, K. Schum. in Engl. Jahrb. xv. (1892) 409, 404, fig. 1 B. & 405, fig. 2 ; in Engl. Pf. Ost-Afr. A. 70, 76, 91 ; B. 225, 446-447, 450-454, fig. 19 on p. 456, fig. 20 on p. 458 ; C. 315 ; Engl. & Prantl, Pflanzenfam. iv. ii. 121, 130, 128, fig. 50, B. 129, fig. 51 ; Engl. Glied. Veg. Usambara, 37 ; Dewèvre Caoutch. Afric. Monogr. Landolph. 18 ; Vogtherr in Köhler, Mediz. Pf. iii. 13 with plate ; Moller in Tropenpfl. i. (1897) 188 ; Sadebeck, Kulturg. Deutsch. Kolon. 274, fig. 105 ; Warb. in Tropenpfl. iii. (1899) 222, 310 ; Kautschukpfl. 116-119 ; Mikosch in Wiesner, Rohstoffe, ed. 2, i. 362 ; Henriques, Kautschuk, 1899, 17 ; Chevalier, Géogr. bot. Sénégal et Soudan, 223. *Vahea florida*, F. v. Muell. in Wittstein, Org. Constit. Plants, 258, 268 ; Select Extratrop. Plants, ed. 3, 344. *Pacouria florida* Hiern in Cat. Afr. Pl. Welw. i. 662.

**Upper Guinea.** Sierra Leone: *Scott-Elliot*, 4896! 5109! Gold Coast, *Johnson*, 749! *Northcott* in *Herb. Johnson*, 151! Togo: near Bismarckburg, *Kling*, 172! *Büttner*, 578! 756! Kirkri, by the Ngalo River, 1000 ft., *Kersting*, 4! Lagos: *Rowland*! *Millen*, 118! 166! *Punch*, 45! Niger Protectorate: by the River Quorra (Niger), *Vogel*, 101! Nupe, *Barter*, 914! Cameroons: near Barombi, *Preuss*, 216! 441! Yeunde, *Zenker*! Johann Albrechts-Höhe, *Staudt*, 487! 889!

**Nile Land.** Gallabat: by the Chor Koki, in damp, shady woods, *Schweinfurth*, 1661! 1662! British East Afrika: Bongo, *Schweinfurth*, 2162! ser. III., 69! *Heuglin*, 26. 45! *Garstin*. Mittu; Kero, *Schweinfurth*, 2804! Jur, *Schweinfurth*, 1351! 1611, 2840. Muro's Territory, river banks, *Petherick*! Uganda, *Wilson*, 61! *Scott-Elliot*, 7201! 7202! Lake Victoria; Buruna Island, *Johnston*! Sesse Islands, very abundant, *Whyte*! *Stuhlmann*, 1214! by the River Tana, *Thomas*, 5; Mombasa, *Kersten*! *Hildebrandt*, 1171! *Kirk*!

**Lower Guinea.** Loango: Chinchocho, *Soyaux*, 22! by the Quilu River, *Pechuel Löschke*. French Congo: Mayombe, *Laurent*. Portuguese Congo: Landana, *Dewèvre*, 219! Lower Congo: Matoba Island, *Dewèvre*, 204! Mouth of the Congo, *Smith*! Mission Cabra, *Tilman*! Kisanu, *Gillet*, 86! 1001! Angola, *Mechow*, 158! 505! *Büchner*, 615! *Welwitsch*, 5929! 5926! 6006! *Monteiro*!

**South Central.** Congo Free State: Boukoya, *Descamps*!. Lukolela, *Demeuse*, 457! Bumba, *Dewèvre*, 886A; Wabundu, *Dewèvre*, 1141A; Mtowa, *Descamps*! Marungu, *De Beerst*!

**Mozamb. Dist.** Zanzibar, rare, *Hildebrandt*. German East Africa: near Igitschu, *Fischer*, 375! 379! Kilimanjaro, 3000 ft., *Falkens*, 1754! 1799! Usambara, 1500-4500 ft., *Holst*, 3306! 3804! *Stuhlmann*, 532; Dar es Salaam, *Stuhlmann*, 51! Ugalla River, *Böhm*, 68A! 111! 121A! Rumbira Valley near Langenburg, *Goetze*, 865! Kondeland, 1800 ft., *Stolz*, 93! Usoga, *Scott-Elliot*, 7201! 7262! British Central Africa: Nyasaland, 2000-6000 ft. *Meller*! *Whyte*! *Kirk*! *Buchanan*, 220 partly! 228!

Var. *β leiantha*, Oliv. in Trans. Linn. Soc. xxix. 107. Inflorescences quite glabrous, or the calyx-segments and some of the bracts ciliolate, rarely the pedicels and peduncles partly and scantily pubescent.—Hallier f. Kautschuklinien in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 93, and in Schlechter, Westafrik. Kautschuk-Expéd. 306. *L. florida*, Bot. Mag. t. 6963 (not Benth.); Dyer in Kew Report, 1880, 41, 42, not 39. *L. comorensis*, K. Schum. in Engl. Jahrb. xv. 402 and in Engl. Pf. Ost-Afr. B, 454, and in Engl. & Prantl, Pflanzenfam. iv. ii. 130; Jummelle, Pl. à Caoutch. et à Gutta, 56; Moller in Tropenpfl. i. (1897) 187; Sadebeck, Kulturg. Deutsch. Kolon. 272. 276; Mikosch in Wiesner,

Rohstoffe, ed. 2, i. 362; Schlechter, Westaf. Kautschuk-Exped. 229 (?). *L. comorensis*, var. *florida*, K. Schum. in Engl. Veget. Uluguru Geb. in Sitz. Ber. Akad. Wissensch. Berlin, xvi. (1900) 195 and in Engl. Jahrb. xxviii. 453 (not elsewhere) ex Hallier f. *Vahea comorensis*. Boj. Hort. Maur. (1837) 207; DC. Prod. viii. 328, and in Nova Acta Acad. Nat. Cur. xxii. ii. (1850), t. 41, figs. 4-7; Collins, Caoutch. Rep. 26; F. v. Muell. in Wittstein, Org. Constit. Plants, 258, 268; L. Planch. Prod. Apocyn. 321. *Willughbeia cordata*, Klotzsch in Peters, Reis: Mossamb. Bot. 283.

**Upper Guinea.** Cameroons: Victoria, *Deistel*, 130!

**Nile Land.** Uganda: Madi, *Speke & Grant*, 707! British East Africa: Witu, *Thomas*, 5! Massa, by the Tana River, *Thomas*, 5 partly!

**South Central.** Congo Free State: La Romée falls, *Duchesne*, 3! Bonga, at the junction of the Sanga and the Congo, *Schlechter*, 12679! Lukolela, *Dewèvre*, 830A! Coquilhatville, *Dewèvre*, 584!

**Mozamb. Dist.** Zanzibar: Ngezi Forest, *Lyne*, 106! German East Africa: Zanguebar, *Kirk*! Umba Valley, *Smith*! Ukami; Mkulassi, 450 ft., *Stuhlmann*, 8664! Uluguru; Lussegwa, 1200 ft., *Stuhlmann*, 8721! Kidai Hills, 1800 ft., *Stuhlmann*, 9001! Portuguese East Africa: Mozambique; Lion's Creek, 1000 ft., *Schlechter*, 12191! British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 43! and without particular locality, *Buchanan*, 220 partly! and 228 partly (ex *Hallier f.*).

The variety *L. leiantha* is also found in the Comoro Islands and Madagascar, where the typical form has not yet been observed.

Opinions as to the economic value of *L. florida* are highly contradictory. Schlechter, the latest authority on the question, says that the plants with which he experimented on the Congo did not yield any rubber at all; he enumerates, however, the *Landolphia comorensis*, K. Schum., from East Africa as one of the most productive rubber plants of Africa, and suggests that the plant (known under the same name) which does not yield rubber may be a distinct species. So far as morphological characters go, there seems to be no difference between the East- and the West-African *L. florida* as represented in the herbaria at Kew, London, Berlin and Brussels, except that the only fruits of the var. *leiantha*, which I have seen (*Buchanan*, 43), are only 2-2½ in. long and 1-2-seeded, although evidently quite mature. As the size of the fruit and number of seeds in each is known to vary considerably in other species, this can hardly be taken as more than an individual or local variation.

8. ***L. ochracea***, K. Schum. ex Hallier f. *Kautschukianen* in *Jahrb. Hamburg. Wissensch. Anstalt.* xvii. (1899), 3. *Beih.* 86, t. i. A tall shrub climbing by means of sensitive inflorescences acting as tendrils; young branches stout, with a very minute dense cinnamon-coloured felt of hairs. Leaves elliptic to elliptic-oblong, abruptly and shortly acuminate, minutely cordate at the base, 8-14 in. long, 4-7 in. broad, coriaceous, glabrous and glossy above, covered with a delicate cinnamon-coloured felt of hairs beneath; midrib and secondary nerves channelled above; raised below; secondary nerves 7-10 on each side, oblique, curved, passing into the large marginal arches; transverse veins conspicuous, remote; petiole stout, ½ in. long. Corymbs dense, many-flowered, terminal on remote divaricate branches of an elongate peduncled panicle, which is covered in all parts with a tomentum like that of the young branches; peduncle stout, long; rhachis over 6 in. long; branches up to 1 in. long, the upper sensitive like the tips of the

rhachis and acting as tendrils; bracts ovate, more or less acute or obtuse, often recurved at the tips, densely fulvo-tomentose, caducous; pedicels stout, very short. Calyx about  $2\frac{1}{2}$  lin. long, densely fulvo-tomentose without; sepals broad-ovate, sub-acute or obtuse, recurved at the tips, long ciliate. Corolla glabrous, except for very long cilia on the lobes; tube widest about or slightly above the middle, subcylindric at both ends, about  $6\frac{1}{2}$  lin. long, mouth narrow; lobes ovate-oblong, subacute, 6 lin. long, 2 lin. broad. Stamens inserted at the middle of the corolla-tube; anthers 1 lin. long. Ovary depressed, glabrous, sulcate; style filiform, 3 lin. long; stigma cylindrical from a thickened base, 1 lin. long.

**Upper Guinea.** Cameroons: Bipinde, 330 ft., *Zenker*, 1290!

Var. *glabrata*, Hallier f., l.c. 87. Leaves glabrous on both sides, otherwise very similar to those of the type.

**Upper Guinea (?)**. Traun!

The variety is represented only by barren specimens now in the Vienna Hof-museum, received by Dr. Traun of Hamburg from West Africa.

9. **L. eminiana**, Hallier f. *Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt.* xiv. (1899), 3. *Beih.* 88. A scandent shrub; tendrils unknown. Young branches densely rusty- or fulvous-tomentose, at length glabrescent, brown, with a few whitish lenticels. Leaves oblong, obtuse, rounded at the base,  $3\frac{1}{2}$ -4 in. long,  $1\frac{1}{4}$  in. broad, coriaceous, fulvo-pubescent on both sides when young, soon glabrescent except the midrib, glossy and green above, drab beneath; midrib shallowly channelled above, much raised beneath; lateral nerves slender, 11-13 on each side, slightly raised on both sides; reticulation distinct and slightly raised above; petiole  $3\frac{1}{2}$ -4 lin. long, tomentose. Panicles terminal, shortly peduncled, tomentose, dense, many-flowered, much contracted or (according to Hallier) elongate, with remote and partly cirriform branches; bracts ovate-lanceolate, up to 3 lin. long, villous, early caducous; bracteoles broad-ovate or obovate, very similar to the calyx-segments, obtuse with recurved tips, more or less hairy; pedicels very short, stout. Calyx  $2\frac{1}{2}$ -3 lin. long; sepals ovate-oblong, obtuse or subacute, tips reflexed, minutely and densely tomentose within, more loosely hairy without. Corolla densely rusty- or fulvous-tomentose without; tube 7-9 lin. long, widest about the middle; lobes oblong-linear, obtuse, about 5-6 lin. long, 2-3 lin. broad, almost glabrous on the inner side. Stamens inserted at the middle of the corolla-tube; anthers slightly over 1 lin. long. Ovary densely adpressedly hirsute; style filiform, about 4 lin. long, hairy except on the upper part; stigma slender, 1 lin. long, 2-lobed.

**Mozamb. Dist.** German East Africa: Karagwe; Itolio, western shore of Lake Victoria, 2100 ft., *Stuhlmann*, 930! Usnao; Mwanza, southern shore of Lake Victoria, *Stuhlmann*, 4662!

10. **L. bracteata**, Dewèvre, *Caoutch. Afr. Monogr. Landolph.* 31. A scandent shrub up to 20 ft. high, with branched tendrils from the

branch-forks; young branches densely fulvo-hirsute, scarcely glabrescent when old, and then dotted with conspicuous whitish lenticels. Leaves elliptic-oblong or oblong, more or less acuminate, rounded at the base or sometimes obscurely and minutely cordate,  $2\frac{1}{2}$ – $4\frac{1}{2}$  in. long, coriaceous, subglaucous above when dry, softly fulvo-hirsute on both sides, soon glabrescent above except on the midrib, permanently hirsute on the nerves below; midrib finely channelled above, prominent below; secondary nerves 5–7 on each side, slender, curved, passing into and connected by rather distinct arches which are somewhat remote from the margins, slightly sunk above, raised beneath; reticulation obscure, or sometimes slightly raised and more conspicuous above; petiole 2– $2\frac{1}{2}$  lin. long, hirsute. Corymbs small, 6–10-flowered, terminal, subsessile, dense, borne on short leafy branches or springing from the branch-forks and then pseudo-axillary; all the parts of the inflorescence fulvo-hirsute; bracts numerous, close to the flowers, subpersistent, ovate-oblong, acuminate, tips recurved; pedicels stout, extremely short. Calyx 3 lin. long; sepals ovate to oblong, subobtuse to acuminate, hirsute at least along the middle, ciliate, finely pubescent within, margins subscarious, midrib slightly raised. Corolla-tube slender, cylindric slightly swollen at the middle, up to 6–8 lin. long, very finely tomentose or pubescent without; lobes linear-lanceolate, acute, up to 9–10 lin. long, slightly pubescent without, otherwise glabrous. Stamens inserted at or just above the middle; anthers lanceolate, acute, 1 lin. long. Ovary ovoid, gradually passing into the filiform style, densely villous; style pubescent at the base, about  $4\frac{1}{2}$  lin. long, including the subcylindric stigma; stigma exuding a waxy substance near the thickened base. Fruit oblong, obtuse, truncate at the base,  $1\frac{1}{2}$ – $1\frac{3}{4}$  in. long,  $\frac{3}{4}$  in. thick, glabrous; pericarp thin with a concentric sclerenchymatous layer; seeds 8–12, ovoid.—*Warb. in Tropenpfl. iii. (1899) 312, and Kautschukpfl. 118; Hallier f. Kautschukhanen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 88. Carpodinus calabaricus, Stapf in Kew Bulletin, 1894, 19; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii., 131; Jumelle, Plantes à Caoutchouc et à Gutta, 62.*

**Upper Guinea.** Gold Coast: Aburi, *Brown*, 391! and without precise locality. *Brass!* Old Calabar, *Mann*, 2242!

*Brown's* specimen has a few more or less mutilated tendrils. The youngest of them is densely fulvo-hirsute and about 2 in. long, and the short divaricate, slightly recurved branches are supported by bract-like leaflets, whilst one of them bears a small cluster of bracts at its end.

11. **L. Lecomtei**, *Dewèvre, Caoutch. Afr. Monogr. Landolph. 25.* A scandent shrub (tendrils unknown); young branches finely rufo-tomentose, glabrescent, dark greyish-brown, with scattered lenticels. Leaves oblong, acuminate, rounded at the base, about  $3\frac{1}{2}$  in. long,  $1\frac{1}{4}$  in. broad, coriaceous, glabrous, glossy above; midrib finely channelled above, raised below; secondary nerves about 8–12 on each side, very slender, curved, passing into the fine rather inconspicuous marginal arches, slightly sunk above, prominent below; reticulation very obscure; petiole slender, about 3 lin. long. Corymbs terminal, shortly peduncled, 10–12-

flowered, rusty-tomentose or villous all over; bracts ovate, subacute, caducous; pedicels very short. Calyx  $2\frac{1}{2}$ –3 lin. long, finely pubescent on both sides; sepals ovate, broad, acute, subacute, or acuminate; tips recurved; midrib raised. Corolla densely and very finely fulvo-tomentose without; tube widest at  $\frac{2}{3}$  from the base or nearly so, slender, cylindric below, 6–7 lin. long; lobes oblong-lanceolate, acute, about 7 lin. long, up to 2 lin. broad. Stamens inserted  $\frac{2}{3}$  up the tube; anthers ovate, oblong, scarcely 1 lin. long. Ovary ovoid, gradually narrowed into the filiform style, densely fulvo-villous like the base of the style; stigma cylindric, thicker and exuding a waxy substance at the base. Fruit unknown.—Warb. in Tropenpfl. iii. (1899) 312, and Kautschukpfl. 118; Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 88.

**Lower Guinea.** French Congo: Kitabi, on the Kuilu River, *Lecomte*, B, 100 !

12. **L. robusta**, *Staff.* A scandent shrub, about 20 ft. high, with sensitive inflorescences acting as tendrils; young branches dark brown when dry, covered with an extremely delicate reddish tomentum, rather stout. Leaves ovate to ovate-oblong, or oblong, gradually and acutely acuminate, rounded at the base, 3 to over 6 in. long,  $1\frac{1}{2}$ – $2\frac{3}{4}$  in. broad, coriaceous, very delicately reddish tomentose when quite young, very soon glabrous on both sides, very glossy and dark above, brown beneath when dry; midrib deeply and finely channelled above, much raised beneath; secondary nerves 8–11 on each side, oblique, curved, passing into and connected by more or less distinct arches somewhat remote from the margin, finely channelled above, raised beneath; reticulation loose, rather obscure above, very slightly raised on both sides; petiole 5–6 lin. long, moderately stout. Panicle long, bearing dense many-flowered clusters of sessile flowers at the ends of its divaricate or recurved or twisted remote branches, very delicately fulvous or reddish tomentose all over; peduncle and rhachis each 5–7 in. long, stout; lower branches up to  $1\frac{1}{2}$  in. long, stout; bracts very small, ovate to oblong, subacute or obtuse. Calyx slightly over 1 lin. long; sepals ovate to ovate-oblong, obtuse, finely rufous-tomentose. Corolla delicately rufous-tomentose without; tube slender, widened above the base, cylindric from 2– $2\frac{1}{2}$  lin. upwards, 7 lin. long; lobes oblong, obtuse, 3 lin. long, ciliate. Stamens inserted  $1\frac{1}{2}$  lin. above the base; anthers ovate-lanceolate, acute, over  $\frac{1}{2}$  lin. long. Ovary ovoid, passing into the filiform style, minutely and adpressedly tomentose; style and stigma about 1 lin. long, the latter cylindric from a thickened base, bifid. Fruit unknown.—*L. scandens* (?), Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 79. *Ancylbothrys robusta*, Pierre in Bull. Soc. Linn. Paris, 1898, 92 (name only). *L. Mannii*, De Wild. & Durand, Reliq. Dewevr. in Ann. Mus. Congo, Bot. sér. 2, fasc. 2, 146 (?).

**Lower Guinea.** Spanish Gaboon: Muni (Danger) River, *Mann*, 1764!

Pierre, l.c., quotes "Mann, 1714" (Côte du Gabon) as the type of his *Ancylbothrys robusta*; but there is no doubt that it should be Mann, 1764, the former being a

species of *Antidesma* in the Kew set. De Wildeman and Durand quote *L. Mannii*, as collected by Dewèvre, 885, near Bumba on the Upper Congo. Although the determination is attributed to me, I have no note or recollection of it. It may have been named by Dewèvre himself, who, however, mixed up *L. robusta*, *L. Klainei* and *Clitandra robustior*. If Dewèvre's 885 is one of them, it can only be *L. robusta*, if I may judge from his note quoted by De Wildeman and Durand.

13. **L. scandens**, *Didr. in Vidensk. Meddel. Naturh. Foren. Kjøbenhavn*, 1855, 190. A scandent shrub, with sensitive inflorescences acting as tendrils; young branches minutely rusty-tomentose, at length slightly glabrescent, dark reddish-brown or almost black, scantily dotted with whitish lenticels. Leaves oblong to lanceolate-oblong, obscurely or distinctly shortly and obtusely acuminate, rounded (rarely subacute) at the base,  $2\frac{1}{2}$ –4 in. long, 1–2 in. broad, thinly coriaceous, very scantily pubescent on both sides when quite young, soon glabrescent, dark green and glossy above, much paler beneath; midrib channelled above, raised below; secondary nerves much spreading, 12–15 on each side, almost straight, very slender, faintly raised on both sides, alternating with still finer tertiary nerves, all the nerves and the delicate network of veins dark brown or black below; marginal arches flat; petiole up to 3 lin. long. Panicle elongate, peduncled, bearing dense clusters of many sessile flowers at the ends of its spreading or recurved branches, finely rusty tomentose all over; rhachis (2–5 in. long) or some of the branches acting as tendrils; peduncle 2–4 in. long, slender; bracts oblong, acute, tomentose. Calyx rusty-tomentose,  $1\frac{1}{4}$ – $1\frac{1}{2}$  lin. long; sepals ovate-oblong, obtuse, more or less laterally compressed in the upper half, and therefore apparently acuminate. Corolla  $1\frac{1}{4}$ – $1\frac{3}{4}$  in. long in bud; tube slender, cylindric, about 9–12 lin. long, slightly widened and staminiferous about  $1\frac{1}{2}$ –2 lin. above the base, very minutely pubescent, usually along 5 fine longitudinal lines, otherwise glabrous, yellow at the base, turning purple; lobes linear-oblong, obtuse, 5–8 lin. long, ciliate, snow-white. Anthers ovate, oblong, acute, scarcely 1 lin. long. Ovary globose, top very minutely rufo-papillose. Style and stigma scarcely  $1\frac{1}{2}$  lin. long, the latter cylindric from a thicker base, bifid. Fruit globose, of the size of a small apple, finely tomentose when young.—*L. scandens*, vars. *genuina* and *coriacea*, Hallier f. Kautschukianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 80, 81. *L. petersiana*, Jumelle, Pl. à Caoutch. et à Gutta, 57 partly; Warb. Kautschukpfl. 118 partly; Henriques, Kautschuk, Tab. iii., not of Dyer. *L. petersiana*, var. *crassifolia*, K. Schum. in Engl. Jahrb. xv. 402 408, t. xii. fig. A; Dewèvre, Caoutch. Afr. Monogr. Landolph. 29 (excl. syn. and the East African specimens); K. Schum. in Engl. Pf. Ost-Afr. B. 462; Moller in Tropenpfl. i. (1897) 187, 188. *L. petersiana*, var. *mucronata*, Dewèvre, l.c. 30 (partly?). *L. Welwitschii*, Dyer ex De Wild. & Durand, Reliq. Dewevr. in Ann. Mus. Congo, Bot. ser. 3, fasc. 2, 146. *Ancylbothrys mammosa*, Pierre, vars. *crassifolia* and *mucronata*, Pierre in Bull. Soc. Linn. Paris, 1898, 92. *Pacouria crassifolia*, Hiern in Cat. Afr. Pl. Welw. i. 663. *Strychnos scandens*, Schumach. & Thonn. Beskr. Guin. Pl. 127; DC. Prod. ix. 13.

**Upper Guinea.** Gold Coast: Krobo plains, *Johnson*, 494! and without precise

locality, *Thonning!* Dahomey, *Poisson!* *Newton*, 12! Lagos: near Illaro, *Millen*, 105! and without precise locality, *Moloney!*

**Lower Guinea.** Gaboon, *Klaine*, 591! 1089! *Thollon*, 756; Loango; Chinochocho, *Soyaux*, 21! Lower Congo; between Poiti and Choa, *Dewèvre*, 393! Angola: Golungo Alto; mountain forests of Queta, near Cahunha and in Sobato de Bumba, *Welwitsch*, 5927! by the Lone River, *Marques!*

14. **L. Tayloris**, *Stapf*. A scandent shrub with sensitive inflorescences acting as tendrils; young branches very minutely and often obscurely pubescent, soon glabrescent, blackish-brown, at length rough with small lenticels. Leaves oblong to lanceolate-oblong, gradually narrowed into a short obtuse acumen, obtuse or subacute at the base, 3-3½ in. long, 1-1¼ in. broad, thinly coriaceous, quite glabrous, dark green and glossy above, paler beneath; midrib channelled above, raised below; lateral nerves subhorizontal, straight, up to 18 on each side, very slender, faintly raised on both sides, middle ones alternating with still fainter parallel tertiary nerves, all the nerves and the delicate network of the veins dark brown below; marginal arches flat; petiole up to 2½ lin. long. Panicle elongate, peduncled, bearing dense clusters of few sessile flowers at the ends of its spreading or recurved branches; rhachis (1½-3 in. long) or branches acting as tendrils, extremely minutely pubescent or glabrescent all over; peduncle 2-3 in. long, very slender; bracts at the base of the branches ovate, acuminate, upper ovate, obtuse, finely rusty-tomentose. Calyx finely rusty-tomentose, scarcely over 1 lin. long; sepals ovate-oblong, obtuse or subacute. Corolla about 11-16 lin. long in bud; tube slender, cylindric, slightly inflated and staminiferous just above the calyx, 4½-6 lin. long, very minutely pubescent, usually only along 5 fine longitudinal lines; lobes linear-lanceolate, acute, 8-11 lin. long, flexuous, ciliolate. Anthers ovate-oblong, acute, ¾ lin. long. Ovary depressed-globose; top very minutely velvety. Style and stigma scarcely 1½ lin. long, the latter cylindric from a thickened base.

**Nile Land.** British East Africa: Rabai Hills, near Fimbine, *Taylor!*

15. **L. pachyphylla**, *Stapf*. A scandent shrub with sensitive inflorescences acting as tendrils; young branches very delicately rusty-pubescent, reddish, soon glabrescent, dotted with pale lenticels. Leaves ovate-lanceolate or oblong, gradually tapering into a very acute acumen, obtuse or shortly subacute at the base, 2½-3½ in. long, 1-1½ in. broad, very coriaceous, very minutely and scantily furfuraceous when young, soon glabrescent, bright yellowish-green and shining above, dull below; midrib channelled above, raised below; lateral nerves up to 20 on each side, horizontal, straight, very faintly raised on both sides; reticulation very delicate, yellowish above, inconspicuous below; marginal arches flat, obscure; petiole up to 4 lin. long, slender. Panicle elongate, peduncled, bearing dense clusters of many sessile flowers at the ends of the spreading or recurved branches, the rhachis (rarely more than 2 in. long) or branches often acting as tendrils, delicately pubescent all over:

peduncle 3-4 in. long. Calyx delicately rusty-tomentose, 1 lin. long; sepals ovate, subobtusate. Corolla up to almost 10 lin. long in bud; tube 3 lin. long, globosely inflated just above the calyx, very slender, pubescent to almost villous; lobes linear-oblong, subacute, 5-6½ lin. long, margins woolly with white hairs. Stamens inserted about 1 lin. above the base of the corolla. Ovary tomentose.

**Mozamb. Dist.** British Central Africa: Nyasaland, *Buchanan* (1895 coll.), 140!

16. **L. amœna**, *Hua in Journ. de Bot.* xv. (1901) 8, 76, *fig.* 3. A shrub 6-12 ft. high; branches pendulous, reddish-velvety from long hairs when young, finally glabrescent, brown, with numerous minute lenticels. Leaves oblong or ovate, shortly and acutely acuminate, rounded at the base, 2½-4 in. long, 1¼-1⅝ in. broad, rigidly papery, reddish-pubescent on both sides when quite young, soon glabrescent; midrib channelled above, prominent below; secondary nerves slightly oblique, very slender, straight or slightly curved, 12 on each side, connected by rather bold unequal arches; reticulation delicate; petiole scarcely 2 lin. long, pubescent. Panicles elongate, sensitive, bearing very dense clusters of many sessile flowers at the ends of the distant branches, which often act as tendrils; bracts resembling the sepals. Calyx rufo-tomentose, 1-1½ lin. long; sepals lanceolate-ovate, acute. Corolla white, sweet-scented; tube inflated near the base, 5-6 lin. long, rusty-tomentose; lobes oblong, obtuse, about as long as the tube, long ciliate. Stamens inserted just above the calyx; anthers acute. Ovary depressed-globose, densely tomentose. Fruit pyriform, pubescent when young, afterwards more or less globose, subapiculate, 5-15 lin. in diam.; rind smooth, very thin; seeds few, 4-6 lin. long, embedded in a sweetish yellowish-brown pulp.—*L. scandens*, Hallier f. *Kautschukianen* in *Jahrb. Hamburg. Wissensch. Anstalt.* xvii. (1899), 3. *Beih.* 79 partly. *Ancylobotrys amœna*, *Hua in Bull. Mus. Hist. Nat. Paris*, v. (1899) 186.

**Upper Guinea.** French Guinea: Kouroussa (Kurusu), on the Upper Niger, *Paroisse!*

According to Hua and Chevalier, l.c. 78, it is common in Futa Jallon and as far as Bélé Dougou (Bambara), in French Guinea. Very closely allied to, and perhaps not specifically distinct from *L. ferruginea*.

17. **L. ferruginea**, *Staff.* A scandent shrub with sensitive inflorescences acting as tendrils; young branches densely rusty-tomentose, very late glabrescent, and then blackish with numerous minute lenticels. Leaves ovate-oblong or oblong, subacuminate, obtuse at the base, 3-5½ in. long, 1½-2½ in. broad, coriaceous, rusty-pubescent on both sides when quite young, soon perfectly glabrescent; midrib finely channelled above, very prominent below; lateral nerves oblique, slightly curved, 9-10 on each side, connected by unequal bold or flat usually inconspicuous arches, slender, rather inconspicuous above, distinct and raised below; reticulation fine, distinct below; petiole 3-5 lin. long, rusty-tomentose. Panicle elongate, sensitive, bearing very dense many-flowered clusters at the ends of the distant spreading or recurved branches, all parts rusty-tomentose;

bracts at the base of the branches subulate-acuminate from an ovate base, up to 2 lin. long, upper ones passing into the calyx-segments. Calyx 1-1½ lin. long, rusty-tomentose; sepals lanceolate-ovate, subacute or subacuminate. Corolla white, fragrant; tube widest 1½ lin. above the base, slender, cylindric above, 6½-7 lin. long, finely tomentose without; lobes as long as the tube, oblong, subobtuse, long ciliate along the outer edge. Stamens inserted near the base; anthers linear-oblong, acute. Ovary depressed-globose, densely tomentose except at the very base; style glabrous. Young fruits pyriform-globose, fulvo-pubescent, or glabrescent, often asymmetrically apiculate by the persistent style base which is thrust aside by the unequal growth of the fruit.—*L. scandens*, var. *ferruginea*, Hallier f. Kautschukianen in Jahrb. Hamburg. Wissensch. Anstalt. xiv. (1899), 3. Beih. 80, partly.

**Upper Guinea.** Gold Coast: Aquapim Hills, *Johnson*, 782! Western Lagos: interior, *Rowland*!

18. **L. petersiana**, *Dyer in Kew Report*, 1880, 42. A scandent shrub with sensitive inflorescences acting as tendrils; young branches minutely rusty-pubescent to tomentose, soon glabrescent, reddish or finally greyish-brown with numerous small lenticels. Leaves elliptic or elliptic-oblong, subacute or more commonly obtuse at both ends, 3½-4½ in. long, 1¼-2 in. broad, coriaceous, loosely pubescent on both sides when quite young, soon glabrous, usually blackish and somewhat glossy above when dry, pale beneath; midrib channelled above, raised below; secondary nerves oblique, distinctly curved, 6-8 (rarely 10) on each side, finely channelled above, distinctly raised below; tertiary nerves more or less irregular and like the fine network of veins usually distinct, brown, scarcely raised; marginal arches obscure; petiole about 3 lin. long. Panicle short or elongate, peduncled, bearing clusters of many sessile flowers at the ends of short spreading or recurved branches; branches or rhachis often acting as tendrils, finely rusty-pubescent or glabrescent all over; peduncle 1-4 in. long, slender; rhachis 1-1½ in. long, lowest branches from a few lines to 1 in. long; bracts ovate-lanceolate or ovate-oblong, acute or subacute, rusty-pubescent or tomentose. Calyx about 1 lin. long; sepals ovate-oblong, obtuse, more or less laterally compressed in the upper half, rusty-pubescent or tomentose. Corolla white, sweet-scented, rather variable in size, 8-13 lin. long (rarely longer) in bud; tube slender, cylindric, about 3-4½ lin. long, slightly wider and staminiferous 1-1½ lin. above the base, minutely and equally pubescent above the widening; lobes obliquely oblong or linear-oblong, acute or obtuse, 6-8 lin. long, curled-ciliate. Anthers ovate-oblong, acute, not quite 1 lin. long. Ovary globose, very minutely rufo-tomentose. Style and stigma 1 lin. long, the latter cylindric from a thicker base, bifid. Fruit globose, up to 2½ in. in diam., finely velvety; pericarp leathery, up to 2 lin. thick, without a sclerenchymatous layer; seeds 4-9 lin. long.—*Ficalho*, Pl. Uteis Afr. Portug. 219; *K. Schum.* in Engl. Jahrb. xv. (1892) 406; *L. Planchon*, Prod. Apocyn. 319; *Dewèvre*, Caoutch. Afr. Monogr. Landolph. 27 partly; *Jumelle*, Pl. à Caoutch. et à Gutta, 57 partly; *Morris* in Journ. Soc. Arts, xlvi.

775, 780; Warb. in *Tropenpfl.* iii. (1899) 222, and *Kautschukpfl.* 118 partly; Sadebeck, *Kulturg. Deutsch. Kolon.* 272 partly? Henriques, *Kautschuk*, Tab. iv.; Schinz in *Mém. Herb. Boiss.* x. 1900, 57; Hook. Ic. Pl. t. 2756 ined. *L. petersiana*, var. *crassifolia*, Dewèvre, l.c. 29 partly; Engl. *Glied. Veg. Fl. Usambara*, 26; Mikosch in *Wiesner, Rchstoffe*, ed. 2, i. 362, not of K. Schum. *L. petersiana*, var. *rotundifolia*. Dewèvre, l.c. 30. *L. scandens*, vars. *petersiana*, *rotundifolia*, and *stuhlmanniana*, Hallier f. *Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt.* xvii. (1890), 3. Beih. 82, 83. *L. senensis*, K. Schum. in *Engl. Pfl. Ost-Afr. B.* 453. *Ancylobothrys petersiana*, and var. *forbesiana*, Pierre in *Bull. Soc. Linn. Paris*, 1898, 91; Schinz, l.c. *A. rotundifolia*, Pierre, l.c. 92. *Willughbeia petersiana* and *W. senensis*, Klotzsch in *Peters, Reise Mossamb. Bot.* i. 281, 282.

**Nile Land.** British East Africa: Mombasa and vicinity, *Kirk!* Giriyama and Shimba Mountains, *Taylor!* Kilimanjaro Expedition, 30-40 miles from the sea, *Johnston!*

**Mozamb. Dist.** Zanzibar, *Stuhlmann*, 475, 828, 340, 352; Schmidt, 12! German East Africa: foot of Kilimanjaro, at Kilema, 3000-4000 ft., *Kersten!* Usambara; Amboni Hill, *Holst*, 2563! Tanga, *Volgens*, 173! Pangani, *Stuhlmann*, 154! 66! Usaramo; Bagamojo, *Kirk!* *Stuhlmann*, 12! 213! 242! Dar es Salaam, *Stuhlmann*, 7345! 7727! 7501! 7856! 7318! Mscroa, 160 ft., *Hedde*, 21! Messoga, *Stuhlmann*, 6052! Kikulu, *Stuhlmann*, 6798! 6849! Kidenge, *Stuhlmann*, 6365! Dunda, *Stuhlmann*, 6509! Dilangito, *Stuhlmann*, 6657! Kirwale Forest near Mafisi, *Busse*, 58! Msenga-Kwa-Punduguru, *Busse*, 100! Useguha, *Stuhlmann*, 7094! Usagara; Sima Valley, *Busse*, 202! Portuguese East Africa: Zambesi Delta; Kongone River, *Kirk*, 309! banks of the Luabo River, *Kirk*, 27! Lower Zambesi; between Lupata and Sena, *Kirk!* near Sena, *Peters!* *Kirk!*

Var.  $\beta$  *schweinfurthiana*, Stapf. Young branches and inflorescences densely rusty-velvety. Leaves elliptic-oblong or oblong; shortly acuminate, rounded or subacute at the base, 2-3 in. long, slightly over 1 in. broad, pubescent on both sides. Corolla-tube  $4\frac{1}{2}$ - $6\frac{1}{2}$  lin. long; lobes  $3\frac{1}{2}$  (in mature?)-6 lin. long—*L. scandens*, vars. *schweinfurthiana* and *rigida*, Hallier f. l.c. 81.

**Nile Land.** British East Africa: Jur; Wau, *Schweinfurth*, 1685! Kurshook Ali's Seriba, *Schweinfurth*, 1759. Bongo; Biselli, *Schweinfurth*, ser. iii. 67. German East Africa: Karagwe; rather dry hills, 4000-5000 ft., *Scott-Elliott*, 8167! Unyamwezi; Tabora, *Stuhlmann*, 586.

Var.  $\gamma$  *rufa*, Stapf. Young branches and inflorescences densely rufo-tomentose. Leaves oblong-elliptic, rounded at both ends,  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. long,  $\frac{3}{4}$ - $1\frac{1}{4}$  in. broad, sparingly pubescent above, curled-tomentose below; secondary nerves 5-6 on each side. Corolla-tube about 3 lin. long; lobes  $4\frac{1}{2}$ - $5\frac{1}{2}$  lin. long.—*L. scandens*, var. ? Hallier f. l.c. 84.

**Mozamb. Dist.** Portuguese East Africa: Lower Zambesi; Tete, *Kirk!* British Central Africa: Nyasaland, *Buchanan*, 437!

Var.  $\delta$  *angustifolia*, Stapf. An erect shrub with divaricate branches, and tendrils from the branch-forks; young branches rusty-pubescent, short, the older ones greyish-brown, rough with lenticels. Leaves oblong to lanceolate-oblong, subacute or obtuse, more or less obtuse at the base,  $1\frac{1}{2}$ -2 in. long, 4-8 lin. broad, thinly coriaceous, rigid, glabrous on both sides (except for scanty pubescence on the midrib when young), pale green; secondary nerves 5-6 on each side, rather prominent; reticulation faint. Panicles small, often reduced to a single cluster. Corolla only seen in bud; tube almost glabrous, 2 lin. long; lobes  $2\frac{1}{2}$  lin. long (*K. Schumann*). Ovary densely and very minutely tomentose in the upper part.—*L. scandens*, var. *angustifolia*,

Hallier f. l.c. 47, 84. *L. angustifolia*, Engl. Glied. Veg. Usambara, 34; in Notizbl. Königl. Bot. Gart. Berlin, i. (1895) 25; Dewèvre, Caoutch. Afr. Monogr. Landolph. 49; K. Schum. in Engl. Pfl. Ost-Afr. A 74, B 454, 462, C 315, t. xxxix. figs. J-M.; Pierre in Bull. Soc. Linn. Paris, 1898, 92; Sadebeck, Kulturg. Deutsch. Kolon. 272, 273, 276; Warb. in Tropenpfl. iii. (1899) 314 and Kautschukpfl. 120.

**Mozamb. Dist.** German East Africa: Usambara; in shrubberies at Mizozue, near Bombuera, *Holst*, 2220!

*L. petersiana* is evidently a very variable plant. It is doubtful if some of the varieties admitted here represent more than individual or local states. On the other hand, there are indications of the existence of more or less distinct forms, which will have to be noticed in future. The fruits of the specimens collected by Sir John Kirk on the Lower Zambesi are exactly globose; but farther north, in German East Africa, a form occurs with almost pear-shaped fruits, solid at the base. Dr. Busse, who collected it in Donde, proposed the name var. *Tubeufii* for it. Kirk's specimen at Kew from Bagamoyo and Stuhlmann's 6509 and 6657 at Berlin belong to it. Another conspicuous, but imperfectly known, form was collected by Goetze (884!) on the hill-sides of the Kande peninsula near Langenburg, Lake Nyasa. It was identified by Hallier f. l.c. 81, with Rowland's specimen from Lagos described here as *L. ferruginea*, and enumerated together with it as *L. scandens*, var. *ferruginea*. The resemblance is very great, but the leaves are rather more ovate, more acutely acuminate, the flowers larger and the young fruits rusty-tomentose, though not so densely and delicately velvety as in typical *L. petersiana*.

19. **L. owariensis**, Beauv. *Fl. Owar.* i. 55, t. 34. A more or less scandent shrub or tree, often very large, with long hook-branched tendrils (usually more or less modified inflorescences); young branches scantily pubescent, soon glabrescent, dark brown to almost black, dotted with small yellowish lenticels. Leaves oblong, rarely elliptic or lanceolate, subacuminate or sometimes distinctly and abruptly acuminate (acumen obtuse), rarely quite obtuse, subobtuse or subacute at the base, 3-6 in. long, 1-2½ (rarely up to 3½) in. broad, coriaceous, quite glabrous or finely pubescent in bud, glossy above; midrib flat or slightly channelled above, prominent below; secondary nerves 10-15 on each side, oblique, slender, connected by strongly curved zig-zag arches rather close to the margin, like the reticulating veins more or less raised; petiole 2-4 lin. long. Panicles pyramidal or ovoid, shortly peduncled, many-flowered, finely fulvo-tomentose (rarely elongate, with distant spreading or recurved branches, the lower acting as tendrils); peduncles ½-1½ in. long; bracts broad-ovate, subacute or apiculate, early deciduous, like the very short pedicels finely fulvo-tomentose. Calyx 1-1½ lin. long, finely fulvo-tomentose; segments very broad, ovate to almost rotundate, acute or obtuse. Corolla white, soon turning brownish; tube cylindric, widest between the middle and mouth, 3 lin. long, more or less pubescent or tomentose without, at least in the upper half; lobes oblong, acute, spreading or reflexed, fleshy, 1½-2¼ lin. long, rarely longer, pubescent without, mouth finely pubescent. Stamens in the upper third of the tube; anthers oblong, subobtuse. Ovary depressed, truncate, top finely tomentose. Style and stigma 2 lin. long, the latter conical, shortly bifid. Fruit of the shape, size and colour of a middle-sized or small orange, 1-2½ in. in diam., yellow mottled with red, wrinkled; rind woody, 2-2½ lin. thick; seeds 5-6 lin. long.—Lam. Illustr. iii. 582, t.

930; DC. Prod. viii. 320; Benth. in Hook. Niger Fl. 443; Collins, Caoutch. Report, 27, 28, t. 4; Dyer in Kew Report, 1880, 38; Moloney, Forestry West Afr. 84, 382; Radlkofer, Abhandl. Naturw. Ver. Bremen, viii. (1883) 396; Ficalho, Pl. Uteis Afr. Portug. 214-220; Kew Bulletin, 1888, 253; 1889, 65; 1893, 183; K. Schum. in Engl. Jahrb. xv. 409, and in Engl. & Prantl, Pflanzenfam. iv. ii. 130; L. Planchon, Prod. Apocyn. 139, 313-319; Dewèvre, Caoutch. Afr. Monogr. Landolph. 36; Chimani in Bot. Centralbl. lxi. (1895) 456, t. 2, figs. 13 and 21; Durand & Schinz, Études Fl. Congo, i. 189; Vogtherr in Köhler, Mediz. Pfl. iii. under *Landolphia comorensis* partly; Moller in Tropenpfl. i. (1897) 188; Jumelle, Pl. à caoutch. et à gutta, 42; Sadebeck, Kulturg. Deutsch. Kolon. 272, 276; Morris in Journ. Soc. Arts, xli. 775; Warb. in Tropenpfl. iii. (1899) 312; Clouth, Gummi, Gutt. and Balata, 17, fig. 8; Mikosch in Wiesner, Rohstoffe, ed. 2, i. 362; Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 42-45, 77; Henriquez, Kautschuk, Tab. iii. and iv.; Warb. Kautschukpfl. 118, 119; Schlechter, Westafrik. Kautschuk-Exped. 229, fig. on p. 128; Hua in Bull. Mus. Hist. Nat. Paris, 1900, 309, 311; De Wild. Apoc. à latex rec. par Gentil, 17; De Wild. & Durand, Reliq. Dewevr. in Ann. Mus. Congo, Bot. iii. fasc. 2, 146. *L. Heudelotii*, Schlechter, Westafrik. Kautschuk-Exped. fig. on p. 9. *L. Gentilii*, De Wild. Apocyn. à latex rec. par Gentil, 20 (?). *Vahea owariensis*, F. v. Muller in Wittstein, Org. Constit. Plants, 258, 268, and in Select. Extratrop. Pl. ed. 3, 344. *V. elastica*, Klotzsch ex Schweinf. MS. in Herb. Kew. *Pacouria owariensis*, Hiern in Cat. Afr. Pl. Welw. i. 661. *Pœderia owariensis*, Spreng. Syst. i. 669.

**Upper Guinea.** French Guinea: Konakri, *Bouéry*, *Lecerf*, *Poisson*! between Bambuya and Timbo, *Pobéquin*, Susu Country, *Scott-Elliot*, 3878! 4754! Sierra Leone: *Afzelius*! *Don*! Ivory Coast; near Baoulé, *Pobéquin*. Gold Coast: Krepi Hills, *Johnson*, 524! 525! Lunte Hills, *Johnson* 811! Aburi Hills, *Johnson*, 282! and without precise locality, *Brown*, 354! *Dahomey*, *Poisson*! Lagos: *Ajitite*, *Millen*, 168! Ilorin, *Rowland*! Niger Protectorate: Oware, *Beauvois*; Onitsa, *Barter*, 1773! 1810! Old Calabar, *Mann*, 2311! Cameroons: Rio del Rey, *Johnston*, 3! Victoria Gardens, *Preuss*; Johann Albrechts-Höhe, *Staudt*, 883.

**Lower Guinea.** Corisco Bay, *Mann*, 2311! Gaboon: Sibange Forest, *Büttner*, 497. Portuguese Congo: Malemba, near Landana, *Philipps*! Lalemba, *Dewèvre*, 362! Lower Congo: Kisantu, *Gillet*, 1764! Limba, *Laurent*! Stanley Pool, *Dewèvre*, 737A! Angola: *Quiballa*, Monteiro! forests of Mussengue, Quilombo, Queta and Bumba and in the mountains of Aito Queta, *Welwitsch*, 5930!

**South Central.** Congo Free State: Mukenge, by the Lulua River, *Pogge*, 1044; (Kassai forest, *Luja*, 267! Moucombe, *Demeuse*, 454! both barren branches); between Lake Léopold II. and Lake Tumba, *Gentil*; Bolobo, *Dewèvre*, 698! Lulunga River, *Dewèvre*, 811A! Fall Station, *Dewèvre*, 1158!

De Wildeman & Durand, Reliq. Dewevr., also refer here a specimen collected near Stanley Pool (*Dewèvre*, 721A), the fruits of which are described by Dewèvre as pyriform.

Var. *β rubiginosa*, Stapf. Young branches and inflorescences velvety with soft flexuous dark rust-coloured hairs. Leaves oblong-lanceolate, subacuminate, 3-3½ in. long, 1-1¼ in. broad, pubescent below, finally more or less glabrescent except on the midrib, which is more permanently covered with hairs similar to those of the young branches.

**Upper Guinea.** Cameroons: Yaunde, *Zenker*, 538!

Var.  $\gamma$  *tomentella*, Stapf. Young branches and tendrils densely fulvo-tomentose. Leaves oblong to elliptic, obtuse or obtusely subacuminate, 2–3½ in. long, 1–1½ in. broad, quite glabrous above (except on the midrib), softly pubescent below when young, soon glabrescent. Fruit globose, 1¼ in. in diam., smooth, dotted with numerous lenticels; rind 1 lin. thick.—*L. owariensis*, forma, Dyer in Kew Report 1880, 38. *L. Heudelotii*, K. Schum. in Engl. Jahrb. xv. 407 partly, t. xii. fig. B; in Engl. Ph. Ost-Afr. B, 446–459 partly; in Engl. and Prantl, Pflanzenfam. iv. ii. 130 partly. Hallier f. l.c. 75 partly; Hua & Chevalier, in Journ. de Bot. xv. (1901) 70 (not elsewhere). *Carpodinus acidus*, Schweinf. Heart of Africa, i. 185, not of Don; C. sp. Schweinfurth, l.c. 192.

**Nile Land.** British East Africa: Jur; Wau, *Schweinfurth*, 1667! Kurshook Ali's Seriba, *Schweinfurth*, ser. iii; 70! Jur Ghattas, *Schweinfurth*, 1377!

*L. owariensis* is one of the principal sources of West African rubber.

*L. Gentilii*, De Wild., Apocyn. à latex rec. par Gentil, 20, seems to me identical with *L. owariensis*. The specimen from which *L. Gentilii* was described formed part of a sample of "Bongew," the rest of it being admitted by De Wildeman as *L. owariensis*. According to the author the former differs in having somewhat narrower leaves, a more pubescent corolla-tube (pubescent all over without, except where it is covered by the calyx), longer corolla-lobes (2½ lin. against 1–1½ lin. in *L. owariensis*), a slightly different stigma and smaller fruits. As to the fruits, the author himself says that he saw only some very young ones, and Gentil's description of their being "small" is too vague and may also refer to immature fruits. The other differences seem to lie well within the ordinary limits of variation of *L. owariensis*.

20. **L. Klainei**, *Pierre* in *Bull. Soc. Linn. Paris*, 1898, 13, 15. A scandent shrub with long branched tendrils (modified inflorescences); young branches more or less pubescent, soon glabrescent, dark reddish-brown, dotted with minute whitish lenticels. Leaves oblong, gradually tapering to an obtuse or subacute acumen, rounded or shortly subacute at the base, 5–6 in. long, 1½ to more than 2 in. broad, coriaceous, pubescent when quite young, soon glabrous, somewhat glossy above; midrib distinctly sunk above, prominent below; secondary nerves 13–15 on each side, moderately oblique, very slender, connected by strongly curved delicate zig-zag arches rather close to the margin, like the delicate network of veins slightly raised on both sides; petiole 2 lin. long, slightly pubescent in the younger leaves. Corymbs dense, subsessile, many-flowered, or panicles elongate, with distant spreading branches passing into tendrils, fulvo-pubescent or finely tomentose all over (including the calyces); bracts oblong to ovate, obtuse; pedicels very short. Calyx slightly over 1 lin. long; sepals broad-oblong or ovate, subacute or very obtuse and apiculate; midrib often slightly prominent and acute. Corolla-tube cylindrical to the middle, then widened and constricted again below the mouth, 2½ lin. long, very finely pubescent except at the base; lobes linear, obtuse, slightly shorter than the tube, finely pubescent along the middle without, mouth very narrow and very minutely pubescent. Stamens in the upper third of the tube; anthers linear-oblong, subacute. Ovary oblong-ovoid, tapering into the style, top very finely pubescent; style and stigma almost 1½ lin. long, the latter slender-cylindric, bifid. Fruit very large globose, 6–10 in. in

diam.; rind hard; seeds over 50, compressed oblong to almost square in outline,  $1\frac{1}{2}$  in. long.—Jumelle, Pl. à caoutch. et à gutta, 48; Mikosch in Wiesner, Rohstoffe, ed. 2, 362; Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 43–45, and in Bot. Centralbl. lxxxiii. (1900) 255; Warb. Kautschukpfl. 119; Schlechter, Westafr. Kautschuk-Exped. 81, 82, 229, 306, 83 with fig. *L. owariensis* Dewèvre, Caoutch. Afr. Monogr. Landolph. 36 (the Gaboon plant).

**Upper Guinea.** South-eastern Cameroons: banks of the Jah River, *Schlechter*, 12770.

**Lower Guinea.** Gaboon, *Klaine*, 850! French Congo: near Lake Ouanga or Ionanga, *Griffon du Bellay*; banks of the River Sanga, near Bonga, *Schlechter*, 12660, and between Bonga and Woso, *Schlechter*, 12689. Lower Congo, *Smith*!

Mann's specimen from Corisco Bay, referred to in Kew Report, 1880, 39, as *L. Mannii*, Dyer, is almost certainly identical with *L. Klainei*. It consists only of a few leaves and some fruits, not quite so large as in the figure by Delpy (distributed by Pierre) from one of Klaine's specimens, but otherwise very similar. They are covered with an extremely delicate and velvety brown tomentum, which is not represented in Delpy's drawing. It is, however, so fine that the fruit appears smooth, and it may therefore have been overlooked. Mann calls the plant "the African Rubber plant," whilst Pierre says that *L. Klainei* is the principal rubber vine in the Gaboon district. *L. Mannii* has been quoted very frequently (Moloney, Forestry West Afr. 392; Kew Bulletin, 1892, 68; K. Schum. in Engl. Jahrb. xv. 409; L. Planchon, Prod. Apocyn, 320; Dewèvre, Caoutch. Afr. Monogr. Landolph. 56 partly; Morris in Journ. Soc. Arts, xlvi. 775; Jumelle, Pl. à caoutch. et à gutta, 45; Warb. in Tropenpfl. iii. (1899) 314 and in Kautschukpfl. 120; Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 98; Henriques, Kautschuk, Tab. iii.), but it seems solely on the authority of the Kew Report for 1880.

21. **L. Dewevrei**, *Staff*. A scandent (?) shrub; (tendrils not seen). Young branches slender, pubescent, at length glabrescent and dotted with scattered whitish lenticels. Leaves oblong, acuminate (acumen up to 5 lin. long, linear from a broader base, obtuse), rarely subacute at the base, 3–4 in. long,  $1\frac{1}{4}$ – $1\frac{1}{2}$  in. broad, thinly coriaceous, glabrous or very scantily pubescent on the midrib below when young, reddish-brown when dry; midrib channelled above, prominent below; secondary nerves subhorizontal, straight, 11–13 on each side, very slender, slightly raised below; reticulation very delicate and inconspicuous; petiole slender,  $1\frac{1}{2}$ – $2\frac{1}{2}$  lin. long. Corymbs terminal or pseudo-axillary, very shortly peduncled, contracted, small; peduncle fulvo-tomentose or pubescent; bracts obovate-oblong to ovate, subacute, fulvo-pubescent; pedicels very short. Calyx  $1\frac{1}{2}$  lin. long; sepals subscarious, broadly ovate or oblong, very obtuse, keeled, ciliate, otherwise glabrous or almost so and shining. Corolla finely pubescent without except at the base; tube widest between the middle and the mouth, 2 lin. long, quite glabrous within; lobes linear-oblong, as long as or slightly shorter than the tube. Stamens inserted in the upper third of the tube; anthers lanceolate, subacute,  $\frac{1}{2}$  lin. long. Ovary ovoid, gradually passing into the short style, upper part long villous; stigma cylindrical from a thickened base, bifid.

**South Central.** Congo Free State, *Dewèvre*, 888!

22. **L. humilis**, *K. Schum. in Schlechter, Westafr. Kautschuk-Exped.* 306, *fig. on p.* 288. A small undershrub, scantily branched or producing only subherbaceous simple shoots, about  $1\frac{1}{2}$  ft. high, with scanty short tendrils; young branches pubescent to tomentose, at length glabrescent, dark brown or blackish when dry, old bark dotted with numerous very minute lenticels. Leaves ovate-oblong or ovate-elliptic, rarely oblong, shortly and obtusely acuminate, rounded at the base, rarely obscurely cordate,  $3-4\frac{1}{2}$  in. long,  $1-1\frac{3}{4}$  in. broad, thinly coriaceous, glabrous above, softly pubescent beneath or finally glabrescent; midrib channelled above, prominent below; secondary nerves 6-7 on each side, more or less curved, connected by strongly curved arches approaching the margins within 1-2 lin., faintly raised like the loosely reticulating veins; petiole 1-3 lin. long. Panicles shortly peduncled, small, compact, fulvo-tomentose, rarely elongate with distant spreading or recurved branches; peduncle up to 1 in. long; bracts broad-ovate, subacute, the lower early deciduous; pedicels hardly any. Calyx  $1\frac{1}{2}$  lin. long, fulvo-tomentose; sepals very broad, ovate, obtuse or subacute. Corolla-tube cylindric, wide, widest between the middle and the mouth,  $3-3\frac{1}{4}$  lin. long, more or less tomentose without at least in the upper part, villous within in the upper third; lobes oblong, subacute, spreading or reflexed, fleshy, 2-3 lin. long, finely pubescent on both sides. Stamens inserted in the upper third of the tube; anthers oblong, subacute. Ovary turbinate, top convex, finely tomentose. Style and stigma 2 lin. long, the latter conical, shortly bifid. Fruit of the shape of an ordinary plum, about  $1\frac{1}{4}$  in. long,  $\frac{3}{4}$  in. in diam. (or of the size of an apple according to Schlechter).

**Lower Guinea.** Lower Congo: common in savannas and shrubberies near Stanley Pool, *Laurent! Schlechter, 12544.*

**South Central.** Congo Free State: Lake Leopold, at Malapié, *Laurent* (fruit only)!

Very closely allied to *L. owariensis*, from which it differs only in the stunted growth and the leaves being more rounded at the base and differently nerved. The flowers are practically indistinguishable. *Laurent* and *Schlechter* state that it yields no rubber.

23. **L. Heudelotii**, *A. DC. Prod.* viii. 320. A shrub or climber up to 30-45 ft. high, with branched tendrils (modified inflorescences); young branches finely pubescent, soon glabrescent or more commonly fulvo- or rufo-tomentose, at length dark or reddish-brown, dotted with numerous small whitish lenticels. Leaves oblong to elliptic or sub-lanceolate, obtusely subacuminate, or obtuse or subacute, obtuse or subacute at the base, 1-3 in. long,  $\frac{3}{4}-1\frac{1}{4}$  in. broad, thinly coriaceous, pubescent on both sides or only on the midrib, or tomentose below, usually finally glabrescent and glossy above; midrib scarcely sunk above, prominent below; secondary nerves 7-10 on each side, oblique, slender, connected by moderately curved fine arches some way within the margin, slightly raised below; veins reticulating, faint below, often quite obscure above; petiole 1-2 lin. long. Corymbs shortly peduncled or sessile, many-flowered, or panicles elongated with remote spreading

branches passing into tendrils; all parts of the inflorescence (including the calyces) finely fulvo-tomentose to almost shaggy; bracts ovate or ovate-oblong, subacute or obtuse; pedicels very short. Calyx  $1-1\frac{1}{4}$  lin. long; sepals oblong or ovate-oblong, subobtuse. Corolla strongly scented; tube whitish, slightly tinged with yellow, subcylindric, slightly inflated, constricted at both ends,  $3-3\frac{1}{2}$  lin. long, finely pubescent or tomentose without; lobes pure white, oblong-obtuse, 2-3 lin. long, pubescent without, mouth finely tomentose. Stamens inserted at the middle; anthers ovate, linear, acute. Ovary truncate, top very finely tomentose. Fruit pear-shaped or globose and often suddenly contracted into a stout stipe, 1-3 in. in diam., yellow; pericarp coriaceous; seeds 4-7 lin. long, embedded in a whitish, sour, watery pulp.—Benth. in Hook. Niger Fl. 444; K. Schum. in Engl. Jahrb. xv. 407, and in Engl. Pfl. Ost-Afr. B. 446-448, 454, 459 partly, and in Engl. & Prantl, Pflanzenfam. iv. ii. 130 partly; L. Planch. Prod. Apocyn. 140, 312; Dewèvre, Caoutch. Afr. Monogr. Landolph. 39 partly; Chimani in Bot. Centralbl. lxi. (1895) 456; Vogtherr in Köhler, Mediz. Pfl. iii. sub *Landolphia comorensis*; Moller in Tropenpfl. i. (1897) 187; Jumelle, Pl. à caoutch. et à gutta, 45, 48, 50, fig. 7 on p. 49; Morris in Journ. Soc. Arts, xlvi. 780; Sadebeck, Kulturg. Deutsch. Kolon. 272-276, fig. 106; Warb. in Tropenpfl. iii. (1899) 313, figs. D-F on p. 311, and Kautschukpfl. 119, 120, 124, fig. D-F on p. 117; Sébire in Rév. Cult. Colon. iv. (1899) 194; Hua in Bull. Mus. Hist. Nat. Paris, v. (1899), 179-183; Mikosch in Wiesner, Rohstoffe, ed. 2, i. 363; Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 41-42, 75; Henriques, Kautschuk, Tab. iii.; Schlechter, Westafrik. Kautschuk-Exp. 229 (not fig. on p. 9); Hua in Bull. Mus. Hist. Nat. Paris, vi. (1900), 311, and in Journ. de Bot. xv. (1901), 65, 68, figs. 1 and 2; Chevalier in Bull. Mus. Hist. Nat. Paris, vi. (1900) 307, and Geog. Botan. Sénégal et Soudan, 218, and fig. on p. 219; De Wild. Apocyn. à latex rec. par Gentil. 10-14. *L. Heudelotii*, var. *tomentosa*, Hua in Bull. Mus. Hist. Nat. Paris, v. (1899) 182. *L. Michelini*, Benth. in Hook. l.c.; Walp. Ann. iii. 29; Radlkof. in Abhandl. Naturwiss. Ver. Bremen, viii. (1883) 396; K. Schum. in Engl. Jahrb. xv. 408, and in Engl. Pfl. Ost-Afr. B. 452; Dewèvre, l.c. 42; Warb. in Tropenpfl. iii. (1899) 313, and Kautschukpfl. 119, 120; Chevalier in Bull. Mus. Hist. Nat. Paris, 1900, 306. *L. Traunii*, Sadeb. ex K. Schum. in Engl. Jahrb. xv. 406, 408; Dewèvre, l.c. 43; K. Schum. in Engl. Pfl. Ost-Afr. B. 453; Sadebeck in Jahrb. Hamburg. Wissensch. Anstalt. xiv. (1897), 3. Beih. 121, and Kulturg. Deutsch. Kolon. 275, 276; Warb. Kautschukpfl. 119, 120; Chevalier, l.c. 306. *L. tomentosa*, Dewèvre l.c. 44 (excl. Sacleux's plant from Zanzibar); Moller in Tropenpfl. i. (1897) 187; Jumelle, Pl. à caoutch. et à gutta, 44, 52; Warb. in Tropenpfl. iii. (1899) 313 and Kautschukpfl. 119; Mikosch, l.c. 362; Henriques, Kautschuk, Tab. iii.; Schlechter, Westafrik. Kautschuk-Exped. 229; Chevalier in Bull. Mus. Hist. Nat. Paris, 1900, 306. *Vahea Heudelotii*, F. Muell. in Wittstein, Org. Constit. Plants (1878) 258, 268, and in Select. Extratrop. Plants, ed. 3 (1880) 344. *V. tomentosa*, Lepr. ex L. Planch. Prod. Apocyn. 139, 306; K. Schum. in Engl. Pfl. Ost-Afr. B. 453. *V. Traunii*, Sadeb. in Jahrb. Hamburg. Wissensch.

Anstalt. iii. (1886) p. lxxvi., ix. 1 (1891) 226; Kulturg. Deutsch. Kolon. 274. *V. senegambensis*, var. *Traunii*, Sadeb. in Jahrb. Hamburg. Wissensch. Anstalt. iii. (1886) lxxvii.

**Upper Guinea.** Senegambia: Gombo, *Heudelot.* Mboro, *Leprieur!* sandy dry soil near Albreda, and very common in the Cape Verd Peninsula and by the Gambia and Casamance Rivers, *Perrottet*, 491! in the neighbourhood of the Casamance and Nunez Rivers, *Heudelot*, 602! 606! Cape Verd Isles: San Jago, *Bocandé.* Senegal, *Michelin!* Portuguese Guinea: Bissão, *Traun.* French Guinea: *Paroisse*, 14, 20, 21, 22, 27. Futa Jallon: Timbo, *Miquel!* Kisosso, *Maclaud*, 242; Bramaya, *Paroisse*, 20, 214; at Bayabaya, near the River Scarcies, *Scott-Elliot*, 4544! 4773! and near Wallia, *Scott-Elliot*, 4630!

Var.  $\beta$  *Djenge*, Stapf in Journ. Linn. Soc. xxx. 87. Fruit globose or depressed-globose, not stipitate.

**Upper Guinea.** Sierra Leone: Scarcies River, near Kukuna, *Scott-Elliot*, 4650! 4675! Falaba, *Scott-Elliot*, 5450!

Hallier f. also enumerates the following specimens under *L. Heudelotii*: Togo: Little Popo, *Traun!* Bismarckburg, *Büttner*, 325; Misahöhe, *Baumann*, 517; 524. Cameroons: Yaunde, *Zenker*, 662. Lower Congo: Stanley Pool, *Laurent.* Of these I have only seen *Zenker's* 662, without flowers or fruits. It is certainly not *L. Heudelotii*, but probably *L. owariensis*. The same may be the case with the Togo specimens, of which Hallier himself says that they much resemble *L. owariensis*. They were referred to *L. Heudelotii* on account of the length of the corolla-lobes, which are on the whole slightly longer in *L. Heudelotii* than in *L. owariensis*; but this is no reliable character. The two species differ chiefly in the shape of the sepals and corolla-tube, and in the insertion of the stamens. *L. Heudelotii* was originally described from almost glabrous specimens; such seem, however, to rarely occur, the tomentose form being the common one. This species is, among *Apocynaceæ*, undoubtedly one of the most valuable sources of rubber in West Africa. Hua and Chevalier, l.c., give an elaborate description of the area inhabited by it in French Guinea. It extends from Senegambia far into the basin of the Upper Niger and to the head waters of the Volta, being one of the characteristic features of the vegetation on the dry laterite plateaux of the interior.

24. **L. Kirkii**, *Dyer in Kew Report*, 1880, 39, 42. A scandent shrub, with long branched tendrils (modified inflorescences); young branches fulvo-pubescent or finely tomentose, at length glabrescent, reddish-brown with small whitish lenticels. Leaves very variable in size and shape on the same branch, lanceolate to oblong, rarely more or less ovate or elliptic, usually gradually tapering into a short obtuse acumen, shortly acute or obtuse at the base, 1-4 in. long, 10-15 lin. broad, thinly coriaceous, very loosely pubescent on both sides (except the midrib which is generally densely pubescent to villous below), finally more or less glabrescent, chiefly above, glossy above; midrib shallowly channelled above, prominent below; secondary nerves 10-12 on each side, very slender, slightly oblique, like the delicate network of the veins slightly raised on both sides; marginal arches obscure; petiole slender, 2-3 lin. long. Corymbs dense, subsessile, many-flowered, or panicles somewhat loose, ovoid or much elongated, with spreading branches often passing into tendrils, fulvo-pubescent or finely tomentose all over; bracts minute, ovate; pedicels very short. Calyx scarcely 1 lin. long.; sepals ovate, acute or subacute, membranous

except the acutely edged midrib, pubescent. Corolla whitish; tube cylindric below to the middle, then much inflated and distinctly constricted close to the mouth,  $1\frac{1}{2}$ – $1\frac{3}{4}$  lin. long, minutely pubescent without in the upper half; lobes linear-oblong, subacute, as long as the tube or slightly shorter, finely pubescent without along the middle, mouth very narrow, very minutely pubescent. Stamens in the upper third of the tube; anthers linear-oblong, acute. Ovary ovoid, glabrous; style and stigma about 1 lin. long, the latter cylindric from a thicker base, bifid. Fruit obovoid-globose,  $1\frac{1}{4}$ –3 in. in diam.; seeds angular, 6–8 lin. long, numerous.—K. Schum. in Engl. Jahrb. xv. 404, 406, 408, 410, fig. 1, A.C.D.E.; Christy, New Comm. Plants & Drugs, vi. 54; Ficalho, Pl. Uteis Afr. Port. 42, 218–220; Kew Bulletin, 1892, 68; L. Planch. Prod. Apocyn. 318; Dewèvre, Caoutch. Afric. Monogr. Landolph. 46; K. Schum. in Engl. Pfl. Ost-Afr. B. 225, 445, 457–8, fig. A, C–E.; C. 315, in Engl. & Prantl, Pflanzenfam. iv. ii. 130, fig. 50, A, C–E., and in Engl. Jahrb. xxviii. 452; Chimani in Bot. Centralbl. lxi. (1895) 456, t. ii. fig. 18, 24, 25; Vogtherr in Köhler, Mediz. Pflanz. sub *Landolphia comorensis*; Moller in Tropenpfl. i. (1897) 187; J. R. Jackson in Bull. of Pharm. xi. (1897) 255; Pierre in Bull. Soc. Linn. Paris, 1898, 14; Jumelle, Pl. à caoutch. et à gutta, 58; Morris in Journ. Soc. Arts, xvi. 779; Sadebeck, Kulturg. Deutsch. Kolon. 272, 276; Warb. in Tropenpfl. iii. (1899) 222, 314, 311, fig. A–C., and Kautschukpfl. 120, 117, fig. A–C; Mikosch in Wiesner, Rohstoffe, ed. 2, i. 363; Liebert in Tropenpfl. iv. (1900) 367; Hallier f. Kautschukliken in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 38–41, 71–74 excl. var.; Henriques, Kautschuk, Tab. iv.; Schlechter, Westafrik. Kautschuk-Exped. 229; Hook. Ic. Plant. t. 2755 ined. *L. elastica*, Vatke ex Dewèvre, l.c. *L. tomentosa*, Dewèvre, l.c. 45 (the Zanzibar plant). *L. polyantha*, K. Schum. in Engl. Jahrb. xxviii. 452. *L. sp.* (Kirk's specimens), Collins, Report Caoutch. 28. *Vahea Kirkii*, Sadeb. in Jahrb. Hamburg. Wissensch. Anstalt. ix. i. (1891) 226. *V. elastica*, Klotzsch ex Dewèvre, l.c. 46. *Carissa sp.*, Collins, l.c.

**Nile Land.** British East Africa: Mombasa, *Hildebrandt*, 1999!

**Mozamb. Dist.** German East Africa: Usambara; Amboni, *Holst*, 2475! Masheua, Msagati, *Holst*, 8844! Pangani, *Stuhlmann*, 59. Usaramo; Dar-es-Salaam, *Hildebrandt*, 1222! *Stuhlmann*, 49! 50, 8533! 30 miles inland from Dar-es-Salaam, *Kirk!* Kisserawe, *Stuhlmann*, 6185! Useramo Plateau, *Goetze*, 10! Kingani, *Stuhlmann*, 6586! Mengwa, *Stuhlmann*, 8614! Kola, *Busse*, 82! Pugu Hills, *Goetze*, 5! Barikiwa, *Traun*; hillsides near Langenburg, 1600 ft., *Götze*, 871! Portuguese East Africa: Lower Zambesi; Boror, *Peters!* Shupanga, *Kirk*, 12! British Central Africa: Nyasaland; Shire Highlands, *Buchanan!* Zomba Plateau, *Whyte*, 3! and without precise locality, *Buchanan*, 182! 220 partly! Stevenson Road, 5000–6000 ft., *Scott-Elliott*, 8375!

This is one of the most important rubber plants of East Africa. A small-leaved variety occurs at Delagoa Bay (*L. Kirkii*, var. *delagoënsis*, Dewèvre, l.c. 48).

Var.  $\beta$  *dondeensis*, Stapf. A shrub, 6–9 ft. high, with pendulous branches or rambling amongst other shrubs and trees. Fruit globose, pale yellow when fresh, bluish-black when dry, 3– $3\frac{1}{4}$  in. in diam.; pericarp 3 lin. thick, smooth; seeds about

22 in an orange-yellow, juicy pulp, up to 1 in. long.—*L. dondeensis*, Busse in Tropenpfl. v. (1901) 406, 407, with fig.

**Mozamb. Dist.** German East Africa: Donde, gregarious, *Busse!*

I prefer to treat this form as a variety of *L. Kirkii*, which it resembles in foliage and flowers. The peculiar habit, which is very uniform over a large area as Dr. Busse tells me and as his excellent photographs show, may very well be due to the conditions of the habitat—a dry region covered with bush and open Leguminosæ woods—just as *L. Heudelotii* assumes a similar facies under similar conditions on the dry laterite plateaux of French Guinea and Sierra Leone.

25. **L. parvifolia**, *K. Schum. in Engl. Jahrb. xv. 409, t. xii. C.* A much-branched climbing shrub with tendrils (modified inflorescences) from the branch-forks; young branches more or less rusty-villous, at length usually glabrescent, reddish-brown dotted with whitish lenticels. Leaves small, oblong to lanceolate, subacuminate to subobtuse (rarely subacute) at the base,  $\frac{3}{4}$ – $1\frac{3}{4}$  in. long, 6–7 lin. broad, coriaceous, rusty-villous in bud, soon glabrescent except the midrib and margins, glossy above; midrib very slender and flat above, much stouter and prominent below; secondary nerves subhorizontal, about 10–12 on each side, very faint on both sides, and like the extremely delicate network of the veins not or scarcely raised on either side; petiole more or less villous, 1 lin. long. Corymbs small, dense, subsessile or shortly peduncled; peduncles and lower bracts rusty-villous; upper bracts scarious and almost glabrous; pedicels very short, puberulous. Calyx about  $1\frac{1}{2}$  lin. long; sepals broad-ovate-oblong, obtuse or subtruncate, keeled, brown, subscarious, glossy, fulvo-ciliate along the margins and the keel, otherwise almost glabrous. Corolla pale yellow or white; tube cylindrical below the middle, then inflated and rather suddenly constricted close to the mouth, 2– $2\frac{1}{2}$  lin. long, very minutely and densely rusty-tomentose in the upper  $\frac{2}{3}$ ; pubescent within except at the base; lobes linear-oblong, subacute, as long as the tube, minutely fulvo-velvety without, mouth very narrow, very minutely pubescent. Stamens in the upper  $\frac{1}{4}$  of the tube; anthers linear-ovate, acute, reaching almost to the mouth. Ovary ovoid, glabrous at the base, top densely rusty-villous; style and stigma 1 lin. long, the latter cylindrical from a thickened base, bifid. Fruit like a small orange, 1–2 in. in diam., greenish purple outside, rind smooth, thick, with a layer of sclerenchymatous nodules; seeds up to 7 lin. long.—Dewèvre, Caoutch. Afr. Monogr. Landolph. 52; K. Schum. in Engl. Pfl. Ost-Afr. B. 453, and in Engl. & Prantl, Pflanzenfam. iv. ii. 129; Warb. in Tropenpfl. iii. (1899) 314, and Kautschukpfl. 120. *L. Kirkii*, var. *parvifolia*, Hallier f. Kautschuklieden in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 39–41, 74, partly. *L. parviflora* (by error), Moller in Tropenpfl. i. (1897) 188; Henriques, Kautschuk, Tab. iv. *Pacouria parvifolia*, Hiern in Cat. Afr. Pl. Welw. i. 663.

**Lower Guinea.** Angola: Huilla; Morro de Lopollo, 5300 ft, *Welwitsch*, 5928! Humpata, *Newton*, 229!

**Mozamb. Dist.** British Central Africa: Nyasaland, *Buchanan!* (No. 1126 in Hb. Boissier ex Hall. f.) Likoma Island in Lake Nyasa, *Johnson*, 66!

Hallier f. indicates this species also from German East Africa: Unyamwezi;

Mtigua, *Stuhlmann*, 472; Oalle (Wala) River, *Stuhlmann*, 515, and Tabora, *Stuhlmann*, 567; these specimens probably belong to *L. Thollonii*.

26. **L. Thollonii**, *Dewèvre, Caoutch. Afr. Monogr. Landolph. 50*. A dwarf shrub, rising scarcely more than  $\frac{1}{2}$  ft. above the ground; young branches brown, shortly pubescent, finally sometimes glabrescent; old stems rough from small lenticels. Leaves narrowly oblong to lanceolate, obtusely subacuminate, rounded at the base, 1–2 $\frac{1}{2}$  in. long, 4–9 lin. broad, scantily pubescent or villous in bud, very soon quite glabrescent (except the midrib) or finally quite glabrous; midrib sunk above, prominent below; secondary nerves 17–20 on each side, straight, connected close to the margin by flat arches, like the fine reticulation slightly raised above, less so below; petiole pubescent, 1–2 lin. long. Corymbs small, 4–5-flowered, shortly peduncled, dense, terminal; peduncle  $\frac{1}{2}$ –4 lin. long; bracts pubescent; pedicels 2 lin. long, or hardly any. Calyx 1 $\frac{1}{4}$  lin. long; sepals very broad, obovate, rounded or truncate, densely fulvo-tomentose, obscurely keeled. Corolla-tube widest between the middle and the mouth, 2–2 $\frac{1}{2}$  lin. long, finely velvety without, pubescent within down to the middle; lobes broadly oblong, over 3 lin. long, fulvo-velvety without, margins wavy. Stamens inserted in the upper  $\frac{1}{4}$  of the tube; anthers apiculate,  $\frac{3}{4}$  lin. long. Ovary ovoid, villous, chiefly above. Fruit globose, over 1 in. in diam.; seeds subglobose, 3 lin. in diam.—*Warb. Kautschukpfl. 120*. *L. ovariensis*, var. *parvifolia*, Hallier f. *Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xiv. (1899), 3. Beih. 41, 74, partly.*

**Lower Guinea.** French Congo: Brazzaville, *Brazza & Thollon*, 145! Lower Congo: Kisantu, *Gillet*, 69! Tampa, *Laurent*! Angola: Kuango River, *Mechow*, 510!

This is one of the plants yielding "root rubber." A very similar but evidently distinct plant has recently been distributed as *Carpodinus chylorrhiza*, K. Schum. MS. It was collected by Baum (714) in Angola, above Sakkemecho on the River Quiriri. The leaves are on the whole longer and narrower and the midrib is much broader, and flatter below. There are no flowers with the specimens. The fruit is globose or pyriform, 1 in. in diam.

*Imperfectly known species.*

27. **L. Foreti**, *Jumelle in Compt.-rend. Acad. Sc. Paris, cxiv. (1897) 1539–1541*. A quite glabrous climber by means of hook-branched pseudo-axillary tendrils; young branches reddish-brown, covered with yellowish lenticels. Leaves ovate, long acuminate, rounded at the base, very large, 14 in. long, 8 in. broad; secondary nerves 12–14 on each side, slightly oblique, connected by submarginal arches, prominent below; petiole 7 $\frac{1}{2}$  lin. long. Cymes dense; flowers small, white, inodorous. Fruit globose, up to 6 in. in diam.; seeds about 60.—*Pierre in Bull. Soc. Linn. Paris, 1898, 14*; *Jumelle, Pl. à caoutch. et à gutta, 45, figs. 5 and 6*; *Mikosch in Wiesner, Rohstoffe, ed. 2, i. 362*; *Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 79*; *Warb. Kautschukpfl. 119*.

**Lower Guinea.** Gaboon: Fernand Vaz, *Forêt*.

This, like *L. Klainei*, is called Ndjembo in the N'Coumi dialect, and Jumelle places it near that species. The very large leaves and absence of any indumentum distinguish it at once from that species.

28. **L. (?) lucida**, *K. Schum. in Notizbl. Königl. Bot. Gart. Berlin*, i. (1897) 24. A scandent shrub, climbing by means of very sensitive inflorescences which act as tendrils, quite glabrous; branches slender, dark brown, at length rough from rather large lenticels. Leaves, oblong to elliptic, obtuse or subacute, usually with a minute mucro, minutely cordate at the base, 2-5 in. long,  $1\frac{1}{4}$ - $2\frac{1}{2}$  in. broad, thinly and rigidly coriaceous, glossy on both sides, dark brownish-green above, lighter below when dry; midrib and secondary nerves finely channelled above, very prominent below; secondary nerves 8-10 on each side, straight, rather spreading, connected by bold marginal arches; reticulation close, marked and raised on both sides; petiole 2-3 lin. long. Panicles bearing small clusters of flowers at the ends of short spreading or recurved branches, peduncled, terminal or pseudo-axillary, very slender; rhachis sometimes curled up into spiral coils; branches up to 7 lin. long; bracts small, scale-like. Calyx  $\frac{3}{4}$ -1 lin. long; sepals lanceolate-ovate or ovate, acute, quite glabrous, margins membranous. Corolla white, sweet-scented; tube very slender, 6 lin. long; lobes very narrow, linear, as long as or slightly shorter than the tube, with long flexuous cilia (almost fimbriate). Stamens inserted about 2 lin. below the mouth; anthers 1 lin. long. Ovary ovoid, quite glabrous, gradually passing into the style; style filiform, thickened (articulate?) below the middle, the whole pistil  $5\frac{1}{2}$ -6 lin. long. Fruit (quite young) globose.—Dewèvre, *Caoutch. Afr. Monogr. Landolph. 32*; *K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 130*, and *Ergänz. Heft i. 56*; *Durand & Schinz, Études Fl. Congo, i. 189*; *Jumelle, Plant. à caoutch. et à gutta, 61*; *Warb. in Tropenpfl. iii. (1899) 314*, and *Kautschukpfl. 120*; *Mikosch in Wiesner, Rohstoffe, ed. 2, i. 363*; *Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3; Beih. 53, 85* partly; *Henriques, Kautschuk, Tab. iv. Dictyophleba lucida, Pierre in Bull. Soc. Linn. Paris, 1898, 93*.

**South Central.** Congo Free State: Kassai region, *Pogge, 1236!* Lunda; river woods near Mukenge, *Pogge, 1038!*

Several other specimens have been referred to *L. lucida* without, as it seems, sufficient justification. Among these *Soyaux 204*, from the Munda District, Gaboon, has longer and comparatively narrower, strictly oblong leaves with long, narrow points, a somewhat different venation, and also a pear-shaped fruit long-beaked at the top and long-stipitate at the base, which peculiarities are not present in the young fruit of *L. lucida*. Hallier also distinguished from the type a variety *hispida* from Derema in Usambara (*Scheffler, 217!*), which has stiff hairs on the midrib of the leaves and the panicle. The leaves and inflorescences are otherwise quite like those of *Pogge's* specimens; but the calyx-segments are in *Scheffler's* plant also ciliate instead of perfectly glabrous and the corolla-tube is (according to the collector) blood-red. As *Pogge's* specimens bear only fragments of flowers, it is impossible to decide definitely on the value of these differences.

29. **L. reticulata**, Hallier f. *Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt.* xvii (1899), 3. Beih. 87. A tall scandent shrub; young branches stout, terete, covered with a delicate dense rusty tomentum. Leaves elliptic, abruptly and acutely acuminate (acumen 10 lin. long), somewhat rounded at the base, 8 in. long,  $3\frac{1}{2}$ –4 in. broad, chartaceous, glabrous and dark-green above, very delicately fulvo-tomentellous below; midrib channelled above, much raised below; secondary nerves 7–9, spreading, straight, slightly raised above, more so below; petiole stout, 7–10 lin. long, finely tomentellous. Flowers and fruits unknown.

**Lower Guinea.** Gaboon: Mbusu, on the Eliva Sonanga (Lake Sonenge), *Buchholz*.

This yields, according to Buchholz, the rubber of the Ogowe basin. Hallier places it near *L. ochracea*.

30. **L. pyriformis**, Stapp. A powerful scandent shrub or tree with strong hook-branched terminal tendrils (sensitive inflorescences) up to 3 ft. long; young branches delicately dark rusty tomentose, soon more or less glabrescent, or even quite glabrous, dark reddish-brown, with whitish inconspicuous lenticels. Leaves elliptic, shortly acuminate or cuspidate, subacute or obtuse at the base, about 6 in. long, 3 in. broad, very coriaceous, glabrous (when mature); midribs channelled above, much raised below; lateral nerves 13–14 on each side, much spreading, straight, connected by marked arches 2–3 lin. within the margin, like the reticulation sunk above, raised below; petiole very stout, up to  $\frac{1}{2}$  in. long. Panicle terminal, up to 3 ft. long, bearing dense clusters of sessile flowers at the ends of spreading or recurved branches, rufo-tomentellous or glabrescent; upper part of the rhachis and branches sensitive and acting as tendrils. Calyx and corolla unknown to me. (Corolla-tube according to Pierre MS. elongate above the stamens which are inserted below the middle.) Fruit pear-shaped, 4–6 in. long, 3 in. or more broad, finely velvety, reddish-yellow; rind fleshy without a sclerenchymatous layer; seeds about 4, almost 1 in. long.—*Ancylobothrys pyriformis*, Pierre in *Bull. Soc. Linn. Paris*, 1899, 126; Schlechter in *Tropenpf. iv.* (1900) 3; Hallier f. *Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt.* xvii. (1899), 3. Beih. 85.

**Lower Guinea.** Gaboon, *Klaine*, 1401! 6591!

This is, no doubt, a member of the section *Ancylobothrys*; but its exact position cannot be ascertained in the absence of flowers.

### 3. CLITANDRA, Benth.; Benth. et Hook. f. *Gen. Pl.* ii. 692.

Calyx very small; sepals 5, ovate, ciliolate, otherwise usually glabrous, rarely minutely pubescent, eglandular. Corolla salver-shaped; tube subcylindric, long or short, or spindle-shaped, or urceolate to companulate, widened and staminiferous just above the calyx (rarely higher up but not more than one calyx-length), mouth naked; lobes 5, narrow, overlapping to the left. Stamens included; filaments

very short or half as long or almost as long as the anthers and very slender; anthers oblong to lanceolate, usually acute, minutely 2-lobed and dehiscent to the base. Disc 0. Ovary entire, glabrous or hairy, 1- (rarely 2-) celled; placentas 2, parietal, very much projecting and sometimes uniting at the top and base, rarely fusing into a complete septum; style columnar, short or almost suppressed; stigma reaching to the base of the anthers, rarely lower down, capitate, clavate or subsubulate, with an annular thickening, rarely with a ring of hairs at the base, entire or more or less 2-lobed, not or very shortly exceeding the calyx (never by more than one calyx-length); ovules 4-seriate, 3-4 in each row. Fruit a globose or pear-shaped, rarely cylindrical-oblong berry, usually not much over 1 in. in diam. Seeds not very numerous, embedded in a juicy pulp, ovoid, compressed or irregularly flattened; albumen bony; cotyledons foliaceous, very thin; radicle short.—Glabrous shrubs with usually slender branches, usually climbing with flagelliform, hook-branched tendrils springing from the branch-forks, rarely dwarf shrubs throwing up fresh shoots yearly. Leaves opposite, small or middle-sized (rarely attaining 6 in. in length), coriaceous, closely or remotely nerved; axillary stipules 0; axillary glands 0 or obscure. Flowers small, rarely up to 1 in. long in the mature bud, in axillary or axillary and terminal more or less loose cymes or compact clusters.

15 species, endemic, except 1 in Trinidad (indigenous?).

\*CHAMECLITANDRA.—Dwarf shrubs, throwing up fresh erect shoots yearly, up to 1½ ft. high. Leaves small, oblong-lanceolate, glaucous. Cymes axillary or terminal, subsessile or on short small-leaved lateral branches. Corolla-tube cylindrical, 4-5 lin. long.

Only species . . . . . 1. *C. henriquesiana*.

\*\*CYLINDROPSIS.—Climbing shrubs. Leaves not glaucous, elliptic to oblong; secondary nerves rather distant, faint. Cymes axillary (or sometimes with some additional terminal (?) ones), reduced to small sessile clusters (in the African species), rarely lax. Flowers not quite 3 lin. long in the mature bud (in the African species), rarely up to 4½ lin. long. Corolla-tube more or less cylindrical, usually longer than the lobes. Style filiform; stigma subulate from an annulate base.—*Cylindropsis*, Pierre.

Quite glabrous; corolla-tube cylindrical to beyond the middle, more or less abruptly inflated below the mouth; ovary puberulous in the upper part . . . . . 2. *C. parvifolia*.

More or less hairy on the young branches; corolla-tube widest at or near the middle, cylindrical below or gradually narrowed to both ends; ovary quite glabrous.

Flowers yellow; sepals submembranous, pale, glabrous or almost so except on the ciliate margins . . . . . 3. *C. togolana*.

Flowers white; sepals firm, scarious, brown, pubescent . . . . . 4. *C. alba*.

\*\*\*EUCLITANDRA.—Climbing shrubs. Leaves very rarely glaucous, elliptic or oblong, rarely lanceolate, very closely nerved. Cymes axillary, much contracted or reduced to sessile clusters. Flowers usually 4-12 lin. (rarely 3 lin.) long in the mature bud. Corolla-tube more or less cylindrical, usually very slender, longer or

shorter than the lobes. Style columnar, very short; stigma conical from a thickened base, very short.

Corolla-tube almost as long as or longer than the lobes; leaves not glaucous.

Corolla-tube as long as the linear or ovate-oblong lobes or only slightly longer.

Flowers 3-4½ lin. long; cymes finely pubescent.

Venation rather faint; secondary nerves 15-20 on each side; panicles small, dense; corolla-tube subcylindric . . . . .

5. *C. cymulosa*.

Venation very marked, prominent; secondary nerves 9-11 on each side; panicles very compound, dense; corolla-tube inflated below . . . . .

6. *C. orientalis*.

Flowers over 4 lin. long; cymes quite glabrous or very minutely and scantily pubescent.

Flowers sessile, 5 lin. long . . . . .

7. *C. Barteri*.

Flowers distinctly pedicelled, 6-8 lin. long.

Cymes quite glabrous; pedicels less than 1 lin. long; ovary glabrous . . . . .

8. *C. visciiflua*.

Cymes minutely and scantily pubescent; pedicels up to 2 lin. long; ovary-top pubescent. . . . .

9. *C. Staudtii*.

Corolla-tube twice as long as the obovate lobes . . . . .

10. *C. cirrhosa*.

Corolla-tube half as long as the linear lobes; leaves glaucous below . . . . .

11. *C. Schweinfurthii*.

\*\*\*\*APHANOSTYLIS.—Climbing shrubs. Leaves not glaucous, elliptic to oblong, closely or remotely nerved. Cymes usually lax, axillary and terminal. Corolla-tube urceolate to campanulate, very short.

Secondary nerves very close, connected by more or less flat arches close to the margin.

Corolla 2½-3 lin. long in bud; tube scarcely ¾ lin. long . . . . .

12. *C. Mannii*.

Corolla up to 6 lin. long in bud; tube scarcely 1½ lin. long . . . . .

13. *C. laxiflora*.

Secondary nerves distant, connected by bold arches somewhat remote from the margin.

Leaves long and abruptly acuminate; corolla 3½-4½ lin. long in bud; ovary pubescent . . . . .

14. *C. leptantha*.

Leaves shortly acuminate; corolla 6 lin. long in bud; ovary quite glabrous. . . . .

15. *C. flavidiflora*.

\*\*\*\*\*ANTHOCLITANDRA.—Climbing shrubs. Leaves oblong to elliptic, remotely nerved. Cymes axillary and terminal, forming many-flowered dense sessile clusters. Corolla-tube spindle-shaped, up to 3 lin. long.

Only species . . . . .

16. *C. robustior*.

1. **C. henriquesiana**, *K. Schum. in Tropenpfl.* i. 134, fig. E, 135 (name and figure only). An erect, perfectly glabrous shrub, much branched from the base, up to ½ ft. high; branches slender, the young parts flexuous, bark reddish-brown; lenticels very small, numerous. Leaves lanceolate or oblong-lanceolate, obtusely subacuminate, 1-2 in. long, ½-¾ in. broad, coriaceous, shining above, glaucous below; midrib slightly channelled above, prominent below; secondary nerves about

12–15 on each side, subhorizontal, very slender, slightly raised on both sides, connecting arches close to the margin; reticulation faint; petiole slender,  $1\frac{1}{2}$ – $2\frac{1}{2}$  lin. long. Cymes shortly peduncled, few-flowered, glabrous or scantily pubescent, axillary, often terminating short small-leaved branchlets; peduncles slender, 1–2 lin. long; bracts oblong, obtuse, up to  $1\frac{1}{2}$  lin. long; pedicels up to  $1\frac{1}{2}$  lin. long. Calyx glaucous, scarcely 1 lin. long; sepals ovate, obtuse to subacute, ciliolate, margins very thin. Corolla glabrous without, 8 lin. long, in bud; tube widened close to the base, cylindrical upwards, 4–5 lin. long, hairy within; lobes linear-oblong, obtuse, as long as the tube or slightly longer. Stamens inserted about 1 lin. above the base; filaments very short; anthers oblong, apiculate, scarcely 1 lin. long. Ovary depressed-globose, densely covered with stiff whitish hairs; style glabrous, including the stigma  $\frac{1}{2}$  lin. long; stigma capitate, with a distinct annular thickening at the base, short, 2-lobed.—Sadebeck, *Nutzpfl. Deutsch. Kolon.* in *Jahrb. Hamburg. Wissensch. Anstalt.* xiv. (1896), 3. Beih. 122, and *Kulturg. Deutsch. Kolon.* 268, 276 (name only); Mikosch in Wiesner, *Rohstoffe*, ed. 2, 363 (name only). *Landolphia henriquesiana*, Hallier f. *Kautschuklianen* in *Jahrb. Hamburg. Wissensch. Anstalt.* xvii. (1899), 3. Beih. 97, 130.

**Lower Guinea.** Angola: Benguela; Cuango River, 14–16°, S. L., *Marques*, 2! Kuebe (Matungue) River, 3700 ft., *Baum*, 309!

The specimen quoted by Hallier, l.c., from Mossamedes (*Moller!*) is certainly distinct from *C. henriquesiana*, and identical with an imperfectly known new species, distributed from Berlin as *Carpodinus chylorrhiza*, K. Schum. see p. 58. *C. henriquesiana* is stated to be one of the sources of the so-called root-rubber.

2. **C. parvifolia**, *Stapf*. A climbing shrub; young branches slender, glabrous, dark brown, with whitish lenticels. Leaves elliptic to elliptic-oblong, abruptly and obtusely acuminate, rounded or subacute at the base,  $2\frac{1}{2}$ – $3\frac{1}{2}$  in. long,  $1\frac{1}{4}$ – $1\frac{3}{4}$  in. broad, thinly coriaceous, quite glabrous, slightly shining above; midrib flat above, distinctly raised below; secondary nerves rather spreading, almost straight, slender, 8–9 on each side, raised below, connected by bold but very fine arches somewhat remote from the margins; veins lax, very obscure; petiole 3–4 lin. long. Flowers sessile in small sessile axillary and terminal (pseudo-terminal?) clusters. Calyx glabrous,  $\frac{1}{2}$  lin. long; sepals very minutely ciliolate. Corolla glabrous without, not quite 3 lin. long in bud; tube cylindrical from the base to just beyond the middle, then more or less inflated, constricted again at the mouth, slightly over  $1\frac{1}{2}$  lin. long, pubescent within near the insertion of the stamens; lobes oblong, obtuse, slightly over 1 lin. long. Filaments very slender, short; anthers reaching almost to the narrow mouth, ovate-oblong, apiculate. Ovary ovoid, puberulous in the upper part, passing into the slender style; stigma sub-subulate from a thickened base, 2-fid; the whole pistil 1 lin. long. Fruit unknown.—*Cylindropsis parvifolia*, Pierre in *Bull. Soc. Linn. Paris*, 1898, 39; Hallier f. *Kautschuklianen* in *Jahrb. Hamburg. Wissensch. Anstalt.* xvii. (1899), 3. Beih. 132; K. Schum. in *Engl. & Prantl, Pflanzenfam. Ergän.* i. 55. *Carpodinus parvifolius*, Pierre, l.c.

**Lower Guinea.** Gaboon, *Klaine*, 103B!

Pierre described the fruit as cylindric, truncate at both ends and 1-3-seeded, and the seeds as exalbuminous with thick, fleshy cotyledons. It was chiefly this peculiarity which induced him to make it the type of a new genus. The crushed fruits in the Kew and Berlin herbaria, distributed by Pierre in capsules along with flowering branches under the name of *Cylindropsis*, suggest (as Hallier has already remarked) a globose shape, and the seeds must have been considerably more numerous. The structure of the latter, however, is as Pierre describes it; but proves that the fruit is that of some species of *Salacia*, which was mixed up with the flowering branches described above. It seems that Klaine had originally sent the true fruits of *C. parvifolia*, as Pierre remarks in a note accompanying the Berlin specimen that the fruit sent by Klaine under No. 103 had albuminous seeds.

3. **C. togolana**, *Staff.* A climbing shrub, with very slender, glabrous, spirally contorted tendrils from the branch-forks or pseudo-axillary; young branches very slender, densely and minutely puberulous, soon glabrescent and at length quite glabrous, fuscous, scantily dotted with minute lenticels. Leaves oblong to elliptic-oblong, shortly and obtusely acuminate or obtuse, acute at the base,  $2\frac{1}{2}$ -4 in. long,  $1-1\frac{3}{4}$  in. broad, thinly coriaceous, quite glabrous; midrib flat above, slightly convex below; secondary nerves 8-9 on each side, rather spreading, straight, very slender, obscure above, slightly raised below; veins lax, quite obscure; petiole  $\frac{2}{3}$  lin. long. Flowers sessile in pubescent few-flowered sessile axillary clusters from the axils of normal or reduced leaves; bracts minute. Calyx  $\frac{3}{4}-\frac{4}{5}$  lin. long; sepals unequal, ovate, obtuse, puberulous or glabrous, the outer shorter, firmer, the inner almost membranous, ciliolate. Corolla yellow, glabrous without; tube cylindric from the base to beyond  $\frac{1}{3}$  of its length then gradually widened, and contracted again at the callous mouth,  $1\frac{1}{2}$  lin. long, very scantily hairy at the insertion of the stamens; lobes linear-oblong, obtuse, rather fleshy, reflexed or spreading, 1 lin. long. Stamens inserted just above the middle on very short slender filaments, not reaching to the mouth of the tube,  $\frac{3}{8}$  lin. long. Ovary ovoid, glabrous, passing into the very short style; stigma subsubulate from a thickened annular base bifid; the whole pistil not or very slightly exceeding the calyx. Fruit globose, over  $1\frac{1}{2}$  in. in diam.; rind thick. Seeds (immature) with very thin foliaceous cotyledons.—*Cylindropsis togolana*, Hallier f. Kautschukianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 133.

**Upper Guinea.** Togo: common in bush near Lome, *Warnecke*, 46!

4. **C. alba**, *Staff.* A powerful climbing shrub; tendrils unknown; stem up to 6 in. in diam.; young branches very slender, flexuous, very sparingly puberulous or glabrous, brown, at length somewhat rough with lenticels. Leaves elliptic to elliptic-oblong, obtuse or obscurely acuminate, acute at the base, 2-4 in. long,  $1\frac{1}{2}$ -2 in. broad, thinly coriaceous, quite glabrous; midrib flat or subconvex on both sides; secondary nerves 8-9 on each side, obliquely spreading, very fine, obscure above, slightly raised below; veins inconspicuous; petiole 2 lin. long. Flowers in axillary and terminal few-flowered, sessile clusters; bracts minute, pubescent. Calyx  $\frac{2}{3}$  lin. long, minutely pubescent; sepals ovate

obtuse, subequal, ciliolate. Corolla white, sweet-scented, glabrous without; tube subcylindric, widest at the middle, gradually and slightly narrowed towards both ends, finely hairy at the insertion of the stamens,  $1\frac{1}{3}$  lin. long; lobes oblong, subacute, spreading, 1 lin. long. Stamens on fine short filaments at the middle of the tube, linear-oblong, scarcely  $\frac{1}{2}$  lin. long. Ovary ovoid, sulcate, gradually passing into the slender style; stigma subulate-clavate, bilobed, slightly exserted from the calyx. Fruit unknown.

**Upper Guinea.** Gold Coast : Okroase, *Johnson*, 753!

5. **C. cymulosa**, *Benth. in Hook. Niger Fl.* 445. A climbing shrub, quite glabrous except the inflorescences; tendrils unknown; young branches brown, dotted with lenticels. Leaves oblong or elliptic-oblong, abruptly acuminate, cuneate at the base, 3-4 in. long,  $1\frac{1}{4}$ - $1\frac{1}{2}$  in. broad, wavy along the margins, coriaceous; midrib flat or convex above, prominent below; secondary nerves 4-5 to an inch (15-20 on each side) with parallel fainter tertiary nerves between them, like the obscure reticulation very faintly raised on both sides; petiole  $\frac{1}{2}$  in. long. Cymes axillary, many-flowered, slightly exceeding the petioles; flowers distinctly, though shortly, pedicelled, very finely puberulous; bracts minute. Calyx  $\frac{1}{2}$  lin. long, minutely pubescent; sepals ovate, subacute, ciliolate. Corolla glabrous without; tube subcylindric,  $1\frac{1}{2}$  to almost 2 lin. long, widest at the middle, pubescent within; lobes linear-oblong, slightly longer than the tube. Stamens inserted slightly below the middle; anthers ovoid, minute, acute, as long as the filaments or longer, finally nodding. Ovary globose-ovoid, glabrous, imperfectly 1-celled, gradually passing into a very short style; stigma globose-ovoid, apiculate, as long as the style. Ovules 2-seriate (?), 3-4 in each series.—*Pierre* in *Bull. Soc. Linn. Paris*, 1898, 40; *Hallier* f. *Kautschuklianen* in *Jahrb. Hamburg. Wissensch. Anstalt.* xvii. (1899), 3. Beih. 129.

**Upper Guinea.** Sierra Leone, *Don*!

6. **C. orientalis**, *K. Schum. in Engl. Pfl. Ost-Afr. C.* 315. A shrub, quite glabrous except the inflorescences; young branches brown, dotted with numerous lenticels. Leaves oblong or oblanceolate, obtusely acuminate (acumen linear, up to 4 lin. long), acute or subcuneate at the base,  $3-3\frac{3}{4}$  in. long,  $1-1\frac{1}{2}$  in. broad, slightly wavy along the margins, coriaceous, somewhat glossy above; midrib flat or slightly sunk above, prominent below; secondary nerves 9-11 on each side, straight, oblique, like the elegant reticulation raised on both sides; petiole 3-4 lin. long. Panicles compound, dense, very finely puberulous, axillary and terminal, scarcely 1 in. long; peduncle extremely short; bracts minute, ovate; pedicels  $\frac{1}{2}$ - $\frac{3}{4}$  lin. long. Calyx up to  $\frac{3}{4}$  lin. long, minutely pubescent; segments ovate, subacute, ciliolate. Corolla minutely puberulous without; tube inflated below the middle,  $2-2\frac{1}{2}$  lin. long, pubescent within; lobes linear-oblong, as long as or slightly shorter than the tube. Stamens inserted just below the middle of the corolla-tube; anthers orbicular-elliptic, obtuse, slightly longer than the

filaments, scarcely  $\frac{1}{4}$  lin. long. Ovary globose-ovoid, glabrous, 2-celled, contracted into a very short style; stigma globose-ovoid, with a minute, 2-lobed apiculus; ovules 3-seriate, 3-4 in each series.—Hallier f. *Kautschuklianen* in *Jahrb. Hamburg. Wissensch. Anstalt.* xvii. (1899), 3. Beih. 121; Hook. Ic. Pl. t. 2742.

**Mozamb. Dist.** German East Africa: Karagwe; Bukoba on Lake Victoria, *Stuhlmann*, 1131!

7. **C. Barteri**, *Stapf in Kew Bulletin*, 1894, 20. A climbing glabrous shrub, 12 ft. high, with hook-branched slender tendrils from the branch-forks; young branches dark reddish-brown, glossy, with minute lenticels. Leaves elliptic or oblong, shortly and abruptly or gradually acuminate or obtuse, shortly cuneate at the base,  $3\frac{1}{4}$ -4 in. long,  $1\frac{1}{2}$ -2 in. broad, thinly coriaceous, somewhat glossy above, opaque beneath, margins slightly wavy; midrib flat or obscurely channelled above, slightly convex below; secondary nerves about 15 to an inch, fine, raised on both sides, with still finer, parallel tertiary ones between them; petiole  $3\frac{1}{2}$  lin. long. Flowers sessile, few, glabrous, in small axillary clusters, slightly exceeding the petioles; bracts minute. Calyx  $\frac{1}{2}$  lin. long, glabrous; sepals ovate, obtuse, ciliolate. Corolla glabrous without; tube subcylindric,  $2\frac{1}{2}$  lin. long, widest at  $\frac{1}{3}$  from the base, very pubescent within; lobes ovate-oblong, obtuse, rather longer than the tube. Stamens inserted near the base; anthers erect; filaments slightly curved, very short. Ovary ovoid-globose, passing into a stout style which is shorter than the ovoid-conical stigma.—Pierre in *Bull. Soc. Linn. Paris*, 1898, 40; Jumelle, *Pl. à caoutch. et à gutta*, 62; Hallier f. *Kautschuklianen* in *Jahrb. Hamburg. Wissensch. Anstalt.* xvii. (1899), 3. Beih. 130.

**Upper Guinea.** Lagos: Eppah, *Barter*, 3310!

8. **C. viscifua**, *K. Schum. ex Hallier f. Kautschuklianen* in *Jahrb. Hamburg. Wissensch. Anstalt.* xvii. (1899), 3. Beih. 127, t. iv. fig. 1-5 partly. A climbing glabrous shrub with flagelliform tendrils from the branch-forks; young branches slender, reddish-brown or fuscous, with inconspicuous minute lenticels. Leaves oblong-elliptic, abruptly acuminate (acumen linear, obtuse, 3-6 lin. long), subcuneate or obtuse at the base, 4-5 in. long, 2-2 $\frac{1}{4}$  in. broad, thinly coriaceous, margins almost flat; midrib slightly sunk above, raised beneath; secondary nerves fine, 4-6 to an inch, with still finer, parallel tertiary ones between them, all slightly raised on both sides; veins obscure beneath; a distinct outer marginal nerve running close to the margin (apart from the inner, which consists of the arches connecting the lateral nerves); petiole  $3\frac{1}{2}$ -6 lin. long, rather stout. Cymes glabrous, 6- or more flowered, as long as the petioles or slightly longer; bracts minute; pedicels up to  $1\frac{1}{2}$  lin. long. Calyx  $\frac{1}{2}$  lin. long, glabrous; sepals ovate, subacute or obtuse, ciliolate. Corolla white, glabrous without; tube slender, subcylindric, slightly widened just above the base, 3-4 lin. long; lobes linear, subacute, 3-5 $\frac{1}{2}$  lin. long. Stamens inserted close to the base; filaments very short; anthers cordate-oblong, acute. Ovary glabrous, globose, gradually

passing into, or more or less distinct from, the cylindric style, about  $\frac{1}{4}$  lin. long; stigma clavate, slightly shorter than the style. Ovules in 2 series of 4 each.

**Upper Guinea.** Cameroons: Bipinde, in forest, *Zenker*, 1606!

Var.  $\beta$  *sclerophylla*, Stapf. Leaves more coriaceous, with slightly revolute margins and no distinct outer marginal nerve. Flowers larger; corolla-tube 6-7 lin. long; lobes  $4\frac{1}{2}$ -5 lin. long. Ovary gradually passing into the style.—*C. visciiflua*, Hallier f. l.c. partly. *C. sclerophylla*, K. Schum. MS.

**Upper Guinea.** Cameroons: Batanga, in forests, *Dinklage*, 840! 1161!

Hallier describes the fruit (which I have not seen) of *Dinklage*, 1161, as globose, over 2 in. in diam., dotted with minute warts, with a hard pericarp and numerous seeds up to  $8\frac{1}{2}$  lin. long. There is also, apart from the differences mentioned above, a difference in the facies of this variety, suggesting a more than varietal rank.

9. **C. Staudtii**, Stapf. A scandent shrub, glabrous except the inflorescences. Young branches rather slender, brown or blackish when dry, smooth; lenticles few and minute. Leaves lanceolate to oblong, acute or subcuneate at the base, abruptly acuminate (acumen linear, obtuse, up to 6 lin. long),  $3\frac{1}{2}$ - $5\frac{1}{2}$  in. long,  $1\frac{1}{4}$ - $1\frac{3}{4}$  in. broad, coriaceous, fuscous when dry; midrib slightly sunk above, raised below; secondary nerves about 4-6 to an inch, fine, very faintly raised on both sides; veins quite obscure; marginal arches close to the margin without an outer marginal nerve; margin revolute; petiole 4 lin. long. Cymes (exclusive of the corollas) as long as the petioles or slightly longer, 5- to many-flowered, minutely and scantily pubescent; bracts minute; pedicels up to 2 lin. long, slender. Calyx slightly over  $\frac{1}{2}$  lin. long, glabrous; sepals ovate, subacute or obtuse, ciliolate. Corolla white, glabrous except the ciliolate lobes; tube about  $3\frac{1}{2}$  lin. long, subcylindric, slender, slightly widened just above the calyx; lobes linear, subacute,  $3$ - $3\frac{1}{2}$  lin. long. Stamens inserted near the base; filaments very short; anthers oblong, subobtusate. Ovary turbinate-globose, truncate, top pubescent; style distinct, cylindric, very short; stigma clavate, slightly longer than the style.—*C. visciiflua*, Hallier f. *Kautschukianen* in *Jahrb. Hamburg. Wissensch. Anstalt.* xvii. (1899), 3. Beih. 128 partly.

**Upper Guinea.** Cameroons: Johann Albrecht's Höhe, in forest, *Staudt*, 860!

This is, no doubt, nearly allied to *C. visciiflua*, but distinguished by the narrower, more coriaceous, more obscurely nerved leaves, the laxer, slightly puberulous inflorescences and the hairy ovary-top.

10. **C. cirrhosa**, Radlk. in *Abhandl. Naturw. Ver. Bremen*, viii. (1883) 400. A climbing shrub with slender hook-branched tendrils; young branches dark reddish-brown, almost glossy, with minute lenticles. Leaves elliptic, abruptly acuminate (acumen linear, obtuse, up to  $\frac{1}{2}$  in. long), rounded at the base,  $2\frac{1}{2}$ - $3\frac{1}{2}$  in. long,  $1\frac{1}{4}$ - $1\frac{1}{2}$  in. broad, thinly coriaceous, almost opaque; margins slightly wavy; midrib flat or slightly convex above, slightly raised below; secondary nerves about 15 to an inch, fine, faintly raised on both sides with still finer, parallel tertiary ones between them; petiole 2-4 lin. long. Cymes many-

flowered, glabrous, slightly exceeding the petioles; bracts minute; pedicels up to  $1\frac{1}{4}$  lin. long. Calyx  $\frac{1}{2}$  lin. long, glabrous; sepals obtuse, ciliolate. Corolla white, glabrous without; tube slender, subcylindric, widest at  $1\frac{1}{2}$  lin. from the base, 5-6 lin. long; lobes obovate, obtuse, half as long as the tube. Stamens inserted  $1\frac{1}{2}$  lin. above the base of the corolla; filaments slightly bent; anthers erect, as long as the filaments, lanceolate, acute. Ovary truncate, glabrous; style slender, cylindric,  $\frac{1}{2}$ - $\frac{3}{4}$  lin. long; stigma ovoid to ovoid-oblong, shorter than the style, not reaching to the anthers. Ovules 4-seriate.—K. Schum. in Engl. Jahrb. xxiii. 219; Pierre in Bull. Soc. Linn. Paris, 1898, 40; Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 129.

**Upper Guinea.** Cameroons: Bipinde, in forest, *Zenker*, 1628! Yaunde, in forest, *Zenker*, 461! 682!

**Lower Guinea.** Gaboon: without precise locality, *Klaine*, 373<sup>bis</sup>! 373<sup>ter</sup>! Loango: Chichocho, in forests, *Soyaux*, 183! Congo: without precise locality, *Demeuse*, 480!

According to a note by *Zenker*, the fruit is pear-shaped, not quite 1 in. long and edible; *Delpy* represents it, in a drawing from *Klaine*'s specimen, 373<sup>bis</sup>, as globose, sometimes apiculate, and about  $1\frac{1}{2}$  in. in diam.

11. **C. Schweinfurthii**, *Stupp* in *Kew Bulletin*, 1894, 20. A climbing shrub; tendrils unknown; young branches pale greyish-brown, lower down dotted with reddish spots, at length equally reddish-brown. Leaves elliptic, abruptly acuminate (acumen short, obtuse), cuneate at the base,  $2\frac{1}{4}$ - $2\frac{3}{4}$  in. long,  $1\frac{1}{4}$ - $1\frac{1}{2}$  in. broad, thinly coriaceous, slightly glossy above, opaque and glaucous beneath; margins almost flat; midrib flat above, slightly convex below; secondary nerves 10-11 to an inch, fine, slightly raised on both sides, with still finer parallel tertiary ones between them; petiole 2-3 lin. long. Cymes few-flowered, glabrous, axillary, (exclusive of the corollas) as long as or shorter than the petioles; bracts minute; pedicels less than 1 lin. long. Calyx  $\frac{1}{2}$  lin. long, glabrous; sepals ovate, subacute, ciliolate. Corolla glabrous without; tube slender, cylindric, slightly widened above the base, 4 lin. long, pale yellow, almost glabrous within; lobes white, linear, subacute, 8 lin. long. Stamens inserted near the base; filaments very short; anthers lanceolate, acute. Ovary globose-ovoid, passing into the short style; stigma ovoid; ovules 3-4-seriate.—*Jumelle*, Pl. à caoutch. et à gutta, 62; *Hallier* f. *Kautschuklianen* in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 126.

**Nile Land.** British East Africa: Bongo; between the River Pongo and River Getti, *Schweinfurth*, ser. iii. 68!

*Hallier* (l.c.) also refers to this species a specimen collected by *Dewèvre* on the Lower Congo (625), which I enumerated as *Clitandra* sp. in *De Wild. & Durand*, Contrib. Fl. Congo, fasc. i. 34. I there pointed out that the leaves much resemble those of *C. Schweinfurthii*, but could not identify it in the absence of flowers. *Schweinfurth* describes the fruit as globose and about 2 in. in diam. *Dewèvre*'s fruit is also globose,  $1\frac{1}{2}$  in. in diam., reddish-brown and dotted with numerous pale lenticles.

12. **C. Mannii**, *Staff in Kew Bulletin*, 1894, 20. A tall, climbing shrub with flagelliform tendrils from the branch-forks; young branches reddish-brown, soon turning grey, with very minute lenticels. Leaves ovate, oblong or elliptic, rather abruptly acuminate (acumen up to 7 lin. long, narrowly linear, obtuse), acute or subobtuse at the base,  $2\frac{1}{4}$ –4 in. long,  $1\frac{1}{4}$ – $1\frac{1}{2}$  in. broad, thinly coriaceous; margins often slightly wavy; midrib flat or subconvex above, slightly prominent below; secondary nerves very fine, often faint, scarcely raised on either side, secondary and tertiary ones almost alike, the former about 4–6 to an inch; petiole 2–3 lin. long. Panicles short, axillary and terminal, few- to 20-flowered, lax, glabrous, up to 1 in. long; peduncles and pedicels very slender, the former up to 4 lin. long (sometimes hardly any), the latter up to 2 lin. long; bracts minute. Calyx  $\frac{1}{4}$ – $\frac{3}{8}$  lin. long, glabrous; sepals ovate or ovate-oblong, acute, ciliolate. Corolla yellowish-white, quite glabrous,  $2\frac{1}{2}$ –3 lin. long in bud; buds very slender, slightly curved; tube subcampanulate, scarcely  $\frac{3}{4}$  lin. long; lobes linear, obtuse, 2– $2\frac{1}{2}$  lin. long. Filaments very short, inserted at the middle of the tube; anthers lanceolate, acute, reaching to the mouth of the corolla. Ovary ovoid, passing into the short style; stigma clavate, more or less minutely 2-lobed. Ovules 4-seriate, few in each series.—Jumelle, Pl. à caoutchouc et à gutta, 62; Pierre in Bull. Soc. Linn. Paris, 1898, 40; Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 125. *Aphanostylis Mannii*, Pierre in Bull. Soc. Linn. Paris, 1898, 89. *A. exserens*, Pierre, l.c. 90. *Carpodinus exserens*, K. Schum. in Engl. Jahrb. xxiii. 219.

**Upper Guinea.** Sierra Leone: Bagru River, *Mann*, 848! Cameroons: common near Yaunde, 2400 ft., *Zenker & Staudt*, 123! Bipinde, *Zenker*, 1237! 1621!

**Lower Guinea.** Gaboon: Como River, 75–80 miles inland, *Bates*, 464!

Hallier f. also refers here a fruiting specimen collected by Pogge (694!) in the Congo Free State. The fruits are pear-shaped, over 1 in. long, 1 in. thick, drab with large circular rough cinnamon coloured patches. The leaves are extremely like those of *C. Mannii*, but the determination appears to me nevertheless still doubtful. The Sierra Leone specimens differ from the others in having smaller panicles with smaller flowers and slightly thinner leaves.

13. **C. laxiflora**, *Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 124.* A glabrous climbing shrub with terminal, very slender, hook-branched tendrils; young branches slender; bark light brown with numerous whitish lenticels. Leaves oblong or ovate-oblong, shortly and obtusely acuminate, rounded at the base,  $2\frac{1}{2}$ – $3\frac{1}{2}$  in. long,  $1\frac{1}{2}$ – $1\frac{2}{3}$  in. broad, papery, light brownish-green when dry, opaque; midrib slightly convex on both sides; secondary nerves very fine, slightly raised on both sides, much spreading, unequal, 4–6 to an inch; petiole 2– $2\frac{1}{2}$  lin. long. Panicles short, axillary and terminal, usually few-flowered, lax, pubescent or almost glabrous, up to  $1\frac{1}{2}$  in. long; peduncles and pedicels very slender, the former up to 7 lin. long, the latter up to 2 lin. long; bracts minute. Calyx  $\frac{3}{4}$  lin. long, glabrous; sepals ovate, acute or subobtuse, ciliolate,

Corolla almost glabrous without, yellow, up to 6 lin. long in bud; buds very slender, slightly curved; tube subcampanulate, scarcely  $1\frac{1}{2}$  lin. long, pubescent within; lobes linear, very narrow, 4–5 lin. long. Filaments short; anthers lanceolate-oblong, acute. Ovary sulcate, scantily hispidulous, forming together with the thick style a conical body; stigma ovoid. Ovules 4-seriate, 3–5 in each series. Fruit globose-ellipsoid, less than 1 in. long, on slender pedicels.—*Carpodinus cymulosa*, Stapf in Journ. Linn. Soc. xxx. 87 (not of Benth.). *Carpodinus incerta*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. 2, 132 (incompletely described). *C. laxiflora*, K. Schum. in Engl. Jahrb. xxiii. 220. *Aphanostylis laxiflora*, Pierre in Bull. Soc. Linn. Paris, 1898, 90.

**Upper Guinea.** French Guinea: Futa Jallon; near Bayabaya, *Scott-Elliot*, 4547! Sierra Leone, *Afzelius*! Togo: Katschenki, *Kling*, 7! Misahöhe, *Baumann*, 514!

14. **C. leptantha**, *Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt.* xvii. (1899), 3. *Beih.* 123, t. iv. *fig.* 6. A climbing shrub, 9–10 ft. high, with tendrils from the branch-forks or (apparently?) from the axils of fallen leaves; branches rather stout, brown, more or less sulcate, rough from brownish lenticels. Leaves oblong, abruptly acuminate (acumen very narrow, 4–5 lin. long), acute or subacute at the base, 4–6 in. long,  $1\frac{1}{2}$ – $2\frac{1}{2}$  in. broad, coriaceous; midrib slightly convex above, prominent below; secondary nerves distant, 7–8 on each side, rather inconspicuous above, slightly raised below; petiole  $1\frac{1}{2}$ –3 lin. long. Cymes few- to 12-flowered, very minutely puberulous, slightly exceeding the petioles, sometimes on the old wood from the axils of fallen leaves; bracts minute; pedicels up to 1 lin. long. Calyx  $\frac{1}{2}$  lin. long, scantily pubescent towards the base; sepals ovate, subacute, minutely ciliolate. Corolla glabrous on both sides,  $3\frac{1}{2}$ – $4\frac{1}{2}$  lin. long in bud; tube urceolate-campanulate, scarcely 1 lin. long; lobes linear-oblong, obtuse,  $2\frac{1}{2}$ –3 lin. long. Stamens inserted below the middle of the tube; filaments very short; anthers erect, ovate-lanceolate. Ovary very shortly cylindric, minutely hairy, passing into the glabrous, sulcate, very short style; stigma conical and 2-lobed. Fruit cylindric-oblong, 2 in. long, 10 lin. in diam., orange-coloured mottled with brown, seeds 6–7 lin. long.—*Carpodinus leptantha*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. 2, 132, not of Stapf. *Aphanostylis leptantha*, Pierre in Bull. Soc. Linn. Paris, 1898, 89, 90.

**Upper Guinea.** Cameroons: Bipinde, in the forest of Mimfia, *Zenker*, 1903A!

**Lower Guinea.** Gaboon: Munda; Sibange Farm, *Soyaux*, 233! 250! and without precise locality, *Klaine*, 1158! 1159!

15. **C. flavidiflora**, *Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt.* xvii. (1899), 3. *Beih.* 124. A tall glabrous climbing shrub; tendrils not seen; young branches dark brown, somewhat rough with numerous small lenticels. Leaves oblong or elliptic-oblong, abruptly and shortly acuminate, acute or subacute at the base,  $3\frac{1}{2}$ – $5\frac{1}{2}$  in. long,  $1\frac{1}{2}$ – $2\frac{1}{4}$  in. broad, thinly coriaceous; midrib flat or subconvex above, slightly raised beneath; secondary nerves distant, about

7-9 on each side, slightly raised on both sides; petiole 3-3½ lin. long. Cymes rather lax, 6-9-flowered; bracts small, ovate, ciliolate; pedicels slender, up to 2½ lin. long. Calyx almost 1 lin. long; sepals ovate, acute, minutely ciliolate. Corolla whitish or yellowish, waxy, 6 lin. long in bud, glabrous on both sides; tube urceolate, slightly exceeding 1 lin.; lobes linear, slightly broader at the base, obtuse, 5 lin. long. Filaments short, inserted just below the middle of the tube; anthers oblong, obtuse. Ovary turbinate, sulcate, glabrous, gradually narrowed into the subcylindric sulcate style; stigma minute, globose-ovoid, obscurely 2-lobed. Ovules multiseriate, numerous.—*Carpodinus flavidiflora*, K. Schum. in Engl. Jahrb. xxiii. 220. *Aphanostylis flavidiflora*, Pierre in Bull. Soc. Linn. Paris, 1898, 90.

**Upper Guinea.** Cameroons: forest near Yaunde, 2400 ft., *Zenker*, 804! Bipinde, in forest, 500 ft., *Zenker*, 1750!

Dinklage, 1621! from Liberia (according to the collector a rubber climber highly appreciated by the natives) is mentioned by Hallier (l.c.) as coming very near to *C. flavidiflora*. The specimen in the Berlin Herbarium is so fragmentary that not even the genus can be ascertained with certainty.

16. **C. robustior**, *K. Schum. in Engl. & Prantl, Pflanzenfam. iv. 2, 130.* A tall, twining (?), glabrous shrub; young branches reddish-brown, when dry grooved and wrinkled, with numerous brown lenticels. Leaves oblong to elliptic-oblong or oblong-lanceolate, abruptly acuminate (acumen linear, up to 5 lin. long, 1½ lin. broad), subacute at the base, 3 to over 6 in. long, 1¼-2½ in. broad, thinly coriaceous; midrib flat or slightly sunk above, distinctly prominent below; secondary nerves distant, about 7 on each side, connected by bold arches, which are rather distant from the margins, slightly channelled above, raised below; veins inconspicuous; petiole about 3 lin. long, channelled. Flowers sessile in dense, sessile, axillary and terminal, almost glabrous, many-flowered clusters; bracts minute. Calyx ½ lin. long; sepals ovate, acute, ciliolate. Corolla sweet-scented, glabrous without, about 5-6 lin. long in bud; buds slender; tube pink, spindle-shaped, widest just below the middle, 2-3½ lin. long, scantily hairy within; lobes white, linear, obtuse, as long as the tube. Filaments slender, ¼ lin. long, inserted at ½ from the base of the corolla-tube; anthers ovate-lanceolate, acuminate, ⅔ lin. long. Ovary subglobose, truncate, minutely hairy at the top; style very short; stigma subcylindric, deeply bifid, with a ring of minute hairs at the base, scarcely reaching the anthers. Ovules 2-seriate, 3-4 in each series. Fruit ovoid, orange-coloured, much smaller than that of *Landolphia florida* (ex Hallier).—*C. myriantha*, K. Schum. ex Pierre in Bull. Soc. Linn. Paris, 1898, 40; Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 121. *Carpodinus myriantha*, K. Schum. in Engl. Jahrb. xxiii. 221. *Landolphia* sp., K. Schum. in Engl. Jahrb. xv. 409 (specim. coll. by Preuss). *L. Preussii*, K. Schum. ex Dewèvre, Caoutch. Afr. Monogr. Landolph. 56. *L. Mannii*, Dewèvre, l.c. partly (not of Dyer).

**Upper Guinea.** Cameroons: between Kumba and Ikiliwindi, near Barombi Preuss, 390! Yaunde, in forest, 2400 ft., Zenker & Staudt, 193! 197! Lolodorf, in moist shady forest, 1500–1800 ft., Staudt, 108!

**South Central.** Congo Free State, between Nyangwe and Kimbundu, Pogge, 1015!

*Imperfectly known species.*

17. **Aphanostylis pyramidata**, Pierre in Bull. Soc. Linn. Paris, 1898, 89, 90; Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 124. *Landolphia* (?) *pyramidata*, Pierre, l.c. 89.

**Lower Guinea.** Gaboon, Autran, 9.

This is only known from some fruits drawn by Delpy from a specimen in Pierre's Herbarium. The fruits are conico-cylindrical, truncate at both ends,  $2\frac{1}{2}$  in. long and  $1-1\frac{1}{4}$  in. in diam. The seeds are semiglobose or oblong or wedge-shaped. I suspect it is a species of *Carpodinus*.

4. **CARPODINUS**, R. Br.; Benth. et Hook. f. Gen. Pl. ii. 693.

Calyx small; sepals 5 or 4, ovate; hairy, rarely glabrous, eglandular. Corolla salver-shaped; tube cylindrical, 4–12 lin. long, rarely shorter, usually slender, widened and stamiferous just below the mouth; mouth naked, often much constricted by a callous ring; lobes 5, narrow, overlapping to the left. Stamens included; filaments very short, slender; anthers lanceolate, acute, obscurely 2-lobed at and dehiscent to the base. Disc 0. Ovary entire, hairy, rarely glabrous (§ *Stereoneuron*), 1-celled; placentas 2, parietal; style filiform, very slender, usually long; stigma surrounded by the anthers, more or less annulate at the base, ovoid-subulate or conical above, bifid; ovules numerous, pluriseriate. Fruit a globose, ovoid, conical or pear-shaped berry, sometimes very large. Seeds not very numerous, embedded in a juicy pulp, ovoid, compressed or irregularly flattened; albumen bony; cotyledons foliaceous, very thin; radicle short.—Hairy or glabrous shrubs, usually climbing with flagelliform (often hook-branched) terminal or axillary tendrils, rarely undershrubs throwing up fresh shoots yearly. Leaves opposite, very rarely 3–4-nate, usually middle-sized, rarely up to 12 in. long or below 2 in.; secondary nerves usually distant, never very close; axillary stipules 0; axillary glands subulate, usually few and short in § *Djeratonia* (except *C. rufinervis*), very obscure in some species of § *Antchina*, otherwise 0. Flowers middle-sized, rarely less than  $\frac{3}{4}$  in. long in the mature bud, usually sessile or subsessile, solitary or in axillary much contracted few-flowered clusters, rarely distinctly or even long pedicelled, and solitary or in axillary and terminal or exclusively terminal very few-flowered cymes.

Over 25 endemic species, some incompletely known.

\*DJERATONIA.—Climbing shrubs. Leaves opposite, glabrous or hairy below; secondary nerves distant, oblique, about 4–8 on each side, much raised below, connected by bold arches rather remote from the margins; midrib finely channelled above, much raised below. Flowers sessile or subsessile in axillary clusters. Ovary hairy.

†Leaves glabrous or more or less sparingly hairy on the midrib and sometimes the secondary nerves below.

Leaf-base acute or obtuse, not (or obscurely in *C. hirsuta*) cordate.

Leaves like the young shoots glabrous, usually thin, chartaceous.

Leaves 6–12 in. by  $3\frac{1}{2}$ –7 in.; flowers up to  $1\frac{2}{3}$  in. long in bud . . . . . 1. *C. maxima*.

Leaves smaller; flowers smaller, or if as long very slender.

Calyx and corolla finely tomentose; leaves 6–9 in long . . . . . 2. *C. uniflora*.

Calyx and corolla glabrous except on the ciliolate margins of the former; leaves 3–4 in. long.

Leaves coriaceous, lanceolate or oblong-lanceolate, 3–4 in. by  $1-1\frac{1}{2}$  in.; corolla about 1 in. long . . . . . 3. *C. Schlechteri*.

Leaves papery, oblong-elliptic, 4–5 in. by  $1\frac{1}{2}$ – $2\frac{1}{2}$  in.; corolla up to  $1\frac{2}{3}$  in. long . . . . . 4. *C. congolensis*.

Leaves sparingly hairy on the midrib when young, coriaceous or chartaceous; young shoots more or less hirsute.

Corolla 6–8 lin. long . . . . . 5. *C. dulcis*.

Corolla up to 4 lin. long . . . . . 6. *C. hirsuta*.

Leaf-base minutely but distinctly cordate.

Corolla finely rusty pubescent without, 11–15 lin. long in bud . . . . . 7. *C. Barteri*.

Corolla glabrous without, under 11 lin. long.

Sepals hairy, acuminate, corolla-lobes as long as the tube . . . . . 8. *C. parviflora*.

Sepals quite glabrous except on the ciliolate margins, subacute; corolla-lobes shorter than the tube . . . . . 9. *C. tenuifolia*.

††Leaves very finely pubescent or more or less papillose beneath all over.

Leaves distinctly dotted beneath; secondary nerves about 9 on each side; sepals united almost to the middle . . . . . 10. *C. Klainei*.

Leaves not dotted beneath; secondary nerves 6–8 on each side; sepals free or nearly so . . . . . 11. *C. rufinervis*.

\*\*ANTCHINEA.—Climbing shrubs. Leaves opposite, quite glabrous; secondary nerves usually more or less horizontal, somewhat closer than in the preceding section, connected by rather flatter arches closer to the margin; midrib usually wide and rather flat, more or less sunk between two raised lines above, flattened below. Flowers sessile or subsessile in axillary clusters, rarely in axillary and terminal subsessile cymes. Ovary hairy.

Flowers distinctly but shortly pedicelled, in axillary and terminal subsessile cymes; secondary nerves oblique . . . . . 12. *C. landolphioides*.

Flowers sessile or subsessile in sessile axillary clusters; secondary nerves more or less horizontal.

Sepals 5; corolla 14–5 lin. long.

Corolla 14–7 lin. long.

- Calyx more or less pubescent; leaves 4-6 in. by  $1\frac{3}{4}$ - $2\frac{1}{2}$  in.  
 Corolla glabrous, violet, 12-14 lin. long in bud . . . . . 13. *C. violacea*.  
 Corolla finely pubescent without, white,  $6\frac{1}{2}$ -8 lin. long in bud . . . . . 14. *C. subrepanda*.  
 Calyx quite glabrous; leaves 3-5 in. by 1-2 in. . . . . 15. *C. glabra*.  
 Corolla 7-5 lin. long in bud.  
 Leaves long and narrowly acuminate; corolla about 7 lin. long; anthers glabrous . . . . . 16. *C. leptantha*.  
 Leaves shortly acuminate; corolla about 5 lin. long; anthers penicillate . . . . . 17. *C. trichanthera*.  
 Sepals 4; corolla  $1\frac{1}{2}$ -2 in. long in bud.  
 Leaves oblong, shortly acuminate; corolla-lobes as long as the tube or slightly shorter . . . . . 18. *C. turbinata*.  
 Leaves ovate to oblong-lanceolate, gradually tapering into a rather long acumen; corolla-lobes longer than the tube . . . . . 19. *C. ligustrifolia*.

\*\*\*STEREONEURON.—Climbing or dwarf, erect or prostrate shrubs. Leaves opposite, scantily hairy or glabrous; secondary nerves rather close, 9-12 on each side, connected by rather flat and faint arches near the margin, obscure above; midrib flat or slightly convex on both sides. Flowers in axillary and terminal few-flowered cymes or solitary, distinctly, and even long pedicelled. Ovary glabrous.

- Leaves thinly coriaceous,  $1\frac{3}{4}$ - $2\frac{1}{2}$  in. by 7-12 lin.; secondary nerves 12 on each side; a dwarf shrub . . . . . 20. *C. gracilis*.  
 Leaves thickly coriaceous,  $2\frac{1}{4}$ -4 in. by  $1\frac{1}{4}$ - $1\frac{1}{2}$  in.; secondary nerves 9-11 on each side; a climber . . . . . 21. *C. macrantha*.

\*\*\*RHIZOCHYLA.—Dwarf undershrubs, throwing up yearly fresh, subherbaceous shoots. Leaves frequently 3-4-nate, lanceolate; secondary nerves 10-15 on each side, faint; midrib channelled above. Flowers in terminal and subterminal few-flowered cymes, pedicelled. Ovary hairy.

- Only species . . . . . 22. *C. lanceolata*.

1. ***C. maxima***, *K. Schum. ex Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt.* xvii. (1899), 3. *Beih.* 105. A large climber with long flagelliform, branched tendrils, glabrous except the flowers; branches stout; bark brown, rough; lenticels large, numerous. Leaves large, elliptic, narrowed into an acute base, obtuse or abruptly acuminate, 6-12 in. long,  $3\frac{1}{2}$ -7 in. broad, papery, thin, glabrous, dotted with minute cork-warts below; midrib channelled above, channel very narrow in the upper  $\frac{2}{3}$ , wider below; secondary nerves about 8-9 on each side, finely channelled above, like the midrib very prominent below, connected by bold arches rather distant from the margin; veins fine; petiole stout, 6-15 lin. long. Flowers in axillary sessile minutely bracteate clusters, large. Calyx  $1\frac{1}{2}$  lin. long; sepals 5, subequal, ovate, acute, fulvo-pubescent, ciliolate. Corolla white; tube slender, 6 (according to *Hallier* up to 10) lin. long, widened below the mouth, glabrous without, finely puberulous within in the upper part; lobes linear-lanceolate, subobtuse, 8-9 lin.

long,  $1\frac{1}{2}$  lin. broad. Ovary rufo-pubescent; style  $3\frac{1}{2}$ – $4\frac{1}{2}$  lin. long, rough with minute curved hairs. Fruit globose, very large, orange-coloured (*Dinklage*).

**Upper Guinea.** Cameroons: Batanga, in forest, *Dinklage*, 710! Bipinde, in forest, climbing into the highest trees, *Zenker*, 1573!

Hallier also referred two specimens collected in the Cameroons by *Dinklage* (1060! 1457!), to *C. maxima*, from which both are certainly distinct, but the material is too incomplete for description. No. 1060 has very large elliptic leaves (12 in. by 7 in.) with a broad, abruptly subacute base and very fine indumentum, and numerous dots below. No. 1457 has similar, but narrower and perfectly glabrous leaves.

2. **C. uniflora**, *Staff in Kew Bulletin*, 1894, 19. A climbing shrub with pseudo-axillary tendrils; branches finely rusty-hairy when young, soon quite glabrous except the flowers, pale brown; lenticels few. Leaves oblong-lanceolate, abruptly and obtusely acuminate; cuneate at the base, 6–9 in. long, 2 in. broad, pale green on both sides or almost glaucous above (dark green when fresh according to *Dinklage*); midrib narrowly channelled above; secondary nerves 6–8 on each side, finely channelled above, prominent below, connected by bold arches rather distant from the margin; petiole stout, 4–6 lin. long. Flowers axillary, solitary, subsessile; bracts 4, broad, ovate, obtuse, finely pubescent. Calyx  $1\frac{1}{2}$  lin. long; sepals similar to the bracts. **Corolla** violet; tube rather wide,  $6\frac{1}{2}$ –7 lin. long, widened below the mouth, finely pubescent without, slightly pubescent within; lobes linear-lanceolate or linear, as long as the tube. Ovary and style-base shortly fulvo-tomentose; style stouter than in the other species. Fruit citron-yellow (*Dinklage*).—*Oliver in Hook. Ic. Pl. t.* 2340; *Jumelle, Pl. à caoutch. et à gutta*, 62; *Pierre in Bull. Soc. Linn. Paris*, 1898, 37; *Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii.* (1899), 3. *Beih.* 106. *C. decipiens*, *Pierre, l.c.* 37 (name only); *Hallier f., l.c.* 109 (name only).

**Upper Guinea.** Cameroons: Ebea Falls, *Dinklage*, 231! 872!

**Lower Guinea.** Gaboon: Munda; Sibange Farm, *Soyaux*, 269! and without precise locality, *Klaine*, 910!

*Soyaux* states that this species yields a very fine rubber. *Dinklage*, 1270! from Batanga, quoted by Hallier, l.c. under *C. uniflora*, is evidently some other species, perhaps *C. parviflora*; but the specimen is too defective for determination.

3. **C. Schlechteri**, *K. Schum. in Schlechter, Westaf. Kautschuk-Exped.* 306 (name only), 305 with fig. A tall, glabrous climber, with flagelliform tendrils from the branch-forks. Leaves lanceolate or oblong-lanceolate, gradually acuminate, obtuse or subacute at the base, 3–4 in. long,  $1$ – $1\frac{1}{2}$  in. broad, coriaceous, glabrous; midrib channelled above, raised below; secondary nerves about 6 on each side, connected by bold arches (rather remote from the margin), finely channelled above, raised below; reticulation conspicuous, raised on both sides; petiole up to 3 lin. long. Flowers axillary, solitary, subsessile. Calyx  $1\frac{1}{2}$  lin. long; sepals 4, ovate, subacute, membranous, ciliolate, otherwise glabrous. **Corolla** 1 in. long in bud; tube slightly widened below the

mouth, 5-6 lin. long; lobes linear, subacute, about as long as the tube. Ovary finely pubescent; style slender, puberulous.

**Lower Guinea.** Lower Congo: Kinchassa, on Stanley Pool, *Schlechter*, 12804!

4. **C. congolensis**, *Stapf in Kew Bulletin*, 1898, 303. Climbing shrub with slender, flagelliform tendrils, quite glabrous; young branches reddish-brown; lenticels minute. Leaves oblong to elliptic, abruptly acuminate (acumen linear, 2-4 lin. long), subacute, rarely rounded at the base, 4-5 in. long,  $1\frac{1}{2}$ -2 in. broad, green, thin, papery; midrib channelled above, channel rather wide in the upper part; secondary nerves 5-6 on each side, rather fine, connected by bold arches distant from the margin; petiole slender, 2-4 lin. long. Flowers sessile, axillary, solitary (always?); bracts few, very small. Calyx glabrous, 1 lin. long or rather more; sepals broadly ovate, obtuse, ciliate. Corolla-tube very slender, widened near the mouth, 9-11 lin. long, glabrous without, hairy below the stamens within; lobes linear, as long as the tube or rather longer. Anthers 1 lin. long or more. Ovary and style pubescent.—*Stapf in De Wild. & Durand, Contrib. Fl. Congo in Ann. Mus. Congo, Bot. sér. 2, i. 34; & De Wild. & Durand, Reliq. Dewevr. in Ann. Mus. Congo, Bot. sér. 3, ii. 146.*

**Lower Guinea.** Lower Congo: Bingila, *Dupuis!* Portuguese Congo? Chimbete, *Dewevre*, 311!

Hallier f. (*Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 109*) reduced *C. congolensis* to *C. turbinata*, from which it is, however, quite distinct.

5. **C. dulcis**, *Sabine in Trans. Hort. Soc. v. 455*. A climbing shrub with long terminal or pseudo-axillary flagelliform, scantily branch-hooked tendrils; young branchlets finely fulvo-hirsute, soon more or less glabrescent and pale brown or grey; lenticels few, inconspicuous. Leaves oblong, indistinctly acuminate or obtuse, rarely acute, rounded at the base, 3-4½ in. long,  $1\frac{1}{2}$ -2 in. broad, coriaceous, when young fulvo-hirsute, soon glabrescent; midrib narrowly channelled above, much raised below; lateral nerves usually 7 on each side, slightly channelled above, prominent below, connected by bold arches rather distant from the margin; petiole 2-2½ lin. long. Cymes axillary, subsessile, contracted, finely fulvo-hirsute, few to 1-flowered; flowers sessile; bracts generally 4 to each flower, oblong, the inner small, adpressed to the calyx, and like it fulvo-hirsute. Calyx  $1\frac{1}{2}$  lin. long; sepals ovate, subacute, ciliate. Corolla-tube 3-4 lin. long, widened below the mouth, almost glabrous; lobes lanceolate, as long as the tube. Ovary fulvo-hirsute above the middle. Style very slender, minutely puberulous, almost up to 3½ lin. long including the stigma. Fruits solitary, rarely in pairs, globose, apiculate, yellow, of the size of a small lemon. Seeds about 12, 3 lin. long.—*DC. Prod. vii. 329; Hook. Niger Fl. 446; L. Planchon, Prod. Apocyn. 141, 292, 321; Stapf in Hook. Ic. Pl. t. 2568; Pierre in Bull. Soc. Linn. Paris, 1898, 36, 37; Jumelle, Pl. à caoutchouc et à gutta, 62; Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih.*

107; Warb. Kautschukpfl. 120; Chevalier, Géogr. Bot. Sénégal et Soudan, 223.

**Upper Guinea.** Cape Verd Isles: San Jago, *Bocandé* (ex Hallier f.) Senegambia, *Heudelot*! Sierra Leone: Freetown, *Don*! Bunce Island, *Kirk*! all over the inland country to the headwaters of the Niger, common on the laterite plateau, *Scott-Elliott*, 4249! 4275A! 4294! 5091! 5127! 5885!

The fruit (sweet "*Pishamin*") is eaten by the natives, and the milky juice of the plant used as birdlime according to Scott-Elliott, whilst Jumelle and Planchon say that it yields an inferior class of rubber.

6. **C. hirsuta**, *Hua ex Chevalier in Bull. Mus. Hist. Nat. Paris*, vi. (1900) 308. A tall, robust, climbing shrub, with scanty tendrils; young branches rather stout, densely hirsute with violet spreading hairs; bark soon blackish-brown, dotted with numerous white lenticels. Leaves oblong, abruptly, shortly and acutely acuminate or acute, subtruncate or obscurely cordate at the base,  $3-4\frac{1}{4}$  in. long,  $1\frac{1}{2}-2$  in. broad (those of barren shoots up to 7 in. by  $3\frac{1}{2}$  in), papery to subcoriaceous, glabrescent above, hirsute along the nerves below; secondary nerves 6-8 on each side, oblique, curved, like the midrib finely channelled above, raised below; transverse veins fine, distant; reticulation delicate, often obscure; petiole about 5 lin. long. Flowers sessile in compact, sessile, axillary clusters; bracts fulvo-tomentose, similar to the sepals, but broader. Calyx densely pubescent, 1 lin. long; sepals ovate-oblong, obtuse. Corolla small; tube fulvo-pubescent without above the glabrous base, 2 lin. long; lobes linear, subacute, 2 lin. long,  $\frac{1}{2}$  lin. wide. Stamens inserted above the middle; anthers ovate, acute, scarcely  $\frac{1}{2}$  lin. long, almost reaching to the mouth. Ovary truncate-subglobose, fulvo-tomentellous in the upper part; style glabrous, including the clavate, bifid stigma over  $\frac{3}{4}$  lin. long. Fruit globose, smooth, resembling an orange,  $2-3\frac{1}{4}$  in. in diam.; seeds 9 lin. long and almost as broad, in a yellow edible pulp.—*Hua*, l.c. 312-317; Chevalier, Géogr. Bot. Sénégal et Soudan, 223.

**Upper Guinea.** Senegambia; Fogny, by the River Casamanze, in Bignonia forests, *Chevalier*; Sinedone, 40 miles from the coast, *Harems* (ex *Chevalier*). French Guinea: Futa Jallon; Bambaya, *Paroisse* (1898) 8. Dubreka, *Bouéry*; Tanéné, near Konakry, *Lecerf*! *Poisson*!

The description (except that of the fruit) was drawn up from a specimen collected by Lecerf near Konakry, which agrees completely with the following barren specimens in the Kew Herbarium: Gold Coast; Aquapim, *Horton*! Lagos, "Ibo tree," *Moloney*! *Higgins*, 19! It comes also very near to *C. fulva*, Pierre, which is known only from leaf specimens and fruits. This Ibo tree is supposed to yield part of the rubber of the Gold Coast Colony and Lagos.

7. **C. Barteri**, *Staff in Kew Bulletin*, 1894, 19. A climber, 8-12 ft. high, with slender terminal or pseudo-axillary tendrils; youngest branches and inflorescences hirsute with short reddish-brown hairs; otherwise glabrous or with a few scattered hairs; bark greyish-brown, dotted with lenticels. Leaves broad elliptic, 2-4 in. long,  $1-2\frac{1}{2}$  (rarely 3) in. broad, cordate at the base, usually obtuse or rounded at the apex, rarely shortly acuminate, coriaceous, finely rusty pubescent in a very young state, soon glabrescent; midrib narrowly channelled;

nerves channelled above, prominent beneath, 4-5 on each side, distant, connected by bold arches distant from the margin; petioles 2-2½ lin. long. Flowers sessile in axillary sessile contracted few- to 10-flowered rusty pubescent clusters; bracts at the base of the flowers mostly solitary or suppressed, small, ovate. Calyx 1-1½ lin. long; sepals ovate, obtuse, ciliate and pubescent on the back, distinctly connate at the base. Corolla entirely violet, or white at the throat (or entirely white?); tube slender, widened below the mouth, 4-8½ lin. long, rusty pubescent without, almost glabrous within; lobes lanceolate, as long as the tube, or nearly so. Ovary hirsute except at the very base; style slender, with a few scattered minute hairs. Young fruit pear-shaped, soon glabrescent.—Jumelle, Pl. à caoutchouc et à gutta, 62; Pierre in Bull. Soc. Linn. Paris, 1898, 37; Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 107. *C. pauciflora*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 131; Hallier f. l.c. 108.

**Upper Guinea.** Togo: Jego River, *Kling*, 51! Misahöhe, *Baumann*, 304! Lagos, *Barter*, 20138! *Moloney*, xi.! *Roland*! *Millen*, 23! 47! 155! 169! *Punch*, 43! New Calabar; Degema, *Holland*, 148! Old Calabar River, *Mann*, 2261! Cameroons: Batanga, *Dinklage*, 1366! *Bates*, 202!

Moloney states that the plant yields a kind of rubber.

The flowers are violet according to Millen and Dinklage, or pale violet with a white throat according to C. Baumann. Bates describes them, however, as white. The leaves of Bates' plant are also mostly distinctly and acutely acuminate and more densely spotted with black dots than in the other specimens of *C. Barteri*.

8. ***C. parviflora***, *Staff* in *Kew Bulletin*, 1894, 19. A scandent shrub, up to 30 ft. high, with flagelliform scantily hook-branched pseudo-axillary tendrils; young branches more or less hirsute, finally often glabrescent, pale-brown; lenticels few. Leaves oblong or obovate-oblong, narrowly and acutely acuminate, slightly cordate at the base, 3¾-5 in. long, 1¼-2 in. broad, coriaceous, sparingly hairy on the midrib below or quite glabrous, pale green above when dry; secondary nerves 5-7 on each side, like the midrib finely channelled above and very prominent below, connected by bold arches rather distant from the margin. Flowers sessile, axillary, solitary or in few-flowered clusters; bracts very small, hirsute. Calyx 1¼ lin. long; sepals almost free, sub-acuminate, with short spreading hairs. Corolla-tube slender, slightly widened below the mouth, glabrous without, almost glabrous within, 3½ lin. long; lobes lanceolate, as long as the tube or slightly longer. Ovary elongate, finely villous; style pubescent. Fruit ovoid, produced into a short beak, 1¾ in. long, 10 lin. broad. Seeds about 6, pale brown, 6 lin. long.—Jumelle, Pl. à caoutch. et à gutta, 62; Pierre in Bull. Soc. Linn. Paris, 1898, 37; Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 108. *C. flava*, Pierre, l.c. (name only); Hallier f. l.c. 109. *Djeratonia* sp., Pierre, l.c.

**Lower Guinea.** Gaboon: Munda; Sibange Farm, *Soyaux*, 184! 219! Libreville, *Klaine*, 291! and without precise locality, *Klaine*, 1155!

9. ***C. tenuifolia***, *Pierre* in *Bull. Soc. Linn. Paris*, 1898, 37 (name only). A climbing shrub, with very slender flagelliform axillary or

terminal tendrils; branches very slender, hispid, finally glabrescent, reddish-brown; lenticels very minute. Leaves elliptic-oblong or oblong, gradually and acutely acuminate, cordate at the base, 3-3½ in. long, 1¼-2⅔ in. broad, thin, papery, glabrous above, sparingly hispid or almost glabrous on the midrib beneath, dull green; midrib very finely channelled above; secondary nerves 6-7 on each side, fine, straight, prominent below; connecting arches 2-2½ lin. from the margin, rather flat; veins inconspicuous; petiole 1-2 lin. long, slender. Flowers solitary, axillary, subsessile; bracts very minute. Calyx 1 lin. long; sepals 5, almost free, ovate, subacute, thin except the midrib, ciliolate. Corolla glabrous; tube very slender, almost 6 lin. long, slightly widened below the mouth; lobes linear, obtuse, 4½ lin. long. Ovary oblong, pubescent like the style.—Hallier f. Kautschukianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 109 (name only).

**Lower Guinea.** Gaboon, *Klaine*, 1103!

10. **C. Klainei**, *Pierre in Bull. Soc. Linn. Paris*, 1898, 38 (*name only*). A climbing shrub; tendrils not seen; branches reddish, very minutely papillose-pubescent; lenticels minute, white. Leaves oblong, acuminate, acute at the base, 6-6½ in. long, 2-2½ in. broad, coriaceous, glabrous and dull green above, more or less covered with a scanty rufous very minutely papillose pubescence, and dotted with minute cork-warts below; midrib narrowly channelled above; secondary nerves about 9 on each side, gently curved towards the margins, faintly looped, finely channelled above, distinctly raised below; veins fine but distinct, scarcely raised; petiole 4-5 lin. long, rufous. Flowers in dense, minutely rufo-tomentose subsessile axillary or pseudo-terminal clusters; bracts minute, ovate, acute. Calyx minutely rufo-tomentose, 1½ lin. long; sepals distinctly united at the base, ovate, acute. Corolla yellowish, minutely tomentose; tube widened below the mouth, 4½ lin. long; lobes linear-lanceolate, obtuse, 3-3½ lin. long, margins undulate. Ovary ovoid, densely tomentose; style 4 lin. long, puberulous near the base.—Hallier f. Kautschukianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 110 (name only). *C. klaineana*, *Pierre*, l.c. 36.

**Lower Guinea.** Gaboon, *Klaine*, 728!

*Pierre* places this species in his section *Commidodia*, which he characterises as having very large ovoid or turbinate fruits.

11. **C. rufinervis**, *Pierre in Bull. Soc. Linn. Paris*, 1898, 38 (*name only*). A climbing shrub; tendrils not seen; branches rather stout, reddish, very minutely papillose-pubescent, with numerous white lenticels when old. Leaves oblong, acuminate (acumen tapering to an acute point from a broad base), acute or subobtuse at the base, 4-6 in. long, 2-2¼ in. broad, coriaceous, greenish-brown on both sides, glabrous above, very finely and densely pubescent and not dotted below; midrib narrowly channelled above; secondary nerves 6-8 on each side, gently curved towards the margins, faintly looped, finely channelled above, distinctly raised below; veins very inconspicuous;

petiole about 3 lin. long, reddish. Flowers in axillary or pseudo-terminal sessile dense minutely rufo-tomentose clusters; bracts ovate, acute, minute. Calyx 1 lin. long; sepals almost free, ovate, obtuse, minutely rufo-tomentose. Corolla white, odorous, densely and minutely rusty-tomentose; tube widened below the mouth, 5-6 lin. long; lobes linear-oblong, obtuse, 4 lin. long. Ovary ovoid, densely tomentose; style finely pubescent, very fine, 4 lin. long. Fruit large, on a very stout pedicel up to 7 lin. in diam.; seeds oblong, 1 in. long.—Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 110 (name only).

**Lower Guinea.** Gaboon, *Klaine*, 400! 1100!

I have not seen the fruit of this species, but only seeds and a branch with a fruit-stalk. Pierre placed it, like *C. Klainei*, in his section *Commidodia*. It differs from *C. Klainei* in the leaves and flowers, as well as (according to Pierre) in the fruit.

12. **C. landolphioides**, *Staff.* A tall powerful climber with long robust hook-branched tendrils from the branch-forks, glabrous except the inflorescences. Flowering branches rather robust, brown, dotted with numerous whitish lenticels. Leaves oblong, more or less abruptly acuminate (acumen obtuse, often very short), subacute or rounded at the base, 5-6 in. long, 2-2½ in. broad, thinly coriaceous, fuscous and somewhat glossy when dry; midrib narrowly channelled above, prominent below; secondary nerves slender, about 9 on each side, obliquely spreading, straight or very slightly curved, connected (2 lin. within the margin) by rather bold zig-zag arches, finely channelled above, raised below, reticulation loose, slightly raised below; petiole 4-5 lin. long. Cymes axillary and terminal, subsessile or very shortly peduncled, contracted, few- to many-flowered, rusty-puberulous, or gathered into short terminal panicles; bracts ovate, broad, obtuse; pedicels very short, rather stout. Calyx 1¼ lin. long; sepals very broad, ovate to rotundate, obtuse, minutely puberulous, ciliolate. Corolla glabrous, 10-12 lin. long in bud; tube cylindric, slightly widened from the middle upwards, 5-6 lin. long; lobes linear-oblong, obtuse, about 5 lin. long. Stamens inserted in the upper third of the tube; anthers linear, acute, 1 lin. long. Ovary turbinate, puberulous at the top; style filiform, glabrous, 2½ lin. long; stigma deeply bifid.—*Clitandra landolphioides*, Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 119.

**Upper Guinea.** Cameroons: Buea, *Deistel*, 556!

Lehmbach's 34, from Buea, quoted by Hallier under *C. landolphioides*, may be correctly referred here, but consists only of barren shoots.

13. **C. violacea**, *K. Schum. ex Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 112.* A climbing shrub, quite glabrous except the inflorescences; tendrils unknown; young branches brown or greyish, dotted with lenticels.

Leaves oblong, abruptly, shortly and obtusely acuminate, rather rounded at the base, 5-6 in. long, 2-2½ in. broad, thinly coriaceous; midrib widely and rather shallowly channelled above; secondary nerves 11-13 on each side, fine, almost straight, horizontal, connected close to the margin by very flat arches; veins fine, but distinct; petiole 2-4 lin. long. Flowers sessile in minutely pubescent clusters of 5-7; bracts very small, pubescent, usually 1 to each flower. Calyx subpubescent, scarcely ¾ lin. long; sepals broadly ovate, obtuse, ciliolate. Corolla pale violet; tube slender, 6-7 lin. long, widened near the mouth, glabrous without, hairy within below the stamens; lobes lanceolate, as long as the tube. Ovary and style very minutely pubescent. Fruit "apple-shaped," striped with violet.

**Upper Guinea.** Cameroons: Yaunde, 2600 ft., *Zenker & Staudt*, 433!

14. **C. subrepanda**, *K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 132. A climbing shrub, with flagelliform tendrils, quite glabrous except the flowers; young branches brown or greyish; lenticels at length numerous. Leaves oblong, abruptly acuminate (acumen linear, obtuse, up to 9 lin. long, 1-2 lin. broad), rounded or subcuneate at the base, 4-5½ in. long, 1¾-2¼ in. broad, firmly coriaceous, pale green on both sides or glaucous above; midrib widely and rather shallowly channelled; secondary nerves 10-12 on each side, slightly sunk above, slightly raised below, connected close to the margin by flat or moderately bold arches; veins inconspicuous; petiole stout, 3-7 lin. long. Flowers sessile, axillary, in subsessile minutely pubescent clusters of 2-5; bracts very small, usually 1 to each flower. Calyx finely tomentose up to 1 lin. long; sepals ovate, subacute, ciliolate. Corolla white, sweet-scented; tube rather wide, widened from above the middle, finely puberulous, 3½-4 lin. long; lobes 3-4 lin. long, narrow, linear. Ovary finely fulvo-hirsute on the top, otherwise glabrous. Fruit globose, over 2 in. in diam. (according to a drawing by Delpy). Seeds 5-7½ lin. long.—Hallier f. *Kautschuklianen* in *Jahrb. Hamburg. Wissensch. Anstalt.* xvii. (1899), 3. Beih. 110, t. iii. fig. 6. *C. friabilis*, Pierre in *Bull. Soc. Linn. Paris*, 1898, 38 (name only); Hallier f. l.c. 110 (name only). *C. lacteus*, K. Schum. MS.

**Upper Guinea.** Cameroons: Makonje, *Preuss*, 187!

**Lower Guinea.** Gaboon: Libreville, *Klaine*, 121! 336! 1132! 1157!

15. **C. glabra**, *Pierre in Bull. Soc. Linn. Paris*, 1898, 38 (name only). A glabrous climbing shrub, with very slender flagelliform tendrils; branches slender, almost black; lenticels numerous, minute. Leaves oblong or elliptic-oblong, abruptly acuminate (acumen linear, obtuse up to 8 lin. long), obtuse at the base, 3-5 in. long, 1-2 in. broad, coriaceous, pale dull green above, brownish-green below when dry; midrib widely and deeply channelled above; secondary nerves 11-12 on each side, almost horizontal and straight, with slightly finer more or less parallel tertiary nerves between, connected close to the margin by

rather flat arches; nerves faintly raised above, more distinctly so below; petiole 2–3½ lin. long. Cymes axillary or pseudoterminal, few-flowered, subsessile, almost glabrous; bracts in 4–5 pairs, ovate, obtuse, minute, the lowest scantily rufo-furfuraceous, the others glabrous. Calyx 1 lin. long, quite glabrous; sepals 5, ovate, subacute. Corolla quite glabrous; tube very slender, slightly widened below the mouth, about 5½ lin. long; lobes narrow, linear, obtuse, 4 lin. long. Ovary fusiform, glabrous at the base, otherwise very minutely pubescent, with curved hairs; style very fine, 3 lin. long. Fruit globose, about 1 in. in diam.—Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1900), 3. Beih. 110.

**Lower Guinea.** Gaboon, *Klaine*, 650! 955!

16. **C. leptantha**, *Stapf in Kew Bulletin*, 1898, 303, not of *K. Schum.* A climbing shrub, with long, slender, hook-branched pseudo-axillary or terminal tendrils; branches slender, quite glabrous, reddish-brown or dark grey; lenticels very numerous, minute. Leaves oblong or elliptic-oblong, abruptly long-acuminate, rounded at the base, 2½–3 in. long, 1–1½ in. broad, coriaceous, quite glabrous; midrib channelled above, channel moderately wide, deep; secondary nerves almost horizontal, more crowded towards both ends of the leaf, in the middle about 2–5 lin. distant, connected close to the margin by flat, faint arches; tertiary nerves scarcely less distinct, all slightly raised on both sides. Flowers solitary, axillary, subsessile; bracts minute, ovate or acute, very finely rufo-tomentose. Calyx finely puberulous, 1 lin. long; sepals 5, ovate, subacute, ciliolate. Corolla greenish-yellow; tube very slender, slightly widened below the mouth, 4 lin. long; lobes narrow, linear, twisted, 3 lin. long. Ovary spindle-shaped, finely crispo-puberulous; style very fine, glabrous above. Fruit globose, 10 lin. in diam.; seeds about 4 lin. long.—Stapf in *De Wild. & Durand, Contr. Fl. Congo in Ann. Mus. Congo, Bot. sér. 2, i. fasc. i. 35*; *De Wild. & Durand, l.c. fasc. ii. 39*; Hallier f. Kautschuklianen in *Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 114, t. iii. fig. 1*; *De Wild. & Durand, Reliq. Dewevr. in Ann. Mus. Congo, Bot. sér. 3, fasc. ii. 148*; not of *K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 132*.

**South Central.** Congo Free State: Bassombo, in the forest, *Laurent!* Coquilhatville, *Dewivre*, 590!

17. **C. trichanthera**, *Pierre in Bull. Soc. Linn. Paris*, 1898, 38 (*name only*). A climbing shrub; tendrils unknown; young branches glabrous, stout, brown; lenticels numerous, rather large. Leaves oblong to elliptic-oblong, shortly and obtusely acuminate, obtuse at the base, 2½–3½ in. long, 1–1½ in. broad, very coriaceous, quite glabrous, dull pale green above; midrib widely channelled; secondary nerves 9–11 on each side, spreading, slightly curved or almost straight, faint and sunk above, distinctly prominent below, connected close to the margin by faint rather flat arches; veins inconspicuous; petiole 1–1½

lin. long. Flowers in sessile axillary clusters; bracts minute, ovate, minutely rufo-puberulous. Calyx very scantily and minutely puberulous,  $\frac{1}{2}$  lin. long; sepals 5, ovate, obtuse. Corolla small, scantily and very finely puberulous; tube cylindrical in the lower  $\frac{2}{3}$ , then suddenly widened,  $2\frac{3}{4}$  lin. long; lobes linear, obtuse,  $2\frac{1}{4}$  lin. long. Anthers lanceolate-oblong, over  $\frac{1}{2}$  lin. long, tips scantily hairy. Ovary densely villous; style very fine, almost  $1\frac{1}{2}$  lin. long.—Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 110 (name only).

**Lower Guinea.** Gaboon, *Klaine*, 336B!

18. **C. turbinata**, *Stapf in Kew Bulletin*, 1898, 304. A climbing shrub, with long terminal, branched tendrils; branches quite glabrous, pale with minute lenticels. Leaves oblong, shortly and obtusely acuminate, rounded at the base,  $2\frac{1}{2}$ – $3\frac{1}{4}$  in. long, 12–16 lin. broad, coriaceous, quite glabrous, pale when dry, especially below; secondary nerves 7–9 on each side, fine, raised below like the reticulating veins; petiole slender,  $2\frac{1}{2}$ – $3\frac{1}{2}$  lin. long. Flowers axillary or sometimes apparently extra-axillary, rarely terminal, solitary, subsessile; bracts minute, ovate, very finely puberulous. Calyx  $\frac{1}{2}$ – $\frac{3}{4}$  lin. long; sepals 4, ovate, obtuse, very minutely ciliate, otherwise glabrous, glaucous. Corolla glabrous, white; tube slender, widened below the mouth, 10–12 lin. long; lobes very narrow, linear, acute, 9–12 lin. long,  $\frac{1}{2}$  lin. wide. Ovary spindle-shaped, glabrous at the base, otherwise pubescent like the style. Fruit conic from a broad truncate base, almost 3 in. long, and over 2 in. wide, yellow; seeds numerous, about 4– $5\frac{1}{2}$  lin. long.—Stapf in De Wild. & Durand, *Illustr. Fl. Congo in Ann. Mus. Congo, Bot. sér. 1, i. fasc. iii. 57, t. xxix.*, and in De Wild. & Durand, *Contrib. Fl. Congo in Ann. Mus. Congo, Bot. sér. 2, i. fasc. i. 35*; Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 109, t. iii. fig. 2–4 partly; De Wild. *Apocyn. à latex rec. par Gentil*, 31.

**South Central.** Congo Free State: Equateur (Equatorville), *Dewivre*, 311! 510; Ikenge (Ruki), *Gentil*.

Hallier also refers to this species a specimen collected by Zenker (2073!) near Bipinde, in the Cameroons. This consists of a branch with leaves and pedicels from which the fruits have fallen. The leaves are much larger and have a somewhat different nervation than in *C. turbinata*, are more acute at the base, and certainly belong to some other species.

19. **C. ligustrifolia**, *Stapf in Kew Bulletin*, 1898, 304. A glabrous or almost glabrous climbing shrub, with long, very slender, flagelliform, branched, terminal tendrils; branches dark with numerous minute lenticels. Leaves usually ovate or oblong-lanceolate, gradually tapering into a rather long obtuse acumen, rounded at the base, 2– $3\frac{1}{2}$  in. long, 9–14 lin. broad, coriaceous, quite glabrous; midrib widely channelled above; secondary nerves 7–8 on each side, fine, sunk above, slightly prominent below, connected near the margin by somewhat flat

arches; petiole 1–1½ lin. long. Flowers axillary, rarely terminal, solitary or sometimes in pairs, subsessile. Calyx 1 lin. long, very minutely rusty-pubescent; sepals 4, ovate, subobtusely, ciliolate. Corolla white, fragrant, glabrous except the delicately rusty-downy outer base of the lobes, slender; tube slightly widened below the mouth, 8–9 lin. long; lobes linear, acute, 12 lin. long, 1½ lin. wide. Ovary finely pubescent except at the glabrous base; style slender, 6–7 lin. long, glabrous above. —Stapf in De Wild. & Durand, Contrib. Fl. Congo in Ann. Mus. Congo, Bot. sér. 2, fasc. i. 34; Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 112; De Wild. & Durand, Reliq. Dewevr. in Ann. Mus. Congo, Bot. sér. 3, fasc. ii. 149. *C. gracilis*, Stapf, ll.cc. 303 and 35 respectively (the fruit according to Hallier f. l.c.); Dewèvre in De Wild. & Durand, Reliq. Dewevr. l.c. (Dewèvre's note).

**Upper Guinea.** Cameroons: near Batanga, *Dinklage*, 1161! (not 1162, as Hallier quotes).

**Lower Guinea.** Lower Congo: Stanley Pool, *Dewèvre*, 709! Kimuenza, *Dewèvre*, 516!

I suggested in my paper on the *Apocynaceæ* of the Congo Free State (Ann. Mus. Congo, Bot. sér. 2, fasc. i. 36) that some detached fruits accompanying Dewèvre's 516<sup>1</sup> might belong to *C. gracilis*. Hallier (l.c.) pointed out, however, that this is not the case and suggested that the fruits might be those of *C. ligustrifolia*. I have since seen a specimen of *C. gracilis*, collected by Gillet at Kisantu, with flowers and fruits still attached to the branch. These fruits are different from those which I described as belonging to *C. gracilis*, and there can be no doubt that my assumption was erroneous. Dewèvre, in his note referring to 516 (*sic*) quoted by De Wild. & Durand in Reliq. Dewevr. l.c., describes some fruits, which are evidently the same, but being subsequently mixed up with his 516<sup>1</sup> misled me. They very likely belong to *C. ligustrifolia*, the more so, as there is also a fragment of a branch with 516<sup>1</sup> the leaves of which agree very well with those of *C. ligustrifolia*. The fruits are more or less shortly conic with a wide base, much resembling those of *C. turbinata*, but smaller. Hallier f. (l.c.) also refers a specimen collected by Pogge (1153!) near Mukenge in the Congo Free State to *C. ligustrifolia*. It has very similar fruits, but is otherwise so defective that its identity with *C. ligustrifolia* is doubtful. Another specimen collected by Laurent at Lusambo! is quoted by Hallier under this species, but (consisting of a barren twig) is very doubtful.

20. ***C. gracilis***, *Stapf in Kew Bulletin*, 1898, 303 (*excl. the fruit*). A dwarf, sometimes prostrate shrub, with or without very slender terminal tendrils; branches slender, reddish-brown, glabrous or sparsely hairy when young; lenticels very minute. Leaves opposite, ovate-oblong or ovate-lanceolate, gradually and obtusely acuminate (acumen 2–4 lin. long), rounded at the base, 1¾–2½ in. long, 7–12 lin. broad, thinly coriaceous, scantily hairy below, chiefly along the midrib, which is slightly raised above, or glabrescent; lateral nerves about 12 on each side, like the tertiary nerves and the veins very faint, connected close to the margin by flat faint arches; petiole 2–2½ lin. long, hispidulous. Flowers pedicelled in terminal or axillary few-flowered peduncled cymes, or solitary; peduncle up to 1 in. long, very slender, like the pedicels more or less hispidulous, these up to 3 lin.

long, more or less spreading; bracts minute, hispidulous. Calyx minutely and scantily pubescent, scarcely  $1\frac{1}{2}$  lin. long; sepals ovate, subobtusely, ciliolate. Corolla white, glabrous; tube slender, slightly widened near the mouth, 7-9 lin. long; lobes linear, acute, 8 lin. long. Ovary glabrous, grooved, gradually passing into the fine style over 6 lin. long; stigma cylindrical, slender, bifid. Fruit on slightly thickened pedicels, globose, about  $1\frac{1}{4}$  in. in diam. Seeds globose, 3 lin. in diam., numerous.—Stapp in De Wild. & Durand, Contrib. Fl. Congo in Ann. Mus. Congo, Bot. sér. 2, i. fasc. i. 35; De Wild. & Durand in Bull. Herb. Boiss. sér. 2, i. 34; De Wild. & Durand, Reliq. Dewevr. in Ann. Mus. Congo, Bot. sér. 3, fasc. ii. 147, excl. Dewèvre's note. *C. camp-toloba*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 132 (incompletely described). *Clitandra gracilis*, Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 117.

**Lower Guinea.** Lower Congo: Kimuenzi, Dewèvre, 516<sup>1</sup> (excluding the fruits)! very common between Leopoldville and Kimuenza, Laurent! near Leopoldville, Luja! Kisantu, Gillet, 71! Angola: Malange, in the forests of Cabangula's country, Marques, 240!

**South Central.** Congo Free State: Mueue Putu Kasongo, near the Kuango River, Buettner, 480!

21. **C. macrantha**, K. Schum. in Engl. Jahrb. xxiii. 220. A climbing, glabrous shrub, with long hook-branched tendrils from the branch-forks; young branches brown, slightly rough with elongate or punctiform lenticels. Leaves oblong, obtusely acuminate (acumen up to 3 lin. long), subacute at the base,  $2\frac{1}{2}$ -4 in. long,  $1\frac{1}{4}$ - $1\frac{1}{2}$  in. broad, coriaceous; midrib flat or slightly convex on both sides; lateral nerves very slender, 9-11 on each side, subhorizontal, inconspicuous above, slightly raised below; petiole up to 3 lin. long. Flowers solitary or in pairs from the leaf-axils or in small terminal 3-4-flowered cymes; peduncle  $1\frac{1}{2}$ -8 lin. long, slender; pedicels up to 9 lin. long; bracts small, ovate, ciliolate. Calyx 1 lin. long, very scantily pubescent or glabrous; sepals ovate, ciliolate. Corolla over  $1\frac{1}{4}$  in. long in bud, quite glabrous; tube widened at the upper third, then narrowed towards the mouth, 9 lin. long, fleshy, especially towards the mouth; lobes linear-oblong, 6-7 lin. long,  $1\frac{1}{2}$  lin. broad. Anthers inserted at the upper third of the corolla-tube, scarcely  $1\frac{1}{4}$  lin. long. Ovary glabrous, ovoid, gradually passing into the style; stigma cylindrical, bifid, with a thickened base, the whole pistil 6-7 lin. long. Fruit short, conical,  $1\frac{1}{2}$  in. long,  $1\frac{1}{2}$  in. broad at the base, glabrous, smooth, edible; pedicels or peduncles stout, flexuous, 1-2 in. long.—Pierre in Bull. Soc. Linn. Paris, 1898, 38. *Clitandra macrantha*, Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 117.

**Upper Guinea.** Sierra Leone: Talla district, near Niwia, in woods, Scott-Elliot, 4924! and without precise locality, Afzelius!

22. **C. lanceolata**, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 132. A perfectly glabrous perennial erect herb; annual shoots

1–2 ft. high, from a long creeping slender rhizome. Leaves opposite or ternate, lanceolate or oblong-lanceolate, acute on both ends or the tips acuminate or subobtusate, 3–5 in. long, 5–16 lin. broad, thinly subcoriaceous, shining above, with black dots beneath; midrib channelled above, channel usually rather wide; lateral nerves subhorizontal, faint, 10–15 on each side, connected quite close to the margins by very flat faint arches; veins delicate; petiole slender, 2–5 lin. long. Cymes few-flowered, terminal, sometimes also from the axils of the uppermost leaves; peduncles up to  $1\frac{1}{2}$  in. long, like the short pedicels glabrous or pubescent in the upper part; bracts oblong, up to 1 lin. long. Calyx puberulous,  $1\frac{1}{2}$ – $1\frac{3}{4}$  lin. long; sepals 5, ovate, obtuse or subacute. Corolla glabrous without, white; tube slender, slightly widened below the mouth, 5 lin. long; lobes linear, subacute, slightly longer than the tube. Ovary glabrous at the very base, otherwise pubescent like the style. Fruit pear-shaped, not quite 2 in. long; seeds few, about 6 lin. long.—Warb. in *Tropenpfl.* i. (1897) 134, fig. A–D.; Sadebeck *Nutzpfl. Deutsch. Kolon.* in *Jahrb. Hamburg. Wissensch. Anstalt.* xiv., 3. Beih. 122, & *Kulturg. Deutsch. Kolon.* 276; Stapf in *Wild. & Durand, Contrib. Fl. Congo* in *Ann. Mus. Congo, Bot. sér. 2*, i. fasc. i. 36, fasc. ii. 39; Mikosch in *Wiesner, Rohstoffe*, ed. 2, 363; Henriques, *Kautschuk*, 19, Tab. iv.; Hallier f. *Kautschuklianen* in *Jahrb. Hamburg. Wissensch. Anstalt.* xvii. (1899), 3. Beih. 115, t. iii., fig. 5; Moller in *Tropenpfl.* iv. (1901) 461; Schlechter, *Westafr. Kautschuk-Exped.* 51, 232, 306, 52 with fig.; De Wild. & Durand, *Reliq. Dewevr.* in *Ann. Mus. Congo, Bot. sér. 3*, fasc. ii. 148.

**Lower Guinea.** Lower Congo: Dolo plains near Stanley Pool, *Schlechter*, 12447! near Leopoldville, *Laurent*; *Dewèvre*, 489! Tampa, *Laurent*! Calâr District, *Laurent*. Angola: country of the Ganguella and Amboella, *Marques*, 1! Majakalla country, *Mechow*, 520!

**South Central.** Congo Free State: Selembao, *Demeuse*, 110! Bashilange; by the Kasai River, near Kikassa, *Pogge*, 1157! Bena Dilule (Dible), *Luja*, 266! between the Lufubu River and Nyangwe, *Pogge*, 1074!

According to *Dewèvre*, *C. lanceolata* assumes occasionally the habit of a climber, developing at the same time tendrils. It yields most of the root-rubber of the Congo.

*Imperfectly known species.*

23. **C. acida**, *Sabine in Trans. Hort. Soc.* v. 456.—DC. *Prod.* viii. 329; Hook. *Niger Fl.* 446; L. *Planchon, Prod. Apocyn.* 141, 321; Pierre in *Bull. Soc. Linn. Paris*, 1898, 37; Jumelle, *Pl. à Caoutchouc et à Gutta*, 62; Hallier f. *Kautschuklianen* in *Jahrb. Hamburg. Wissensch. Anstalt.* xvii. (1899), 3. Beih. 107; Warb. *Kautschukpfl.* 120, not of Schweinf.

**Upper Guinea.** Sierra Leone: by the side of a rivulet in the mountains near Free Town, *Don*.

This is known only from the fruits which are said to be acid and somewhat smaller than those of *C. dulcis*. It is, according to G. Don (ex Sabine, l.c.), a more straggling

climber than *C. dulcis*, and only two specimens of it were found. Planchon mentions it as producing a kind of rubber. The "*C. acidus*" of Schweinfurth (Heart of Africa, i. 185) is evidently *Landolphia owariensis*.

24. **C. foretiana**, *Pierre ex Jumelle, Plant. à Caoutch. et à Gutta*, 98. A powerful climber; stem over  $2\frac{1}{2}$  in. in diam.; branches glabrous, blackish-brown, dotted with small yellowish lenticels. Leaves ovate-oblong, with rounded or cuspidate tips, up to 11 in. long, 6 in. broad, coriaceous, glabrous, glossy above; secondary nerves 7-9 on each side, oblique, much raised below; petiole about 5 lin. long. Flowers of the size of those of the ordinary lilac, white, scentless. Fruit ovoid-globose, over 3 in. long and  $2\frac{3}{4}$  in. in diam.; seeds 20-25.—Pierre in Bull. Soc. Linn. Paris, 1898, 38.

**Lower Guinea.** Gaboon: Fernand Vaz, *Forest*.

Two leaves of *C. foretiana* communicated by Jumelle to the Berlin herbarium so much resemble those of *C. maxima*, that I would not hesitate to refer them to this species if it were not for the flowers of *C. foretiana* being described as small (of the size of lilac flowers), whilst they are comparatively large in *C. maxima*.

25. **C. fulva**, *Pierre in Bull. Soc. Linn. Paris*, 1898, 38 (*name only*). A very tall climbing shrub, with long flagelliform tendrils; young branches and tendrils more or less densely hispid with long reddish spreading hairs, the former with numerous inconspicuous lenticels. Leaves obovate-oblong, abruptly, shortly and acutely acuminate, slightly cordate at the base, 3-4 in. long, 2- $2\frac{1}{2}$  in. broad, subcoriaceous, slightly shining above with stiff hairs on both sides, but chiefly on the nerves below, finally glabrescent above; midrib finely channelled above; secondary nerves 5-6 on each side, slightly sunk above, distinctly raised below, connected by bold arches; veins fine, distinct, loosely anastomosing; petiole 3-4 lin. long. Flowers unknown. Fruit lemon-shaped, apiculate, almost 2 in. long, yellow, hairy when young.—Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 108 partly.

**Lower Guinea.** Gaboon: Munda; Sibange Farm, *Dinklage*, 575! and without precise locality, *Klaine*, 1400!

Hallier (l.c.) also refers specimens from Togo (Baumann, 520!) and from Monbuttu (Schweinfurth, 3482!), all without flowers or fruits, to this species, to which they bear a certain general resemblance without however, agreeing exactly, and the Togo specimens are more likely to be identical with *C. hirsuta*.

26. **C. griffoniana**, *Pierre ex Jumelle, Plant. à Caoutchouc et à Gutta*, 98.

Nothing is known about this species except that it is allied to *C. foretiana*. It is probably the plant mentioned by Pierre, in Bull. Soc. Linn. Paris, 1898, 93, as *Sclerodictyon griffonianum*. See Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 156. Pierre says that in the shape of the leaves it resembles his *Ancylobotrys mammosa*, var. *micronata*, and that the leaves are thin and faintly nerved.

27. **C. (?) Iganda**, *Pierre in Bull. Soc. Linn. Paris*, 1898, 38 (name only).

**Lower Guinea.** Gaboon : Fernand Vaz, *Foret*.

This is evidently the plant described by Jumelle, *Plant. à Caoutchouc et à Gutta*, 102, under the native name "Iganda." It is one of the rubber plants sent by Foret from Fernand Vaz to the Musée colonial de Marseilles. It is described thus: Branches brown with short white hairs and scanty lenticels. Leaves elliptic, rounded at the base, acuminate, 5 in. long, 2 in. broad; lateral nerves 10-12 on each side, slightly raised; petiole 7 lin. long. Fruit globose, brown, smooth, almost 3 in. in diam. Pierre refers it with some doubt to his section *Antchineæ*.

28. **C. Jumellei**, *Pierre in Bull. Soc. Linn. Paris*, 1898, 38 (name only). A climber; branches covered with short, stiff, reddish hairs; lenticels numerous, yellowish. Leaves ovate, acutely and shortly acuminate, rounded at the base,  $4\frac{1}{2}$  in. long,  $2\frac{3}{4}$  in. broad; lateral nerves 5-6 on each side; petiole 4 lin. long. Flowers in cymes. Calyx hispid with reddish hairs, 1 lin. long. Fruit globose, brown when dry,  $2\frac{1}{4}$  in. in diam. Seeds 8.—Jumelle, *Pl. à Caoutchouc et à Gutta*, 100.

**Lower Guinea.** French Congo, *Foret*.

29. **C. Gentilii**, *De Wild. Apocyn. à Latex rec. par Gentil*, 28. A powerful climber; stem over 1 ft. in diam.; young branches covered with stiff spreading brown hairs, at length glabrous, and dotted with yellowish-white lenticels. Leaves elliptic or obovate, abruptly acute, cuneate or rounded at the base (rarely subcordate),  $3-4\frac{3}{4}$  in. long,  $1\frac{1}{3}-2\frac{1}{2}$  in. broad, hairy (chiefly on the nerves) above, subhirsute below; midrib channelled above; secondary nerves about 11 on each side, oblique, finely channelled above, connected by distinct marginal arches; petiole 5 lin. long, hirsute. Fruit subglobose,  $4\frac{3}{4}$  in. long, 4 in. in diam.; orange-yellow, tubercled; pericarp 7-15 lin. thick when fresh. Seeds 8-30, 8-9 lin. long, embedded in an acid, edible, whitish-yellow pulp.

**South Central.** Congo Free State : between Lake Leopold and Lake Tumba, *Gentil*.

Said to be allied to *C. fulva*.

5. **CARISSA**, Linn.; Benth. et Hook. f. *Gen. Pl.* i. 695.

Calyx small, eglandular, very rarely multiglandular within; sepals 5, very rarely 4, free or nearly so, imbricate, acute or acuminate. Corolla salver-shaped; tube slightly widened below the mouth or near the middle; lobes usually overlapping to the right, rarely to the left. Stamens enclosed in the widened part of the corolla-tube; filaments short, slender; anthers oblong, acute; cells obtuse at the base, polliniferous and dehiscing to the base. Disc 0. Ovary entire, 2-celled; ovules 1-4 in each cell, from the middle of the septum, rarely more in 2-3 rows; style filiform; stigma at the level of the anthers, or rarely some way below them, oblong, papillose and viscous, with a 2-lobed

hairy tip. Fruit baccate, globose to oblong. Seeds usually 1-4, rarely more, peltate, plano-convex; hilum central; endosperm horny; cotyledons ovate; radicle superior.—Much branched, straggling and usually very spinous shrubs or small trees, rarely climbing; spines opposite, simple, rarely forked, often very stout. Leaves coriaceous, very variable on the same individual; axillary stipules 0; axillary glands very minute and few, or 0. Inflorescence often umbelliform, or corymbiform, and much-contracted, terminal or pseudo-axillary, rarely cymose, lax and few-flowered; flowers subsessile, white or tinged with pink. Berries often edible.

About 18 species, in the tropics of the Old World, extratropical South Africa and Australia.

\**EU-CARISSA*.—Corolla-lobes overlapping to the right.

Ovules 1-4 in each cell. Spines simple . . . 1. *C. edulis*.

\*\**ARDUINA*.—Corolla-lobes overlapping to the left. Ovules

1-10 in each cell. Spines bifurcate.

Flowers pentamerous. Ovules solitary . . . 2. *C. Arduina*.

Flowers tetramerous. Ovules in each cell . . . 3. *C. tetramera*.

1. *C. edulis*, *Vahl, Symb.* i. 22. A very much branched straggling or climbing shrub, glabrous, or young branches with short spreading hairs but soon glabrescent; spines simple, straight or recurved, 1-2 in. long, rarely almost suppressed. Leaves ovate to ovate-elliptic or sublanceolate, rarely orbicular, 9-24 lin. long, 9-18 lin. broad, sometimes much smaller, rounded at the base or subcuneate, acute and often mucronate, rarely obtuse, coriaceous, glabrous or very soon glabrescent; nerves 3-5, faint on both sides; petiole 1-1½ lin. long. Calyx 1½-2 lin. long; sepals lanceolate, acuminate, ciliolate, glabrous or puberulous. Corolla white or purple, or purple turning white, glabrous or minutely hairy at the mouth and on the inner surface of the lobes, 6-9 (rarely 4-6) lin. long; lobes ovate or oblong, acute, 1¼-4 lin. long. Berry globose, purple to black, ¼-⅔ in. in diam., edible. Seeds 2-4.—Delile, *Cent. Pl. Afr. Caill.*, 51, t. 2, fig. 1; DC. *Prod.* viii. 334; Hook. *Niger Fl.* 446; Ficalho, *Pl. Uteis Afr. Port.* 221; L. Planchon, *Prod. Apocyn.* 141, 286, 292; Engl. in *Engl. Jahrb.* viii. 64; Hochgebirgsfl. *Trop.-Afr.* 340; Defflers, *Voy. Yemen*, 163; Lewin in *Engl. Jahrb.* xvii. Beibl. 41, 49, 50, and in *Virchow's Archiv. Path. Anat. u. Phys.* Bd. 134, 246; Durand & Schinz, *Études Fl. Congo*, i. 189; K. Schum. in *Engl. Jahrb.* xxviii. 453. *C. dulcis*, Schumach. & Thonn. *Beskr. Guin. Pl.* 146; DC. l.c. 333. *C. pubescens*, DC. l.c. 334; Hook. *Niger Fl.* 446. *C. candolleana*, Jaub. & Spach, *Ill. Fl. Or. v. t.* 497. *C. cornifolia*, Jaub. & Spach, l.c. t. 498. *C. richardiana*, Jaub. & Spach, l.c. t. 496; *C. Schimperii*, Balf. f. in *Trans. Roy. Soc. Elin.* xxxi. 157, not of A. DC.; *C. sp. no. 3*, Oliv. in *Trans. Linn. Soc.* xxix. 107. *Antura*, Forsk. *Fl. Ægypt.-Arab.* 63. *A. hadiensis*, G. F. Gmel. *Syst.* 405. *Arduina edulis*, Spreng. *Syst.* i. 669; K. Schum. in *Engl. & Prantl, Pflanzenfam.* iv. ii. 127, and in *Engl. Pf. Ost-Afr. C.* 315, and in Schlechter, *Westafr. Kautschuk-Exped.* 304. *Carandas edulis*, Hiern in *Cat. Afr. Pl. Welw.* ii.

664. *Jasminonerium africanum*, *J. dulce*, *J. edule* and *J. pubescens*, O. Kuntze, Rev. Gen. Pl. ii. 415.

**Upper Guinea.** Cape Verd, *Perrottet*, 490! 494! Gold Coast: Accra, *Fogel*! Cape Coast Castle, *Brass*! Krobo plains, *Johnson*, 510! Togo; Atikpui, *Schlechter*, 12980.

**Lower Guinea.** Lower Congo, *Smith*! *Naumann*. *Daniell*! Angola: Loanda, common on the coast hills, *Welwitsch*, 5972! 5973! 5975! Loanda, *Rattry*! Ambriz, *Welwitsch*, 5974! *Monteiro*, 1! Kissemba, *Welwitsch*, 5974! Bumbo; Bruco, *Welwitsch*, 5971!

**Nile Land.** Nubia: Erkowit Mountain, *Schweinfurth*, 241! Eritrea: Habab, 4000-8000 ft., *Hildebrandt*, 486! Keren, 4500 ft., *Beccari*, 35! Acrur, 6000 ft., *Schweinfurth & Riva*, 1348! Abyssinia, up to 8000 ft., *Salt*! *Quartin Dillon & Petit*, 25! *Schimper*, 156 partly! 209 partly! 560! 590! 867! 893! Schoa; Ankober, *Roth*, 406! Upper Sennar: Fazokl, *Boriemi in Herb. Kotschy*, 78! *Paul von Wurtemberg*! Gebel Kassan, *Cienkowsky*, 61! Camamil, Choor Gutschetsch, *Kotschy*, 569! Somaliland: Golis Range, *Miss Edith Cole*! British East Africa: Jur, *Schweinfurth*, 1586! Kich; Ador Village, *Petherick*! Madi, *Speke & Grant*, 688! Uganda, *Wilson*, 86! Mau Plateau, *Johnston*, 3! Leikipia, 6000-8000 ft., *Thomson*! Mwachi, *Scott-Elliott*, 6128! near Mombasa, *Wakefield*! Witu, *Thomas*, 112! Wanga, *Smith*!

**Mozamb. Dist.** German East Africa: Karagwe, *Speke & Grant*, 214! Kilimanjaro, 3300-3600 ft., *Volkens*, 1794! 2058! Usunbara, *Buchwald*, 103! 119! Usagara, ex *Schumann*, Uhehe; Iringa, *Goetze*! British Central Africa: Nyasaland, *Buchanan*, 150! *Cameron*, 4! Zambesi River, at Victoria Falls, *Kirk*!

Also in Socetra and tropical Arabia.

Var.  $\beta$  *tomentosa*, Stapf. Branches and leaves tomentose, at least in a young state.—*C. tomentosa*, A. Rich. Tent. Fl. Abyss. ii. 30; Engl. Hochgebirgsh. Trop. Afr. 340. *C. pilosa*, Schinz in Verhandl. Bot. Ver. Brandenburg, xxx. 258. *Jasminonerium tomentosum*, O. Kuntze, Rev. Gen. Pl. ii. 415.

**Nile Land.** Eritrea: Marakhat Valley, near Saganeiti, 7000 ft., *Schweinfurth & Riva*, 824! Abyssinia, *Schimper*, 156 partly! 209 partly! 1068! *Petit*. British East Africa: Jur, *Schweinfurth*, 1406! 1859!

**Lower Guinea.** Damaraland: Grootfontein, *Schinz*.

**Mozamb. Dist.** British Central Africa: Rhodesia; Buluwayo, *Rand*, 176! Matabeleland, *Oates*! Bechuanaland; Lake River, *Lugard*, 16!

I have enumerated here only the extreme forms; specimens with more or less hairy young branches approaching var. *tomentosa* may be met with in almost any part of the area of the type.

Var.  $\gamma$  *major*, Stapf. Branches and leaves glabrous or more or less hairy; berries 7-8 lin. in diam.

**Lower Guinea.** Angola: Huilla; Lopollo, *Welwitsch*, 5969!

**Mozamb. Dist.** Nyasaland: Manganja Hills, *Meller*! Chiradzulu Hill, *Kirk*! Transvaal; Zoutpansberg, *Nelson*, 412! by the Lehlaba (Lehlabane) River, *Nelson*, 373!

I have referred to var. *major* only specimens of which I have seen or had notes by the collectors, concerning the ripe fruits.

The shape and size of the leaves, length of the corolla-tube and general amount of hairiness are extremely variable, but are characters which seem neither to be distinctly correlated, nor to be dependent upon geographical areas.

2. **C. Arduina**, *Lam. Encycl.* i. 555. A glabrous, rarely pubescent shrub up to 10 ft. high, with numerous green simply or repeatedly bifurcate spines; spines  $\frac{1}{2}$ – $1\frac{1}{2}$  in. long. Leaves generally ovate, acute, mucronulate, obtuse or sometimes almost cordate, and as long as broad, sometimes oblong or nearly lanceolate,  $\frac{3}{4}$ –3 in. long,  $\frac{1}{2}$ –2 in. broad, dark shining green above, paler below; secondary nerves about 6–8 on each side, like the veins faintly prominent or quite obscure, mainly below; petiole 1–3 lin. long. Cymes subsessile or shortly peduncled, few- to many-flowered, glabrous or subglabrous; pedicels slender, 1– $2\frac{1}{2}$  lin. long. Calyx  $\frac{3}{4}$ –1 lin. long; sepals lanceolate, acuminate, ciliolate, glabrous or very finely puberulous, pale pink. Corolla white, fragrant; tube 3–4 lin. long, densely hairy at the throat; lobes overlapping to the left, ovate to lanceolate, 2– $2\frac{1}{2}$  lin. long. Stamens inserted between the middle and the mouth. Ovule 1 in each cell. Berry scarlet, oblong, acute, 4– $7\frac{1}{2}$  lin. long, 1–2-seeded, edible.—DC. *Prod.* viii. 334; L. Planch. *Prod. Apocyn.* 141, 258; Lewin in *Engl. Jahrb.* xvii. Beibl. 41, 49, 50; Schinz in *Mém. Herb. Boiss.* x. 56. *C. bispinosa*, Desf. *Tabl. Écol. Bot.* 78. *C. ferox*, DC. l.c. 335. *C. acuminata*, DC. l.c. 335; Wood, *Natal Plants*, t. 203. *C. myrtoides*, Desf. *Cat. Hort. Paris*, ed. 3, 398; DC. l.c. 335. *C. erythrocarpa*, DC. l.c. *C. hamatocarpa*, DC. l.c. 336. *C. oblongifolia*, Hochst. in *Flora*, 1844, 827. *C. bispinata* (by error), Lewin in *Virchow's Arch. Path. Anat. u. Physiol.* Bd. 134, 246. *Arduina bispinosa*, Linn. *Mant.* i. 52; Lodd. *Bot. Cat.* t. 387; K. Schum. in *Engl. & Prantl, Pflanzenfam.* iv. ii. 126; in *Engl. Pfl. Ost-Afr. C.* 315. *A. erythrocarpa*, Eckl. in *South Afr. Journ.* i. (1830), 372. *A. hamatocarpa*, Eckl. l.c. *A. ferox*, E. Meyer, *Comm.* 191; K. Schum. in *Engl. and Prantl, l.c. A. acuminata*, E. Meyer, l.c.; K. Schum. in *Engl. & Prantl, l.c. Jasminonerium acuminatum, J. bispinosum, J. erythrocarpum, J. ferox, J. hamatocarpum*, and *J. oblongifolium*, O. Kuntze, *Rev. Gen.* ii. 415.

**Mozamb. Dist.** British Central Africa: Nyasaland; Mount Zomba and Mount Mahon, 4000–6000 ft., *Whyte!* Shire Highlands, *Buchanan*, 8! and without precise locality, *Buchanan*, 1466! Rhodesia; Buluwayo, *Rand*, 285!

Also in South Africa.

3. **C. tetramera**, *Staff.* A spinous much-branched shrub; young branches puberulous when quite young, soon glabrous; spines straight, bifurcate,  $\frac{3}{4}$ –2 in. long. Leaves ovate (sometimes very broad) or oblong, acute or obtuse, rarely emarginate, mucronulate, rounded to subcordate at the base,  $1\frac{3}{4}$ –2 in. long,  $\frac{3}{4}$ – $1\frac{1}{2}$  in. broad, coriaceous, very rigid, glabrous, glossy above; secondary nerves 12 or more on each side, almost straight, like the reticulation very faint or slightly prominent, especially above; petiole  $\frac{1}{2}$ –1 lin. long. Cymes few-flowered, contracted, subsessile at the ends of the branches or in the spine-forks, sparingly puberulous; bracts lanceolate, subulate-acute; pedicels up to 1 lin. long. Calyx 1– $1\frac{1}{4}$  lin. long, eglandular, glabrous or finely puberulous; sepals 4, ovate, very acute or subulate-acuminate, ciliolate. Corolla glabrous without; tube purple, 8–9 lin. long, hairy within; lobes 4, ovate-elliptic,

apiculate,  $2\frac{1}{2}$  lin. long. Stamens inserted at the middle; anthers almost 1 lin. long. Stigma some distance below the anthers, cylindric-oblong; the whole pistil 3 lin. long. Ovules about 8 in each cell. Berry globose, bluish-black, pruinose, sweet. Seeds 6-8, lenticular.—*Arduina tetramera*, Sacleux in Morot, Journ de Bot. vii. 312. *A. edulis*, Warb. in Engl. Pf. Ost-Afr. B. 226 (the Amboni plant), not of Sprengel. *Carissa edulis*, Engl. Veg. Usambara, 27, not of Vahl.

**Mozamb. Dist.** Zanzibar: in the littoral bush, *Boirin*; *Kirk*, 22! *Hildebrandt*, 1271! *Duparquet*, *Sacleux*. German East Africa: Usambara; Umba Valley, *Smith*! Amboni, in clearings, *Holst*, 2474A!

*Imperfectly known species.*

**C. africana**, DC. Prod. viii. 332. A shrub, 6 ft. high; branches gnarled, spreading, with stout, simply or repeatedly bifurcate spines. Leaves ovate, acute,  $1\frac{1}{2}$ -2 in. long,  $\frac{3}{4}$ -1 in. broad, coriaceous, glabrous; secondary nerves few, indistinct, veins obscure; petiole 2 lin. long. Cymes 3-5-flowered, terminal, short; pedicels almost glabrous. Sepals narrow-lanceolate, acuminate, ciliate. Corolla 9 lin. long, white, pubescent without; lobes ovate, as long as the tube. Berry ovoid, many-seeded, black, edible.—*C. Carandas*, Lour. Fl. Coch. 124, not of L.

**Mozamb. Dist.** Coast of East Africa; probably Mozambique, *Loureiro*.

De Candolle, l.c., compares this to *C. xylopicron*, Thouars, which has few, short, slender, simple spines or is, when adult, almost unarmed.

6. **ACOKANTHERA**, G. Don; Benth. et Hook. f. Gen. Pl. i. 696.  
(*Acocanthera*, K. Schum.)

Calyx small, eglandular within; sepals free or almost so, imbricate, acute or acuminate, more or less scarious. Corolla salver-shaped; tube slightly widened near the mouth; lobes short, overlapping to the left. Stamens enclosed in the widened part of the tube; anthers ovate-oblong, connective produced into a short minutely pilose point, shortly 2-lobed at and dehiscing to the base. Disc 0. Ovary entire, 2-celled; style filiform; stigma short conic or cylindric, with a ring of papillæ at the base and a minutely 2-lobed hairy apiculus; ovule 1 in each cell, pendulous, attached to the centre of the septum. Fruit a globose or ellipsoid berry. Seeds 2, or 1 (by abortion), peltate, sessile on the septum, plano-convex; hilum oblong, rather large; endosperm bony; cotyledons broadly ovate or subcordate; radicle superior.—Unarmed shrubs or small trees. Leaves thickly coriaceous; axillary stipules 0; axillary glands 0 or very scanty and minute. Corymbs very shortly peduncled or sessile, axillary, often reduced to clusters; flowers subsessile, white or tinged with pink, usually sweet-scented.

Species 3 in tropical and South Africa, 1 extending to Arabia.

Leaves not more than twice as long as broad;  
corolla-tube  $3\frac{1}{2}$ -5 lin. long, very rarely longer.

Secondary nerves 4-5 (rarely 6) on each side,  
often obscure and rather irregular

1. *A. Schimperii*.

- Secondary nerves 6-10, more parallel and prominent on both sides . . . . . 2. *A. venenata*.  
 Leaves about 3 times as long as broad; corolla-tube 7-9 lin. long . . . . . 3. *A. spectabilis*.

1. **A. Schimperii**, Schweinf. in *Boll. Soc. Afr. Italia*, x. (1891), No. xi-xii, 12 (excl. the Taita plant). A glabrous shrub; young branches more or less compressed. Leaves elliptic, subovate or obovate, acute or obtuse, mucronulate, more or less acute at the base,  $1\frac{1}{2}$ - $3\frac{1}{2}$  in. long,  $\frac{3}{4}$ - $1\frac{1}{2}$  in. broad, often shining above; secondary nerves 4-5 (rarely 6) on each side, obscure or more or less prominent on both sides, often much curved or irregularly flexuous; reticulation obscure or more or less distinct; petiole  $1\frac{1}{2}$ -2 lin. long, rarely longer. Corymbs or clusters few- or many-flowered, glabrous, rarely scantily puberulous; bracts ovate, ciliate. Calyx  $\frac{3}{4}$  lin. long; sepals ovate to ovate-lanceolate, acute or acuminate, ciliate. Corolla white or tinged with pink, usually fragrant; tube  $3\frac{1}{2}$ -5 lin. long, glabrous without; lobes broad-ovate, acute or sub-acuminate,  $1\frac{1}{2}$ -2 lin. long. Anthers  $\frac{3}{4}$  lin. long. Stigma conic, short, obtuse. Berry globose or subellipsoid, 1 in. long, black. Seeds semi-globose or semi-ellipsoid, 4-7 lin. long.—Schweinf. & Lewin in *Engl. Jahrb.* xvii. Beibl. 41, 46; Lewin, l.c. 47-51, and in Virchow's *Arch. Path. Anat. u. Physiol.* Bd. 134, 242; Holmes in *Pharm. Journ. Soc. ser. 3*, xxiii. 965; *Engl. Hochgebirgssfl. Trop. Afr.* 340; L. Planchon, *Prod. Apocyn.* 249, 251; *Engl. Pfl. Ost-Afr. A.* 114, 129; Pax in *Engl. Pfl. Ost-Afr. B.* 516, 518, 519 (excl. the Taita plant); Fraser & Tillie in *Proc. Roy. Soc. lvi.* 71; Schweinf. in Höhnel, *Zum Rudolf-See u. Stephanie-See*, 359. *A. Ouabaïo*, Poisson in *Assoc. Franç. L'Avanc. Sc. Congrès d'Oran*, 1888, 3; Cathélineau, *L'Ouabio* 9, and in *Bull. gén. Thérap.* cxiii. (1889) 107; Schweinf. & Lewin in *Engl. Jahrb. l.c.*, and in Virchow's *Arch. l.c.* 241; L. Planchon, l.c. 248-249, 252, fig. 22; Vogtherr in Köhler, *Mediz. Pfl.* iii. text to t. 64. *A. abyssinica*, K. Schum. in *Engl. & Prantl, Pflanzenfam.* iv. ii. 124, fig. 49. B.C., 126, and in *Engl. Pfl. Ost-Afr. C.* 315; Pax in *Engl. Pfl. Ost-Afr. B.* 532; *Engl. Pfl. Ost-Afr. A.* 44, 48, 105; Vogtherr in Köhler, *Mediz. Pfl.* iii. t. 64. *A. sp.*, Benth. & Hook. f. *Gen. Pl.* ii. 696; Oliver in Thomson, *Masai Land*, *Append.* 351; Fraser & Tillie in *Proc. Roy. Soc. liii.* 153. *Carissa abyssinica*, R. Br. in *Salt, Abyss. Append.* iv. lxiv. (name only). *C. Schimperii*, A. DC. *Prod.* viii. 675; A. Rich. *Tent. Fl. Abyss.* ii. 31, t. 68; Hanbury in *Pharm. Journ. ser. 7*, xii. 271; Franch. ex Planch. l.c. 248, not of Balf. f. *C. Mepte*, Hochst. in *Flora*, 1844, 101. *C. Ouabaïo*, Poiss. l.c.; Planch. l.c. 248; *C. sp. aff. C. Schimperii*, Franch. & Poiss. ex Arnaud. *Compt. Rend.* cvi. (1888), 1011. *Arduina Ouabaïo*, Cornu ex Holmes, l.c. 965. *Strychnos abyssinica*, Hochst. ex DC. *Prod.* viii. 675; *Flora*, 1844, 101; *Srophanthus* (?) sp., Gerrard in *Pharm. Journ. ser. 3*, xi. 834.

**Nile Land.** Eritrea: Acnur, 6200 ft., *Schweinfurth & Riva*, 712! 742! Saganeiti, 7200 ft., *Schweinfurth & Riva*, 1825! Abyssinia: Tigre; near Adua, *Quartin-D'Non, Schimper*, 254! 870! 1904! Samen; Aman Eski, *Schimper!* Chelicut, *Petit*, and without precise locality, *Salt! Schimper*, 1074! Somaliland:

mountains south of Zeila, ex *Burton*. Ahl Mountains, 3000-3900 ft., *Hildebrandt*, 1431! Golis Range, *Mrs. Lort-Philips!* *Miss Edith Cole!* mountains of the Warsangeli and Mijurti districts, *Révoil!* Halrawal, *Donaldson-Smith!* British East Africa: Leikipia, 6000-8000 ft., *Thomson!* *Höhnel!* Ellamo, 4500 ft., *Delamere!* Mau, 7000 ft., *Johnston!* Ukamba, 6000 ft., *Scott-Elliot*, 6395! Nyika, *Gregory!*

Also in South-western Arabia.

Var.  $\beta$  *Deflersii*, Stapf. Branches and leaves scabrid, at least when young, the latter frequently larger than in the type. Corolla-tube 5-6 lin. long, pubescent or glabrous.—*A. Deflersii*, Schweinf. ex Lewin in Engl. Jahrb. xvii. Beibl. 41, 46, and Lewin, l.c. 47-51, fig. E, and in Virchow's Archiv. l.c. 233; L. Planchon, Prod. Apocyn. 250; Vogtherr in Köhler, Mediz. Pfl. iii. text to t. 64.

**Nile Land.** Eritrea: Ginda; on the Dongollo Hills, 3200 ft., *Schweinfurth & Riva*, 2223! and near the Felakhit River, *Schweinfurth & Riva*, 2183! Somaliland: Wagga Mountains, 6000 ft., *Mrs. Lort-Philips!* British East Africa: between Lé and Tocha, *Delamere!*

Also in South-western Arabia. This is probably only an individual variation, such as occurs frequently, for instance, in *Carissa edulis*.

A decoction of the root of *A. Schimperi* is, as J. Vaughan (in Pharm. Journ. ser. 7, xii. 271) and F. S. Arnott [see *Burton*, "First Footsteps in East Africa" (ed. 1894) i. 139, footnote] first pointed out, used by the Somalis for poisoning arrows. The Wandorobbo, Wakamba, Wanyika and other tribes of British East Africa also use it for the same purpose. The Somali-name for the plant is Wabei or Waba, and for the poison Wabayo or Ouabaïo (Rochebrune & Arnaud, Rech. sur le Ouabaïo in Mission Révoil Pays Çomalis), the Masai name Murzu.

2. ***A. venenata***, *G. Don*, *Gen. Syst.* iv. 485. A shrub or a gnarled tree, up to 14 ft. high, glabrous (except sometimes the inflorescence); young branches compressed or ancipitous, smooth. Leaves mostly ovate or elliptic, sometimes oblong, rarely lanceolate, acute and usually mucronulate, rarely obtuse, acute at the base,  $1\frac{1}{2}$ -4 in. long,  $\frac{3}{4}$ -2 in. broad, pale or olive-green when dry, somewhat shining above or on both sides; secondary nerves 6-10 on each side, often with similar interposed tertiary nerves, oblique, parallel, prominent on both sides; veins distinct or obscure; petiole stout, 1-2 lin. long. Clusters glabrous or puberulous, sessile or subsessile, usually many-flowered; bracts ovate, brown or the upper pinkish. Calyx glabrous or puberulous, 1 lin. long; sepals ovate to ovate-lanceolate, acute to subacuminate, distinctly to very obscurely ciliate. Corolla white to pink, sweet-scented; tube  $3\frac{1}{2}$ -5 lin. long, puberulous or glabrous without, hairy within; lobes broad-ovate, acute or shortly acuminate, somewhat over 1 lin. long. Anthers  $\frac{1}{2}$ - $\frac{3}{4}$  lin. long. Stigma short, obtuse, conic. Berry globose, 1 in. in diam., purplish-black; seeds semi-globose or semi-ellipsoid, 4-6 lin. long.—Vatke ex Schweinf. in Engl. Jahrb. xvii. Beibl. 41, 46 (footnote); Holmes in Pharm. Journ. ser. 3, xxiv. 42; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 126 (not of Schweinf. ex Lewin in Engl. Jahrb. xvii. Beibl. 41, 46, and Lewin, l.c. 49-51, 47, fig. A., nor L. Planchon, Prod. Apocyn. 255, nor Vogtherr in Köhler, Mediz. Pfl. iii. t. 64). *A. Lamarkii*, Don, l.c. *A. Schimperi*, Schweinf.

in. Boll. Soc. Afr. Italia, x. (1891) xi.-xii. 13 (the Taita plant); Pax in Engl. Pf. Ost-Afr. B. 519 (the Taita plant). *A. abyssinica*, K. Schum. in Engl. Pf. Ost-Afr. A. 48 (partly?) *Cestrum venenatum*, Thunb. Prodr. 36; Fl. Cap. ed. Schult. 193. *C. oppositifolium*, Lam. Ill. ii. 5, t. 112, fig. 2; Poir. Suppl. ii. 182. *Toxicophlœa Thunbergii*, Harv. in Hook. Lond. Journ. Bot. i. 24, and Thes. Cap. 10, t. 16. *T. cestroides*, A. DC. Prod. viii. 336. *Sideroxylum toxiciferum*, Thunb. Trav. ed. 3, i. 156.

**Nile Land.** British East Africa: Taita; Ndara Mountain, 4000-4800 ft., Hildebrandt, 2452! *Holmwood!*

**Mozamb. Dist.** German East Africa: Usambara; Kwa Mshuza, 4500 ft., Holst, 8968! British Central Africa: Rhodesia; by streams near Buluwayo, Rand, 572!

Also in South Africa. The root is used by the natives of the Taita District for poisoning arrows. Thunberg, l.c., also states that it is used for the same purpose by the Hotientots and that the Cape Dutch call it "Gift boom." Suaheli name Mchungu (Hildebrandt).

3. *A. spectabilis*, Hook. f. in Bot. Mag. t. 6359. A tall shrub or small tree up to 15 ft. high, glabrous (except sometimes the inflorescences); young branches compressed. Leaves elliptic or oblong-lanceolate, acute, rarely obtuse, generally mucronate, acute at the base, 2½-5 in. long, 1-2 in. broad, very coriaceous, dark green, paler and sometimes purplish beneath; secondary nerves usually 7-10 on each side, sometimes with similar tertiary nerves between them, faint or like the reticulating veins slightly prominent on both sides; petiole stout, 2-4 lin. long. Corymbs or clusters short, dense, many-flowered, subsessile, glabrous or puberulous; bracts ovate, caducous, ciliolate. Calyx more or less pubescent, green or whitish, 1½ lin. long; sepals ovate-lanceolate, ciliolate. Corolla white, tinged with pink, fragrant; tube 7-9 lin. long, pubescent or almost glabrous without, hairy within; lobes ovate to oblong, acute, 2-3 lin. long. Anthers ¾ lin. long. Stigma short, cylindric, obtusely apiculate. Berry ellipsoid, 1 lin. long or longer, purplish-black. Seeds 1-2, semi-ellipsoid, 5-9 lin. long.—K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 126; Wood, Natal Pl. 60, t. 74. *A. venenata*, Schweinf. ex Lewin in Engl. Jahrb. xvii. Beibl. 41, 46, and Lewin, l.c. 47-51; L. Planchon, Prod. Apocyn. 255; Vogtherr in Köhler, Mediz. Pf. iii. text to t. 64; not of G. Don. *A. sp.*, Benth. et Hook. f. Gen. Pl. ii. 696. *Carissa oblongifolia*, Hochst. in Flora, 1844, 827, and ex Walp. Rep. vi. 466. *Toxicophlœa spectabilis*, Thiselton-Dyer ex Gard. Chron. 1872, 363; Flor. Mag. new ser. t. 20; Gard. Chron. xv. (1894) 209, fig. 23; Rev. Hort. 1879, 270 with plate; 1888, 517 with fig. *T. Thunbergii*, Sonder in Linnæa, xxiii. 79; Gartenflora, 1878, t. 940; Rev. Hort. 1880, 370 with plate; Ill. Hort. xxxii. (1885) t. 553, not of Harvey.

**Lower Guinea.** German South-west Africa: Hereroland, Pechuel Loesche (according to O. Kuntze in Jahrb. Berl. Bot. Gart. iv. 1886, 268)?

Hitherto only known from Natal. I suspect that O. Kuntze's determination (made from a fruiting branch) is erroneous, and that the Hereroland plant is *A.*

*venenata*. On the other hand, the *A. venenata*, mentioned in Lewin's paper in Engl. Jahrb. xvii. Beibl. No. 41, in L. Planchon, Prodr. Apocyn. 255, and by Vegtherr in Köhler's Mediz. Pfl. iii. text to t. 64, is certainly *A. spectabilis*. The specimen which Lewin examined was obtained from La Mortola; Schweinfurth's description of its leaves and remark (in Lewin, l.c.) that the flowers are one-third larger than those of *A. Schimperii* or *A. Deftersii*, leave no doubt about it. *A. spectabilis* also contains a deadly poison.

#### 7. PICRALIMA, Pierre in Bull. Soc. Linn. Paris, 1896, 1278.

Calyx middle-sized; sepals 5, free, imbricate, broad, obtuse, subcoriaceous, with numerous small adpressed glands at the base within. Corolla salver-shaped; tube cylindric, very slightly widened in the upper third, fleshy, naked at the mouth; lobes 5, broad-elliptic, obtuse, overlapping to the left. Stamens 5, enclosed in the widened part of the corolla-tube; filaments very short, filiform; anthers free from the stigma, oblong-linear, subacute, shortly 2-lobed at the base; anther-cells polliniferous and dehiscing to the base. Disc 0. Carpels 2, coherent along the ventral sutures, oblong; style filiform; stigma cylindric-oblong, smooth, minutely 2-apiculate; ovules multiseriate, numerous. Fruit of 2 (or by abortion of 1) large obovoid-oblong baccate divaricate mericarps, slightly flattened at the base where they touch each other, but are free; pericarp thick, fleshy, fibrous, especially in the inner part, milky. Seeds many, oblong, compressed, horizontal and sessile on the fleshy placenta, more or less embedded in a scanty fleshy pulp; hilum basal, punctiform; testa smooth, coriaceous; endosperm fleshy (hard when dry), ample. Embryo shorter than the endosperm; cotyledons obovate-oblong about as long as or longer than the radicle.—A glabrous tree. Leaves opposite, petioled, coriaceous; petioles hollowed at the base; axillary stipules 0; axillary glands numerous, forming a fringe lining the cavity of the petiole, secreting resin. Inflorescence terminal, of 1 shortly peduncled or 2-3 closely approximate, few- to 12-flowered pseudo-umbels, much shorter than the uppermost leaves. Flowers white, middle-sized.

Species 1, endemic.

1. **P. klaineana**, Pierre, l.c. 1279. A tree 30-80 ft. high; branches stout, terete, dark brown or blackish. Leaves oblong, more or less abruptly acuminate, rotundate or subacute at the base,  $5\frac{1}{2}$ -7 in. long, 2-3 in. broad, thinly coriaceous, glossy above; secondary nerves about 20 on each side, sometimes with similar parallel tertiary nerves between them, rather spreading, straight to or beyond the middle, then slightly curved, joined by a distinct marginal nerve close to the edge; veins slightly prominent, anastomosing in more or less elongate areoles, subparallel to the side-nerves; petiole stout, canaliculate, up to 6 lin. long. Peduncle stout,  $\frac{1}{2}$ -1 in. long; bracts small or quite suppressed; pedicels 4-6 lin. long. Sepals ovate-oblong, obtuse, 3 lin. long, shining

Corolla-tube long, glabrous outside, loosely pubescent within in the middle third, 7-9 lin. long; lobes about as long as the tube. Anthers  $1\frac{1}{2}$  lin. long. Style (including the stigma) 4 lin. long. Berries 4-6 in. long, 3-4 in. in diam. Seeds about 1 in. long.—K. Schum. in Engl. & Prantl, Pflanzenfam. Nachtr. 284; Ergänz. i. 60; Hook. Ic. Pl. tt. 2745-6. *Tabernaemontana nitida*, Stapf in Kew Bulletin, 1894, 22, & in De Wild. & Durand, Contrib. Fl. Congo in Ann. Mus. Congo, Bot. sér. 2, i. fasc. i. 39; De Wild. & Durand, Reliq. Dewevr. in Ann. Mus. Congo, Bot. sér. 3, fasc. ii. 153.

**Upper Guinea.** Old Calabar, *Robb!* Cameroons: Ambas Bay, *Mann*, 710!

**Lower Guinea.** Gaboon: Mount Bouët, near Libreville, *Jolly*, 27; *Klaine*, 299!

**South Central.** Congo Free State: Lukolela, *Dewèvre*, 847! Lokandu, *Dewèvre*, 1113!

There are 2 leaves in the herbarium at Brussels, accompanied by a coloured drawing by Demense (105), named *Hunteria* sp., Hallier f., and referred to by him as *Hunteria* in his Kautschuklieden, 190. These leaves were collected near the Sankuru River in the Congo Free State, and differ only slightly in their dimensions from those of Klaine's specimens. The drawing represents a green pear-shaped fruit  $\frac{1}{4}$  natural size. The measures calculated from it are:— $10\frac{2}{3}$  in. long and  $6\frac{2}{3}$  in. wide. The pericarp is shown thick and the seeds somewhat asymmetrically oblong-elliptic in outline, 14 lin. long,  $6\frac{1}{2}$  lin. wide. Demense's plant is, no doubt, a *Picalima*, and possibly identical with *P. klaineana*.

## 8. PLEIOCARPA, Benth. in Benth. et Hook. f. Gen. Plant. ii. 699.

Calyx small, eglandular; sepals 5, almost or quite free, sub-membranous except at the herbaceous base, obtuse or acute. Corolla salver-shaped; tube cylindric, slightly widened below the mouth; lobes 5, overlapping to the left. Stamens enclosed in the widened part of the corolla-tube; anthers free from the stigma, ovate to oblong-lanceolate, acute; cells obtuse at and dehiscing to the base. Disc 0. Carpels 2-5, distinct; style filiform; stigma at the level of the anthers, oblong-ellipsoid, papillose, not or very obscurely apiculate; ovules 1-4 in each cell. Mericarps baccate, fleshy, coriaceous when dry, spreading, often rugose, 1- or 2- (rarely 3-) seeded. Seeds oblong-ellipsoid, slightly laterally compressed; testa membranous; endosperm almost horny; cotyledons very thin, foliaceous, oblong; radicle thickened at the base, as long as or slightly longer than the cotyledons.—Glabrous shrubs or small trees. Leaves opposite or ternate, coriaceous; lateral nerves rather straight and parallel, usually numerous, connected by a more or less conspicuous marginal nerve; axillary stipules 0; axillary glands very obscure or 0. Flowers in sessile axillary and often opposite (rarely pseudo-terminal) clusters, very rarely in compact panicles or pseudo-umbels.

Species 9, besides several imperfectly known, endemic.

Corolla  $\frac{3}{4}$ -2 in. long. Carpels 3-5, 1-4-ovuled.

Leaves oblong or elliptic,  $1\frac{1}{2}$ - $3\frac{1}{2}$  in. broad.

- Corolla 2 in. long; lobes as long as the tube;  
berries long-rostrate,  $1\frac{1}{2}$  in. long . . . . . 1. *P. rostrata*.
- Corolla 9-10 lin. long; lobes short; berries ovoid-  
globose, apiculate, 4 lin. long . . . . . 2. *P. mutica*.
- Leaves lanceolate,  $1-1\frac{1}{4}$  in. broad . . . . . 3. *P. salicifolia*.
- Corolla  $\frac{1}{4}-\frac{3}{4}$  in. long; carpels 2, 2-ovuled.
- Corolla 5-9 lin. long, lobes at least  $\frac{1}{2}$  as long as the  
tube.
- Flowers shortly (1 lin.) pedicelled in compact  
umbels or panicles . . . . . 4. *P. pycnantha*.
- Flowers sessile in compact clusters . . . . . 5. *P. bicarpellata*.
- Corolla under 5 lin. long, lobes much less than  $\frac{1}{2}$  as  
long as the tube.
- Leaves oblong,  $1\frac{1}{2}-2\frac{1}{2}$  in. broad, papery.
- Leaves obtuse or obtusely acuminate,  $1\frac{1}{2}-1\frac{3}{4}$  in.  
broad; corolla-tube  $3\frac{1}{2}$  lin. long . . . . . 6. *P. Welwitschii*.
- Leaves abruptly and acutely acuminate or  
acutely subacuminate,  $1\frac{1}{2}-2\frac{1}{2}$  in. broad;  
corolla-tube 2 lin. long . . . . . 7. *P. micrantha*.
- Leaves oblong-lanceolate to lanceolate, about  $1\frac{1}{4}$  in.  
broad, coriaceous to chartaceous.
- Corolla-tube  $2-2\frac{1}{2}$  lin. long . . . . . 8. *P. flavescens*.
- Corolla-tube  $3-3\frac{1}{2}$  lin. long . . . . . 9. *P. tubicina*.

1. ***P. rostrata***, *Benth. in Hook. Ic. Pl. t.* 1182. A shrub, 8-12 ft. high; young branches dark brown; lenticels few, rather large. Leaves oblong to elliptic, very shortly acuminate, acute at the base, 6-8 in. long,  $3-3\frac{1}{2}$  in. broad, coriaceous, glossy above; secondary nerves 7-9 on each side, distant, oblique; petioles 3 lin. long. Flowers few in each cluster. Calyx 1 lin. long; sepals acute or subobtuse. Corolla white; tube 9-11 lin. long; lobes oblong, rather broad, obtuse, as long as the tube or somewhat shorter. Carpels 3, 4-ovuled. Berries oblong-ovoid, rostrate,  $1\frac{1}{2}$  in. long (including the beak), rather fleshy and coarsely rugose.—K. Schum. in Engl. & Prantl, *Pflanzenfam.* iv. ii. 135, fig. 52, E. *Hunteria rostrata*, Hallier f. *Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt.* xvii. (1899), 3. Beih. 194.

**Upper Guinea.** Cameroons: Cameroon River, *Mann*, 720! 2189!

A specimen collected near Bipinde, in the Cameroons, by Zenker (1181B!) and enumerated by Hallier, l.c., 194, under *Hunteria pleiocarpa*, agrees (so far as the material goes) exactly with Mann's specimens of *P. rostrata*, except that the young fruits do not show any indication of a beak. The ternate mericarps are quite obtuse, but contain like those of *P. rostrata* 4 orules in 2 collateral rows. I have not seen flowers of this plant, which is (according to Zenker) a small shrub, about 3 ft. high, with white flowers.

2. ***P. mutica***, *Benth. in Hook. Ic. Pl. t.* 1181. A shrub, 5 ft. high; branches dark brown; lenticels few, rather large. Leaves elliptic or oblong, abruptly acuminate (acumen linear, obtuse, up to 7 lin. long), acute or subacute at the base, 3-6 in. long,  $1\frac{1}{2}-2\frac{1}{2}$  in. broad, thinly coriaceous, glossy above; secondary nerves 11-14 on each side; petiole 3 lin. long. Flowers in axillary clusters of 10-20, often from

the axils of fallen leaves. Calyx  $\frac{3}{4}$ –1 lin. long; sepals broad, ovate, obtuse. Corolla-tube 6–8½ lin. long; lobes ovate to oblong, obtuse, 3–3½ lin. long. Carpels 5, 1-ovuled. Berries ovoid-globose, obtuse or apiculate, rugose, 4 lin. long, 1-seeded.—K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 135, fig. 52, C-D. *Hunteria pleiocarpa*, Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 193 partly.

**Upper Guinea.** Southern Nigeria: Old Calabar River, *Mann*, 2277! *Thomson*, 38! *Robb*! Adiabo, *Holland*, 106! Cross River, *Johnston*! Cameroons: Rio del Rey, *Johnston*! Lolodorf, *Staudt*, 322!

Hallier f., l.c., also quotes a fruiting specimen collected by Dinklage (1432) near Batanga, under this species.

3. **P. salicifolia**, *Stapf*. Young branches slender, brown, soon grey. Leaves lanceolate, gradually tapering to a slender acumen, sub-acuminate at the base, 4–5 in. long, 1–1¼ in. broad, coriaceous, rather dull on both sides; secondary nerves 16–18 on each side, like the anastomosing veins distinctly raised above; petioles 2–3 lin. long. Flowers few in each cluster. Calyx  $\frac{3}{4}$  lin. long; sepals ovate, sub-obtuse. Corolla-tube 6–7 lin. long; lobes oblong, subobtuse, 3½ lin. long. Carpels 3–4, 2-ovuled.

**Upper Guinea.** Sierra Leone, *Barter*!

This specimen was doubtfully referred to *P. bicarpellata*, Stapf in Kew Bulletin, 1894, 21.

4. **P. pycnantha**, *Stapf*. A shrub; branches slender, terete, drying black. Leaves oblong or oblong-lanceolate, subobtuse or shortly and obtusely acuminate, acute at the base, 2–3½ in. long, 1–1½ in. broad, chartaceous, shining above; secondary nerves about 15 on each side, quite obscure below, very slightly raised above, with similar tertiary nerves between them, much spreading, straight; veins quite obscure below, faintly raised above; petiole 3–5 lin. long. Flowers pedicelled in many- (about 20-) flowered much contracted axillary umbels or panicles, often from the axils of fallen leaves; pedicels up to 1 lin. long. Calyx 1 lin. long; sepals ovate-oblong, subacute or obtuse. Corolla-tube up to 5 lin. long; lobes oblong, obtuse, up to 2½ lin. long. Carpels 2, 2-ovuled.—*Hunteria pycnantha*, K. Schum. in Engl. Jahrb. xxiii. 222; Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899) 3. Beih. 191 partly.

**Nile Land.** Uganda: Sesse Islands, in Lake Victoria, *Stuhlmann*, 1216!

Schumann describes (l.c.) the inflorescence in the Latin diagnosis as terminal or axillary, in the German text, however, as axillary and frequently springing from the lower denuded part of the branches. When I saw the specimen in the Berlin herbarium, I omitted to make a special note concerning this point, but put the specimen down as belonging to *Pleiocarpa*, which implies that it has exclusively or predominantly axillary inflorescences.

5. **P. bicarpellata**, *Stapf* in *Kew Bulletin*, 1894, 21. A shrub or small tree, 3–24 ft. high, rarely climbing; branches slender, quadrangular when young, pale brown or greyish; lenticels very sparse, large. Leaves narrowly oblong or sub lanceolate to ovate-oblong or

subelliptic, obtusely acuminate (acumen linear, obtuse, up to 9 lin. long), acute or acuminate at the base, 3–6 in. long, 1–2 in. broad, chartaceous, glossy above; secondary nerves about 20 on each side, straight, subhorizontal, very fine, slightly raised on both sides, with very similar tertiary nerves between them, which are (like the delicate veins) quite obscure below and faintly raised above; petioles 2–4 lin. long. Flowers few to many in axillary clusters, often from the axils of fallen leaves, rarely from those of the uppermost pair and then apparently terminal. Calyx  $\frac{3}{4}$  lin. long; sepals ovate, acute or subacuminate. Corolla white, fragrant; tube  $3\frac{1}{2}$ –7 (usually 4–5) lin. long; lobes more or less oblong, obtuse,  $2\frac{1}{2}$ – $3\frac{1}{2}$  lin. long. Carpels 2, 2-ovuled. Berries fig-shaped, 8–9 lin. long, 5–6 lin. in diam.—K Schumann in Engl. & Prantl, Pflanzenfam. iv. ii. 135. *Hunteria ambiens*, K. Schum. in Engl. Jahrb. xxiii. 223; Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 191.

**Upper Guinea.** Cameroons: Cameroon Mountain, 4000 ft., *Mann*, 1213! Barombi, 1300 ft., *Preuss*, 44! Johann Albrechts Höhe, 1300–1400 ft., *Staudt*, 573! 683! 794! Bipinde, 360 ft., *Zenker*, 1658! 1660! 1728! Bijoka, 500 ft., *Zenker*! Lolodorf, 1500 ft., *Staudt*, 93! Yaunde, *Zenker*, 501! 753! *Zenker* & *Staudt*, 611! Efulen, *Bates*, 368!

6. **P. Welwitschii**, *Stapf ex Hiern in Cat. Afr. Pl. Welw.* i. 665. A tree, 10–18 ft. high; branches spreading, flexuous. Leaves mostly ternate, rarely opposite, oblong, obtuse or obscurely acuminate, subacute or obtuse at the base, 4–6 in. long,  $1\frac{3}{4}$ – $2\frac{1}{4}$  in. broad, coriaceous, glossy above, dull green beneath, almost glaucous; secondary nerves subhorizontal, about 10–15 on each side, very faint; veins obscure; petioles 6 lin. long. Flowers in small axillary clusters, sessile. Calyx  $\frac{1}{2}$  lin. long; sepals broadly ovate, very obtuse. Corolla-tube white,  $3\frac{1}{2}$  lin. long, slightly widened above the middle; lobes yellow, spreading, roundish-ovate,  $\frac{3}{4}$  lin. long. Carpels 2, 2-ovuled. Berries obovoid or pear-shaped, 5–6 lin. long.—*Hunteria pycnantha*, Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 191 partly, not of K. Schum.

**Lower Guinea.** Angola: Golungo Alto; by the Cuango stream, *Welwitsch*, 5981!

**South Central.** Angola: Lunda; Luachim River, *Buchner*, 621!

Welwitsch states (in MS.) that this tree is extremely rich in a milky juice which dries to an elastic rubber.

A plant collected in Lunda, on the Lulua River, by Pogge (1630!) was referred by Hallier f., i.e., to *Hunteria pycnantha*, which it certainly is not, but the specimen is too defective for determination.

7. **P. micrantha**, *Stapf*. A small tree, 20 ft. high; young branches slender, terete; old bark grey. Leaves opposite or ternate, oblong, abruptly and shortly acuminate (acumen subacute), acute at the base, 4–6 in. long,  $1\frac{1}{2}$ – $2\frac{1}{2}$  in. broad, chartaceous, dull green, slightly shining above; secondary nerves about 20 on each side, very fine, subhorizontal, straight, faintly raised on both sides, but more distinctly

above, alternating with very similar tertiary nerves, which are (like the delicate veins) inconspicuous below and slightly raised above; petiole 4-5 lin. long. Flowers sessile in compact axillary clusters, often from the axils of fallen leaves. Calyx  $\frac{1}{2}$  lin. long; sepals ovate, acute or subacute. Corolla white; tube 2 lin. long; lobes shortly ovate, obtuse,  $\frac{3}{4}$  lin. long. Carpels 2, 2-ovuled.

**Upper Guinea.** Gold Coast: at the base of the Aburi Hills, *Johnson*, 623!

8. **P. flavescens**, *Stapf*. A shrub or small tree; young branches terete; bark greyish-brown, breaking up longitudinally. Leaves opposite, rarely ternate, oblong to oblong-lanceolate, shortly and gradually acuminate or subobtuse, acute at the base, 3-5 in. long, 1-1 $\frac{1}{3}$  in. broad, chartaceous or almost coriaceous, shining above, drying dark-brown; secondary nerves 15-20 on each side, with almost indistinguishable tertiary nerves between them, both of which (as well as the veins) are very faintly raised above and rather obscure below; petiole 4-6 lin. long. Flowers sessile, in compact sessile or very shortly peduncled axillary clusters, often from the axils of fallen leaves. Calyx  $\frac{3}{4}$  lin. long; sepals broad-ovate, acute to subobtuse. Corolla whitish to sulphur-yellow; tube 3 lin. long; lobes short-ovate, obtuse,  $\frac{3}{4}$  lin. long. Carpels 2, 2-ovuled.

**Upper Guinea.** Gold Coast: Acropong, *Johnson*, 803! Aburi Hills, *Johnson*, 616!

Very near *P. micrantha*, but the leaves are narrower, not abruptly acuminate and more coriaceous, and the flowers slightly larger.

9. **P. tubicina**, *Stapf* in *Kew Bulletin*, 1898, 304. A shrub; branches greyish-brown; bark breaking up longitudinally. Leaves ternate, oblong, shortly and more or less obtusely acuminate, acute at the base, 3 $\frac{1}{2}$ -5 $\frac{1}{2}$  in. long, 1 to nearly 2 in. broad, coriaceous, glossy above; secondary nerves 12-20 on each side, very faint below, more distinct above, alternating with and often indistinguishable from the tertiary nerves; veins quite obscure below, slightly raised above; petiole 6-8 lin. long. Flowers sessile, 12-20 in compact axillary clusters, often from the axils of former leaves. Calyx  $\frac{3}{4}$  lin. long; sepals ovate or broad-oblong, obtuse. Corolla white; tube slender, 3-3 $\frac{1}{2}$  lin. long; lobes oblong, obtuse, up to  $\frac{3}{4}$  lin. long. Carpels 2, 2-ovuled.—*Stapf* ex *De Wild. & Durand. Contrib. Fl. Congo* in *Ann. Mus. Congo, Bot. sér. 2, i. fasc. 1, 37; fasc. 2, 40. De Wild. & Durand, Reliq. Dewevr. in Ann. Mus. Congo, Bot. sér. 3, fasc. ii. 150. Hunteria pycnantha, Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 191 partly, not of K. Schum.*

**South Central.** Congo Free State: Basoko, *Demeuse*; Katanga; Lukofu, *Verdick*, 594! Kasongo, *Dewèvre*, 945!

The Ikwangotlas, according to *Dewèvre*, use the leaves for poisoning animals.

*Imperfectly known species.*

10. **P. breviloba**, *Staff.* Young branches slender, subangular; lenticels scanty, minute. Leaves opposite, elliptic-lanceolate, acuminate (acumen sublinear, subobtus), gradually narrowed into the petiole,  $4\frac{1}{2}$ –6 in. long,  $1\frac{1}{2}$ –2 in. broad, chartaceous-membranous, shining on both sides; secondary nerves mixed with tertiary nerves, which (like the reticulating veins) are slightly raised, especially above; petiole  $3\frac{1}{2}$ –5 lin. long. Flowers subsessile, in sessile compact axillary clusters. Calyx scarcely  $\frac{3}{4}$  lin. long; sepals ovate, acute. Corolla-tube  $2\frac{1}{2}$ –3 lin. long; lobes ovate, obtuse, hardly 1 lin. long. Carpels 2.—*Hunteria breviloba*, Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 189, and in Schlechter, Westaf. Kautschuk-Exped. 306.

**Lower Guinea.** French Congo: in forests near the River Sanga, between Woso and Bonga, *Schlechter*, 12706.

This is, no doubt, a true *Pleiocarpa*, very near *P. Welwitschii* and *l. tubicina*, if it is not identical with one of them.

11. **P. camerunensis**, *Staff.* A shrub 3–9 ft. high; young branches slender, angular, green; the older rough with lenticels. Leaves elliptic- to lanceolate-oblong, abruptly acuminate (acumen obtuse, up to 7 lin. long),  $3\frac{1}{2}$ –6 in. long,  $1\frac{1}{4}$ – $2\frac{1}{2}$  in. broad, chartaceous or papery, dull or pale green; midrib channelled, with a more or less distinct central longitudinal ridge; secondary nerves obliquely spreading, about 10 on each side, faintly raised above and below; veins obscure; petiole 3–4 lin. long. Flowers in few- to many-flowered axillary or pseudoterminal sessile compact clusters. Calyx  $\frac{1}{2}$  to almost 1 lin. long; sepals ovate-triangular, acute, herbaceous, with an entire or lobed scale-like gland at the base within. Corolla white; tube  $1\frac{1}{2}$  lin. long, with a callous ring at the mouth; lobes oblong, obtuse, as long as the tube. Carpels 2; ovules 4 in each cell.—*Hunteria camerunensis*, Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 187.

**Lower Guinea.** Cameroons; Bipinde, by streamlets, in shady forest, 300–350 ft., *Zenker*, 1211! 1620! 2311!

I have little doubt that this is a *Pleiocarpa*; but as the material at my disposal is very scanty, I am unable to work out its affinity. Hallier states that there are 8 ovules in 4 rows in each carpel; I have not been able to find more than 4 in each carpel.

12. **P. microcarpa**, *Staff.* Branches pale brown, with warty lenticels. Leaves ternate, oblong, abruptly acuminate (acumen linear, obtuse, up to 5 lin. long), acuminate at the base,  $4\frac{1}{2}$ –7 in. long,  $1\frac{3}{4}$ – $2\frac{1}{4}$  in. broad, almost glaucous below; secondary nerves subhorizontal, 16–20 on each side, raised on both sides; veins delicate, surrounding horizontal areoles; petioles 4–6 in. long. Flowers in sessile axillary

clusters. Calyx  $\frac{3}{4}$  lin. long; sepals broad, ovate, obtuse. Corolla unknown. Carpels 2, 2-ovuled. Berries ellipsoid or obovoid, minutely apiculate, 3-4 lin. long (immature).—*Hunteria pycnantha*, Hallier f. Kautschuklienen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 191 partly, not of K. Schum.

**South Central.** Congo Free State: Niamniam, Murwole River, Schweinfurth, 3073!

### 9. POLYADOA, Stapf.

Calyx very small; sepals 5, almost free, firm, coriaceous, obtusely keeled, acute or obtuse, with scale- or finger-shaped glands within, more or less coated with resin. Corolla salver-shaped; tube subcylindric, more or less widened below the naked mouth; lobes 5, oblong, overlapping to the left, twisted in bud. Anthers enclosed in the widened part of the tube, ovate to lanceolate; cells obtuse at and dehiscent to the base. Disc. 0. Carpels 2, free; style filiform; stigma at the level of the anthers or almost so, oblong-ellipsoid, viscid, subpapillose all over except at the smooth bifid apex; ovules 10-24 in 3-6 rows. Fruit unknown.—Small glabrous trees or shrubs. Leaves opposite, thinly coriaceous, with distant or close, spreading nerves; axillary stipules 0; axillary glands obscure or 0. Flowers in terminal or pseudo-axillary, subsessile or shortly peduncled, clusters or congested corymbs. "*Apocynacea*, quoad genus dubia," Stapf in Journ. Linn. Soc. xxx. 90.

Species 2, endemic.

- |  |                          |
|--|--------------------------|
| Leaves 5-8 in. long, 2-3 in. broad; middle secondary nerves 5-9 lin. apart . . . . .               | 1. <i>P. umbellata</i> . |
| Leaves 3-5 in. long, $1\frac{1}{2}$ -2 in. broad; middle secondary nerves 2-3 lin. apart . . . . . | 2. <i>P. Elliotii</i> .  |

1. ***P. umbellata*, Stapf.** A small tree 24-30 ft. high, with very hard wood; young branches much compressed, drying blackish- or reddish-brown, older ones with a few warty lenticels. Leaves elliptic to broad-oblong, shortly and obtusely acuminate or subacuminate, acute at the base, 4-9 in. long,  $1\frac{1}{2}$ - $3\frac{1}{2}$  in. broad, chartaceous, drying brown; midrib channelled above, much raised beneath; secondary nerves about 10-14 on each side, rather oblique, straight to beyond the middle, slightly raised on both sides but principally below; veins inconspicuous; petiole  $\frac{1}{2}$ - $\frac{3}{4}$  in. long. Flowers many in subsessile, rarely distinctly peduncled, terminal or pseudo-terminal clusters, or congested umbelliform inflorescences; pedicels up to  $1\frac{1}{2}$  lin. long. Calyx very resinous; sepals rotundate-ovate, obtuse, with numerous cylindric glands within,  $\frac{1}{2}$ - $\frac{3}{4}$  lin. long. Corolla yellowish-white; tube slender, 3- $3\frac{1}{2}$  lin. long, sparsely pubescent below the stamens; lobes flexuous, linear-oblong, as long as or slightly longer than the tube. Anthers ovate-oblong, subacute,  $\frac{1}{2}$  lin. long. Ovules about 6-seriate, 3-4 in each row.—*Carpodinus umbellata*, K. Schum. in Engl. Jahrb. xxiii. 221; Pierre in Bull. Soc. Linn. Paris, 1898, 38. *Hunteria*

*umbellata*, Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt. xvii. (1899), 3. Beih. 190.

**Upper Guinea.** Lagos: Ibadan Forest, *Punch*, 138! Cameroons: Mbanga Mountain, near Lolodorf, 2300 ft., *Staudt*, 130! Bipiude, in forest, 500 ft., *Zenker*, 1707! 1729!

2. **P. *Elliotii***, *Stapp*. A shrub; branches slender, laterally compressed when young, drying blackish; lenticels very scanty, warty. Leaves ovate-oblong to oblong-lanceolate, obtuse to obtusely sub-acuminate, acute at the base, 3-5 in. long,  $1\frac{1}{2}$ -2 in. broad, subcoriaceous; midrib channelled above, prominent beneath; secondary nerves up to 20 on each side, with very similar parallel tertiary nerves between them, obliquely spreading, straight, fine, slightly raised on both sides; reticulation distinct, though faint, above, obscure beneath; petiole 4-5 lin. long. Corymbs 5- to many-flowered, subsessile or distinctly peduncled, compact, terminal; peduncle up to 5 lin. long; pedicels very short. Calyx slightly over  $\frac{1}{2}$  lin. long, very resinous; sepals rotundate-ovate, obtuse, with cylindrical glands within. Corolla-tube  $2\frac{1}{2}$ - $3\frac{1}{2}$  lin. long, pubescent within below the stamens; lobes oblong, obtuse, as long as or slightly longer or shorter than the tube. Anthers ovate-oblong, subobtuse,  $\frac{2}{3}$  lin. long. Ovules 10-12 in about 3 rows.

**Upper Guinea.** Sierra Leone: near Makunde, *Scott-Elliot*, 5690! and without precise locality, *Wulferth* (?)!

## 10. **HUNTERIA**, Roxb.; Benth. et Hook. f. Gen. Pl. ii. 698.

Calyx small; sepals almost free, acute, firm, obtusely keeled, with adpressed entire or lobed scale-like glands near the base within. Corolla salver-shaped; tube slightly widened above the middle, mouth constricted by a callous ring, naked; lobes overlapping to the left. Stamens inserted in the widened part of the tube; anthers free from the stigma, oblong-lanceolate; cells obtuse at and dehiscing to the base. Disc 0. Carpels 2, free or slightly connate at the base; style filiform; stigma at the level of the anthers, oblong-ellipsoid, subpapillose, with a distinct bifid apiculus; ovules collateral, 2 in each cell. Mericarps baccate, divaricate, or one frequently abortive, ellipsoid or globose, stipitate, apiculate or obtuse. Seeds 1 or 2 (and then plano-convex), semi-ellipsoid; testa rather thick, almost fleshy; endosperm almost horny; cotyledons very thin, foliaceous, as long as the slender radicle.—Glabrous trees. Leaves opposite, coriaceous, glossy, with numerous faint sub-parallel nerves; axillary stipules 0; axillary glands very minute or 0; axillary and terminal buds usually more or less coated with resin. Corymbs terminal or pseudo-axillary.

A small genus of 4 species, 1 in East Africa, 3 in Ceylon, South India, and the Malayan region.

1. **H. *africana***, *K. Schum. in Engl. Pfl. Ost-Afr. C.* 317. Young branches brown, soon grey. Leaves oblong or elliptic, obtuse, sometimes indistinctly acuminate, acute at the base, 3-4 $\frac{1}{2}$  in. long,  $1\frac{1}{4}$ - $1\frac{3}{4}$  in. broad, thinly coriaceous, very glossy above, dull beneath; lateral nerves about

15 on each side. Peduncle up to 1 in. long; pedicels 1-2 lin. long. Sepals acute, 1 lin. long. Corolla-tube 5 lin. long; lobes  $2\frac{1}{2}$ -3 lin. long. Berries (immature) ovoid or globose, stipitate, obtuse or apiculate, 4-5 lin. long.

**Nile Land.** British East Africa: by the River Sabaki, near Malindi, *Kirk!*

**Mozamb. Dist.** German East Africa: Usambara; Pangani, *Stuhlmann, 77!* Usaramo; Bagamoyo, *Stuhlmann, 206!* Dar es Salaam, *Kirk!*

### 11. DIPLORHYNCHUS, Welw. in Trans. Linn. Soc. ser. 2, ii. 22.

Calyx very small, eglandular; sepals almost free, ovate, subacute, more or less membranous or subherbaceous, not resinous. Corolla salver-shaped; tube cylindric, widened below and constricted at the mouth; lobes oblong, overlapping to the left. Stamens inserted in the widened part of the tube; anthers free from the stigma, ovate, acute; cells obtuse at and dehiscent to the base. Disc 0. Carpels 2, free; style filiform; stigma at the level of the anthers, depressed-capitate, subpapillose, with a bifid smooth apiculus; ovules 2-4 in each cell, superposed. Mericarps follicular, 2, spreading, semi-obovate, stipitate, woody or coriaceous, warty, dehiscent. Seeds 2-4, strongly compressed, winged, the wing of the basal seed terminal, that of the topmost seed basal; endosperm 0; cotyledons reniform, almost twice as broad as long; radicle short, lateral.—Trees or scandent shrubs. Leaves opposite, coriaceous with rather numerous parallel nerves, minutely reticulate; axillary stipules 0; axillary glands quite obscure or 0. Flowers small, white, fragrant, in terminal often lax panicles.

About 5 species, endemic, all of them very closely allied and difficult to discriminate.

Young branches, leaves and inflorescences perfectly glabrous.

Leaves broad-elliptic, generally rounded or truncate at the base; corolla-tube  $1\frac{1}{2}$  lin. long, lobes slightly longer . . . . . 1. *D. Welwitschii*.

Leaves oblong, acute at the base; corolla-tube 1 lin. long, lobes almost twice as long . . . . . 2. *D. angolensis*.

Young branches, leaves, and inflorescences, or at least the latter, distinctly pubescent.

Lateral nerves 8-12 on each side.

Leaves elliptic, distinctly cuneate, glabrous; petiole 10-12 lin. long . . . . . 3. *D. psilopus*.

Leaves ovate or elliptic, rounded or shortly acute at the base, softly pubescent beneath, rarely subglabrous; petiole 4-8 lin. long. . . . . 4. *D. mossambicensis*.

Lateral nerves 14-16 on each side . . . . . 5. *D. angustifolia*.

1. *D. Welwitschii*, *Rolfe in Bolet. Soc. Bot.* xi. 85. A shrub 8 to 15 ft. high. Branches sarmentose, glabrous, terete, more or less dotted with minute lenticels. Leaves broadly elliptic, mostly shortly and obtusely acuminate, or sometimes rounded or retuse at the apex, rounded or truncate, rarely subacute at the base, 2-3 $\frac{1}{2}$  in. long, 1 $\frac{1}{2}$ -2 in. broad, coriaceous, perfectly glabrous, dark olive-brown when dry; nerves

9-12 on each side; petioles about 4 lin. long. Panicle slender, loose, perfectly glabrous, 4-4½ in. long; pedicels scarcely 1 lin. long. Calyx glabrous, ½ lin. long; sepals broadly ovate. Corolla whitish glabrous without; tube cylindrical, 1½ lin. long; lobes slightly longer. Follicles 1½ in. long.—*D. Poggei*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 142, fig. 54, O; De Wild. in Rév. Cult. Colon. x. (1902) 142. *D. angolensis*, Britten in Journ. Bot. 1895, 76 partly; Hiern in Cat. Afr. Pl. Welw. i. 667 partly, De Wild. l.c. 141 partly, not of Büttner.

**Lower Guinea.** Angola: Cazengo; in dense thickets on the banks of the River Luinha, *Welwitsch*, 5968! Malange, *Marques*, 16!

**South Central.** Congo Free State: Lomami River, *Pogge*, 1002!

2. ***D. angolensis***, Büttner in *Verhandl. Bot. Ver. Brandenb.* xxxi. 85. A rambling shrub; branches pendulous, glabrous, scantily dotted with minute whitish lenticels. Leaves oblong to elliptic, obtuse or obtusely subacuminate, acute at the base, 2-3 in. long, 1-1½ in. broad, thinly coriaceous, reddish-brown when dry; nerves 7-9 on each side; petioles 3-6 lin. long, rarely less. Panicle very many-flowered, perfectly glabrous, 2-3 in. long; flowers crowded on the branchlets; pedicels scarcely 1 lin. long. Calyx glabrous, ½ lin. long; sepals broadly ovate. Corolla glabrous without, slightly hairy on the lobes within; tube cylindrical below, obovoid above the middle, 1 lin. long; lobes almost twice as long.—K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 142. Durand & Schinz, *Études Fl. Congo*, i. 189; not of Hiern in Cat. Afr. Pl. Welw. i. 667; De Wild. in Rév. Cult. Colon. x. (1902) 140-142 partly.

**Lower Guinea.** Angola: Malange, *Meehow*, 193! Benguela, *Siedler*! by the River Kuango, Büttner, 404.

De Wildeman, l.c., indicates *D. angolensis* as collected by Butaye (2241) near Kisantu, Lower Congo; but the description given by him of this plant does not quite agree. It is stated to yield a kind of varnish.

3. ***D. psilopus***, Welw. in *Trans. Linn. Soc. ser. 2, Bot.* ii. 23, t. 5. A small tree or climbing or rambling shrub; branches sarmentose, more or less puberulous when young, soon glabrescent, scantily dotted with obscure lenticels. Leaves elliptic-cuneate, obtuse or obtusely subacuminate, cuneate at the base, 2-3 in. long, 1-1½ in. broad, coriaceous, glabrous or minutely papillose on the midrib near the base on both sides, subglaucous above, pale brown beneath; nerves 8-9 on each side; petioles 10-12 lin. long. Panicle contracted, short, pubescent, 1-2 in. long; pedicels up to 1 lin. long. Calyx pubescent; sepals ovate. Corolla white, fragrant, glabrous without, slightly hairy on the lobes within; tube slightly constricted below the middle, obovoid above, a little over 1 lin. long; lobes slightly longer. Follicles half-ovoid, scarcely 1 in. long, spread out when quite ripe into a nearly flat disc; seeds broadly winged.—Ficalho, Pl. Uteis Afr. Port. 221; K. Schum. in Engl. &

Prantl, Pflanzenfam. iv. ii. 142, fig. 54 M-N; Hiern in Cat. Afr. Pl. Welw. i. 666.

**Lower Guinea.** Angola: Huilla; hills near Nene, *Welwitsch*, 5982! *Antunes*, 292!

A fruit collected at Tundo Quilombo in Pungo Andongo, by *Welwitsch* (fruit 729), probably belongs to *D. psilopus*. *Welwitsch* also states in a note that this species occurs in Pungo Andongo as well as in Cazengo. *Ficalho* records it from the River Ninda, Central Angola, where *Serpa Pinto* collected it.

4. **D. mossambicensis**, *Benth. in Hook. Ic. Pl. t.* 1355. A tree; branches minutely greyish tomentose when young, at length glabrescent, pale or greyish-brown; lenticels few, obscure. Leaves ovate, elliptic, or oblong-elliptic, rounded or shortly acute at the base, obtuse or obtusely acuminate,  $2\frac{1}{2}$ -4 in. long,  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. broad, papery, softly pubescent on both sides when young, ultimately glabrescent, rarely almost glabrous from the beginning; nerves 8-12 on each side; petioles 4-8 lin. long. Panicles mostly contracted, sometimes elongate and loose, pubescent or tomentose, 1-4 in. long; pedicels very short, up to  $2\frac{1}{2}$  lin. long. Calyx pubescent,  $\frac{1}{2}$  lin. long; sepals short, broadly ovate. Corolla glabrous; tube slightly constricted below the middle, obovoid above, up to  $1\frac{1}{2}$  lin. long; lobes as long as or slightly longer than the tube. Follicles obtuse or shortly beaked, 2 in. long.—*K. Schum.* in *Engl. & Prantl, Pflanzenfam.* iv. ii. 142; and in *Engl. Pfl. Ost-Afr. B.* 351, C. 316; *De Wild. in Rév. Cult. Colon.* x. (1902), 139, 142.

**Lower Guinea.** South Angola: by the Chitanda River, between *Gaudkopyje* and *Katzele*, 4000 ft., *Baum*, 178!

**South Central.** Congo Free State: *Katanga*; *Lukofu*, *Verdick*!

**Mozamb. Dist.** German East Africa: *Ukome*, on Lake Victoria, *Stuhlmann*, 880! *Pori*, near *Gonda*, *Böhm*, 160A! Steppes by the *Rufidji* River, 800 ft., *Goetze*, 87! Portuguese East Africa: *Mozambique*; *Cape Caboceira*, *Carralho*! Lower *Shire* River; *Moramballa* Mountain, *Kirk*! British Central Africa: *Nyasa-land*; *Shire Highlands*, *Buchanan*, 12! *Mount Malosa*, 4000-6000 ft., *Whyte*! and without precise locality, *Buchanan*, 9! 391! south coast of *Tanganyika*, *Scott-Elliot*, 8263! *Boruma*, on the *Zambesi*, *Mengharth*, B!

*Baum's* specimens from the Chitanda River have slightly larger calyces with oblong-ovate lobes.

5. **D. angustifolia**, *Staff.* A small tree; branches very slender, pubescent when quite young; lenticels very obscure. Leaves lanceolate or lanceolate-oblong, acute at the base, shortly acuminate (acumen narrow and obtuse), rarely broad-oblong and rounded at the base,  $2\frac{1}{2}$ -3 in. long,  $1-1\frac{1}{4}$  in. broad, thinly coriaceous, glabrous or minutely papillose on the midrib near the base, reddish-brown, paler beneath when dry; nerves 14-16 on each side; petioles 3-5 lin. long. Panicle loose, mostly small and few-flowered, pubescent,  $\frac{1}{2}$ -2 in. long; pedicels up to 1 lin. long. Calyx puberulous near the base,  $\frac{1}{2}$  lin. long; lobes broad-ovate. Corolla glabrous without, with a line of hairs on the lobes

within; tube constricted near the base, obovoid above, 1 lin. long; lobes slightly longer.

**Mozamb. Dist.** German East Africa: Ugalla; Kabombue, *Böhm*, 29A! Portuguese East Africa: Lower Zambesi; opposite Sena, *Kirk*!

12. **RAUWOLFIA**, Linn.; Benth. et Hook. f. Gen. Pl. ii. 697.

Calyx small, eglandular within, more or less herbaceous; sepals 5, almost free and imbricate or united into a flat 5-toothed cup. Corolla salver-shaped; tube slightly widened below the mouth, very rarely just below the middle (*R. Volkensii*); mouth constricted, without appendages, usually villous; lobes 5, twisted and overlapping to the left. Stamens in the widened part of the tube; filaments short; anthers free from the stigma, ovate, usually rather obtuse, shortly and obtusely 2-lobed at the base; anther-cells polliniferous and dehiscing to the base. Disc annular or cup-shaped, entire or slightly lobed. Carpels 2, free or more or less coherent; style filiform or columnar; stigma capitate, shortly cylindrical, minutely papillose and slightly viscous, with a basal deflected rim or membrane and a usually very short slightly bilobed apiculus rising from a shallow depression; ovules 2 in each cell, collateral. Mericarps 2 (or often 1 by abortion), free or more or less united, drupaceous; pyrenes crustaceous, 1-2-seeded, more or less compressed. Seeds ovoid; endosperm fleshy; cotyledons flat; radicle straight or recurved.—Mostly glabrous trees or shrubs. Leaves opposite or verticillate, those of a whorl often very unequal; axillary stipules 0; axillary glands numerous, in a dense fringe or in clusters, frequently secreting resin. Inflorescences terminal or pseudo-axillary, peduncled, few- or many-flowered, often repeatedly 2-3-chotomous, compound, umbelliform or corymbose, rarely racemiform; flowers small.

Species about 50 in the tropics of both hemispheres and in eastern South Africa.

\*Corolla-tube  $1\frac{1}{2}$ - $3\frac{1}{2}$  lin. long; mouth densely villous; lobes  $\frac{1}{4}$ - $\frac{1}{3}$  the length of the tube; stamens near the mouth.

†Young branches stout; leaf whorls crowded; leaves firmly membranous or chartaceous, acute or acuminate, not caudate; flowers sessile or shortly pedicelled, in dense cymes on the ends of the secondary or tertiary rays of usually large umbels; fruit a globose or orbiculate-globose twin drupe, or more usually (by abortion) a simple often asymmetric drupe, rather fleshy, slightly compressed.

Young branches distinctly 4-winged . . . . . 1. *R. macrophylla*.

Young branches terete or subangular, not winged.

Leaves narrow-lanceolate ( $\frac{3}{4}$ - $1\frac{1}{2}$  in. broad), long and

gradually acuminate at both ends; petioles

$\frac{1}{2}$ - $1\frac{1}{2}$  in. long, very slender . . . . . 2. *R. caffra*.

Leaves lanceolate to lanceolate-elliptic ( $1\frac{1}{4}$ -4 in.

broad), acute or shortly acuminate.

Blade not or obscurely decurrent at the acute

base; petiole  $\frac{1}{2}$ -1 in. long . . . . . 3. *R. Welwitschii*.

Blade more or less decurrent; petiole usually very short.

Blade about 5 times as long as broad . . . . . 4. *R. natalensis*.

Blade about 2-4 times as long as broad.

Umbels contracted; peduncles up to 1 in. long; calyx 5-partite; segments very broad, distinctly overlapping at the base; leaf-reticulation rather close, distinct . . . . . 5. *R. ochrosioides*.

Umbels lax; peduncles 2-3½ in. long; calyx less divided; segments less overlapping or not at all; leaf-reticulation very lax, faint.

Blades lanceolate to oblanceolate, about 4 times as long as broad.

Secondary nerves 25-30 on each side, subhorizontal, straight or slightly curved; calyx-segments slightly overlapping at the base; corolla-tube 2½ lin. long . . . . . 6. *R. inebrians*.

Secondary nerves 16-20 on each side, oblique, curved; calyx cup-shaped, 5-toothed; corolla-tube 1½-2 lin. long . . . . . 7. *R. obliquinervis*.

Blades lanceolate-oblong or elliptic, 2-3 times as long as broad . . . . . 8. *R. Gœtzei*.

††Young branches slender; leaf whorls distant; leaves thinly membranous, acute to caudate-acuminate; flowers distinctly pedicelled, in small umbels or racemiform cymes; fruit a twin drupe, with the two halves connate to or beyond the middle, but separated by a groove on each side, or quite free, or more usually (by abortion) a single, often asymmetric drupe, scantily fleshy and often laterally compressed.

Leaves caudate-acuminate; flowers on short pedicels in usually paired racemiform or subscorpioid cymes; fruit halves (if both are developed) connate to or beyond the middle, separated by a groove on each side, strongly laterally compressed.

Branches 4-angular when young, with more or less conspicuous decurrent raised lines . . . . . 9. *R. Mannii*.

Branches terete, without decurrent lines.

Peduncles rather stout . . . . . 10. *R. Preussii*.

Peduncles filiform . . . . . 11. *R. rosea*.

Leaves acute or acuminate, scarcely ever caudate; flowers on slender, short or long pedicels at the ends of the secondary or tertiary rays of a compound umbel or in repeatedly dichotomous cymes arranged in umbels; fruit halves (if both are developed) quite free, divaricate, compressed or not.

Drupes laterally much compressed, 4-5 lin. long . . . . . 12. *R. Cumminsii*.

Drupes ellipsoid, 3-3½ lin. long.

Inflorescence glabrous; style glabrous . . . . . 13. *R. mombasiana*.

Inflorescence pubescent; style villous at the base . . . . . 14. *R. vomitoria*.

\*\*Corolla-tube 6 lin. long; mouth not villous; lobes at least ½ the length of the tube; stamens inserted below the middle . . . . . 15. *R. Volkensii*.

1. **R. macrophylla**, *Staff in Kew Bulletin*, 1894, 20. A tree, 40–50 ft. high, quite glabrous; young branches stout, 4-winged, dark brown or blackish. Leaves in whorls of 4, lanceolate or oblong-obovate, obtuse or subacute, long cuneate at the base and decurrent into the short or indistinct petiole, 6–8 in. long,  $2\frac{1}{2}$ –3 in. broad, firmly membranous; secondary nerves 16–24 on each side, straight, subhorizontal; veins forming a faint network beneath. Flowers shortly pedicelled, in dense cymes on the ends of the secondary rays of large umbels; peduncles  $1\frac{1}{2}$ –3 in. long; primary rays  $\frac{3}{4}$ –2 in. long, secondary rays 3–9 lin. long; pedicels in the flower  $\frac{1}{2}$ –1 lin., in fruit up to 2 lin. long. Calyx  $\frac{3}{8}$ – $\frac{3}{4}$  lin. long; segments ovate or triangular, acute. Corolla-tube about  $1\frac{1}{2}$  lin. long; lobes ovate, obtuse,  $\frac{1}{3}$ – $\frac{2}{3}$  lin. long; mouth villous. Style 1 lin. long, glabrous. Fruit a more or less globose or ellipsoid, slightly compressed drupe with usually 2 often unequal pyrenes, about 4 lin. long.—*R. gonioclada*, K. Schum. and *R. leucopoda*, K. Schum. MS.

**Upper Guinea.** Cameroons: Ambas Bay, *Mann*, 1328! Bipinde, *Zenker*, 1626! 1975!

2. **R. caffra**, *Sonder in Linnæa*, xxiii. 77. A large tree, 50–60 ft. high, quite glabrous; young branches angular or almost terete, stout, blackish-brown when dry. Leaves in whorls of 3–5, unequal, lanceolate, long acuminate, long cuneate at the base, 3–8 in. long,  $\frac{3}{4}$ – $1\frac{1}{2}$  in. broad, membranous, rather firm; secondary nerves 20–30 on each side, straight or curved, subhorizontal; veins obscure or more or less distinct below; petioles up to  $1\frac{1}{2}$  in. long. Cymes dense, at the ends of the secondary or tertiary rays of large umbels; flowers shortly pedicelled or sessile; peduncles 1– $2\frac{1}{2}$  in. long; primary rays  $\frac{3}{4}$ – $1\frac{1}{2}$  in. long, secondary rays  $\frac{1}{2}$ –1 in. long. Calyx  $\frac{1}{2}$ – $\frac{2}{3}$  lin. long; lobes ovate, acute. Corolla white; tube  $1\frac{1}{2}$ –2 lin. long, mouth very hairy; lobes ovate, very short, subacute. Carpels connate at the base in the flower, more or less fused in the fruit or usually only one developing; style glabrous,  $\frac{1}{2}$  lin. long; stigma truncate with a reflexed membrane. Fruit a simple drupe (by abortion), obovoid or almost globose, 3 lin. long, or an obcordate twin drupe.

**South Central.** Congo Free State: Katanga; near Lukofa, *Verdick*, 618! Lake Nivers, *Verdick*!

Also in the Transvaal. The Congo Free State specimens differ from those of the Transvaal in the more distinct reticulation of the leaves and sessile or sessile flowers.

3. **R. Welwitschii**, *Staff*. A tree, 25–35 ft. high, quite glabrous; young branches angular or almost terete, stout, blackish when dry. Leaves in whorls of 3–4, oblanceolate or lanceolate-oblong, very acute, apiculate or finely and acutely acuminate, acute at the base, not decurrent,  $3\frac{1}{2}$ –6 in. long,  $1\frac{1}{4}$ – $1\frac{2}{3}$  in. broad (rarely up to 12 in. long and  $3\frac{1}{2}$  in. broad), more or less firmly membranous, shining above; secondary nerves up to 30 on each side, slightly curved or straight, subhorizontal; veins distinct, dark, loosely anastomosing; petiole  $\frac{1}{2}$ – $1\frac{1}{2}$  in. long. Flowers sessile, in dense clusters on the ends of the slender secondary

rays of an umbel; peduncle up to 2 in. long; primary rays  $1\frac{1}{2}$  in. long; secondary rays  $\frac{1}{2}$  in. long. Calyx not quite  $\frac{1}{2}$  lin. long, cup-shaped, 5-toothed. Corolla whitish; tube  $1\frac{1}{4}$  lin. long, villous at the mouth; lobes very broad, ovate, subacute, small. Carpels connate at the base; style glabrous, less than 1 lin. long. Fruit a more or less obovate twin drupe or an ellipsoid or subglobose simple drupe, rather thick, up to 5 lin. long.—*R. caffra*, var. *natalensis*, Stapf ex Hiern in Cat. Afr. Pl. Welw. i. 665, excl. syn.

**Lower Guinea.** Angola: Pungo Andongo; common by streams, *Welwitsch*, 5951!

*Welwitsch*, 5952 from the Tangué River, Angola, is very similar in foliage to *Welwitsch*, 5951, but the fruit accompanying it belongs evidently to a species of *Cono-pharyngia*.

4. ***R. natalensis***, *Sond. in Linnæa*, xxiii. 78. A tree, 30–40 ft. high, quite glabrous; young branches terete, stout, blackish or brown when dry. Leaves in whorls of 3–4, oblanceolate, acute or subacuminate, long attenuated towards the base and more or less decurrent on the petiole, 5–12 in. long,  $1\frac{1}{4}$ – $2\frac{1}{2}$  in. broad, firmly membranous, pale dull green; secondary nerves 18–30 on each side, slightly curved, sub-horizontal; veins quite obscure, or very faint, loosely anastomosing; petiole 2–12 lin. long, stout. Cymes very dense, at the ends of the secondary rays of large umbels; peduncle 2– $3\frac{1}{2}$  in. long, stout; primary rays 1–2 in. long; secondary rays 3–6 lin. long; pedicels in flower up to  $\frac{1}{2}$  lin. long, in fruit up to 1 lin. long. Calyx  $\frac{1}{2}$  lin. long; lobes broad, ovate, subacute. Corolla-tube about 2 lin. long, densely villous at the mouth; lobes small, rounded. Carpels connate at the base or half-way up in flower. Fruit a more or less obovoid or subglobose drupe, 4 lin. long (semimature).—K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 154.

**Mozamb. Dist.** British Central Africa: Nyasaland; Shire Highlands, on the banks of streams, *Buchanan*, 24!

Also in Natal.

A plant collected by Boehm and Reichardt in Kavende, Western German East Africa, and distributed as *Voacanga angustifolia*, K. Schum. (ined.), belongs either to *R. caffra* or to a new species nearly allied to it. I have only seen a leaf and a fruit of it. The leaf is linear-lanceolate, acuminate, long attenuate into a short stout petiole, over 7 in. long, slightly over 1 in. broad, with about 10–20 very delicate curved secondary nerves. The fruit is a very fleshy obscurely and asymmetrically obovate twin drupe with 2 unequal pyrenes, over  $\frac{1}{2}$  in. long and across.

Another specimen collected by Kirk between Shibisa and Tshimmuzo, in Nyasaland, between 2000 and 4000 ft., agrees with *R. natalensis* in the inflorescences and flowers, but the leaves are relatively broader (3 times as long as broad), not quite so firm and more distinctly reticulated; they are nearly all detached and mutilated.

5. ***R. ochrosioides***, *K. Schum. in Engl. Pfl. Ost-Afr. C.* 318 (*not elsewhere*). Whole plant glabrous. Young branches terete or subangular, blackish when dry, stout. Leaves in whorls of 4 or more, lanceolate to obovate-lanceolate, acute or apiculate, long attenuate into

the very short petiole,  $2\frac{1}{2}$ –6 in. long,  $\frac{2}{3}$ –2 in. broad, firmly membranous; midrib rather slender, deeply channelled above; secondary nerves about 16–25 on each side, starting more or less at right angles to the midrib, curved near the margin; reticulation distinct, dark brown, somewhat close. Flowers sessile in dense clusters at the ends of the secondary rays of compound contracted umbels; peduncle  $\frac{1}{2}$ –1 in. long; primary rays up to  $\frac{1}{2}$  in. long; secondary rays 2–3 lin. long. Calyx  $\frac{1}{2}$  lin. long; segments broad-ovate, subacute, overlapping at the base. Corolla-tube scarcely  $1\frac{1}{2}$  lin. long, villous at the mouth; lobes broad-ovate, obtuse or subacute,  $\frac{1}{3}$  lin. long. Carpels connate at the very base in flower. Fruit unknown.—*R. inebrians*, K. Schum. in Engl. Pfl. Ost-Afr. B. 352 (the Gonja plant only).

**Mozamb. Dist.** German East Africa: Itarige, *Fischer*, 377! Usambara; Gonja, *Holst*, 4336!

I have seen only the top of a flowering branch of *Fischer's* specimen. Its leaves are much narrower and smaller than those of the Gonja plant, but they agree exactly in the nervation, venation, and texture; the inflorescence and flowers also agree.

6. ***R. inebrians***, *K. Schum. in Engl. Pfl. Ost-Afr. A.* 93, 105; *B.* 352 partly; *C.* 318 partly. A middle-sized tree, quite glabrous; young branches terete, blackish when dry, stout. Leaves in whorls of about 4, lanceolate to oblong-lanceolate or broad-oblongate, acute or shortly and very acutely acuminate, long attenuate towards the short petiole, 5–12 in. long,  $1\frac{1}{2}$ –3 in. broad, membranous; midrib stout; secondary nerves about 25–30 on each side, subhorizontal, straight or slightly curved, forked near the margin; veins faint, loosely anastomosing. Flowers sessile or subsessile in dense clusters on the ends of the secondary rays of compound lax umbels (about 3 in. in diam.); peduncle up to 2 in. long; primary rays up to 2 in. long; secondary rays up to 4 lin. long. Calyx  $\frac{1}{2}$  lin. long; segments ovate, subacute, overlapping at the base. Corolla white; tube  $2\frac{1}{2}$  lin. long, villous at the mouth; lobes very broad, subacute or obtuse,  $\frac{1}{2}$  lin. long. Carpels connate at the very base in flower. Fruit unknown.—*K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii.* 154; *Volk. Kilimand.* 231, 291.

**Mozamb. Dist.** German East Africa: Kilimanjaro; Marangu, 4900 ft., *Volkens*, 1415!

7. ***R. obliquinervis***, *Stapf*. Whole plant glabrous. Young branches stout, terete, blackish when dry. Leaves whorled, very shortly petioled or subsessile, lanceolate or oblongate, shortly and very acutely acuminate, long attenuate towards the base, 6–9 in. long,  $1\frac{1}{2}$ –2 in. broad, firmly membranous, dark and slightly shining above, pale beneath; midrib channelled above, prominent and stout beneath; secondary nerves 16–20 on each side, oblique, starting at an angle of  $65^{\circ}$ – $45^{\circ}$ , curved; reticulation faint though distinct, lax. Flowers sessile or subsessile in dense clusters at the ends of the secondary rays of lax compound umbels; peduncle 2 in. long; primary rays 1– $1\frac{3}{4}$  in. long; secondary rays 4–9 in. long. Calyx not quite  $\frac{1}{2}$  lin. long, cup-shaped, 5-toothed. Corolla-

tube  $1\frac{1}{2}$ –2 lin. long, villous at the mouth; lobes very broad, ovate, sub-obtuse, scarcely  $\frac{1}{2}$  lin. long. Carpels connate at the base or up to the middle. Fruit unknown.—*R. ochrosioides*, K. Schum. in Engl. Gläd. Veg. Usambara, 52 and in Engl. Pf. Ost-Afr. A. 88 (not elsewhere). *R. inebrians*, K. Schum. in Engl. Pf. Ost-Afr. C. 318 (not elsewhere).

**Mozamb. Dist.** German East Africa: Usambara; at Kizara in North Handei, *Holst*, 2360!

8. **R. Goetzei**, *Stapf*. Whole plant glabrous. Young branches stout, subangular, brown when dry. Leaves in whorls of 3–4, shortly petioled, oblong- or elliptic-lanceolate, shortly acuminate, more or less attenuate at the base, very variable in size, up to 1 ft. long and  $\frac{1}{4}$  in. broad, chartaceous; midrib channelled above, stout beneath; secondary nerves up to 30 or more on each side, subhorizontal, straight or the upper curved; reticulation faint, lax; petiole hardly any or up to  $\frac{1}{2}$  in. long, stout. Flowers very shortly pedicelled in few-flowered (always?) clusters on the ends of the secondary or tertiary rays of lax compound umbels; peduncle up to  $2\frac{1}{2}$  in. long; primary rays  $\frac{3}{4}$ – $1\frac{1}{4}$  in. long; secondary rays  $\frac{1}{4}$ – $\frac{3}{4}$  in. long. Calyx not quite  $\frac{1}{2}$  lin. long, cup-shaped, 5-toothed. Corolla-tube  $1\frac{1}{2}$  lin. long, villous at the mouth; lobes broad-ovate, obtuse, scarcely  $\frac{1}{2}$  lin. long. Carpels connate at the base. Fruit unknown.

**Mozamb. Dist.** German East Africa: Ruhambe, 1650 ft., *Goetze*, 385!

The discrimination of this and the three preceding species is not quite satisfactory owing to the scanty material. Further investigation will show how far the characters derived from the shape, size and nervation of the leaves may be relied upon. The degree of division of the calyx, whether 5-partite with segments distinctly overlapping at the base, or merely 5-toothed, will probably be found of greater taxonomic value.

9. **R. Mannii**, *Stapf* in *Kew Bulletin*, 1894, 21. A shrub, 6–9 ft. high, perfectly glabrous; youngest branches quadrangular, soon rounded, with more or less conspicuous decurrent lines. Leaves in whorls of 4–3, very unequal in size, oblong; abruptly contracted into a narrow linear acumen ( $\frac{1}{2}$  to 1 in. long), gradually narrowed into the petiole, the longer ones 5–9 in. long, 2–3 in. broad, thinly membranous; secondary nerves almost horizontal, 12–16 on each side; veins quite obscure; petioles 2–8 lin. long. Flowers in small few-flowered pseudo-umbels; peduncle about 1 in. long, very slender; pedicels 1–2 lin. long. Calyx 1 lin. long; segments linear-lanceolate. Corolla-tube  $2\frac{1}{2}$  lin. long, villous at the mouth; lobes ovate, obtuse,  $\frac{1}{2}$  lin. long. Carpels connate at the base; style slender, glabrous. Fruit a simple obliquely ovoid much-compressed drupe or an orbiculate twin drupe, 4–5 lin. long.—De Wild. & Durand, *Reliq. Dewevr.* in *Ann. Mus. Congo*, Bot. sér. 3, fasc. ii. 150. *R. cardiocarpa*, K. Schum. in *Engl. & Prantl, Pflanzenfam.* iv. ii. 154, fig. 56, R.

**Upper Guinea.** Cameroons: Yaunde, 2600 ft., *Zenker & Staudt*, 665! Bipinde, *Zenker*, 1815!

**South Central.** Congo Free State: Bokakata, *Dewèvre*, 791.

**Lower Guinea.** Gaboon: Sierra del Crystal, *Mann*, 1720! Munda; Sibange Farm, *Soyaux*!

10. **R. Preussii**, *K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 154, fig. 56, S. Branches terete, slender olive-brown, dotted with whitish lenticels. Leaves ternate, obovate-oblong, suddenly contracted into a linear acumen (up to 6 lin. long and  $1-1\frac{1}{2}$  lin. broad), cuneate at the base, very variable in size, up to 7 in. long and  $2\frac{3}{4}$  in. broad, thinly membranous; secondary nerves about 6-10 on each side; veins quite obscure; petiole 4-6 lin. long. Flowers in paired subscorpioid or raceme-like cymes, much contracted when young, resembling a small corymb; peduncle  $\frac{1}{2}-1\frac{1}{2}$  in. long; pedicels up to 2 lin. long. Calyx  $\frac{3}{4}$  lin. long; segments lanceolate-linear, obtuse. Corolla-tube about 2 lin. long; lobes rounded,  $\frac{1}{2}$  lin. long. Fruit an obliquely obovoid simple or obcordate twin drupe, acute, 4 lin. long.—Schlechter, Westafr. Kautschuk-Exped. 307.

**Upper Guinea.** Cameroons: Barombi, *Preuss*, 65! 342! Lolodorf, *Staudt*, 384! Mundame, 660 ft., *Schlechter*, 12929.

11. **R. rosea**, *K. Schum. in Engl. Pfl. Ost-Afr. C.* 317. A glabrous shrub, about 6 ft. high; branches divaricate, terete, slender. Leaves ternate, obovate-oblong to oblong, acuminate (acumen acute,  $\frac{1}{2}$  in. long), acute to cuneate at the base, 4-6 in. long,  $1\frac{3}{4}-2\frac{1}{4}$  in. broad, thinly membranous, dark green above, pale beneath; secondary nerves 9-12 on each side, oblique, curved; veins obscure; petiole 4-6 lin. long. Cymes solitary or 2-4 on a common peduncle, few-flowered, racemiform; peduncle very slender,  $\frac{1}{2}-\frac{3}{4}$  in. long. Calyx not quite 1 lin. long; segments ovate, subacute. Corolla rose-coloured; tube  $2\frac{1}{2}$  lin. long, villous at the mouth; lobes orbicular-ovate,  $\frac{3}{4}$  lin. long. Fruit an oblique, oblong-ovoid, simple, or an obcordate twin drupe, each drupe 4 lin. long.

**Mozamb. Dist.** German East Africa: Usambara; Lutindi, in forests, *Holst*, 3250! Nguelo, *Heinsen*!

12. **R. Cumminsii**, *Stapf*. A glabrous shrub; young branches quadrangular, slender. Leaves in whorls of 3-4, oblanceolate, acuminate, long attenuate at the base, 4-6 in. long,  $1-1\frac{1}{2}$  in. broad, dull pale green, membranous; secondary nerves about 12 on each side, oblique, curved; petiole 1-3 lin. long. Cymes 3-1-flowered, lax, arranged in 4-2-rayed umbels; peduncle about  $\frac{3}{4}$  in. long, slender; rays about 3 lin. long, very slender; pedicels  $1\frac{1}{2}$  lin. long. Calyx  $\frac{1}{2}$  lin. long; segments ovate, acute. Corolla unknown in the normal state. Fruit a simple or twin drupe, with the two halves quite free and divaricate; drupes semi-elliptic, 5 lin. long, much compressed from the sides, red, outer edge almost straight.

**Upper Guinea.** Ashanti: Assin Yan Kumasi, *Cummins*, 216!

The corollas of the specimen are, below the middle, deformed by a gall insect. They are about  $4\frac{1}{2}$  lin. long of which nearly  $2\frac{1}{2}$  lin. go to the gall, which consists of an almost solid thick ellipsoid body.

13. **R. mombasiana**, *Stapf in Kew Bulletin*, 1894, 21. A shrub, up to 6 ft. high, perfectly glabrous; youngest branches quadrangular.

Leaves in whorls of 4-3, oblong or oblong-lanceolate, acute or acuminate, cuneate at the base, 4-8 in. long, 1-2½ in. broad, thinly membranous; secondary nerves 15-18 on each side, rarely fewer, much spreading, curved; veins quite obscure; petiole 4-12 lin. long. Flowers pedicelled at or near the ends of the secondary or tertiary rays of a compound umbel; peduncles 2-6 in. long; primary rays 2½-½ in. long; secondary and tertiary rays often very unequal, 6-2 lin. long; pedicels filiform, up to 3 lin. long. Calyx ½-¾ lin. long; segments ovate, acute. Corolla yellowish; tube 3-3½ lin. long, villous at the mouth; lobes ovate, obtuse, ¾ lin. long. Carpels free; style slender, glabrous. Fruit a simple or divaricate twin drupe; drupes quite free, ovoid, subapiculate, 3-4 lin. long, red.—*R. monopyrena*, K. Schum. in Engl. Pf. Ost-Afr. C. 318.

**Nile Land.** British East Africa: Witu, *Thomas*, 110! 130! Mombasa, *Hildebrandt*, 2011! *Wakefield*! Rabai Hills, *Taylor*!

**Mozamb. Dist.** German East Africa: Usambara; Amboni, *Holst*, 2801A! Zanguebar, *Kirk*, 84! Portuguese East Africa: Lower Zambesi; Shupanga, *Kirk*!

14. **R. vomitoria**, *Afz. Stirp. Guin. Med. Sp. Nov.* 1. A shrub or small tree, up to 20 ft. high, glabrous except the inflorescences; young branches quadrangular. Leaves in whorls of 3-4, very variable in shape, lanceolate to elliptic, more or less acuminate at both ends, 3-7 in. long, 1-3 in. broad, thinly membranous; secondary nerves 10-16, much spreading; veins usually very obscure; petiole 3-15 lin. long. Flowers in repeatedly dichotomous finely pubescent cymes, arranged in umbels; peduncles ½-3 in. long; primary rays ½-1 in. long; pedicels slender, from less than ½ lin. to 2 lin. long. Calyx ½ to over ¾ lin. long; segments ovate, obtuse. Corolla white; tube somewhat constricted at the very mouth, 3-3½ lin. long; hairy in the mouth; lobes ovate, obtuse, ½-¾ lin. long. Carpels free; style slightly thickened and villous towards the base, 1½-2 lin. long. Fruit a simple or divaricate twin drupe; drupes quite free, ovoid, subapiculate, 3½-4 lin. long, red.—*Spreng. Syst.* i. 834; *DC. Prod.* viii. 341; *Hook. Niger Fl.* 446; *L. Planchon, Prod. Apocyn.* 295. *R. Senegambicæ*, *DC. Prod.* viii. 340; *Hook. l.c.*; *K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 154; *De Wild. in Bull. Herb. Boiss, sér. 2, i. 34.* *R. senegambica*, *A. DC. ex De Wild. & Durand, Reliq. Dewevr. in Ann. Mus. Congo, Bot. sér. 3, fasc. ii. 150.* *R. pleiosciadica*, *K. Schum. l.c.*, and in *Schlechter, Westafr. Kautschuk-Exped.* 307. *R. Stuhlmannii*, *K. Schum. in Engl. Pf. Ost-Afr. C. 318*; *R. congolana*, *De Wild. & Durand in Comptes-rendus Soc. Bot. Belg. xxxviii. 204*, and *Reliq. Dewevr. in Ann. Mus. Congo Bot. sér. 3, fasc. ii. 150.*

**Upper Guinea.** Senegambia: Rio Nunez, *Heudelot*, 910. French Guinea; near Sulimana, 3500 ft., *Scott-Elliot*, 5318! Duyania, *Scott-Elliot*, 4823! Sierra Leone: Kambia, *Scott-Elliot*, 4356! Bafodeya, *Scott-Elliot*, 5501! Bagru River, *Mann*! and without precise locality, *Afzelius*! *Don*! *Vogel*, 103! *Barter*! Liberia: Grand Bassa, *Vogel*, 19! Gold Coast, *Burton & Cameron*! Lagos: Ebuta Metta, *Millen*, 20! Abeokuta, *Irving*, 23! 64! between Abeokuta and Ibadan, *Schlechter*,

13037; near Lagos, *Rowland*! Niger Protectorate: by the Nun River, *Barter*, 2091! Nupe, *Barter*, 1704! Old Calabar, *Thomson*, 54! 120! Cross River, *Johnston*! Cameroons: Cameroon River, *Mann*, 750! *Preuss*, 903! Batanga, *Bates*, 32! Yaunde, 2600 ft., *Zenker & Staudt*, 118! 784! *Zenker*, 736! 800! 1736! Bipinde, *Zenker*, 842! 850! 1626B! 2118!

**Lower Guinea.** Gaboon: *Klaine*, 892! Lower Congo: Kisantu, *Gillet*, 203!

**Mozamb. Dist.** German East Africa: Karagwe; Bukoba, *Stuhlmann*, 980, 3616, 3621!

**South Central.** Congo Free State: Niamniam, by the Assika River, *Schweinfurth*, 3246! Mobanga, on the Congo, *Dewèvre*, 753. Kiboubou, near Kasongo, *Dewèvre*, 924!

15. **R. Volkensii**, *Stapp*. A glabrous shrub, 6 ft. high; branches slender, the older coarsely lenticellate. Leaves in pairs or in whorls of 3, broadly lanceolate to lanceolate-oblong,  $2\frac{1}{2}$ –3 in. long,  $1-1\frac{1}{3}$  in. broad, acute or subacuminate at both ends, very thin; secondary nerves about 7 on each side, faint, but distinct. Flowers pedicelled, in more or less umbelliform 3–5-flowered glabrous peduncled terminal cymes; peduncles up to 1 in. long; pedicels 2–5 lin. long. Calyx-segments lanceolate-subulate, 1 lin. long. Corolla greenish; tube  $\frac{1}{2}$  in. long, widened below the middle, hairy within except at the base, mouth not villous; lobes elliptic, very obtuse, 4–5 lin. long, elegantly veined. Anthers inserted 2 lin. above the base,  $\frac{3}{4}$ –1 lin. long. Carpels connate beyond the middle; style  $1\frac{1}{2}$  lin. long. Fruit obcordate when young.—*Tubernaemontana Volkensii*, K. Schum. in Engl. Pfl. Ost-Afr. C. 316.

**Mozamb. Dist.** German East Africa: Usambara; Mlalo, *Holst*, 174; Kilimanjaro; Shira, *Volkens*, 1942!

*Imperfectly known species.*

16. **R. dichotoma**, K. Schum. in Engl. & Prantl, *Pflanzenfam.* iv. ii. 154.

**Lower Guinea.** Island of St. Thomas, *Moller*, 145!

I have seen only fragments of this plant, the description of which is quite insufficient. It has opposite leaves with petioles over 1 in. long, and small terminal panicles with linear bracts. The minute, crowded buds are coated with a kind of varnish. It is very doubtful whether this is a *Rauwolfia*.

17. **R. longeacuminata**, De Wild. & Durand in *Comptes-rendus Soc. Bot. Belg.* xxxviii. 205. Glabrous; branches terete, lenticellate. Leaves whorled, petioled, long elliptic-lanceolate, very long acutely acuminate, long cuneate at the base,  $3\frac{1}{2}$ –4 in. long,  $5\frac{1}{2}$ –13 lin. broad, drying blackish; secondary nerves about 11 on each side: veins inconspicuous. Flowers in small glabrous umbels,  $\frac{3}{4}$  in. across; peduncle 8–10 lin. long; pedicels  $\frac{1}{2}$ – $\frac{3}{4}$  lin. long. Calyx  $\frac{1}{2}$  lin. long; segments triangular, acute. Corolla-tube  $1\frac{1}{2}$ –2 lin. long; villous at the mouth; lobes  $\frac{3}{4}$  lin. long.

**Lower Guinea.** Congo Free State: *Cabra*.

The author compares this species with *R. obscura*, which is also very imperfectly known.

18. **R. obscura**, *K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 154.* Quite glabrous. Leaves petioled, oblong-lanceolate, subacuminate (?), acute at the base, about 4 in. long,  $1\frac{1}{3}$  in. broad, membranous, drying blackish above, coffee-brown below, margins wavy; secondary nerves about 12 on each side; veins quite obscure. Cymes few-flowered, crowded on the ends of the rays of an umbel (?); flowers very shortly pedicelled. Calyx slightly over  $\frac{1}{2}$  lin. long, divided almost to the base; segments ovate, subacuminate. Corolla drying black; tube  $1\frac{1}{2}$  lin. long, villous at the mouth; lobes broad-ovate, obtuse,  $\frac{1}{2}$  lin. long. Carpels free to the base in flower.—Schlechter, Westafr. Kautschuk-Exped. 307.

**South Central.** Congo Free State: Mukenge, *Pogge*, 1080! Leopoldville, in shrubberies, *Schlechter*, 22534.

Evidently a distinct species. I have seen only small fragments of an inflorescence and a mutilated leaf, and as there is practically no description in Engler & Prantl, l.c., I have not been able to ascertain its affinity.

13. **ALLAMANDA**, Linn.; Benth. et Hook. f. Gen. Pl. ii. 690.

Calyx rather large, eglandular within; sepals 5, lanceolate, more or less unequal. Corolla funnel-shaped; tube slender and cylindrical to about the middle, then much widened into a campanulate or funnel-shaped throat with fimbriate scales or tufts of hairs at its base; lobes broad, contorted, overlapping to the left. Stamens inserted at the very base of the throat, conniving into a cone; filaments very short, decurrent into a thin densely hairy ridge which projects much towards the centre of the tube; anthers free from the stigma, sagittate-lanceolate, acuminate or aristulate; anther-cells polliniferous and dehiscing all along except at the hard solid basal points. Disc annular, fleshy, entire or obscurely lobed. Ovary syncarpous, 1-celled; style filiform; stigma capitate, with 5 dense patches of delicate hairs matted together by their viscous secretion, a deflexed, rigid, 10-toothed frill (always?) and a 2-lobed short apiculus; placentas 2, parietal; ovules numerous, 2-5-seriate. Fruit capsular, ovate or elliptic, flattened, echinate, dehiscing along the sutures; valves almost woody. Seeds numerous, imbricate, broad, flat, margins membranous or winged; endosperm fleshy; cotyledons large, subfoliaceous; radicle short.—Trees or shrubs, frequently climbing. Leaves opposite or whorled, or the upper alternate; axillary stipules 0; axillary glands subulate, distinct, often very numerous. Flowers large, showy, in racemiform or paniced cymes.

Species 12, in tropical South America; one frequently cultivated and occasionally naturalised in the tropics of the Old World.

1. **A. cathartica**, *Linn. Mant. 214.* A scantily branched shrub, with pubescent or glabrate spreading branches. Leaves obovate-lanceolate, acutely acuminate, attenuate towards the base, 3-5 in. long,  $1-1\frac{2}{3}$  in. broad, glossy above, glabrous or hairy along the midrib and sometimes also on the side-nerves below; secondary nerves about 15 on each side, very slender, spreading; petiole 1-3 lin. long. Cymes racemiform or paniced, glabrous or hispidulous; bracts deciduous;

pedicels stout,  $1\frac{1}{2}$ –6 lin. long. Calyx 4–8 lin. long, quite glabrous, persistent; sepals lanceolate or lanceolate-oblong, acute to subobtuse. Corolla yellow; cylindric part of the tube and throat, each  $2-2\frac{1}{2}$  in. long; lobes round, unequal,  $\frac{3}{4}$ –1 lin. long; throat-scales fimbriate. Capsule ovoid-elliptic,  $1\frac{1}{2}$  in. long,  $1\frac{1}{4}$  in. broad. Seeds 4–5 lin. long, broadly winged.—Gertn. De Fruct. t. 61; Lodd. Bot. Cab. t. 259; Bot. Mag. t. 338; A.D.C. Prod. viii. 318; Muell. Arg. in Fl. Brasil. vi. i. 10; K. Schum. in Engl. & Prantl. Pflanzenfam. iv. ii. 128, fig. 49, E-G; and in Engl. Pfl. Ost-Afr. C. 315; Stapf in De Wild. & Durand. Contrib. Fl. Congo in Ann. Mus. Congo, Bot. sér. 2, i. fasc. i. 33; De Wild. & Durand, Reliq. Dewevr. in Ann. Mus. Congo, Bot. sér. 3, fasc. ii. 145. *A. Schottii*, Bot. Mag. t. 4351 (not of Pohl). *A. Aubletii*, Pohl, Plant. Brasil. i. 75; Bot. Mag. t. 4411. *Orelia grandiflora*, Aubl. Guyan. i. 271, t. 106.

**Lower Guinea.** Lower Congo: Boma, *Dewèvre*, 417!

**Mozamb. Dist.** Zanzibar, *Stuhlmann*, 636.

A native of tropical South America, cultivated and sometimes naturalised in various parts of the Old World.

#### 14. LOCHNERA, Reichb. Conspectus, 134.

Calyx middle-sized, herbaceous, eglandular within; sepals 5, subulate, scarcely imbricate. Corolla salver-shaped; tube slender, cylindric, slightly widened below the constricted, callous, velvety mouth; lobes overlapping to the left. Stamens in the widened part of the corolla-tube; filaments very short; anthers free from the stigma; ovate-lanceolate, acute, shortly and obtusely 2-lobed at the base; anther-cells polliniferous and dehiscing to the base. Disc replaced by two long linear glands alternating with the carpels. Carpels 2, free; style filiform; stigma slightly below the level of the anthers, depressed-capitate, viscous with a long hyaline reflexed frill at the base and a minute obtuse 2-lobed apiculus surrounded by a very short erect membranous rim; ovules numerous, 2-seriate. Mericarps follicular, cylindric, slightly spreading. Seeds numerous, small; testa rugose; hilum lateral; endosperm fleshy; cotyledons oblong, flat, shorter than the thick radicle.—Annual or perennial herbs or small undershrubs. Leaves opposite; axillary stipules 0; axillary glands numerous in a fringe, the outer long, filiform, the inner minute. Flowers axillary, solitary or paired, white or pink.—*Vinca*, Benth. et Hook. f. Gen. Pl. ii. 703 partly.

Species 3, indigenous in tropical America, India, and Madagascar. One species widely diffused as a weed throughout the tropical and subtropical regions of both hemispheres.

1. *L. rosea*, Reichb. l.c. A small undershrub, up to 3 ft. high. Leaves obovate or oblong, very obtuse (rarely subacute) and apiculate, acute at the base,  $1\frac{1}{2}$ –3 in. long,  $\frac{3}{4}$ – $1\frac{1}{2}$  in. broad, herbaceous, finely pubescent to subtomentose; petioles 1–4 lin. long. Pedicels up to 1 lin.

long, pubescent. Corolla white or pink; tube puberulous, 1 in. long; lobes broad, obliquely obovate, apiculate,  $\frac{3}{4}$  in. long. Follicles up to  $1\frac{1}{4}$  in. long, spreadingly pubescent, striate.—Schnizl. Iconogr. t. 132, figs. 2–16; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 145, fig. 57 A–D., and in Engl. Pfl. Ost-Afr. C. 316; L. Planchon, Prod. Apocyn. 231, 284; Durand & Schinz, Études Fl. Congo i. 190; De Wild. & Durand, Contrib. Fl. Congo in Ann. Mus. Congo, Bot. sér. 2, i. fasc. ii. 39, and Reliq. Dewevr. in Ann. Mus. Congo, Bot. sér. 3, fasc. ii. 151. *Vinca rosea*, Linn. Syst. Nat. ed. x. 944; Gaertn. De Fruct. ii. 172, t. 117; DC. Prod. viii. 382; Muell. Arg. in Mart. Fl. Bras. vi. i. 69, t. 25; Hook. Niger Flora, 450; Grisebach, Fl. Brit. West Ind. 410; Cardoso jun. in Bolet. Soc. Brot. xiii. 144; Hiern in Cat. Afr. Pl. Welw. i. 667. *Catharanthus roseus*, G. Don, Gen. Syst. iv. 95.—*Vinca* fol. oblongo-ovatis, Mill. Ic. t. 186.

**Upper Guinea.** Cape Verde Islands: *Cardoso*. Sierra Leone, *Turner!* Gold Coast: Cape Coast Castle, *Vogel*, 60!

**Lower Guinea.** Congo Free State: Banana, *Dewèvre*, 50! Boma, *Wilwerth*, *Dewèvre!* and without precise locality, by roadsides, *Dupuis*, 3!

**Mozamb. Dist.** Zanzibar, *Stuhlmann*. Portuguese East Africa: Kerimba Islands, *Peters!*

Probably a native of the West Indies, now widely naturalised in the tropics of both hemispheres, chiefly near the coasts.

## 15. PLUMERIA, Linn.; Benth. et Hook. f. Gen. Pl. ii. 704.

Calyx small, eglandular within; sepals 5, almost free, imbricate, usually broad and obtuse, sometimes unequal or partly or wholly suppressed. Corolla salver-shaped; tube cylindric, slender, slightly widened at the base, without appendages in the mouth; lobes 5, broad, oblong, overlapping to the left, straight or more or less twisted. Stamens in the widened base of the corolla-tube; anthers free from the stigma, oblong, apiculate, 2-lobed at the base; anther-cells polliniferous and dehiscent to the base. Disc 0. Ovary apocarpous, semi-inferior; carpels 2; style very short, columnar; stigma just below the anthers, ellipsoid, copiously viscous in the lower part, somewhat constricted above, with a thick papillose ring below the 2-fid, stout apiculus; ovules numerous, pluriseriate. Mericarps follicular, divaricate, elliptic to linear in outline, coriaceous. Seeds oblong or lanceolate, flattened, winged at the apex or all round; endosperm fleshy, thin; cotyledons oblong or ovate-cordate; radicle short.—Trees or tall shrubs, usually with stout branches. Leaves alternate; petioles usually long; secondary nerves numerous, straight, connected by a more or less conspicuous marginal nerve; axillary stipules 0; petiole resinous at the base, without external glands. Flowers rather large, white or pink, frequently with a yellow centre or quite yellow, in contracted or ultimately elongate cymes arranged in terminal, often umbelliform corymbs or panicles, and supported by often large, caducous bracts.

Species 30–40, natives of tropical America; some of them naturalised or commonly cultivated in the tropics of the Old World.

1. **P. rubra**, *Linn. Sp. Pl.* 209. A shrub or small tree. Leaves crowded near the ends of the branches, oblong or elliptic-oblong, acute at both ends, or the tips subacuminate, 6–12 in. long, 2–4 in. broad, herbaceous, quite glabrous; secondary nerves 25–40 on each side, horizontal in the lower, slightly oblique in the upper part; petiole puberulous, 1–2 in. long. Corymbs many-flowered, umbelliform; peduncle 2–6 in. long, stout, puberulous; pedicels up to  $\frac{1}{2}$  in. long. Calyx scarcely 1 lin. long. Corolla pink; tube  $\frac{1}{2}$ – $\frac{3}{4}$  in. long; lobes obovate-oblong, 1–1 $\frac{1}{2}$  in. long. Follicles 8 in. long, 1 $\frac{1}{2}$  in. wide.—*Bot. Mag.* t. 279; *Lam. Encycl.* ii. 308, t. 173, fig. 1; *DC. Prod.* viii. 390; *Bot. Reg.* t. 780; *Reichb. Fl. Exot.* t. 175; *Hiern in Cat. Afr. Pl.* Welw. i. 667. *Plumiera rubra*, K. Schum. in *Engl. & Prantl, Pflanzenfam.* iv. ii. 136. *P. rosea*, (error for *P. rubra*), K. Schum. in *Engl. Pfl. Ost-Afr. C.* 315.

**Lower Guinea.** Angola: Loanda, cultivated, *Welwitsch*, 5985.

**Mozamb. Dist.** Zanzibar, *Stuhlmann*.

Probably a native of Central America; frequently cultivated in the tropics.

*Imperfectly known species.*

2. **P. africana**, *Mill. Gard. Dict. ed. 8, No. 5*. Leaves linear-lanceolate, 9–10 in. long, 2 in. broad, rather succulent, acute, slightly rounded at the base. Flowers yellow.

**Upper Guinea.** Senegal, *Adanson*.

This was described from specimens raised from seeds brought home by Adanson. It has not been observed again.

16. **ALSTONIA**, R. Br.; *Benth. et Hook. f. Gen. Pl.* ii. 705.

Calyx small, eglandular within; sepals 5, almost free or distinctly united at the base, imbricate, more or less ovate. Corolla salver-shaped; tube cylindric, slightly widened below the mouth (or near the middle in short-flowered species), more or less callous at the mouth; lobes rounded to lanceolate, contorted, overlapping either way. Stamens in the widened part of the corolla-tube, included; filaments filiform, short. Anthers free from the stigma, ovate to ovate-oblong, subacute, 2-lobed at the base; anther-cells polliniferous and dehiscing to the base. Disc 0, or obscurely annular, or (*Sect. Blaberopus*) tubular, adnate to the base of the ovary and produced into 2 lobes, alternating with the carpels. Carpels 2, free or coherent in flower, frequently slightly immersed in the torus; style filiform, often very short; stigma oblong, 2-lobed or 2-fid, with a ring or reflexed frill at the base; ovules numerous, pluriseriate. Mericarps 2, follicular, usually long, cylindric, slender. Seeds oblong, compressed, attached by the centre, with long hairs all round the edges, but chiefly at both ends, or shortly ciliate on the sides, glabrous or pubescent on the faces; testa very thin; endosperm fleshy. Embryo in the longitudinal axis of the seed; cotyledons oblong, flat, foliaceous; radicle about as long as the

cotyledons or slightly shorter.—Trees, often very tall, or shrubs. Leaves in whorls of 3–4, or more rarely opposite, frequently with numerous horizontal nerves; axillary stipules 0; axillary glands usually numerous, often very small, in a fringe or covering the hollowed base of the petiole, rarely both. Inflorescences terminal, usually whorled on the top of the branch, rarely with additional ones from the next leaf-whorl, mostly many-flowered and compound, umbelliform, corymbose or paniced. Flowers white, whitish or brownish, middle-sized or small.

Species about 30, natives of India, Malaya, tropical Australia and Polynesia, 1 in tropical Africa.

1. **A. congensis**, *Engl. in Engl. Jahrb.* viii. 64. A large tree, with a tall clear trunk, quite glabrous; branches moderately stout, brown or blackish when dry. Leaves in whorls of 4–6, oblanceolate to obovate-cuneate, shortly acuminate or obtuse or retuse, acute or cuneate at the base, 4–7 in. long,  $1\frac{1}{2}$ – $2\frac{1}{4}$  in. broad, subcoriaceous when mature, dark above, pale and more or less glaucous beneath; secondary nerves straight, horizontal, prominent on both sides, 30–40 on each side; petiole very short or up to  $\frac{1}{2}$  in. long. Panicles several from the tops of the branches, compound, loose, many-flowered, greyish, puberulous; peduncle up to  $1\frac{1}{2}$  in. long; branches whorled in 2–3 tiers, the lowest  $1\frac{1}{2}$  in. long, bearing corymbosely arranged pseudo-umbels of 4–7 flowers; bracts small, crowded at the base of the pseudo-umbels; pedicels up to  $2\frac{1}{2}$  lin. long. Calyx scarcely 1 lin. long, minutely greyish tomentose; segments broadly-ovate, subacuminate. Corolla more or less minutely papillose-tomentose without or glabrescent in the lower part; tube slender, 4– $5\frac{1}{2}$  lin. long, scantily pubescent within; limb villous at the mouth; lobes somewhat obliquely ovate,  $1\frac{1}{2}$ –2 lin. long. Anthers  $\frac{3}{4}$  lin. long. Ovary finely greyish-tomentose except at the base; style (inclusive of the stigma), 4 lin. long.—Durand & Schinz, *Études Fl. Congo*, i. 190. *A. scholaris*, Chevalier, *Géogr. Bot. Sénég. et Soudan*, 207, 224, and in *Rév. Cult. Colon.* vii. (1900), 492, 493 with fig., not of R. Br.

**Upper Guinea.** Senegambia: rather common from the Gambia to Portuguese Guinea; in the Sinedone, Adéane, Sedhiou, Yacine and Fogyne districts, *Chevalier*; Diebali, *Sébire*. Gambia: near Bathurst and Balantacounda, ex *Chevalier*. Lagos: Ibadan Forest, *Punch*, 145! Niger Protectorate: Aboh, *Barter*, 490! Idda, *Barter*, 302! Brass, *Barter*, 64! Cameroons: Bipinde, *Zenker*, 1622!

**Nile Land.** British East Africa: Niamniam; by the Diamvonu stream, *Schweinfurth*, 3260!

**Lower Guinea.** Lower Congo: *Smith*! *Naumann*.

All the specimens which I have seen (except *Punch*'s) consist of barren branches, and it is therefore possible that they may belong to more than one species in spite of their great resemblance in vegetative characters. Moreover, *A. congensis* was described from barren specimens, so that even the basis of the species is uncertain. *Chevalier* describes the flowers as yellowish-brown with a penetrating sweet odour; they are out in Senegambia in January and February. According to *Punch*, who collected early in December, the tree sheds nearly all its leaves before flowering.

17. **TABERNANTHE**, Baill. in Bull. Soc. Linn. Paris, i. 783.

Calyx small, herbaceous, with 5 small glands within, alternating with the sepals; sepals 5, almost free, imbricate, ovate, acute, rotundate, very minutely ciliolate. Corolla small, salver-shaped; tube subcylindric, or more or less inflated below, thin; lobes overlapping to the left, very broad, obtuse, as long as or shorter than the tube, tips not inflexed in bud. Stamens inserted about the middle of the corolla-tube; anthers conniving in a cone, included, subsessile, linear-sagittate, finely acuminate, wings with thin involute margins; tails acute, foot of connective narrow, flat, glabrous, slightly viscous; filaments very short, stout, hairy in front; filamental ridges very slender. Disc 0. Ovary syncarpous, imperfectly 2-celled; style filiform; stigma capitate, 5-grooved, viscous, with a short reflexed membrane at the base and a slender 2-fid apiculus; placentas parietal, much projecting, united at the bottom and the top; ovules 2-4-seriate, numerous. Fruit baccate, fleshy, ovoid, acuminate. Seeds few, embedded in a scanty pulp (membranous when dry), ellipsoid, ventrally deeply grooved; testa very thick, corky, divided by deep longitudinal and transverse grooves into seriate tubercles; endosperm ruminated by the intruding testa, fleshy; cotyledons transverse, thin, concavo-convex, about as long as the radicle. —Shrubs or small trees, dichotomously branched. Leaves opposite, thin, herbaceous; axillary stipules 0; axillary glands filiform, often numerous. Flowers small, in terminal or pseudo-axillary, usually paired, lax, few-flowered, corymbose or pseudo-scorpioid inflorescences.

Species about 5, endemic.

Corolla-tube inflated and ovoid at the base.

Leaves oblong-lanceolate, gradually acuminate,

\* acute at the base, distinctly petioled . . . . . 1. *T. Bocca*.

Leaves oblanceolate to subobovate, minutely rounded at the base, subsessile or sessile . . . . . 2. *T. subsessilis*.

Corolla-tube subcylindric, slightly narrowed above the middle.

Corolla-tube  $3\frac{1}{2}$ –4 lin. long . . . . . 3. *T. Mannii*.

Corolla-tube 2– $2\frac{1}{2}$  lin. long.

Corolla white; leaves with petioles up to 4 lin.

long, acute or acuminate at the base . . . . . 4. *T. Ibo*ga.

Corolla yellowish; one leaf of each pair usually sessile or subsessile and shortly rounded at the base, the other shortly petioled and acute or subacute at the base . . . . . 5. *T. tenuiflora*.

1. **T. Bocca**, *Staff.* A glabrous shrub; branches reddish-brown; lenticels small, scattered. Leaves oblong-lanceolate, gradually long acuminate, (acumen subacute, rather broad, up to  $\frac{1}{2}$  in. long), acute or subacute at the base, 4–5 in. long,  $1\frac{1}{4}$ – $1\frac{3}{4}$  in. broad, herbaceous, thin; secondary nerves 9–11 on each side, oblique, curved; veins faint; petioles up to  $1\frac{1}{2}$  lin. long. Inflorescences geminate from the branch-forks, few- to 8-flowered, subcorymbose or subumbelliform, drooping,

lax, obscurely bracteate; peduncle slender, up to 9 lin. long; pedicels slender, up to 6 lin. long. Calyx deeply 5-partite,  $1\frac{1}{2}$  lin. long; sepals ovate, acute, very minutely ciliolate, the inner with 1-2 glands inside the base. Corolla-tube wide ovoid, much narrowed above the middle,  $2\frac{1}{2}$ -3 lin. long; lobes rotundate-ovate,  $2\frac{1}{2}$  lin. long. Stamens inserted at the middle; anthers  $1\frac{1}{4}$  lin. long. Style not quite 1 lin. long.—*T. Iboga*, Oliver in Hook. Ic. Pl. t. 2337, only the plant figured, not of Baillon; Kew Bulletin, 1895, 37, with plate, partly.

**Lower Guinea.** Congo: without precise locality, *Müller!*

*T. Bocca* distinctly differs from *T. Iboga* in the more robust inflorescences, larger flowers and much inflated base of the corolla-tube. It is called "Bocca" on the lower Congo.

2. ***T. subsessilis*, Staff.** A shrub or small tree, up to 15 ft. high, with dichotomous branches; bark pallid; lenticels few. Leaves subsessile or sessile, oblanceolate to subobovate, subabruptly acuminate (acumen acute, sublinear, up to 5 lin. long), narrowed towards the base, and shortly and abruptly rounded at the base, 3-4 in. long,  $1-1\frac{1}{2}$  in. broad, herbaceous or thinly coriaceous, soft, rather glossy above when alive, dull when dry, paler and slightly glaucous beneath; secondary nerves 10-12 on each side, very oblique, gently curved; transverse veins more or less at right angles to the secondary nerves; petiole up to  $\frac{1}{2}$  lin. long or absent. Inflorescences geminate from the branch-forks, few-flowered, lax, subumbelliform, sometimes drooping, minutely bracteate or ebracteate; peduncle filiform, up to 1 in. long; pedicels up to 6 lin. long. Calyx yellowish, almost  $1\frac{1}{2}$  lin. long, deeply 5-partite; sepals ovate, acute, minutely ciliolate with 1-2 glands inside the base. Corolla sulphur-yellow; tube ovoid at the base, narrowed from the middle upwards,  $2\frac{1}{2}$  lin. long; lobes obliquely rounded, as long as the tube. Stamens inserted at the middle; anthers 1 lin. long. Style scarcely 1 lin. long. Fruit of the shape and colour of a lemon, distinctly apiculate, 1 in. long.—*T. Iboga*, Oliver in Hook. Ic. Pl. sub t. 2337 partly, and in Kew Bulletin, 1895, 37 partly; Hiern in Cat. Afr. Pl. Welw. i. 667, not of Baillon.

**Lower Guinea.** Angola: Pungo Andongo; in the thickets of Barrancos da Pedra Songue, *Welwitsch*, 5950! forests in the Præsidium, *Welwitsch*, fruit, 728!

This comes very near to *T. Bocca*, and differs mainly in the shape of the leaves, which are often strictly sessile.

3. ***T. Mannii*, Staff.** A small, glabrous shrub; branches very slender, greenish-brown, with scattered wart-like lenticels. Leaves oblong, long acuminate (acumen subobtuse, sublinear up to 9 lin. long), acute at the base,  $3-5\frac{1}{2}$  in. long,  $1\frac{1}{4}-1\frac{3}{4}$  in. broad, herbaceous, thin; secondary nerves much spreading, curved, 10-11 on each side, very slender; transverse veins subhorizontal, faint; petiole  $\frac{1}{2}$ -1 lin. long or hardly any. Inflorescences geminate from the branch-forks, few-flowered, umbelliform or subcorymbose, lax, shorter than the leaves, ebracteate; peduncles finely filiform,  $1\frac{1}{2}$  in. long; pedicels very slender, 4 lin. long. Calyx 5-partite almost to the base, 1 lin. long; sepals

ovate, acute, very minutely ciliolate, with 1-2 glands inside the base. Corolla-tube subcylindric, narrowed from the middle upwards,  $3\frac{1}{2}$ -4 lin. long; lobes rotundate-obovate,  $2-2\frac{1}{2}$  lin. long. Stamens inserted at the middle. Anthers  $1\frac{1}{4}$  lin. long. Style  $1\frac{1}{2}$  lin. long.—*T. Iboga*, Oliver in Hook. Ic. Pl. sub t. 2337 partly, not of Baillon.

**Lower Guinea.** Gaboon River, *Mann*, 943!

This comes near to *T. Iboga*, from which it differs somewhat in the shape and venation of the leaves and the larger flowers.

4. ***T. Iboga***, *Baill. in Bull. Soc. Linn. Paris*, i. 783, not of Oliver. A small glabrous shrub, up to 5 ft. high; stems from a large branched root; branches slender, terete, pale or dark brown, with scattered wart-like lenticels. Leaves elliptic- or ovate- or obovate-lanceolate, acuminate at the tip, acuminate or acute at the base, 3-5 in. long,  $1-1\frac{3}{4}$  in. broad, herbaceous; secondary nerves oblique, gently curved, slender, 9-11; transverse veins more or less distinct, and almost at right angles to the secondary nerves; petiole very slender,  $1-1\frac{1}{2}$  lin. long. Inflorescence subcorymbose or umbelliform, lax, few- to 12-flowered, shorter than the leaves, more or less drooping, minutely bracteate; peduncle filiform,  $\frac{1}{2}-1\frac{1}{2}$  in. long; pedicels up to 4 lin. long. Calyx deeply 5-partite,  $\frac{1}{2}-\frac{3}{4}$  lin. long; sepals rotundate-ovate, acute, very minutely ciliolate, the inner with 1-2 glands inside the base, persistent and reflexed in fruit. Corolla white, spotted with pink; tube subcylindric, slightly narrowed from the middle upwards,  $2\frac{1}{2}$  lin. long; lobes obliquely rotundate, not quite  $1\frac{1}{2}$  lin. long. Stamens inserted at the middle of the tube; anthers over 1 lin. long. Style almost 1 lin. long. Fruit ellipsoid, sometimes crowned by the persistent style-base, 9-12 lin. long; pericarp smooth, thin, crustaceous when dry. Seeds globose-ellipsoid, 3 lin. long; testa corky, coarsely lamellate-rugose.—*T. albiflora*, Stapf in Kew Bulletin, 1898, 305, in De Wild. & Durand, Contrib. Fl. Congo in Ann. Mus. Congo, Bot. sér. 2, i. fasc. 1, 38, and in De Wild. & Durand, Ill. Fl. Congo in Ann. Mus. Congo, sér. 1, i. fasc. 4, t. 41, and Reliq. Dewevr. in Ann. Mus. Congo, Bot. sér. 3, fasc. 2, 151.

**Lower Guinea.** Gaboon: Libreville, *Klaine*, 428! and without precise locality, *Klaine*, 911! Cape Lopez, *Griffon du Ballay*, 327.

**South Central.** Congo Free State: Coquilhatville, *Dewèvre*, 684!

*Klaine's* 911, was distributed by Pierre as *T. Iboga*, and said to be the "*Iboga*" of the Gaboon people. It is the same as *Klaine*, 428. *M. Hua* of Paris, having been good enough to compare these specimens with Baillon's type, confirms Pierre's determination. This excludes Müller's plant (figured as *T. Iboga* in Hooker's Ic. Pl. t. 2337) from this species. When I described *T. albiflora*, I had not seen *Klaine's* specimen, and mistook Müller's plant for the true *T. Iboga*. Although I have not Dewèvre's plant before me, from which I described *T. albiflora*, I have little doubt that it is identical with the true *T. Iboga*. I only add that Dewèvre describes the corolla-lobes as white with pink spots, Baillon merely as white. This is evidently also the plant mentioned by Dybowski and Landrin in their paper on *Iboga* and *ibogaïne* in Comptes-rendus Acad. Sc. cxxxiii 748.

5. ***T. tenuiflora***, *Stapf in Kew Bulletin*, 1894, 305. Branches brown, with few minute lenticels. Leaves broad-oblancoelate, acumi-

date, one of each pair usually sessile or subsessile and more or less rounded at the base, the other shortly petioled and acute or subacute at the base, those of each pair equal, or one of them much smaller, the larger leaves 4–6 in. long,  $1\frac{1}{6}$ –2 in. long; secondary nerves 8–10; veins inconspicuous. Inflorescences subcorymbose, few-flowered, minutely bracteate, much shorter than the leaves, on very slender peduncles up to 1 in. long; pedicels up to 3 lin. long. Calyx deeply 5-partite,  $\frac{3}{4}$  lin. long; segments rotundate, sparingly and minutely ciliolate, the inner with 1 or 2 minute glands inside the base. Corolla yellowish, with red spots in the centre; tube cylindric from an ovoid base, 2 lin. long; lobes broad, obovate, shorter than the tube. Stamens inserted at the middle; anthers over 1 lin. long, reaching to the mouth.—Stapf in De Wild. & Durand, Contrib. Fl. Congo in Ann. Mus. Congo, Bot. sér. 2, i, fasc. 1. 38, and fasc. 2, 40.

**Lower Guinea.** Lower Congo: Lemba, *Cabra*; Dewèvre, 361!

**South Central.** Congo Free State: Stanleyville, *Demeuse*!

*Imperfectly known species.*

6. **Iboga vateriana**, *J. Br. & K. Schum. in Danckelmann, Mitth. Deutsch. Schutzgeb.* ii. 172. A glabrous shrub or small tree, with slender dichotomous branches. Leaves oblong, acuminate, mucronulate, acute at the base,  $3\frac{1}{2}$ –6 in. long,  $\frac{2}{3}$ – $1\frac{1}{3}$  in. broad, membranous; secondary nerves 6–8 on each side. Inflorescences geminate, terminal, shortly racemiform, few-flowered,  $\frac{3}{4}$ – $1\frac{1}{4}$  in long; bracteate. Calyx  $\frac{1}{2}$  lin. long; eglandular. Corolla-tube 2 lin. long; lobes 1 lin. long. Anthers  $1\frac{1}{4}$  lin. long. Style  $1\frac{1}{4}$  lin. long. Fruit oblong with an incurved tip,  $3\frac{1}{3}$  in. long, 7 lin. in diam.

**Upper Guinea.** Cameroons: littoral forests near Batanga, *Braun*.

This is, no doubt, a species of *Tabernanthe*, as K. Schumann himself has pointed out (Engl. & Prantl, Pflanzenfam. iv. ii. 146), and may be identical with one of the species described above.

18. **PTEROTABERNA**, Stapf.

Calyx small, subherbaceous; sepals 5, ovate, with several small, flat glands inside the base. Corolla small, salver-shaped; tube cylindric, slightly widened in the upper third, thin, naked at the mouth; lobes overlapping to the left, inflexed in bud, oblique. Stamens in the widened part of the corolla-tube, erect; filaments very short, distinct, scarcely decurrent; anthers linear-oblong, acute, minutely and acutely 2-lobed at the base; anther-cells polliniferous and dehiscent to the base of the apiculate lobes. Disc 0. Ovary apocarpous; carpels 2, slightly coherent, lanceolate-ovoid; style filiform; stigma capitate, placed about the middle of the corolla-tube and distant from the anthers, not apiculate, slightly viscous; ovules about 20 in each cell, approximately 4-seriate. Mericarps in pairs, or solitary by abortion, subbaccate, ovoid, rather flat on the face, with 3 narrow wings (2 lateral, 1 dorsal); pericarp thin, subcrustaceous;

seeds about 5, ellipsoid, deeply grooved on the ventral face, embedded in a scanty fleshy pulp (forming a thin skin when dry); testa crustaceous with faint longitudinal ridges, intruding into the albumen between the ridges; endosperm fleshy; cotyledons foliaceous, broad, cordate-ovate; radicle small.—A shrub with slender branches. Leaves opposite, membranous; axillary stipules short, but distinct, with very minute glands in their axils. Inflorescences usually geminate at the tips of the branches, few-flowered, cymose, lax.

Species 1, endemic. Very similar to some Indian species hitherto referred to *Tabernamontana*, e.g., *T. peduncularis* or *T. malaccana*, but differing in the stigma, which is remote from the anthers, capitate and exapiculate, and in the winged, apparently indehiscent fruits. It is distinguished from *Tabernamontana* proper in the structure of the anthers, the stigma and the fruit. *Tabernanthe*, which is very similar in habit, differs not only in the structure of the stamens and the stigma, but also in having syncarpous ovaries and fruits.

1. **P. inconspicua**, *Stapf*. A perfectly glabrous shrub, 10 ft. high; branches greyish or brown when dry. Leaves obovate-oblong to oblong, abruptly acuminate (acumen narrow, linear, up to 1 lin. long), acute to cuneate at the base, very variable in size,  $2\frac{1}{2}$ –6 in. long,  $1\frac{1}{4}$ – $2\frac{1}{2}$  in. broad, thin, dark-green above, paler beneath; secondary nerves slender, 8–10 on each side, oblique, curved; veins quite obscure; petiole slender, up to 8 lin. long. Inflorescences 1– $1\frac{1}{2}$  in. long; peduncle up to  $\frac{1}{2}$  in. long; bracts linear-lanceolate, inconspicuous; pedicels up to  $2\frac{1}{2}$  lin. long. Calyx slightly over 1 lin. long, persistent; sepals ovate-lanceolate, acute. Corolla-tube 3–4 lin. long, delicately papillose below the stamens, otherwise quite glabrous; lobes obovate,  $2\frac{1}{2}$  lin. long. Anthers  $1\frac{1}{2}$  lin. long. Mericarps orange-coloured, about 1 in. long, over  $\frac{1}{2}$  in. broad; wings about 1 lin. broad, fused towards the tip into a very broad obtuse short beak. Seeds up to 4 lin. long.—*Tabernamontana inconspicua*, Stapf in Kew Bulletin, 1894, 120. *T. trilata*, Pierre MS.

**Upper Guinea.** Cameroons: Bipinde, *Zenker*, 1059!

**Lower Guinea.** Gaboon: Coriseo Bay; Mount John, on the Kongui River, *Mann*, 1803! near Libreville, *Klaine*, 526!

## 19. **ERVATAMIA**, *Stapf*.

Calyx small, subherbaceous to subcoriaceous; sepals 5, free or united at the base, imbricate, broad or narrow, acute or obtuse, each with several glands inside the base. Corolla small or middle-sized, salver-shaped; tube cylindric, slightly widened towards the naked mouth, rarely near or below the middle, not fleshy; lobes overlapping to the left, very rarely to the right, scarcely asymmetric, tips inflexed in bud. Stamens erect, inserted in the widened part of the corolla-tube, included; filaments short, but distinct, more or less decurrent as slightly prominent ridges in the tube; anthers linear, acute, 2-lobed at the base, polliniferous and dehiscing right into the usually small basal lobes. Disc 0. Ovary apocarpous; carpels 2, sometimes slightly coherent; style long, rarely comparatively short, filiform, very slender;

stigma at the level of the anthers, clavate or oblong-ellipsoid, with a slender papillose bifid apiculus; ovules numerous, pluriseriate. Mericarps geminate, follicular, more or less coriaceous when mature, obliquely ovoid to lanceolate, usually curved and beaked, rarely more elongate, often at length quite flattened out, rounded on the back, usually 1-3-keeled on each side. Seeds few to many, enveloped by an orange-coloured aril, more or less irregularly ellipsoid, deeply grooved ventrally; testa crustaceous, finely sulcate, protruding into the copious endosperm.—Shrubs, rarely small trees, usually quite glabrous. Leaves opposite, herbaceous to coriaceous; axillary stipules distinct, though sometimes small, obtuse; axillary glands small, often numerous. Flowers small to middle-sized, sometimes showy, in terminal or pseudo-axillary usually paired many-flowered more or less dichotomous corymbose or umbelliform inflorescences or in few-flowered cymes.—*Tabernaemontana*, sect. *Ervatamia*, A. DC. Prod. viii. 373.

Species about 30 in tropical Asia, Australia and Polynesia, 1 in Madagascar. One species frequently cultivated in the tropics and sometimes naturalised.

1. **E. coronaria**, Stapf. A glabrous, much branched shrub; branches slender; bark very pale, verrucose with large corky warts. Leaves lanceolate to oblong, long-acuminate, acute or acuminate at the base, 3-5 in. long,  $\frac{3}{4}$ -1 $\frac{1}{2}$  in. broad, papery, deep green; secondary nerves 7-9 on each side, slender, curved; petiole 2 $\frac{1}{2}$ -5 lin. long, slender; axillary stipules small. Flowers in 2-10-flowered cymes, rarely solitary, showy, fragrant at night, inodorous by day; pedicels slender, 2-10 lin. long. Calyx 1-1 $\frac{1}{2}$  lin. long; sepals ovate, obtuse (rarely acute). Corolla-tube yellowish or greenish, 8-11 lin. long; lobes ovate-oblong, obtuse, about as long as the tube, snow-white except at the yellow base. Anthers 1 $\frac{1}{2}$  lin. long. Stigma clavate-oblong; pistil  $\frac{1}{3}$  or  $\frac{1}{2}$  as long as the corolla-tube. Follicles oblong with a recurved beak, more or less stipitate, finally opened out flat, up to 2 in. long, with 1-3 obtuse keels on each side.—*Tabernaemontana coronaria*, Willd. Enum. Hort. Berol. 275; Ait. Hort. Kew. ed. 2, ii. 72; A. DC. Prod. viii. 373; Wight, Ic. Pl. t. 477; Lodd. Bot. Cab. t. 406; Lindl. in Bot. Reg. t. 1064; Hook. f. Fl. Brit. Ind. iii. 646; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 148. *T. divaricata*, R. Br. ex Blume, Bijdr. 1027, not of others. *N. coronarium*, Jacq. Coll. i. 138, and Ic. t. 52; Bot. Mag. t. 1865. *Jasminum zeylanicum*, J. Burm. Thes. Zeyl. 129, t. 59.

**Upper Guinea.** Sierra Leone: Regent, *Scott-Elliot*, 3973!

Indigenous in India; widely cultivated and occasionally naturalised elsewhere. There is a long- and a short-styled form in India, the pistil measuring 5-6 $\frac{1}{2}$  lin. and 2 $\frac{1}{2}$ -3 $\frac{1}{2}$  lin. respectively. The first has the anthers in the middle of the corolla-tube, the other at  $\frac{1}{2}$  from the base. Both occur in cultivation in a double-flowered form. The wild simple short-styled form seems, however, to be confined to the northern parts of India. *Nerium divaricatum*, Linn. Sp. Pl. i. 209, based on Hermann's *Apocynum zeylanicum* (Parad. Batav. 40) and supposed to be identical with *Nerium coronarium*, Jacq. (R. Brown in Mem. Werner. Soc. i. 72) is *Wrightia zeylanica*, R. Br.

20. **CALOCRATER**, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 175, fig. 58, S-T.

Calyx rather small, herbaceous; sepals ovate-lanceolate, acuminate, imbricate, with minute glands at the base. Corolla funnel-shaped-campanulate; tube cylindric and slender at the base, then widened, without appendages in the throat; lobes short, very broad and oblique, overlapping to the left not inflexed in bud. Stamens inserted at the constriction of the corolla-tube; anthers conniving in a cone, subsessile, free from the stigma, oblong, acute, shortly 2-lobed at the base; lobes subobtusate, empty at the base; filaments reduced to a callous glabrous swelling. Disc annular, fleshy, adnate to the ovary. Carpels 2, free except at the very base; style filiform; stigma cylindric, slightly grooved, viscous, minutely apiculate, without an appendage or rim at the base, reaching to the base of the anthers; ovules numerous, pluri-seriate. Fruit unknown.—An undershrub, producing erect, sub-herbaceous shoots from a creeping rhizome. Leaves opposite, subsessile, papery; axillary stipules distinct, obtuse, joining around the stem, secreting some resin, without external glands (?). Flowers large, in sessile bracteate few-flowered axillary (pseudo-axillary ?) clusters.

Species 1, endemic.

1. **C. Preussii**, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 175, fig. 58, S-T. An undershrub, producing erect shoots, ultimately woody at the base and 2-3 ft. high, from a creeping rhizome, glabrous in all parts; stems terete with prominent lines on the sides alternating with the leaves. Leaves subsessile, oblong to lanceolate-elliptic, acuminate, acute or sub-acuminate at the base, 4-7 in. long,  $1\frac{1}{2}$ - $2\frac{3}{4}$  in. broad, pale green, herbaceous; secondary nerves 8-12 on each side, oblique; veins obscure. Flowers in few-flowered dense sessile axillary (pseudo-axillary ?) clusters; bracts ovate, acute to caudate, up to 2 lin. long, herbaceous. Sepals ovate to ovate-lanceolate, acuminate, 2-3 lin. long, herbaceous, with several minute basal glands within. Corolla white; tube over 2 in. long, slender, cylindric up to 8 lin. above the base then funnel-shaped-campanulate, about  $\frac{3}{4}$  in. wide at the mouth, quite glabrous except for a minute tuft of hairs below each anther; lobes somewhat asymmetric, about 7 lin. long, 8-9 lin. broad. Stamens inserted 7 lin. above the base,  $2\frac{3}{4}$  lin. long. Style  $4\frac{1}{2}$  lin. long, filiform; stigma cylindric, 2 lin. long, minutely apiculate.

**Upper Guinea.** Cameroons: Kombu Niugu, *Preuss*, 741

21. **CRIOCERAS**, Pierre in Bull. Soc. Linn. Paris, 1897, 1311.

Calyx middle-sized, herbaceous; sepals 5, free, unequal, ovate-lanceolate, acuminate, each with several basal glands within. Corolla-tube slender and cylindric to above the middle, then funnel-shaped-campanulate or campanulate, without appendages; lobes broad, ovate-oblong, overlapping to the left, not inflexed in bud. Stamens inserted

from the constriction of the tube; anthers conniving in a cone, subsessile, free from the stigma, linear-lanceolate, acute, subsagittate; tails sub-obtuse, empty, solid; foot of the connective very short, glabrous, flat; filaments reduced to a callous glabrous swelling; filamental ridges slender, glabrous, slightly prominent. Disc annular, fleshy, adnate to the ovary. Carpels 2, connate at the base; style filiform; stigma at the level of the anthers, oblong, 5-grooved, minutely apiculate, without an appendage or rim at the base, very viscous; ovules numerous, pluriseriate. Mericarps 2, follicular, connate below or almost free, divaricate, globose or lanceolate-oblong, with 2 lateral keels or wings, thin leathery when dry, tardily dehiscent. Seeds ellipsoid, ventrally deeply grooved, coated with a thin aril; testa crustaceous; endosperm horny, deeply ruminated; cotyledons transverse, flat, thin, much shorter than the radicle.—Erect, glabrous shrubs or climbers. Leaves sessile or subsessile, papery; axillary stipules distinct, obtuse, joining around the stem; glands inconspicuous. Inflorescences pseudo-axillary, long-peduncled, of 2-1 large white fragrant flowers, more or less nodding, supported by large foliaceous bracts, forming an involucre.

Species 2, endemic.

Leaves elliptic or obovate-oblong, subobtuse or acuminate, 5-6 in. by  $2\frac{1}{2}$ - $3\frac{1}{2}$  in.; corolla-tube  $3\frac{1}{2}$  in. long . . . . .

1. *C. dipladeniiflora*.

Leaves panduriform or obovate- to elliptic-lanceolate, caudate-acuminate, 4-12 in. by 2-5 in.; corolla-tube 4-5 in. long . . . . .

2. *C. longiflora*.

1. **C. dipladeniiflora**, *K. Schum. in Engl. & Prantl, Pflanzenfam. Ergän. Heft i.* 56. A climbing or arborescent shrub, up to 10 ft. high; branches slender, terete, pallid. Leaves sessile or subsessile, elliptic or obovate-oblong, acutely or obtusely acuminate or subobtuse, 5-6 in. long,  $2\frac{1}{2}$ - $3\frac{1}{2}$  in. broad; secondary nerves 6-7 on each side; veins rather distinct. Peduncles 1-8 in. long; involucre bracts oblong, obtuse, 3 in. long, over 1 in. broad; pedicels very short or up to 6 lin. long. Sepals ovate-lanceolate, 4 lin. long. Corolla-tube  $3\frac{1}{2}$  in. long, slender and cylindrical to about 2 in. above the base, then campanulate; lobes ovate-oblong, subcordate at the base,  $1\frac{1}{2}$  in. long, up to 1 in. broad. Anthers 4 lin. long. Carpels connate at the base; style  $1\frac{3}{4}$  in. long. Follicles (semi-mature) spreading at right angles, obliquely lanceolate-oblong, with 2 narrow lateral wings,  $1\frac{1}{2}$  in. long.—*Tabernaemontana dipladeniiflora*, Stapf in Kew Bulletin, 1894, 121.

**Lower Guinea.** Gaboon: Munda; Sibange Farm, Soyaux, 315! 392!

2. **C. longiflora**, *Pierre in Bull. Soc. Linn. Paris*, 1897, 1512. A shrub, up to 9 ft. high; branches more or less compressed when young, pale green. Leaves sessile, panduriform or obovate or elliptic-lanceolate and long cuneate towards the usually very narrow and often cordate base, abruptly and long acuminate (acumen up to  $\frac{3}{4}$  in. long, acute), from 4-12 in. long, 2-5 in. broad; secondary nerves 6-8 on each side; transverse veins rather distinct. Peduncles 1- $2\frac{1}{2}$  in. long; involucre bracts ovate, long acuminate, 3-5 in. long, up to more than 2 in. broad;

pedicels up to  $2\frac{1}{2}$  lin. long. Sepals ovate-lanceolate, acuminate, 3-5 lin. long. Corolla-tube 4-5 in. long, very slender and cylindric for about 3 in. from the base, then elongate-campanulate; lobes ovate-oblong,  $1\frac{1}{2}$  in. long. Anthers 5 lin. long. Carpels connate to the middle; style over 3 in. long. Follicles connate almost to the middle, then divaricate, subglobose, abruptly acuminate and cuspidate, almost 1 in. long, with two lateral keels or narrow wings, leathery when dry. Seeds 4 lin. long.

**Lower Guinea.** Gaboon, *Klaine*, 595! 857! 1437!

## 22. CALLICHILIA, Stapf.

Calyx small to middle-sized (up to 6 lin. long), herbaceous to subcoriaceous; sepals 5, free, ovate or oblong, rarely lanceolate, often unequal, each with several small glands inside the base. Corolla salver-shaped; tube slender and cylindric from the base to or somewhat beyond the middle, then more or less widened and cylindric or narrowly funnel-shaped; lobes broad, large, asymmetric, overlapping to the left, not inflexed in bud. Stamens inserted at the constriction of the corolla-tube; anthers conniving in a cone, free from the stigma, lanceolate-oblong, acute, 2-lobed to subsagittate at the base; lobes or tails obtuse or subobtuse, horny, solid; filaments short, distinct, filiform, rarely reduced to a large disc-like body. Disc annular, free, fleshy, more or less wavy or lobed. Carpels 2, free. Style filiform; stigma shortly subulate or cylindric, 2-fid, papillose, with a large wavy and lobed fleshy viscous ring at the base or clavate with a grooved thickening at the base; ovules numerous, pluri-seriate. Mericarps 2, free, baccate, divaricate, obliquely ovoid, rostrate, tardily dehiscent (?); pericarp thin, leathery when dry. Seeds ellipsoid, deeply grooved, coated with a thin aril; testa crustaceous, honeycombed, with the pits in longitudinal rows; endosperm almost horny, scarcely ruminant; cotyledons flat, much shorter than the radicle.—Erect or climbing, glabrous shrubs. Leaves opposite, papery or herbaceous; axillary stipules short, joining across the stem; axillary glands minute. Inflorescences usually apparently inter-axillary, near to or somewhat remote from the tips of the branches, or sometimes obviously terminal, few- to 10-flowered, racemiform or umbelliform; rhachis very short, finally covered below with the persistent bracts and large scars of the fallen flowers. Flowers showy, white, fragrant.—*Tabernaemontana*, Benth. et Hook. f. Gen. Pl. ii. 706 partly.

Species 5, mostly closely allied, endemic.

*C. Barteri* and *C. subsessilis* are extremely similar in external appearance; the shape of the filament is, however, entirely different, and the stigma of *C. Barteri* is, so far as I have been able to make out its shape (it is buried in a drop of an extremely sticky matter), more like that of a *Conopharyngia*.

LABANTHERA.—Filament short, filiform, not thickened at the top, inserted at the forking point of the anther-tails. Stigma shortly subulate or cylindric, 2-fid, papillose, with a wavy and lobed fleshy viscous ring at the base.

Corolla-tube up to more than 2 in. long, stamiferous

above the middle. . . . . 1. *C. monopodialis*.

Corolla-tube 1-1½ in. long, staminiferous at or below the middle.

Corolla-tube very gradually narrowed below the stamens, subcylindric to funnel-shaped above.

Corolla-tube very slightly widened or almost cylindrical throughout; lobes longer than the tube, rather narrowed towards the base; leaves obtuse to subacute at the base . . . . . 2. *C. Mannii*.

Corolla-tube funnel-shaped from the stamens upwards; lobes as long as the tube (or almost so), very broad; leaves rounded or subcordate at the base . . . . . 3. *C. inæqualis*.

Corolla-tube more or less abruptly constricted below the stamens, subcylindrical above, usually gradually and slightly contracted between the mouth and the stamens . . . . . 4. *C. subsessilis*.

♂♂ HEDRANTHERA.—Filament reduced to a large broad-elliptic fleshy disc, adpressed to the back of the anther. Stigma clavate, with a 5-grooved thickening at the base . . . . . 5. *C. Barteri*.

1. **C. monopodialis**, *Stapf*. A glabrous, erect or decumbent shrub, 3-7 ft. high; branches slender, terete, greenish. Leaves petioled, oblong to oblanceolate, acuminate (acumen short or up to ¼ in. long, acute or cuneate at the base, 6-11 in. long, 1½-3½ in. broad, herbaceous; secondary nerves 7-10 on each side, oblique; petiole 3-7 lin. long. Inflorescences shortly peduncled, pseudo-interaxillary, very dense; rhachis at first very short, then lengthening and covered below with the persistent bracts and large scars of the fallen flowers; peduncle up to 5 lin. long; bracts ovate, acute or acuminate, up to 3 lin. long; pedicels up to 2 lin. long, bracteolate. Sepals oblong to lanceolate, unequal, acuminate or acute, 3-6 lin. long. Corolla snow-white; tube up to more than 2 in. long, very slender in the lower two-thirds, then suddenly widened, but still cylindrical for 4-6 lin., then shortly funnel-shaped, with hairy lines within below the stamens; lobes very broad, obliquely obovate and acuminate, 1 in. long and almost as broad. Stamens inserted 1½ in. from the base; anthers 2½ lin. long. Style 1½ in. long.—*Tabernaemontana monopodialis*, K. Schum. in Engl. Jahrb. xxiii. 225.

**Upper Guinea.** Cameroons: Yaunde, in shady forests, *Zenker & Staudt*, 76! 629! Bipinde, *Zenker*, 481! 1292! Barombi, *Preuss*, 310! Johann Albrechtshöhe, *Staudt*, 832!

2. **C. Mannii**, *Stapf*. A scandent shrub, up to 20 ft. high; branches slender, terete, greenish. Leaves shortly petioled, oblong to elliptic or oblanceolate, abruptly and acutely acuminate, obtuse or subacute at the base, 4-8 in. long, 1½-3 in. broad, papery; secondary nerves 7-8 on each side, oblique, curved; veins loosely reticulating, usually slightly raised below; petiole up to 3 lin. long, sometimes very short. Inflorescences few- to 10-flowered, with usually only 1 flower out at a time, racemiform, on very slender pseudo-axillary or obviously

terminal; peduncles  $1\frac{1}{2}$ – $4\frac{1}{2}$  in. long, sometimes paired on a common peduncle; rhachis at first very short, then lengthening, ultimately up to  $1\frac{1}{4}$  in. long, bearing the persistent, somewhat distant bracts and scars of the fallen flowers, bracts ovate, acute, up to  $1\frac{1}{2}$  lin. long; pedicels slender, up to 6 lin. long. Sepals unequal, oblong, obtuse, 4–5 lin. long. Corolla-tube slightly over 1 in. long, cylindric up to 6–7 lin. from the base, then subcylindric or very slightly and gradually widened towards the mouth, here 2–3 lin. in diam.; lobes obliquely obovate and acuminate, cuneate below, up to  $1\frac{1}{2}$  in. long, almost 1 in. broad. Stamens inserted 7–8 lin. from the base; anthers 2 lin. long. Style 6–7 lin. long; stigma shortly cylindric, bifid, with a wavy, lobed ring at the base.

**Upper Guinea.** Cameroons: Ambas Bay, *Mann*, 2152!

Very similar to *C. inequalis*, from which it differs only in the more attenuate or even acute (never cordate) leaf-bases, in the larger calyx and the corolla-lobes, being comparatively longer and more narrowed towards the base.

3. ***C. inæqualis*, Staff.** A glabrous, scandent shrub; branches slender, greenish, terete. Leaves sessile, oblong-elliptic to obovate-oblong or oblong, abruptly and acutely acuminate, rounded or subcordate at the base, 5–8 in. long,  $1\frac{1}{2}$ – $3\frac{1}{2}$  in. broad, papery; midrib slender; secondary nerves 7–9 on each side; veins distinct or obscure, forming a loose network; petiole hardly any or up to 2 lin. long, stout. Inflorescences 2–7-flowered (often with only 1 flower out at a time), racemiform on very slender pseudo-axillary peduncles 2–5 in. long; rhachis at first very short, then lengthening to  $\frac{1}{2}$  in. long, covered with the persistent bracts and scars of the fallen flowers; bracts very broad, ovate,  $\frac{1}{2}$ – $\frac{3}{4}$  lin. long, margins scarious; pedicels slender, up to 6 lin. long, bracteolate at the very base. Sepals unequal, ovate, obtuse,  $1\frac{1}{2}$ – $2\frac{1}{2}$  lin. long. Corolla-tube 1– $1\frac{1}{4}$  in. long, cylindric to 7–8 lin. above the base, then gradually widened towards the mouth; lobes very broad, obliquely obovate and acuminate, 1 in. long and almost as broad. Stamens inserted 6–7 lin. above the base; anthers 2 to scarcely  $2\frac{1}{2}$  lin. long; style about 6–7 lin. long; stigma subulate, papillose, bifid, with a lobed wavy ring at the base.—*Tabernæmontana inequalis*, Pierre MS.

**Upper Guinea.** Cameroons: Efulen, *Bates*, 407!

**Lower Guinea.** Gaboon: Mfoa, 85 miles east of Gaboon, *Bates*, 515! Como River, 75 miles east of Gaboon, *Bates*, 471! and without precise locality, *Klaine*, 1046!

4. ***C. subsessilis*, Staff.** A climbing or erect shrub, or small tree, quite glabrous; branches slender, terete or quadrangular when quite young, pale green, ultimately whitish. Leaves oblong to lanceolate, acuminate (acumen slender and acute), narrowed towards and generally suddenly contracted at the base, 3–7 in. long, 1– $2\frac{1}{4}$  in. broad, membranous or papery; secondary nerves about 8 on each side; petiole very short or 0. Inflorescences few-flowered or reduced to 1 flower; peduncle rather slender,  $1\frac{1}{2}$ –4 in. long; bracts ovate-acute, 1–2 lin. long; pedicels 2–6 lin. long. Calyx 3–5 lin. long; sepals oblong, obtuse or

acute. Corolla white; tube slender, constricted below the middle, 1 in. long; lobes obliquely obovate, slightly longer than the tube. Stamens inserted 6 lin. above the base; anthers 2 lin. long. Disc annular, lobed. Style 7 lin. long; stigma short, subulate, bifid, with a wavy lobed ring at the base. Berries obliquely ovoid, rostrate, 1-1½ in. long, tardily dehiscent (?). Seeds embedded in a pulp, ellipsoid, 2-3 lin. long, honeycombed.—*Tabernaemontana subsessilis*, Benth. in Hook. Niger Fl. 448.

**Upper Guinea.** Sierra Leone: Kahreni, *Scott-Elliott*, 5590! near Madina, *Scott-Elliott*, 5565! Liberia, *Vogel*, 4! 5! Gold Coast: East Akim, *Johnson*, 762! 765! Assin-Yan-Kumassi, *Cummins*, 48! 235! Cameroons: Ambas Bay, *Mann*, 2152!

5. **C. Barteri**, *Stapf*. A glabrous, erect shrub, 6-8 ft. high; branches slender, terete, very pallid. Leaves elliptic or oblong to lanceolate, acuminate or acute at both ends, rarely obtuse, 3-8 in. long, 1-3 in. broad, herbaceous to papery; secondary nerves 6-8 on each side; petiole 2-6 lin. long. Inflorescences few- to 10-flowered, umbelliform (at least when young); peduncle from a few lines to 1 in. long; bracts ovate-oblong or lanceolate, acuminate, 1-3 lin. long; pedicels 1-4 lin. long, slender. Calyx 3-6 lin. long; sepals broad-oblong, obtuse or acute. Corolla white, very fragrant; tube cylindrical, slender, constricted below the middle, 1¼-1½ in. long, rarely shorter; lobes obliquely obovate, very broad, slightly shorter than the tube. Stamens inserted 5-6 lin. above the base; anthers 2½ lin. long. Disc small, cup-shaped, lobed. Style 4 lin. long; stigma clavate, with a 5-grooved thickening at the base. Berries divaricate, obliquely ellipsoid with a recurved beak, 1-1½ in. long, tardily dehiscent (?). Seeds semi-ellipsoid, 3 lin. long; testa deeply honeycombed, brown.—*Tabernaemontana Barteri*, Hook. f. in Bot. Mag. t. 5859; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 148, and in Schlechter, Westaf. Kautschuk-Exped. 306.

**Upper Guinea.** Gold Coast: *Burton*! Lagos: interior, *Rowland*! Eppah (Epe), *Millen*, 170! *Barter*, 3284! common on open plains, *Barter*, 3357! Abeokuta, *Irring*, 132! Ikirun and Essa Egure, *Millson*! Ikoradu, *Schlechter*, 12301. Ibadan Forest Reserve, *Punch*, 48! Southern Nigeria: Brass, *Barter*, 86! Onitsa, *Barter*, 1653! Obeyon, on the Etoi River, *Stevenson*, 246! Old Calabar, *Mann*, 2271! *Thomson*, 80! Cross River, *Johnston*! Northern Nigeria, *Kentish-Rankin*!

I referred (in De Wild & Durand, Contrib. Fl. Congo, i. 39; cf. also De Wild. & Durand, Reliq. Dewevr. in Ann. Mus. Congo, sér. 3, fasc. ii. 153) to "*Tabernaemontana Barteri*" an imperfect specimen, collected on the Congo between Lukolela and Ngomba by Dewèvre (793), which was not accessible when I revised *Tabernaemontana*, but I have little doubt that the determination was erroneous so far as the species is concerned.

23. **CARVALHOA**, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 189; Nachtr. 284.

Calyx small, herbaceous, eglandular (?) within; sepals 5, nearly free, imbricate, ovate, acuminate, ciliolate. Corolla subcampanulate-funnel-shaped; tube subcylindric at the base, widened from below the

middle, without appendages in the throat, hairy within near the base of the anthers; lobes broad, obtuse, overlapping to the left, not inflexed in bud. Stamens inserted at the constriction of the corolla-tube; anthers conniving in a cone, subsessile, free from the stigma, included, linear-lanceolate, acuminate, sagittate; tails long, acute, more or less curved; back of the connective minutely tomentose, foot developed, narrow, flat, glabrous; filaments reduced to a callous swelling; filamental ridges short, slender, hairy. Disc annular, fleshy, undulate, adnate to the ovary. Carpels 2, free, except at the very base, gradually passing into the filiform style; stigma capitate, 5-grooved, very viscous, minutely apiculate, with an undulate ring at the base; ovules about 4-seriate, 30 or more in each cell. Mericarps (not quite mature) baccate (or subfollicular?), obliquely erect, lanceolate, much narrowed at both ends, upper end incurved. Seeds about 8-10, ellipsoid, covered with a thin aril.—Shrubs dichotomously branched. Leaves opposite, herbaceous, thin; petioles hollowed out at the base and joined into a rim around the stem, with numerous filiform glands within. Flowers scarcely middle-sized, in few-flowered, very lax panicles from the upper branch-forks.

Species 2 or 3 in tropical and South Africa.

- Leaves obtusely subauriculate at the base, sessile,  
 pubescent . . . . . 1. *C. campanulata*.  
 Leaves acute at the base, shortly petioled, glabrous. 2. *C. macrophylla*.

1. **C. campanulata**, *K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 189. A shrub; young branches puberulous. Leaves sessile, oblong to obovate-oblong, acute, narrower at the base, with almost parallel sides; shortly and obtusely auriculate, 2-3½ in. long, up to 1¼ in. broad, herbaceous, pubescent on both sides; secondary nerves 8-9 on each side, slender, curved. Panicles few-flowered, lax, pubescent; peduncle very slender, about 1 in. long; bracts small, linear; pedicels up to 1 in. long. Calyx 1½ lin. long, finely puberulous; sepals ovate, acute to acuminate. Corolla subcampanulate-funnel-shaped; tube 3½ lin. long, constricted below the middle; lobes rotundate-elliptic, 2 lin. long. Anthers 1½ lin. long. Pistil 2 lin. long.

**Mozamb. Dist.** Portuguese East Africa: Mozambique; Mosoril, near Cabeceira, *Carvalho!*

2. **C. macrophylla**, *K. Schum. in Engl. Jahrb.* xxx. 381. A perfectly glabrous shrub, 9-12 ft. high; branches erect, straight, slender and compressed when young, green in the upper part, yellowish-grey below. Leaves elliptic or oblong, shortly and very acutely acuminate, acute at the base, 3½-9 in. long, 1½-3¼ in. broad, membranous; secondary nerves 10-16 on each side, somewhat prominent below; petiole up to 2½ lin. long. Panicles 4-12-flowered, axillary, long-peduncled; pedicels 2½-3½ lin. long; bracts lanceolate, acuminate. Calyx 1 lin. long; sepals ovate, acute, minutely ciliolate. Corolla subcampanulate-funnel-shaped, 6½ lin. long, pale yellow with red stripes in

the puberulous throat; lobes rounded,  $1\frac{3}{4}$ –2 lin. long. Anthers inserted  $1\frac{3}{4}$  lin. above the base of the corolla,  $1\frac{3}{4}$  lin. long. Pistil 2 lin. long.

**Mozamb. Dist.** German East Africa: Kondeland; in wooded gorges of the Gurumbi Mountains, near Uporoto, 5600 ft., *Goetze*, 1143.

There is a specimen in the herbarium of the British Museum, collected by Whyte near Zomba, Nyasaland, which agrees so closely with Schumann's description of *C. macrophylla* that I suspect it is the same species. The fruits attached to it, which are not perfectly mature, have been used for the completion of the description of the genus, the fruit of which was not previously known.

## 24. SCHIZOZYGIA, Baill. in Bull. Soc. Linn. Paris, i. 752.

Calyx small; sepals 5, almost free, herbaceous, ovate, not ciliate, glandular inside the base. Corolla salver-shaped; tube short, elongate-ovoid; lobes very asymmetric, overlapping to the right, inflexed in bud. Stamens inserted at the middle of the corolla-tube; anthers conniving in a cone, sessile, lanceolate-sagittate, acute; wings horny with acute margins; tails acute; foot of the connective flat, glabrous, viscous. Ovary apocarpous except at the base, surrounded by a fleshy disc adnate to  $\frac{3}{4}$  of its height; style filiform; stigma capitate, 5-grooved, very viscous, with an undulate ring at the base and a minute 2-lobed apiculus; ovules 2-seriate, about 9 in each cell. Mericarps 2, follicular, short, asymmetric, the apical often obscure mucro becoming by unequal growth nearly basal; transverse veins prominent, numerous, arched. Seeds few, ovoid, embedded in a yellow pulp; testa crustaceous, finely granular, longitudinally striate; endosperm slightly ruminant, fleshy; cotyledons thin, concavo-convex.—A dichotomously branched shrub. Leaves opposite, subsessile, herbaceous; axillary stipules 0; axillary glands few to many, short, filiform, often besides a long filiform gland from the transverse rim between the petioles. Racemes or spikes short, dense, persistently bracteate, few-flowered, springing from the branch-forks; flowers small.

Species 1, endemic.

1. *S. coffæoides*, *Baill. l.c.* A shrub 6 ft. high, quite glabrous; branches terete, the older ones yellowish-brown; lenticels scattered. Leaves elliptic or obovate, shortly acuminate, gradually narrowed into the base, then suddenly contracted, 4–5 in. long, 2–2½ in. broad, membranous, reddish or yellowish-brown when dry; secondary nerves about 8 on each side, distant; veins obscure; petiole very short  $\frac{1}{2}$ –1 lin. long. Inflorescences  $\frac{1}{2}$  in. long; bracts ovate, 1 lin. long. Calyx 2 lin. long. Corolla-tube 2 lin. long, hairy within above the stamens; lobes rather shorter than the tube, broad. Anthers 1 lin. long. Follicles 6–7 lin. long, up to 5 lin. broad, red. Seeds 2½–3 lin. long.—*K. Schum.* in *Engl. & Prantl, Pflanzenfam. iv. ii. 147, fig. 55, J*; *O. Kuntze, Rev. Gen. Pl. iii. 198.*

**Mozamb. Dist.** Zanzibar, *Hildebrandt*, 1152! *Kirk! Kuntze.* German East Africa: Khutu; Kissaki Steppe, 650 ft., *Goetze*, 132!

## 25. GABUNIA, K. Schum. in Engl. Jahrb. xxiii. 224.

Calyx small to middle-sized, herbaceous, usually eglandular within; sepals 5, free or nearly so, imbricate, oblong to rotundate, obtuse, ciliolate. Corolla salver-shaped; tube cylindric, slender, more or less widened at the base, often twisted below, with patches of hairs between the filamental ridges, otherwise glabrous or hairy above the stamens; lobes long, very narrow, oblique, wavy, inflexed and deeply descending into the corolla-tube in bud, overlapping to the left. Stamens inserted near the base; anthers conniving in a cone, subsessile, free from the stigma, lanceolate-subulate, sagittate; wings narrow, stout, with rounded edges; tails rather short, acute; foot of the connective flat, glabrous; filaments reduced to a callous swelling; filamental ridges short, broad, convex. Disc 0. Carpels 2, free. Style filiform, wider above,  $\frac{1}{3}$ - $1\frac{1}{2}$  lin. long; stigma conic-cylindric, 5-grooved, very viscous, with a slightly lobed projecting rim at the base and a short subulate apiculus; ovules numerous, pluriseriate. Mericarps 2, baccate (?) or subfollicular, divaricate, obliquely ovoid with two lateral ridges or wings joining at the apex into a short flattened obtuse beak; pericarp sometimes rather fleshy at first, at length dry, coriaceous, tardily dehiscent. Seeds ellipsoid, embedded in a scanty pulp or coated with a thin aril (?); testa crustaceous, finely granular, longitudinally sulcate; endosperm almost horny, ruminate; cotyledons flat, shorter than the radicle.—Climbing glabrous shrubs; stems smooth, fistular. Leaves opposite, papery or chartaceous; nerves usually faint; axillary stipules distinct, very obtuse, joining across the stem into a short tubular sheath, secreting resin when young, without (?) external glands. Flowers rather showy, white, fragrant, in usually paired terminal or pseudolateral few- to more than 10-flowered persistently bracteate racemiform, corymbose or umbelliform inflorescences.

Species 7, endemic.

It was not possible to ascertain from the dried fruits, which I saw, whether the seeds were embedded in a common pulp or each coated with a separate aril. The former seemed to be the case in the more baccate fruits of *G. eglandulosa*, the latter in those of *G. crispiflora*.

Corolla-tube 6 lin. long . . . . . 1. *G. psorocarpa*

Corolla-tube over 1 in. long.

Calyx about 1 lin. long, eglandular; corolla-tube glabrous within; stigma almost sessile; leaves abruptly acuminate.

Leaves 2- $4\frac{1}{2}$  in. long, 1-2 in. broad; petiole  $1\frac{1}{2}$ -2 lin. long . . . . . 2. *G. brachypoda*.

Leaves 5-6 in. long, 2-3 in. broad; petiole 4-6 lin. long . . . . . 3. *G. latifolia*.

Calyx  $1\frac{1}{2}$  lin. long or longer, glandular or eglandular; corolla-tube hairy within; style  $\frac{3}{4}$ - $1\frac{1}{2}$  lin. long; leaves more or less gradually acuminate.

Calyx  $1\frac{1}{2}$ -2 lin. long.

Corolla-tube very slender,  $1\frac{3}{4}$ - $2\frac{1}{2}$  in. long; lobes linear, very narrow; petioles 5-10 lin. long

4. *G. longiflora*.

- Corolla-tube less slender,  $1\frac{1}{3}$ – $2\frac{1}{4}$  in. long; lobes lanceolate; petioles 2–6 lin. long.
- Calyx glandular within . . . . . 5. *G. glandulosa*.  
 Calyx eglandular . . . . . 6. *G. eglandulosa*.
- Calyx  $3\frac{1}{2}$ – $4\frac{1}{2}$  lin. long.
- Sepals broad, obtuse, straight; corolla-tube loosely hairy in the upper part . . . . . 6. *G. eglandulosa*, var.
- Sepals oblong, slightly constricted above the base, recurved; corolla-tube villous within from the anthers upwards . . . . . 7. *G. crispiflora*.

1. **G. psorocarpa**, *Pierre MS.* A climbing shrub, perfectly glabrous; branches slender, fistular. Leaves lanceolate to oblong-lanceolate, acuminate, long attenuate at the base, 4–6 in. long,  $1-1\frac{3}{4}$  in. broad, chartaceous, olive-green when dry; secondary nerves 8–10 on each side, faint, oblique, curved; petiole slender, 3–4 lin. long. Inflorescences few- to many-flowered, corymbiform; peduncle slender,  $\frac{1}{4}$ – $\frac{1}{2}$  in. long; pedicels slender, up to 5 lin. long. Calyx almost  $1\frac{1}{2}$  lin. long; sepals ovate, obtuse, ciliolate, eglandular. Corolla white; tube cylindric, gradually widened at the base, not twisted, 6 lin. long, villous within from the base of the anthers upwards; lobes linear, acuminate, as long as the tube, very wavy. Anthers  $2\frac{1}{2}$  lin. long. Style very short. Fruit slightly winged (*Pierre*).

**Lower Guinea.** Gaboon, *Klaïne*, 725!

2. **G. brachypoda**, *Stapf.* A climbing shrub, up to 6 ft. high, quite glabrous; branches fistular, dark brownish-green. Leaves oblong, abruptly acuminate (acumen linear, very slender, acute, up to 4 lin. long), rounded or subacute at the base,  $2-4\frac{1}{2}$  in. long, 1–2 in. broad, chartaceous, dark brownish-green above, pale brown below when dry; secondary nerves 7–8 on each side, spreading almost at right angles, curved; petiole  $1\frac{1}{2}$ –2 lin. long. Inflorescences umbelliform, about 10-flowered, on a very short stout peduncle; pedicels slender, up to 4 lin. long. Calyx scarcely 1 lin. long; sepals suborbicular, eglandular, ciliolate. Corolla white; tube slender,  $1\frac{1}{3}$  in. long, slightly widened and twisted at the base, glabrous within above the stamens; lobes linear, long-tapering,  $\frac{3}{4}$  in. long, wavy. Anthers 2 lin. long. Stigma almost sessile.—*Tabernæmontana brachypoda*, K. Schum. in Engl. Jahrb. xxiii. 223 partly.

**Upper Guinea.** Cameroons: Lolodorf, in forest, *Staudt*, 18!

K. Schumann also quotes (l.c.) a specimen collected on the Sibange farm, in Munda, Gaboon, by Soyaux (239), under his *Tabernæmontana brachypoda*. The Kew specimen, so numbered, has lanceolate to lanceolate-oblong, gradually acuminate leaves, which dry green above and pale yellowish-green below and have longer petioles. I have no doubt that it is specifically distinct from *G. brachypoda*; but as there is only one flower-bud with the specimen at Kew, I must confine myself to drawing attention to this plant.

3. **G. latifolia**, *Stapf.* A climbing shrub, 6–8 ft. high, quite glabrous; branches fistular, rather slender, pale green. Leaves elliptic to elliptic-oblong, abruptly acuminate (acumen very slender, sublinear,

4-5 lin. long), acute at the base, 5-6 in. long, 2-3 in. broad, papery, dull olive-green when dry, paler beneath; secondary nerves 7-8 on each side, faint; petiole not flexuose, 4-6 lin. long. Inflorescences umbelliform, 6-7-flowered; peduncle slender, 1 in. long; pedicels up to 3 lin. long. Calyx 1-1 $\frac{1}{4}$  lin. long; segments elliptic-oblong, broad, obtuse, ciliate, eglandular. Corolla-tube very slender, widened close to the base and twisted to or beyond the middle, 1 $\frac{1}{3}$ -1 $\frac{2}{3}$  in. long, glabrous within above the stamens; lobes linear, long tapering, about 1 in. long, very wavy. Anthers 2 lin. long. Style under  $\frac{1}{2}$  lin. long.—*Taberna-montana eglandulosa*, Stapf in Kew Bulletin, 1894, 24 partly.

**Lower Guinea.** Gaboon: Corisco Bay; Mount John, on the River Kongui, Mann, 1794!

4. **G. longiflora**, Stapf. A climbing shrub, 10 ft. high, quite glabrous; branches fistular, olive-green. Leaves oblong to lanceolate, long acuminate (acumen fine, obtuse), acute at the base, 4-6 in. long, 1 $\frac{1}{2}$ -2 $\frac{1}{2}$  in. broad, chartaceous, dark above, olive-green below when dry; secondary nerves 6-7 on each side, very fine; petiole up to 10 lin. long. Inflorescences corymbiform or after the falling of the lower flowers umbelliform, rather dense, peduncle under 1 in. long; pedicels up to 3 lin. long. Calyx 2 lin. long; sepals broad, ovate-oblong, very obtuse, ciliate, eglandular. Corolla white; tube very slender, almost filiform, 1 $\frac{3}{4}$ -2 $\frac{1}{3}$  in. long, widened at the base and twisted all along, loosely hairy in the upper part, glabrous below down to the filaments; lobes linear, long tapering, up to 2 in. long, very wavy. Anthers 2 $\frac{1}{2}$  lin. long. Style 1 lin. long.

**Upper Guinea.** Fernando Po, Mann, 239!

5. **G. glandulosa**, Stapf. A climbing shrub, quite glabrous; branches rather slender, fistular, olive-green. Leaves oblong, long and acutely acuminate, acute or sometimes obtuse at the base, 4-5 $\frac{1}{2}$  in. long, 1 $\frac{1}{2}$ -2 $\frac{1}{4}$  in. broad, chartaceous, olive-green when dry; secondary nerves about 7 on each side, strongly curved, slender; petiole 2 $\frac{1}{2}$ -4 lin. long, rather slender. Inflorescences corymbiform, dense, about 10-flowered; peduncle very short; pedicels up to 3 lin. long. Calyx 1 $\frac{1}{2}$ -2 lin. long; sepals ovate to elliptic-oblong, obtuse or subobtuse, somewhat pruinose with a few small glands inside the base. Corolla-tube 1 $\frac{3}{4}$ -2 $\frac{1}{4}$  in. long, widened and twisted at the base, scantily hairy within above the anthers; lobes very oblique, lanceolate, long tapering, over 1 in. long. Anthers almost 3 lin. long. Style  $\frac{3}{4}$  lin. long.

**Upper Guinea.** Sierra Leone, near Regent, Scott-Elliot, 5821!

To this species belong probably also specimens collected on the Aburi Hills by Johnson (477!), and near Kwahu, Johnson (669!), Gold Coast Colony. Both have intracalycular glands, and the first agrees with the Sierra Leone specimens in all respects except the much reduced inflorescence, slightly smaller calyx-segments and thinner dark green leaves; the other has, however, comparatively broad leaves with short subobtuse tips, petioles up to 7 $\frac{1}{2}$  lin. long and still smaller calyx-segments.

6. **G. eglandulosa**, Stapf. A climbing shrub, perfectly glabrous; young branches terete, compressible, sometimes fistular, olive-green.

Leaves oblong, abruptly acuminate, narrowed to the base, 4-6 (rarely to 8) in. long,  $1\frac{1}{2}$ - $3\frac{1}{2}$  in. broad, papery, dull; secondary nerves 5-7 on each side, strongly curved; petiole 3-5 lin. long. Inflorescences corymbose or umbelliform, 7-10-flowered, rather dense; peduncle up to  $1\frac{3}{4}$  in. long; pedicels 2-4 lin. long. Calyx  $1\frac{1}{2}$ -2 lin. long; sepals broad, oblong, very obtuse, ciliolate, eglandular. Corolla white, very fragrant; tube slender, slightly dilated near the base, more or less twisted below,  $1\frac{1}{2}$ - $1\frac{3}{4}$  in. long, hairy within in the upper part; lobes very oblique, lanceolate, long tapering to an acute point, over 1 in. long. Anthers  $2\frac{1}{2}$ - $2\frac{3}{4}$  lin. long. Style 1 lin. long. Mericarps rather baccate, ovoid, orange-coloured,  $1\frac{3}{4}$ -2 in. long with 2 lateral keels.—*Tabernaemontana eglandulosa*, Stapf in Kew Bulletin, 1894, 24 partly.

**Upper Guinea.** Lagos: Eppah, Barter, 3306! Yoruba; Ikirun, Millson, 12!

Var.  $\beta$  *macrocalyx*, Stapf. Calyx  $3\frac{1}{2}$ -4 lin. long.

**Upper Guinea.** Old Calabar, Mann, 2253!

I have regarded Mann's specimen as a variety of *G. eglandulosa*, on the assumption that the size of the calyx of this species varies in a similar way to that of *Callichilia Barteri*. I cannot discover any other difference.

**7. G. crispiflora**, Stapf. A tall climber, perfectly glabrous; branches terete, slender, scarcely fistular, olive-green. Leaves oblong, abruptly acuminate (acumen linear, obtuse, 3-5 lin. long), acute at the base,  $3\frac{1}{2}$ -5 in. long,  $1\frac{1}{4}$ - $2\frac{1}{2}$  in. broad, papery, glaucous above, pale olive-green beneath when dry; secondary nerves very faint, 7-9 on each side; petiole not flexuous,  $\frac{1}{2}$ - $1\frac{1}{4}$  in. long. Inflorescences few-flowered, very shortly racemose or subumbellate; peduncle 3-4 lin. long; pedicels 4-5 lin. long. Calyx 4- $4\frac{1}{2}$  lin. long; sepals oblong, slightly constricted above the base, obtuse or subacuminate, recurved, ciliolate, eglandular. Corolla-tube  $1\frac{1}{3}$ - $1\frac{2}{3}$  in. long, quite straight, slightly widened towards both ends, hairy within from the base of the stamens upwards; lobes obliquely lanceolate, long tapering, very wavy. Anthers almost 4 lin. long. Style  $1\frac{1}{2}$  lin. long. Mericarps obliquely ovoid with a short broad flattened beak and 2 lateral keels, over 1 in. long; pericarp thin, coriaceous. Seeds 3-4 lin. long.—*Tabernaemontana crispiflora*, K. Schum. in Engl. & Prantl, Pflanzfam. iv. ii. 148. *T. eglandulosa*, Stapf in Kew Bulletin, 1894, 24 partly.

**Lower Guinea.** Gaboon: Munda; Sibange Farm, Soyaux, 183!

## 26. CONOPHARYNGIA, D. Don, Gen. Syst. iv. 94.

Calyx small (at least comparatively), subcoriaceous; sepals united at the base only, imbricate, obtuse, each with several minute glands inside the base. Corolla salver-shaped, small to large, often very fleshy; tube cylindric, spindle- or barrel-shaped, widest at or below the middle, sometimes twisted, naked at the mouth, usually more or less tomentose inside; lobes overlapping to the left, inflexed and descending into the corolla-tube in bud. Stamens in the widened part of the corolla-tube; anthers conniving in a cone, subsessile, included, rarely shortly exerted in species with a short corolla-tube, lanceolate, acute, sagittate; tails

solid, barren; filaments reduced to a callous swelling; filamental ridge usually distinct. Disc 0. Carpels 2, free; style filiform to columnar, short (at least comparatively); stigma cylindric, grooved, with an entire or lobed projecting rim or short frill at the base and a minute 2-lobed apiculus, more rarely (Sect. *Leptopharyngia*) elliptic or globose, delicately papillose, not grooved, with a usually toothed rim at the base and a conspicuous 2-fid papillose apiculus as long as or longer than the rest of the stigma. Mericarps baccate, usually more or less globose or ovoid, smooth, rarely keeled or warty and tardily dehiscent when drying up. Seeds numerous, embedded in a usually fleshy pulp, more or less ellipsoid, deeply grooved ventrally; testa crustaceous; endosperm fleshy, ruminant; cotyledons ovate, longer or shorter than the radicle.—Trees, often tall, or shrubs. Leaves opposite, more or less coriaceous, sometimes very large; axillary stipules distinct, very obtuse, united into a very short tubular sheath, usually with very numerous resiniferous glands within. Inflorescences terminal or pseudo-axillary, corymbose, rarely paniced or reduced to few-flowered cymes. Flowers large and showy to middle-sized, rarely small, usually white and fragrant.—*Tabernaemontana*, Benth. et Hook. f. Gen. Pl. ii. 706 partly.

Species about 25, mostly in tropical Africa, a few in the Mascarene Islands, 2 in Eastern South Africa.

\*SARCOPHARYNGIA.—Corolla-tube  $\frac{1}{2}$ – $3\frac{1}{2}$  in. long, fleshy. Stigma more or less cylindric, grooved, with a projecting entire or lobed rim at the base and a minute apiculus.

Corolla-tube  $1\frac{3}{4}$ – $3\frac{1}{2}$  in. long.

Corolla-tube  $2\frac{1}{2}$ – $3\frac{1}{2}$  in. long, with the anthers inserted 14–15 lin. above the base; leaves oblong-elliptic to oblong-lanceolate, 4–6 in. long,  $1\frac{3}{4}$ – $2\frac{1}{2}$  in. broad.

1. *C. longiflora*.

Corolla-tube under  $2\frac{1}{2}$  in. long, with the anthers inserted 7–3 lin. above the base; leaves larger than in *C. longiflora*.

Calyx  $3\frac{1}{2}$ – $4\frac{1}{2}$  lin. long; corolla-tube  $2$ – $2\frac{1}{4}$  in. long, widest 6–7 lin. above the base; anthers 6–8 lin. long.

Calyx  $4$ – $4\frac{1}{2}$  lin. long; corolla-tube very stout, much twisted; anthers 7–8 lin. long; style 7 lin. long.

2. *C. contorta*.

Calyx  $3\frac{1}{2}$ – $4$  lin. long; corolla-tube more slender than in the preceding species, slightly twisted near the base, otherwise straight; anthers 6 lin. long; style 5–6 lin. long.

3. *C. Smithii*.

Calyx  $3$ – $1\frac{1}{2}$  lin. long; corolla-tube  $2\frac{1}{4}$ – $1\frac{1}{2}$  in. long, widest 4–3 lin. above the base; anthers 4–5 lin. long.

Calyx 3–2 lin. long.

Corolla-tube  $2$ – $2\frac{1}{4}$  in. long; anthers 5 lin. long; leaves 8–12 in. long,  $4\frac{1}{2}$ –8 in. broad; secondary nerves 11–12 on each side.

4. *C. Thonneri*.

Corolla-tube  $1\frac{3}{4}$  lin. long; anthers 4 lin. long; leaves smaller or at least narrower than in *C. Thonneri*; secondary nerves 9 (sometimes up to 11).

5. *C. durissima*.

Calyx  $1\frac{1}{2}$  lin. long.

6. *C. jollyana*.

Corolla-tube 9-14 lin. long.

Corolla-tube very fleshy, usually much widened at the middle.

Calyx  $1\frac{1}{4}$ - $1\frac{3}{4}$  lin. long; corolla-tube 1 in. long, glabrous within above the anthers; secondary nerves 6-8 on each side . . . 7. *C. crassa*.

Calyx 2-5 lin. long; corolla-tube pubescent to tomentose within above the anthers; secondary nerves 9-18 on each side.

Calyx  $2-2\frac{1}{2}$  lin. long; corolla-tube 9-10 lin. long, pubescent within above the anthers, and with gold-brown velvety lines below . . . 8. *C. Cumminsii*.

Calyx 3-5 lin. long; corolla-tube 12-14 lin. long, with different indumentum inside from that of *C. Cumminsii*.

Corolla-tube very stout, pubescent, densely tomentose or villous within all over, except a portion near the base.

Calyx 3-4 lin. long; leaves 10-15 in. long, 4-10 in. broad; secondary nerves 12-15 on each side.

Leaves 12-15 in. long, 8-10 in. broad . . . 9. *C. pachysiphon*.  
Leaves about 7-10 in. long, 3-4 in. broad.

Calyx  $3-3\frac{1}{2}$  lin. long; corolla-tube widest at the middle, anthers inserted 6 lin. above its base . . . 10. *C. Holstii*.

Calyx 4 lin. long; corolla-tube widest below the middle, anthers inserted  $4\frac{1}{2}$  lin. above its base . . . 11. *C. angolensis*.

Calyx 5 lin. long; leaves 5-7 in. long, 2-3 in. broad; secondary nerves 9-13 on each side . . . 12. *C. stapfiana*.

Corolla-tube more slender than in the 5 preceding species, villous within near the mouth, otherwise glabrous . . . 13. *C. Johnstonii*.

Corolla-tube very slender, cylindric, 9-10 lin. long . . . 14. *C. stenosphon*.

Corolla-tube 5-6 lin. long.

Inflorescences more or less corymbose on stout peduncles from the tops of the branches, rarely overtopped by young shoots.

Leaves elliptic to elliptic-oblong, 7-16 in. long, 3-9 in. broad; secondary nerves 8-12 on each side; calyx 3 lin. long . . . 15. *C. brachyantha*.

Leaves oblong to linear-oblong, 5-8 in. long,  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. broad; secondary nerves 12-16 on each side; calyx  $2-2\frac{1}{2}$  lin. long . . . 16. *C. usambarensis*.

Inflorescences usually pseudo-axillary, subsessile . . . 17. *C. penduliflora*.

\*\*LEPTOPHARYNGIA.—Corolla-tube  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, comparatively thin. Stigma ellipsoid or globose, minutely papillose, not grooved, with a usually toothed rim at the base and a conspicuous papillose 2-fid apiculus as long as or longer than the rest of the stigma . . . 18. *C. elegans*.

1. **C. longiflora**, *Stapf*. A tree; branches stout, terete, bark very pallid. Leaves oblong-elliptic to oblong-lanceolate, acuminate to subacuminate, acute at the base, 4–6 in. long,  $1\frac{3}{4}$ – $2\frac{1}{2}$  in. broad, subcoriaceous; secondary nerves 7–8 on each side; petiole  $\frac{3}{4}$ –6 lin. long. Inflorescences 4–2-flowered or reduced to a solitary flower, generally from the branch-forks or pseudo-axillary; peduncle stout,  $1$ – $1\frac{1}{2}$  in. long; bracts ovate, small, more or less caducous; pedicels stout, 6–8 lin. long. Calyx 4–5 lin. long; sepals broad-ovate, very obtuse, ciliolate, with numerous basal glands within. Corolla white or cream-coloured, fragrant; tube cylindrical, widened below the middle, sometimes slightly twisted,  $2\frac{3}{4}$ – $3\frac{1}{2}$  in. long, densely pubescent within, with the exception of 5 glabrous lines below the stamens; lobes obliquely oblong, obtuse,  $2$ – $2\frac{1}{2}$  in. long, minutely puberulous on both sides near the base. Stamens inserted  $1$ – $1\frac{1}{4}$  in. above the base of the corolla-tube; anthers long-sagittate, 7 lin. long. Style over 1 in. long; stigma cylindrical with a basal ring. Berries globose, smooth, of the size of an orange. Seeds 4 lin. long.—*Tabernaemontana longiflora*, Benth. in Hook. Niger Fl. 447; Bot. Mag. t. 4484; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 147, fig. 55, D; Hiern in Cat. Afr. Pl. Welw. i. 669.

**Upper Guinea.** Senegambia, *Heudelot*, 726! Futa Jallon: Tumbo Island in the Dubréca River, *Gürich*! Laya, on the River Scarcies, *Scott-Elliot*, 4756! Sierra Leone: Waterloo, *Kirk*, 23! Freetown, *Welwitsch*, 5987! fruit, 718! Sugarloaf Mountain, *Barter*! Regent, *Scott-Elliot*, 4001! Ninia, Talla Hills, *Scott-Elliot*, 4909! and without precise locality, *Afzelius*! *Vogel*, 151! *Whitfield*!

Some ripe fruits collected by Barter have mericarps measuring in the dry state not more than 1 in. in diameter. They are evidently much shrunken. The pericarp is leathery, and the well developed seeds are about 4 lin. long.

2. **C. contorta**, *Stapf*. A tree, 30–40 ft. high; branches stout, terete, greenish. Leaves elliptic or subobovate, obtuse or subacuminate, rounded or shortly contracted at the base, 7–13 in. long, 4–7 in. broad, subcoriaceous; secondary nerves 9–15 on each side, like the midrib much raised below; petiole stout, 4–6 lin. long. Inflorescences subcorymbose; peduncle very stout, 4 in. long; bracts ovate, caducous; pedicels stout, up to 9 lin. long. Calyx  $4$ – $4\frac{1}{2}$  lin. long; sepals roundish-oblong, with numerous small basal glands within. Corolla white, sweet-scented; tube stout, much twisted, subcylindric, slightly widened near the base,  $2$ – $2\frac{1}{2}$  in. long, scantily pubescent within above the stamens, densely pubescent below towards the base and between the filamental ridges; lobes obovate-oblong, about as long as the tube. Stamens inserted 6–7 lin. above the base of the corolla-tube; anthers long-sagittate, 7–8 lin. long. Style up to 7 lin. long.—*Tabernaemontana contorta*, *Stapf* in Kew Bulletin, 1894, 23.

**Upper Guinea.** Cameroons: Ambas Bay, *Mann*, 703! Victoria, *Kalbreyer*! *Deistel*, 132! 151! Yaunde, 2600 ft., *Zenker & Staudt*, 203 partly! Johann Albrechtshöhe, *Staudt*, 796!

3. **C. Smithii**, *Stapf*. Small tree; branches stout. Leaves elliptic or oblong, very obtuse, subacute at the base, 7–12 in. long,

3-8 in. broad, coriaceous, punctate below; secondary nerves 11-14 on each side; veins inconspicuous; petiole stout, 3-9 lin. long. Inflorescences corymbose; peduncle stout, 6 in. long; bracts small, ovate, deciduous; pedicels up to 9 lin. long. Calyx 3-4 lin. long; sepals broad-elliptic, very obtuse, ciliolate, with numerous minute basal glands within. Corolla white; tube slender, slightly over 2 in. long, somewhat twisted below, otherwise straight, widened near the base ( $\frac{1}{4}$  lin. in diam.); lobes oblong, obtuse, 1 in. long, 4 lin. broad, margins wavy. Stamens inserted 7 lin. above the base; anthers sagittate, subulate-acuminate, 6 lin. long. Style 5-6 lin. long. Berries globose.—*Tabernæmontana Smithii*, Stapf in Kew Bulletin, 1898, 305, and in De Wild. & Durand, Contrib. Fl. Congo in Ann. Mus. Congo, Bot. sér. 2, i. fasc. i. 39; De Wild. & Durand, Reliq. Dewevr. in Ann. Mus. Congo, Bot. sér. 3, fasc. ii. 153.

**Lower Guinea.** Lower Congo: Leopoldville, *Laurent!* and without precise locality, *Smith!* North Angola: Chinganga (Kinganga), *Dewèvre*, 261!

**South Central.** Congo Free State: basin of the Sankuru, *Laurent!* Stanleyville, *Dewèvre*, 1167A!

De Wildeman & Durand quote, in Reliquiæ Dewevrianæ, Dewèvre as saying under 271 that this is sometimes a very high climber, whilst the Stanleyville plant is described as arborescent. The number which I noted from Dewèvre's specimen from Chinganga was 261, not 271 as stated by De Wildeman and Durand.

4. **C. Thonneri**, *Stapf*. A perfectly glabrous shrub, up to 15 ft. high, with stout branches. Leaves elliptic to obovate-oblong, very obtuse, apiculate, subacute or rounded at the base, 8-12 in. long,  $4\frac{1}{2}$ -8 in. broad, subcoriaceous, pale and punctate beneath; secondary nerves 11-12 on each side, usually straight up to  $\frac{3}{4}$  of their length; veins inconspicuous; petiole stout,  $\frac{3}{4}$ -1 $\frac{1}{4}$  in. long. Inflorescences subcorymbose, many-flowered, from the branch-forks; peduncle stout, 3-4 $\frac{1}{2}$  in. long; bracts small, ovate, deciduous; pedicels up to 6 lin. long. Calyx 2 $\frac{1}{2}$ -3 lin. long; sepals elliptic, obtuse, ciliolate, with numerous basal glands within. Corolla white, fragrant; tube rather slender, cylindric, 2-2 $\frac{1}{4}$  in. long, widened (to 3 lin.) and twisted near the base, tomentose within above and below the anthers; lobes oblong, obtuse, 1-1 $\frac{1}{4}$  in. long, margins wavy. Stamens inserted 4 lin. above the base; anthers almost 5 lin. long, sagittate, subulate-acuminate. Style 3-3 $\frac{1}{2}$  lin. long.—*Tabernæmontana Thonneri*, De Wild. & Durand ex Stapf in Kew Bulletin, 1898, 306; Contrib. Fl. Congo in Ann. Mus. Congo, Bot. sér. 2, i. fasc. i. 39; De Wild. & Durand, Pl. Thonner. Congol. 32, t. vii.

**South Central.** Congo Free State: Bogolo near Businga, on the River Mougala, *Thonner!*

De Wildeman and Durand also suggest (Contrib. Fl. Congo, l.c.) that a plant collected near Dembo by Gillet may belong to this species. It, however, is said to have somewhat longer, more slender corollas and a slightly shorter calyx.

5. **C. durissima**, *Stapf*. A tree, 30-70 ft. high; branches stout, terete, olive-green, when dry. Leaves obovate-oblong, very obtuse,

apiculate or abruptly acuminate, acute to cuneate at the base, 6–11 in. long, 3–5 in. broad, subcoriaceous; secondary nerves about 8–12 on each side; petiole stout, up to 9 lin. long, or sometimes very short. Inflorescences terminal, corymbose; peduncle stout, 4–6 in. long; bracts very small, deciduous, or suppressed; pedicels stout, up to 6 lin. long. Calyx 2–3 lin. long; segments very broad, ovate, obtuse, with numerous small basal glands within. Corolla white; tube rather slender, straight or slightly twisted, widened near the base,  $1\frac{3}{4}$  in. long, glabrous within above the anthers, and densely pubescent between the filamental ridges; lobes oblong-lanceolate, 2 in. long. Stamens inserted 3–4 lin. above the base; anthers doubly sagittate (each tail divided into a short inner and a longer outer point), 4 lin. long. Style 2–3 lin. long. Berries globose, obovoid, up to  $2\frac{1}{2}$  in. long when dry, smooth; pericarp coriaceous; seeds about 5 lin. long.—*Tabernæmontana durissima*, Stapf in Kew Bulletin, 1894, 24; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 148. *T. durinervis* (by error), Durand & Schinz, Études Fl. Congo, i. 190.

**Upper Guinea.** Cameroons: Bipinde, Zenker, 1265! 1636! Yaunde, Zenker & Staudt, 203 partly!

**Lower Guinea.** Gaboon: Libreville, Klaine, 181! 440! Jolly, 71! Munda; Sibange Farm, Soyaux, 172!

Two specimens collected by Thomson (73!) and Holland (4!) in Old Calabar, both with very young flowers, probably also belong here. This tree yields very hard timber according to Soyaux.

6. **C. jollyana**, Stapf. A middle-sized tree, quite glabrous; branches stout. Leaves obovate to oblong, shortly apiculate, acute to subcuneate at the base, 6–10 in. long,  $3-4\frac{1}{2}$  in. broad, subcoriaceous, dull green when dry; secondary nerves 7–9 on each side, oblique, straight or slightly curved; petiole 4–8 lin. long. Inflorescences few-flowered, rather contracted; peduncle stout,  $2-2\frac{1}{2}$  in. long; bracts caducous; pedicels 3–5 lin. long. Calyx  $1\frac{1}{2}$  lin. long; sepals broad-ovate to suborbicular, ciliolate, with numerous small basal glands within. Corolla white; tube  $1\frac{1}{2}-1\frac{3}{4}$  lin. long, twisted below, widest 4–5 lin. above the base, then slender, cylindrical, glabrous within except for 5 tomentose lines below the anthers. Stamens inserted about 4 lin. above the base of the corolla-tube; anthers sagittate, 5 lin. long, acuminate-subulate. Carpels oblong-lanceolate; style 3– $3\frac{1}{2}$  lin. long; stigma cylindrical, grooved, with a thin basal ring. Berries globose, up to almost 4 in. in diam., orange-coloured, smooth; rind up to 1 in. thick. Seeds very numerous, about 5 lin. long.—*Tabernæmontana jollyana*, Pierre MS.

**Upper Guinea.** Ivory Coast: Dabou, Jolly, 168! Gold Coast, Cameron!

Very similar to *C. crassa*, from which it differs in the narrower, more obovate or obovate-oblong leaves and the elongate, comparatively slender corolla-tube.

7. **C. crassa**, Stapf. A small tree or shrub; branches terete, very stout. Leaves elliptic or oblong, very shortly acuminate or apiculate, acute or rounded at the base, 6–7 (rarely to 9) in. long,  $3-4\frac{1}{2}$  in.

broad, subcoriaceous; secondary nerves about 6-8 on each side; petiole very stout, 3-6 lin. long. Inflorescences corymbose, rather contracted, 12-15-flowered; peduncle stout, 2-4 in. long; pedicels 2-3 lin. long. Calyx  $1\frac{1}{4}$ - $1\frac{1}{2}$  lin. long; sepals broad-ovate, obtuse, not ciliolate. Corolla white; tube about 1 in. long, wide in the lower part, contracted just above the middle, then rather slender, glabrous within above the anthers, with tomentose lines near the base. Stamens inserted about 5 lin. above the base of the corolla-tube; anthers 5 lin. long. Style 2 lin. long; stigma long cylindric, grooved, with a wavy membranous ring at the base. Berries subglobose. Seeds numerous, embedded in a pulp.—*Tabernæmontana crassa*, Benth. in Hook. Niger Fl. 447; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 148.

**Upper Guinea.** Liberia: Grand Bassa, Vogel, 21! *Dinklage*, 1434!

There is little doubt that (as Bentham, l.c., has already suggested) the plant mentioned in Vogel's Journal (in Hook. London Journ. Bot. v. 634) as "a genus apparently new and near *Tabernæmontana*, remarkable for its double fruit, as large as a child's head, the seeds nestling in the almost woody pulp," is this species. See also the note under *C. pachysiphon*.

8. **C. Cuminsii**, *Stapf*. A large, perfectly glabrous shrub; branches stout. Leaves elliptic or obovate-oblong, suddenly contracted or subacute at the base, over 9 in. long, up to  $5\frac{1}{2}$  in. broad, coriaceous, dull green when dry; secondary nerves more than 9 on each side, straight to near to the margin; petiole stout,  $\frac{1}{2}$ - $\frac{3}{4}$  in. long. Inflorescences terminal, paired, corymbose, rather lax; peduncle stout, up to 3 in. long; bracts short, caducous; pedicels up to 9 lin. long. Calyx 2- $2\frac{1}{2}$  lin. long; sepals rotundate, ciliolate, with numerous small basal glands within. Corolla white; tube oblong-ellipsoid, constricted below the mouth, 9-10 lin. long, 4 lin. in diam., pubescent within above the anthers, with broad gold-brown velvety lines along the filamental ridges; lobes oblong, 5-6 lin. long, velvety near the base. Stamens inserted 5 lin. above the base of the corolla-tube; anthers sagittate, subulate-acuminate, 5 lin. long. Carpels semi-ovoid; style  $3\frac{1}{2}$  lin. long; stigma shortly cylindric, grooved, apiculate, with a wavy ring at the base. Berries 4 in. in diam.; pulp white (according to Cummins).—*Tabernæmontana crassa* (?), Cummins in Kew Bulletin, 1898, 76.

**Upper Guinea.** Ashanti: Assin-Yan-Kunassi, *Cummins*, 114!

Very similar to *C. crassa*, but distinguished by the larger leaves with more numerous nerves, larger calyces, stouter corollas and the beautiful hairy marking inside the corolla-tube below the anthers. The leaf-tips are broken off, except from one small arrested leaf where the tip is abruptly narrowed to an acute point. Judging from mutilated leaves, they may well attain a length of a foot or even more, and probably have between 12 and 15 secondary nerves.

9. **C. pachysiphon**, *Stapf*. A shrub up to 10 ft. high. Leaves ovate or elliptic, shortly acuminate, subacute or suddenly contracted at the base, 12-15 in. long, 8-10 in. broad, subcoriaceous; secondary nerves 13-15 on each side; petiole broad, stout, 6-12 lin. long. Inflorescence corymbose, many-flowered, contracted; peduncle stout, 5-6 in. long; bracts ovate, caducous, 2-3 lin. long; pedicels 4-5 lin. long. Calyx  $3\frac{1}{2}$ -4 lin. long; sepals broad, oblong, obtuse, ciliolate. Corolla

white, fragrant; tube very fleshy, wide, oblong-ellipsoid, constricted below the mouth, 1 in. long or slightly longer, 4-5 lin. wide, densely tomentose within except along the middle lines of the filamental ridges and short lines between the bases of the stamens; lobes oblong, 8-18 lin. long, margins wavy. Stamens inserted at the middle of the corolla-tube; anthers 6 lin. long, almost reaching the mouth. Style 5 lin. long.—*Tabernaemontana pachysiphon*, Stapf in Kew Bulletin, 1894, 22.

**Upper Guinea.** Lower Niger: Onitsa, *Barter*, 1328! Lagos; Ibadan Forest Reserve, *Punch*, 146!

Leaves sent by Miss Gurney from "West Africa" under the name Kpokpoka belong very probably to this species. They were referred by Morris (in Journ. Soc. Arts, xlvii. 778), to *C. crassa*, which is stated there to yield part of the rubber of Sierra Leone and the Gold Coast. Neither *C. crassa* nor *C. pachysiphon* have been, so far, observed in these colonies, and experiments made in Ceylon to obtain rubber from a cultivated specimen of "*Tabernaemontana crassa*" have been unsuccessful (see Vilbouchevitch in Warb. Plant. à Caoutch. 208, in note).

I referred (in De Wild. & Durand, Contrib. Fl. Congo in Ann. Mus. Congo, Bot. sér. 1, i. fasc. i. 40) a plant collected by Dewèvre on the Upper Congo near Kasongo to this species. Having revised this group since; I have no doubt now that Dewèvre's plant does not belong here, but am unable to assign it to its proper place in the absence of the specimen.

10. **C. Holstii**, *Stapf*. A tall tree with very hard wood; bark dark green, at length whitish; branches stout. Leaves oblong to elliptic-oblong, acute at both ends or the tips apiculate, up to 10 in. long and 4 in. broad, subcoriaceous; secondary nerves 12-15 on each side, rather spreading and straight; petiole stout, 6 lin. long. Inflorescences loosely corymbose; peduncle stout,  $2\frac{1}{2}$ - $5\frac{1}{2}$  in. long; bracts ovate, acute, early deciduous; pedicels  $\frac{1}{2}$ -1 in. long. Calyx 3-3 $\frac{1}{2}$  lin. long; sepals suborbicular, ciliolate. Corolla white, yellow in the centre, fragrant; tube very fleshy, wide, up to 5 lin. in diam. at the middle, 1 in. long, densely tomentose within except along 5 lines below the stamens; lobes oblong, as long as the tube or longer, margin crisp. Stamens inserted at the middle of the corolla-tube; anthers 5 $\frac{1}{2}$  lin. long. Style 5-6 lin. long. Berries blackish-brown, globose, 4 in. in diam., with a ventral groove and 2 faint lateral ridges.—*Tabernaemontana Holstii*, Engl. Pfl. Ost-Afr. A. 86, 88; Pax in Engl. l.c. B. 352; K. Schum. in Engl. l.c. C. 317, and in Engl. & Prantl, Pflanzenfam. iv. ii. 148; Scheffler in Notizbl. Königl. Bot. Gart. Berlin, iii. 143. *Voacanga Holstii*, Engl. Glied. Veg. Usambara, 48, 52 (name only).

**Nile Land.** Uganda: Entebbe, *Whyte*! and without precise locality, *Johnston*!

**Mozamb. Dist.** German East Africa: Usambara; Nderema (Ngerema?) *Holst*, 2247! *Volkens*, 134! *Scheffler*, 9! Nguelo, *Kummer*, 28!

11 **C. angolensis**, *Stapf*. A small tree, 12-26 ft. high; branches stout, terete, olive-green when dry. Leaves oblong-elliptic, very shortly acuminate or acute, acute at the base, 7-11 in. long, 3-4 in. broad, subcoriaceous, glossy when fresh, dull when dry; secondary nerves 9-12 on each side; petiole stout, 4 lin. to 1 in. long. Inflorescences geminate or 3-nate, corymbose, few- or many-flowered; peduncles stout, up to 5 in.

long; bracts ovate, caducous, 3-4 lin. long; pedicels rather slender, up to 1 in. long. Flowers sweet-scented. Calyx  $3\frac{1}{2}$ -4 lin. long; sepals broad, oblong or obovate, minutely ciliolate with small basal glands within. Corolla white; tube widest below the middle, 1 in. long, or slightly longer, up to  $3\frac{1}{2}$  lin. wide, densely villous within up to the mouth except on the filamental ridges; lobes oblong, as long as the tube. Stamens inserted  $4\frac{1}{2}$  lin. above the base of the corolla-tube; anthers 5-6 lin. long. Style rather stout,  $3\frac{1}{2}$  lin. long. Berries of the shape, size and colour of an orange. Seeds in a spongy pulp,  $5-6\frac{1}{2}$  lin. long.—*Tabernemontana angolensis*, Stapf in Kew Bulletin, 1894, 23; Warb. Kautschukpfl. 112, and Plant. à Caoutch. (French edit.) 207; Hiern in Cat. Afr. Pl. Welw. i. 669. *Apocynacea*, No. 55, Welw. Apont. 588; Britten in Trans. Linn. Soc. ser. 2, Bot. iv. 25 partly.

**Lower Guinea.** Angola: Pungo Andongo; in forest, *Welwitsch*, 5989! and fruit, 730! 731!

**Mozamb. Dist.** British Central Africa: Nyasaland; Stevenson Road, 6000 ft., *Scott-Elliot*, 8297!

12. **C. stapfiana**, *Stapf*. Leaves oblong-elliptic, subacute or obtuse, acute at the base, 5-7 in. long,  $1\frac{3}{4}$ - $2\frac{3}{4}$  in. broad, coriaceous; secondary nerves 9-13 on each side, much spreading, straight; petiole 2-4 lin. long. Inflorescence corymbose; peduncle stout, 3- $3\frac{1}{2}$  in. long; bracts ovate, 2-3 lin. long, early deciduous; pedicels stout, 1-2 lin. long. Calyx  $4\frac{1}{2}$ -5 lin. long; sepals ovate-oblong, very obtuse, very sparingly ciliolate. Corolla-tube subcylindric, slightly widened below the middle, 1 in. long, softly pubescent above the stamens, especially near the mouth, and just below them, otherwise glabrous within; lobes broad-ovate, 12-14 lin. long, up to 10 lin. broad. Stamens inserted below the middle of the corolla-tube, 5 lin. long. Style 5 lin. long.—*Tabernemontana stapfiana*, Britten in Trans. Linn. Soc. ser. 2, Bot. iv. 25 partly; Engl. Pfl. Ost-Afr. A. 132; K. Schum. in Engl. l.c. C. 316.

**Mozamb. Dist.** British Central Africa: Nyasaland; Mount Mlanje, at 6000 ft., *Whyte*, 87!

13. **C. Johnstonii**, *Stapf*. A tall tree, quite glabrous. Leaves oblong, apiculate, subacute at the base, 10-11 in. long, 3-4 in. broad, subcoriaceous, dark green above when dry; secondary nerves 15-18 on each side, much spreading, almost straight; petiole up to 1 in. long. Inflorescences corymbose, rather loose; peduncle stout, 1-4 in. long; bracts small, ovate, the lower deciduous; pedicels rather slender, up to 7 lin. long. Calyx  $3\frac{1}{2}$ -4 lin. long; sepals very broad-elliptic, obtuse, with small basal glands within. Corolla white; tube 1 in. long, subcylindric, widened at  $\frac{1}{3}$  from the base, villous within in the upper third, otherwise quite glabrous; lobes broad-oblong, 9-10 lin. long, margins wavy. Stamens inserted at the middle of the corolla-tube; anthers sagittate, subulate-acuminate, 5 lin. long. Carpels ovate-lanceolate; style filiform, 5 lin. long; stigma cylindric, grooved, with a basal ring.

**Nile Land.** Uganâ: Nandi Plateau, *Johnston*.

14. **C. stenosphon**, *Stapf*. Leaves obovate-oblong or oblong, subacute at both ends, 6-8 in. long,  $2\frac{1}{4}$ - $3\frac{1}{2}$  in. broad, subcoriaceous (or

papery ?); secondary nerves 12–14 on each side; petiole  $\frac{1}{2}$  in. long. Inflorescence loosely corymbose; peduncle  $1\frac{1}{2}$  in. long; pedicels  $\frac{1}{2}$  in. long. Calyx 2 lin. long; segments obovate, obtuse. Corolla-tube slender, cylindrical, scarcely widened, twisted, 9–10 lin. long, 1 lin. wide, very villous within from the base of the stamens upwards; lobes narrow-oblong, villous near the base within,  $1\frac{1}{2}$  in. long, up to 7 lin. broad. Stamens inserted 3–4 lin. above the base; anthers linear, sagittate, 6 lin. long, almost reaching to the mouth.—*Tabernæmontana stenosphon*, Stapf in Kew Bulletin, 1894, 23; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 148; Warb. Kautschukpfl. 112, and Plant. à Caoutch. (French. edit.) 207.

**Lower Guinea.** Island of St. Thomas, 4000 ft., *Moller*, 97!

The specimen at Kew, from which this description was made is—apart from the corollas—in a somewhat unsatisfactory condition. *C. stenosphon* is stated to yield sparingly very good rubber.

15. **C. brachyantha**, *Stapf*. A tree 40–50 ft. high. Leaves elliptic or elliptic-oblong, shortly or obscurely acuminate, rounded or suddenly contracted and subacute at the base, 9–16 in. long, 5–9 in. broad, subcoriaceous; secondary nerves 8–12 on each side, oblique, slightly curved, or almost straight to the margin; peduncle very broad and stout, 3–5 lin. long. Inflorescences corymbose, many-flowered, contracted; peduncle stout, up to 6 in. long; bracts ovate,  $\frac{1}{2}$ – $1\frac{1}{2}$  lin. long; pedicels rather slender, up to 4 lin. long. Calyx 3 lin. long; sepals very broad, oblong, ciliolate, with numerous small basal glands within. Corolla white, fragrant; tube subcylindric, rather wide, more or less twisted, 5– $5\frac{1}{2}$  lin. long, densely tomentose within, except along lines joining at the base and tapering towards the anther bases, and 5 short lines between the anther bases; lobes linear-oblong, up to 9 lin. long, velvety towards the mouth, margins wavy. Stamens inserted at or just above the middle of the corolla-tube; anthers 3 lin. long, tips exerted. Style  $2\frac{1}{2}$  lin. long.—*Tabernæmontana brachyantha*, Stapf in Kew Bulletin, 1894, 22; K. Schum. in Engl. Jahrb. xxiii. 223.

**Upper Guinea.** Cameroons: Yaunde, 2600 ft., *Zenker & Staudt*, 183! 676! 677! 816! Fernando Po, *Mann*, 221!

16. **C. usambarensis**, *Stapf*. A shrub or tree, 16–40 ft. high; branches terete, subfistular, olive- or pale-green when dry. Leaves oblong or linear-oblong, shortly acuminate, acute at the base, 5–8 in. long,  $1\frac{1}{2}$ – $2\frac{1}{2}$  in. broad, subcoriaceous; secondary nerves 12–16 on each side, oblique; petiole 3–6 lin. long. Inflorescence corymbose, dense; peduncle rather stout, 1– $2\frac{1}{2}$  in. long; bracts ovate, acute; pedicels stout, 2–4 lin. long. Calyx  $2\frac{1}{2}$  lin. long; sepals suborbicular, minutely ciliolate. Corolla-tube elongate-ovoid, constricted below the mouth, 5–6 lin. long, velvety within between the filamental ridges, otherwise glabrous; lobes oblong, from somewhat longer than twice as long as the tube; margins wavy. Stamens inserted just below the middle of the corolla-tube; anthers  $3\frac{1}{2}$  lin. long, reaching to or slightly beyond the mouth. Style  $1\frac{1}{2}$ –2 lin. long. Berries orange-like,

subglobose,  $2\frac{1}{2}$  in. in diam. Seeds 5 lin. long.—*Tabernaemontana usambarensis*, Engl. Pf. Ost-Afr. A. 75; Pax in Engl. l.c. B. 351; K. Schum. in Engl. l.c. C. 316, and in Engl. & Prantl, Pflanzenfam. iv. ii. 148; Engl. Glied. Veg. Usambara, 36. *T. ventricosa*, Britten in Trans. Linn. Soc. ser. 2, Bot. iv. 25; Engl. Pf. Ost-Afr. A. 132; K. Schum. in Engl. l.c. C. 316, not of Hochst. ex DC.

**Nile Land.** British East Africa: Ukamba; Kitui, *Hildebrandt*, 2833! Uganda; Toru, *Johnston*, 23!

**Mozamb. Dist.** Zanzibar, *Lyne*! German East Africa: Usambara; Masheua (Kivindo), *Holst*, 8810! Kilimanjaro; Kahe, *Volkens*, 2165! British Central Africa: Nyasaland; Mount Mlanje, *Whyte*, 188!

Very near to *C. ventricosa*, Stapf (*Tabernaemontana ventricosa*, Hochst. ex DC.) from Natal, but distinguished by the smaller usually coriaceous (not subherbaceous) calyx and the oblique nervation.

17. **C. (?) penduliflora**, *Stapf*. A glabrous shrub or tree, up to 30 ft. high; branches terete, slender, dark grey or brown. Leaves lanceolate to elliptic-oblong, shortly or long acuminate, acute at the base, 4–8 in. long,  $1\frac{1}{2}$ –4 in. broad, subcoriaceous; secondary nerves 9–11 on each side, oblique, almost straight to near the margin; petiole 3–5 lin. long. Inflorescences racemose, pseudo-axillary or obviously terminal, very shortly peduncled or sessile, dense, 6–8-flowered, pendulous; lowest bracts oblong, obtuse, up to 2 lin. long, early deciduous, upper ones much shorter, more persistent; axis very short, then elongate, and in the lower part covered with the large contiguous scars of the fallen flowers, finally (including the peduncle) up to 7 lin. long; pedicels up to 3 lin. long. Calyx 2 lin. long; sepals rotundate-ovate, obtuse, ciliolate, with a row of small basal glands within. Corolla white, fragrant; tube subcylindric, up to 5 lin. long, widened at the middle, pubescent or villous within from just below the anthers upwards; lobes very oblique, pubescent near the base. Stamens inserted about 2 lin. above the base; anthers sagittate,  $2\frac{1}{2}$  lin. long, reaching to the mouth of the corolla. Carpels semi-ovoid, suddenly contracted into the filiform style; stigma cylindrical with a thickened grooved top and a membranous ring at the base. Berries (young) globose, fleshy.—*Tabernaemontana penduliflora*, K. Schum. in Engl. Jahrb. xxiii. 225.

**Upper Guinea.** Cameroons: Yaunde, in forests, *Zenker*, 797! Lolodorf, common in the bush, 1500–2000 ft., *Standt*, 139! Bipinde, *Zenker*, 1721! 1727! 1970!

This differs considerably from the other species of *Conopharyngia*, recalling in habit and inflorescences *Gabunia*, with which Schumann's description of the corolla does, however, not agree. I have seen only very young flowers.

A specimen collected by Schweinfurth on the Turu (Yuru) River, Niamniam Country, with very young fruits, belongs either to this or a very similar new species.

18. **C. elegans**, *Stapf*. A shrub, 8–10 ft. high; branches terete, rather stout, drying more or less black. Leaves narrowly oblong to lanceolate, subacuminate or obtuse, acute at the base, 4–6 in. long,  $1\frac{1}{3}$ –2 in. broad, subcoriaceous, opaque when dry, much paler beneath; secondary nerves 16–22 on each side, almost horizontal and straight. Inflorescence corymbose or paniculate, terminal, more or less overtopped

by young shoots, many-flowered, loose; peduncle 1–2 in. long; bracts small, scarious, caducous; pedicels slender, up to 6 lin. long. Calyx 1–1½ lin. long; sepals rotundate-ovate, obtuse, not ciliolate, with 1 bifid or 2–3 entire basal glands within. Corolla yellowish-white; tube short, cylindrical, 3–3½ lin. long, constricted and thin and glabrous within below the stamens, more fleshy and hairy within in the upper part; lobes oblong, 4½ lin. long. Stamens inserted 1 lin. above the base of the corolla-tube; anthers subsagittate, with short solid basal points, 1 lin. long. Style ½ lin. long; stigma subulate, densely papillose, 2-fid, from a globose or ellipsoid viscid base, supported by a ring of 10 small spreading lobes. Berries obliquely ovoid, with apiculate recurved tips and 1 dorsal and 2 lateral ridges, up to 2 in. long, fleshy, covered with numerous suberous warts, at length dehiscing ventrally.—*Tabernæmontana elegans*, Stapf in Kew Bulletin, 1894, 24; K. Schum. in Engl. Pfl. Ost-Afr. C. 316.

**Nile Land.** British East Africa: Mombasa, *Wakefield!*

**Mozamb. Dist.** Portuguese East Africa: Lower Zambesi; Shupanga, *Kirk!* between Séna and Lupata, *Kirk*, 30A! 42! Shiramba, *Peters!* Chiromo, *Scott-Elliot*, 2806A! Shire Highlands, *Johnston!*

The Mombasa plant has (in comparison to the specimens from the Zambesi basin) very narrow, lanceolate leaves (¾–1 in. broad) with more oblique side-nerve and slightly smaller flowers. On the other hand, a form occurs with thin, strictly oblong and obtuse leaves and fruits up to 4 in. long when dry. The material at hand is too scanty to suggest whether those differences are constant or not.

*Imperfectly known species.*

19. **Tabernæmontana grandiflora**, *Hook. in Gray & Doehard, Trav. West. Afr. App.* 389, t. B., not of *Linn.* Leaves ovate-lanceolate, acute at both ends or with subobtuse tips, 5 in. long, 1½ in. broad; secondary nerves up to 12 on each side; petiole 4 lin. long. Flowers solitary, pseudo-axillary; peduncle stout, 6–10 lin. long. Calyx about 5–6 lin. long; sepals ovate, obtuse. Corolla white; tube about 1 in. long, much twisted, widened at the middle; lobes obliquely obovate-oblong. Stamens inserted at the middle of the corolla-tube; anthers sagittate. Carpels free; style filiform; stigma cylindrical with a basal ring. Berries ovoid, apiculate.—*T. africana*, A. DC. Prod. viii. 367; L. Planchon, Prod. Apocyn. 294; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 148.

**Upper Guinea.** French Guinea: Kakundi, on the Rio Nunez, *Kummer.*

This plant was described from a drawing made by Kummer on the spot, the original specimen having been lost. If the drawing is correct in all its proportions, it doubtless represents a distinct species of *Conopharyngia*; but I suspect this is not the case. The foliage is quite like that of *C. longiflora*, and the figures of the flower and fruit would, except for their reduced size, also answer fairly well for that species.

20. **Tabernæmontana mborensis**, *K. Schum. in Engl. Veg. Uluguru Gebirges in Sitz. Ber. Akad. Wissensch. Berlin*, xvi. (1900) 198 (name only).

**Mozamb. Dist.** German East Africa: North Uluguru; near Mboro, ex *Schumann.*

## 27. VOACANGA, Thouars, Nov. Gen. Madag. 10.

Calyx tubular or subcampanulate, 5-lobed, early circumscissile at the base and deciduous, or more persistent, tardily circumscissile or splitting longitudinally, with a ring or zone of, often numerous, small glands at or above the base; lobes obtuse, imbricate. Corolla salver-shaped; tube stamiferous above the middle, constricted below the stamens and at the mouth, with callous thickenings round the often very narrow orifice, more or less twisted from left to right, very rarely straight, with prominent filamental ridges; lobes broad, obtuse, as long as or longer than the tube and more or less spreading, rarely much shorter and tightly reflexed, tips not inflexed in bud. Anthers sessile, adnate by a broad base to the corolla-tube, deeply sagittate; tips subulate, usually more or less exerted, or reaching close to the mouth; basal tails horny, slender, solid. Disc usually annular, very fleshy, surrounding the base of the ovary, or cupular and concealing the ovary, very rarely reduced to an inconspicuous ring, more or less confluent with the base of the ovary. Carpels 2, semi-ovoid or semi-globose, free, very rarely connate to the middle; style columnar, thickened upwards; stigma subcapitate, 5-grooved with a fleshy wavy ring or frill at the base; ovules multiseriate, very numerous on bifid placentas. Mericarps baccate, globose or pear-shaped, more or less oblique, sometimes with short, recurved beaks, sometimes very tardily dehiscing along the ventral suture; pericarp thick and fleshy or thinner and coriaceous when dry. Seeds numerous, embedded in a pulpy mass, oblong-ellipsoid, deeply grooved ventrally; testa crustaceous, more or less grooved longitudinally, often coarsely honeycombed by transverse partitions across the grooves, more or less intruding into the endosperm; endosperm fleshy; cotyledons foliaceous, thin, ventrally concave, shorter than the radicle.—Shrubs or trees, dichotomously branched; leaf-buds sometimes coated with resin. Leaves opposite, herbaceous to coriaceous; axillary stipules distinct, like those of *Comopharyngia* (in the first two species) or quite obscure or 0; leaf-bases united into a rim or very short sheath; axillary glands small, numerous. Flowers large to rather small, in terminal, frequently paired, peduncled, racemiform, umbelliform or corymbose inflorescences, usually from the young branch-forks. Corollas white, yellow or greenish, or the limb violet-brown.—*Tabernaemontana*, Benth. et Hook. f. Gen. Pl. ii. 706 partly.

Species 12 in tropical Africa, Natal, and the Mascarene Islands, and about 4 in the Malay Archipelago.

This description excludes those Malayan species, referred to *Voacanga* by recent authors, which have the corolla-tube much prolonged beyond the stamens. They might better be joined to the genus *Orchippeda*, under which some of them were originally described by Blume.

Flowers large (limb 2 in. or more in diam.), white, in few-flowered, racemiform or umbelliform, very robust inflorescences; calyx wide-tubular; lobes short, early circumscissile; disc cupular, exceeding the ovary.

- Calyx 7-8 lin. long; corolla-tube as long as the calyx; leaves frequently subacute or obtuse (but not broadly rounded) at the apex . . . . . 1. *V. obtusa*.
- Calyx 5½-6 (rarely to 7) lin. long; corolla-tube shortly exerted from the calyx; leaves usually broadly rounded at the apex . . . . . 2. *V. Thouarsii*.
- Flowers large (limb 2 in. in diam.) and yellow, or middle-sized to small and variously coloured, in few- to many-flowered, racemiform to corymbose inflorescences, never so robust as in the preceding species; calyx more or less campanulate, lobes as long as the tube or nearly so, not or very tardily circumscissile at the base; disc annular, rarely obscure.
- Bracts caducous; corolla-limb rotate; lobes always longer than the tube.
- Inflorescences shortly racemiform or umbelliform, few-flowered; calyx 7-9 lin. long; corolla-limb 2 in. in diam. or almost so.
- Young branches, leaves and inflorescences (except the flowers) more or less pubescent, at least when young . . . . . 3. *V. angolensis*.
- Quite glabrous . . . . . 4. *V. Schweinfurthii*.
- Inflorescences corymbose, many-flowered; calyx 6-3 lin. long; corolla-limb 2 to less than 1 in. in diam.
- Corolla-tube twisted, 6-4 lin. long.
- Calyx 5-6 lin. long; corolla deep yellow (where the colour is known).
- Leaves sessile or subsessile, broad-ovate or elliptic . . . . . 5. *V. spectabilis*.
- Leaves distinctly petioled, more or less lanceolate to ovate . . . . . 6. *V. puberula*.
- Calyx 3½-4½ lin. long; corolla not deep yellow.
- Corolla greenish-yellow; leaves sessile, rarely subsessile . . . . . 7. *V. lutescens*.
- Corolla white; leaves petioled (petiole up to 6 lin. long), rarely subsessile . . . . . 8. *V. africana*.
- Corolla-tube straight, 3 lin. long . . . . . 9. *V. chaloniana*.
- Bracts persistent, more or less crowded at the base of the inflorescence; corolla-limb rotate or reflexed; lobes shorter than the tube.
- Corolla-lobes almost as long as the tube, not darker than the tube; limb rotate.
- Calyx 7-8 lin. long, sparingly glandular inside; lobes oblong; corolla-tube 7-8 lin. long . . . . . 10. *V. psilocalyx*.
- Calyx 4-5 lin. long, multiglandular inside; lobes rotundate; corolla-tube 5-5½ lin. long . . . . . 11. *V. Zenkeri*.
- Corolla-lobes half as long as the tube or less, flat and dark when dry; limb tightly reflexed.
- Leaves (at least below and when young) and inflorescences finely pubescent; calyx 5-6 lin. long, with a zone of glands above the base; lobes reflexed, rather longer than the tube; corolla greenish . . . . . 12. *V. diplochlamys*.

Leaves and inflorescences glabrous; calyx 4-4½ lin. long, with a ring of glands at the very base, lobes usually porrect, as long as or shorter than the tube; corolla-limb violet-brown . 13. *V. bracteata*.

1. **V. obtusa**, *K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 149. A tall glabrous tree; branches stout, pallid, or the youngest blackish when dry. Leaves crowded towards the tips of the branches, obovate to oblong, obtuse to subacute, subcuneate towards the base, 4-9 in. long, 1½-3½ in. broad, dark green, shining when fresh, subcoriaceous, dull when dry; secondary nerves subhorizontal or rather oblique, almost straight, slender; petiole 4-9 lin. long. Inflorescences usually geminate from the branch-forks, shortly racemiform or umbelliform, few-flowered; peduncle stout, 4-5 in. long; rhachis stout, gradually lengthening up to 2 in. as the lower flowers fall; bracts ovate, concave, up to 5 lin. long, caducous; pedicels stout, finally up to 6 lin. long. Calyx wide-tubular, about 7-8 lin. long, early circumscissile at the base, with very numerous glands within; lobes rotundate, about 2 lin. long. Corolla white (or pale yellow?), sweet-scented, fleshy; tube subcylindric, not or scarcely exerted from the calyx, slightly constricted, 7-9 lin. long, twisted from the base upwards, quite glabrous; limb ovoid in bud, 8 lin. long; lobes somewhat asymmetric, broadly subobcordate, narrow at the base, about 1 in. long, up to almost 1½ in. broad, sinus shallow. Anthers inserted close to the mouth of the corolla, exerted for half their length, slightly over 3 lin. long. Disc cupular, obscurely lobed, exceeding the ovary and adnate to it only at the base, persistent. Style up to 8 lin. long; stigma shortly cylindric, grooved, with a frill at the base. Berries globose, over 2 in. in diam., smooth; pericarp very thick, fleshy. Seeds about 4 lin. long, enveloped in a thick pulpy coat; testa almost smooth externally, slightly intruding into the albumen.—*K. Schum. in Durand & De Wild. in Bull. Soc. Bot. Belg.* xxxvii. 122 (*V. obtusata*, by error); *De Wild. in Bull. Herb. Boiss.* 2 sér., i. 34. *K. Schum. in Engl. Jahrb.* xxiii. 226; *Scheffler in Notizbl. Königl. Bot. Gart. Berlin*, iii. 161. *V. Thouarsii*, *Hiern in Cat. Afr. Pl. Welw.* i. 669, not of *Roem. & Schultes*.

**Upper Guinea.** French Guinea: Laya, by a stream, *Scott-Elliott*, 4481! Cameroons: Yaunde, 2600 ft., *Zenker & Staudt*, 130!

**Nile Land.** Uganda: Kampala, *Scott-Elliott*, 7506!

**Lower Guinea.** Angola: Ambaca; along streams between Ngombe and Puri-Cacarambola, *Welwitsch*, 5977! Lower Congo: Kisantu, *Gillet*, 203.

**South Central.** Congo Free State: Lunda; Kibanga, *De Beerst*. Niamniam, by the Mbrwole River, *Schweinfurth*, 3741!

Schumann also refers to *V. obtusa* a plant collected by Goetze in the Kinga Mountains, South-western German East-Africa, at an altitude of 7000 ft. According to the collector it is a tree 45-60 ft. high with fruits as large as a head. This species comes extremely near to *V. Thouarsii*, from which it seems to differ mainly in the less obtuse leaves, slightly larger calyces, and comparatively short corolla-tubes. The description of the flowers is drawn up from Schweinfurth's and Welwitsch's, that of the fruit and seeds from Scott-Elliott's Laya specimen. The Cameroons plant has very narrow leaves (4-6 in. by 1-1½ in.) and (according to

the collectors) pale sulphur-yellow flowers, whilst Schweinfurth describes the corollas as white and Welwitsch as whitish. A very similar species occurs in Natal: *V. Dregei*, E. Meyer. Much more material with good flowers, fruits and seeds is required before it can be definitely decided whether *V. obtusa* should be treated as a species distinct from *V. Thouarsii*. At the same time it is also possible that the above description covers more than one species.

Scheffler (l.c.) gives a description of a tree found in the Usambara forests, which he names *V. obtusa*. It is a tall tree with a slender stem, slender erect branches, and scanty foliage. The flowers are sulphur-yellow, waxy, and in size and shape very similar to those of *Tabernamontana Holstii*. The wood is hard, yellowish-white, the bark smooth, dark grey, and the fruits dark green, mottled with yellowish-white. This tree sheds its foliage completely by the end of October and beginning of November. The new leaves appear early in December.

2. **V. Thouarsii**, *Roem. & Schultes, Syst. Veg.* iv. 439. A glabrous tree or shrub; branches stout, pallid or the youngest blackish when dry; leaf-buds more or less coated with resin. Leaves crowded towards the ends of the branches, obovate- or oblong-cuneate, broadly rounded at the apex, 4-8 in. long,  $1\frac{1}{2}$ - $3\frac{1}{2}$  in. broad, subcoriaceous, dull when dry; secondary nerves 12-16 on each side, subhorizontal, straight for the greatest part or slightly curved, slender; petiole very variable in length, rarely over  $\frac{1}{2}$  in. long. Inflorescences usually geminate from the branch-forks, racemiform (consisting really of racemously arranged reduced cymes); peduncle stout, 2-4 in. long; rhachis stout, gradually lengthening up to 3 in. as the lower flowers fall; bracts ovate, concave, up to 5 lin. long, caducous; pedicels stout, 3-5 lin. long. Calyx wide-tubular,  $5\frac{1}{2}$ -7 lin. long, early circumscissile at the base, with very numerous glands within; lobes rotundate, 2 lin. long. Corolla white, fleshy; tube subcylindric, slightly constricted, 8-10 lin. long, twisted from the middle upwards, quite glabrous; limb in bud ellipsoid, 6 lin. long; lobes subobcordate, up to 1 in. long, and more than 1 in. broad. Anthers inserted close to the mouth of the corolla, exerted for half their length,  $3-3\frac{1}{2}$  lin. long. Disc cupular, obscurely lobed, exceeding the ovary and adnate to it only at the base, persistent. Style up to 8 lin. long; stigma shortly cylindric, grooved, with a frill at the base. Berries globose, of the size of an apple (*Baron*) or a walnut (*Kirk*), mottled.—K. Schum. in Engl. & Prantl, *Pflanzenfam.* iv. ii. 149.

**Mozamb. Dist.** German East Africa: Mafia Island, *Kirk*!  
Also in Madagascar.

3. **V. angolensis**, *Staff ex Hiern in Cat. Afr. Pl. Welw.* i. 668 *partly*. A small tree, 6-9 ft. high; branches moderately stout, pubescent when young, pallid. Leaves broadly ovate- or obovate- or elliptic-lanceolate, acute to acutely acuminate, acute at the base or decurrent on the petiole, rarely more or less panduriform and sessile, up to 10 in. long, 2-4 in. broad, thinly coriaceous, pubescent beneath chiefly on the midrib and nerves, at least near the base, or glabrescent; secondary nerves 12-15 on each side, slender, oblique; petiole up to 4 lin. long or hardly any. Inflorescences geminate, terminal, few-flowered, shortly racemiform or umbelliform, softly pubescent, at least below; peduncle

rather stout, 2 in. long; bracts ovoid, acute or acuminate, 6 lin. long; pedicels rather slender, 3–7 lin. long. Calyx subcampanulate, 7–9 lin. long, subherbaceous, with numerous small glands about 2 lin. above the base; lobes broad-oblong, obtuse, almost as long as the tube, at last spreading or reflexed. Corolla sulphur-yellow; tube stout, 7 lin. long, constricted at the middle, twisted; lobes broad, obovate-oblong, somewhat oblique, 9–12 lin. long. Stamens inserted above the middle; anthers  $3\frac{1}{2}$ –4 lin. long, tips scarcely exerted, tails rather long. Disc fleshy, annular, much shorter than the carpels. Style  $3\frac{1}{2}$  lin. long. Berries (one often abortive) of the shape and size of a small apple, somewhat oblique, 2 in. in diam., with curved longitudinal ridges; pericarp coriaceous when dry. Seeds about 3 lin. long; testa finely punctate, longitudinal grooves distinct and honeycombed or more or less obscure externally.—*V. africana*, var. ? Stapf in Journ. Linn. Soc. xxx. 88.

**Lower Guinea.** Gaboon: banks of the Como River, 75 miles east of Gaboon, *Bates*, 461! Angola: Golungo Alto; Quibixe Mountains, and near Canguerasange and Quilombo, *Welwitsch*, 5979! 5980: forests of Alto Queta, *Welwitsch*, 5931! and fruits, 720! 721!

4. **V. Schweinfurthii**, *Stapf* in *Kew Bulletin*, 1894, 21. A glabrous shrub, 15 ft. high; branches slender, pallid, or the youngest blackish when dry. Leaves oblanceolate to elliptic-lanceolate, acute or subacuminate, long attenuate and acute or the lower rounded at the base, 5–8 in. long,  $1\frac{3}{4}$ – $2\frac{1}{2}$  in. broad, papery; secondary nerves 9–14 on each side, very oblique, gently curved; petiole up to 5 lin. long (then the leaf-base always acute) or none. Inflorescences geminate from the young branch-forks, umbelliform, few-flowered, sometimes nodding; peduncle slender,  $1\frac{1}{2}$ –3 in. long; bracts oblong, caducous; pedicels slender, 6–12 lin. long. Calyx subcampanulate, 7–8 lin. long, with a transverse zone of scattered glands about  $1\frac{1}{2}$  lin. above the base; lobes broad-ovate, obtuse, spreading or reflexed, about as long as the tube. Corolla yellow; tube stout, constricted at the middle and mouth, scarcely 6 lin. long, finely tomentose on the broad filamental ridges, and delicately papillose below; lobes obliquely obovate, subacuminate, almost 1 in. long. Stamens inserted above the middle; anthers 3 lin. long, tips shortly exerted, tails long. Disc annular, surrounding the ovary to almost half their height. Style  $3\frac{1}{2}$  lin. long. Berries “ovoid, pulp yellow” (*Schweinfurth*).—*K. Schum.* in Engl. Pf. Ost-Afr. C. 317 (excl. *Stuhlmann's* plant?).

**South Central.** Congo Free State: Niamniam; Yuru River, *Schweinfurth*, 3326!

The plant figured as *V. Schweinfurthii* in De Wild. & Durand, Ill. Fl. Congo, t. 39, is a pubescent state of *V. africana*. *Stuhlmann's* specimen from Quilimane (i. 710), referred to *V. Schweinfurthii* by *Schumann*, l.c., belongs very probably to some other species, but which I cannot say. The *V. Schweinfurthii* mentioned by De Wild. & Durand, Contrib. Fl. Congo, fasc. ii. 40, as collected by *Demeuse* near Bangala on the middle Congo, is equally doubtful.

5. **V. spectabilis**, *Stapf*. A much branched shrub, 5–7 ft. high; branches rather stout, softly and densely pubescent when young, then glabrescent, pale greyish. Leaves sessile or subsessile, broadly ovate or

elliptic, obtuse or acute or subacuminate, narrowed (often suddenly) from below the middle to the base,  $4\frac{1}{2}$ – $5\frac{1}{2}$  in. long,  $2\frac{1}{2}$ – $3\frac{1}{2}$  in. broad, subcoriaceous, finely pubescent to subtomentose on the nerves below; secondary nerves 12–15 on each side, rather spreading, straight or gently curved; petiole (if any) very short and winged from the decurrent blade. Inflorescences usually geminate from the youngest branch-forks, dichotomously corymbose, many-flowered, glabrous or sparingly pubescent below; peduncle about 2 in. long, moderately stout; bracts ovate, subacute, up to 3 lin. long, caducous; pedicels rather slender, 6–9 lin. long. Calyx subcampanulate, 5–6 lin. long, subherbaceous, with a zone of glands above the base; lobes rotundate, almost as long as the tube, at last spreading or reflexed. Corolla deep yellow; tube 4–5 lin. long, stout, constricted just above the middle, twisted; lobes obovate or elliptic, up to 9 lin. long. Stamens inserted above the middle of the corolla-tube; anthers  $2$ – $2\frac{1}{4}$  lin. long, tips very shortly exerted, tails rather short. Disc fleshy, annular, much shorter than the carpels. Style 3 lin. long.—*V. africana*, Stapf in Journ. Linn. Soc. xxx. 87 partly. *V. angolensis*, Stapf ex Hiern in Cat. Afr. Pl. Welw. i. 668 partly.

**Lower Guinea.** Angola: Ambaca; hills between Ngombe and Puri-Cacarambola, *Welwitsch*, 5978!

6. *V. puberula*, *K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 149. A shrub 5–12 ft. high, softly pubescent when young; branches moderately stout, fistular, pallid. Leaves elliptic-lanceolate to lanceolate or ovate, subacuminate, acute or subacute at the base, 3–5 in. long,  $1\frac{1}{4}$ – $2\frac{1}{2}$  in. broad, papery, finely and softly pubescent beneath, at least on the nerves, at length glabrescent; secondary nerves 9–12 on each side, rather spreading and almost straight or oblique and gently curved; petiole slender, 2–4 lin. long. Inflorescences geminate from the young branch-forks, dichotomously corymbose or of paired pseudumbels, rather loose, pubescent up to the calyces; peduncles slender,  $1$ – $1\frac{1}{2}$  in. long; bracts obovate-oblong, up to 6 lin. long, caducous; pedicels slender, up to 10 lin. long. Calyx subcampanulate, 5–6 lin. long, rather firm, with a zone of small glands somewhat above the base; lobes broad-ovate or ovate-oblong, obtuse, as long as the tube, porrect or sometimes reflexed. Corolla-tube stout,  $4\frac{1}{2}$ –5 lin. long, constricted at the middle and mouth, twisted, finely tomentose within just below the stamens, otherwise glabrous; lobes obliquely obovate, wavy, 6–7 lin. long, horizontally spreading. Stamens inserted above the middle; anthers  $2\frac{1}{2}$ –3 lin. long, tips shortly exerted, tails almost straight, very acute. Disc fleshy, annular, free, less than half the height of the ovary. Style 3 lin. long. Berries obliquely ovoid-globose, 2 in. long; pericarp thick. Seeds  $2\frac{1}{2}$  lin. long, longitudinally grooved on the back, horizontally on the face (according to Pierre).—*V. Schweinfurthii*, De Wild. in Bull. Herb. Boiss. 2 sér., i. 34, not of Stapf. *V. Klainii*, Pierre MS.

**Lower Guinea.** Gaboon: *Klaine*, 1244! Loango: *Chinchocho*, *Soyaux*, 41! Lower Congo: *Kisantu*, *Gillet*, 186!

7. *V. lutescens*, Stapf. A shrub, 9-12 ft. high; branches moderately stout, pallid, usually pubescent when young, rarely quite glabrous from the beginning. Leaves sessile, rarely subsessile, elliptic or elliptic-oblong, acute or obscurely acuminate, narrowed from the middle downwards, obscurely and minutely cordate or rounded at the base or decurrent on the very short petiole, 4-8 in. long, 2-4 in. broad, papery, usually more or less softly pubescent below, especially on the midrib, rarely quite glabrous; secondary nerves 11-13 on each side, rather spreading (or oblique in the narrow leaves), straight for more than half their length or gently curved. Inflorescences geminate, from the young branch-forks, dichotomously corymbose, many-flowered, more or less pubescent (at least in the lower parts), or more rarely quite glabrous; peduncle rather stout, 1-5 in. long; bracts ovate-oblong, obtuse or subacute, up to 4 lin. long, caducous; pedicels rather slender, 3-7 lin. long. Calyx subcampanulate, herbaceous,  $3\frac{1}{2}$ - $4\frac{1}{2}$  lin. long, with a transverse zone of numerous glands above the base, not or very tardily circumscissile at the base; lobes rotundate-ovate, obtuse, about as long as the tube, at length often spreading or reflexed. Corolla greenish-yellow; tube stout, constricted at the middle and mouth, twisted,  $4-4\frac{1}{2}$  lin. long, very finely tomentose on and especially between the filamental ridges, otherwise glabrous between them; lobes broad, obovate to obovate-oblong, up to 7 lin. long. Stamens inserted above the middle; anthers  $2-2\frac{1}{2}$  lin. long, tips very shortly exerted, tails moderately long. Disc fleshy, annular, less than half the height of the ovary. Style 2 lin. long. Berries (often one abortive) obovoid-globose, oblique, 2 in. long; pericarp thick, coriaceous when dry, mottled. Seeds coated with a thick pulpy mantle (aril?), longitudinally grooved, grooves wide with transverse partitions; testa finely granular.—*V. africana*, Stapf in Journ. Linn. Soc. xxx. 87 partly. *V. Bahmii*, K. Schum. in Engl. Jahrb. xxviii. 453, scarcely of K. Schum. in Engl. Pf. Ost-Afr. C. 317.

**Mozamb. Dist.** German East Africa: Khutu; in the steppe by the Mgeta River, at Kisaki, 500 ft., Goetze 127! Portuguese East Africa: Lower Zambesi; between Lupata and Sena, Kirk, 31! Shupanga, Kirk! and without precise locality, Stewart! British Central Africa: Nyasaland; Chiromo, Scott-Elliott, 2806! 60 miles up the River Shire, Kirk! Shire Highlands, Buchanan, 9!

K. Schumann states that the flowers of the plant, which he described originally as *V. Bahmii*, are white, and smell slightly like glue. Goetze's plant, also named *V. Bahmii* by K. Schumann, has according to the collector greenish-yellow flowers. It agrees exactly with Kirk's specimens (from the district between Lupata and Sena), of which there is a coloured sketch by Kirk, at Kew, showing the flowers to be a pale greenish-yellow. The original *V. Bahmii* was collected in the Kawendi district on the east shore of Lake Tanganyika.

8. *V. africana*, Stapf in Journ. Linn. Soc. xxx. 87 partly. A shrub or small tree, up to 15 ft. high; branches moderately stout, glabrous or pubescent when young, pallid. Leaves rather variable in shape, size and tomentum, lanceolate to obovate, ovate or elliptic, acute to acuminate, rarely obtuse, long (rarely abruptly) attenuate towards and acute (rarely subcordate) at the base,  $1\frac{1}{2}$ -8 in. long,  $1\frac{1}{4}$ - $4\frac{1}{2}$  in. broad,

papery, glabrous or softly pubescent beneath, especially on the midrib; secondary nerves 11–16 on each side, subhorizontal or oblique, gently curved; petiole up to 6 lin. long or hardly any. Inflorescences usually paired from the young branch-forks, dichotomously corymbose, many-flowered, glabrous or more or less pubescent in the lower part; peduncle 2–5 in. long; bracts oblong, up to 4 lin. long, caducous; pedicels slender, up to 10 lin. long. Calyx subcampanulate,  $3\frac{1}{2}$ – $4\frac{1}{2}$  lin. long, with a transverse zone of very numerous glands above the base; lobes rotundate-ovate, as long as or almost as long as the tube. Corolla white, sweet-scented; tube  $3$ – $4\frac{1}{2}$  lin. long, stout, constricted at the middle and mouth, twisted, finely tomentose on the filamental ridges, otherwise glabrous within; lobes subobliquely obovate-oblong, from 6 lin. to almost 1 in. long. Stamens inserted above the middle; anthers 2 lin. long, tips shortly exerted, tails long. Disc annular, surrounding the ovary to half its height. Style 2 lin. long. Fruit unknown.—*V. glabra*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 149. *V. Schweinfurthii*, Durand & De Wild. in Bull. Soc. Bot. Belg. xxxvii. 122; De Wild. & Durand, Ill. Fl. Congo, 77 (excl. descript.), t. 39, and Reliq. Dewevr. 151; var. *parviflora*, K. Schum. in Engl. Jahrb. xxiii. 226.

**Upper Guinea.** Senegambia: Mboro, *Perrottet*, 463! Senegal, *Heudelot* or *Leprieur*, 89! Gambia: Bathurst, *Skues*! Sierra Leone: Bafodeya, *Scott-Elliott*, 5484! Ninia Talla Hills, *Scott-Elliott*, 4903! and without precise locality, *Afzelius*! Gold Coast: Krepi, *Johnson*, 814! Togo; Misahöhe, *Baumann*, 464! Lagos: Abeokuta, *Barter*, 3376! Jopo, *Millen*, 143! near Lagos, *Moloney*! Ibadan Forest Reserve, *Punch*, 146! and without precise locality, *Millen*, 178 partly! Niger Protectorate: Nupe, *Barter*, 1327! Old Calabar; Adiabo, *Holland*, 94! Cameroons: Mungo, *Buchholz*! Fernando Po, *Mann*, 243!

**Lower Guinea.** Lower Congo: near Leopoldville, *Dewèvre*, 483! *Laurent*.

A specimen collected near Yaunde in the Cameroons, by Zenker & Staudt (121!), and distributed as *V. Schweinfurthii*, probably also belongs to *V. africana*, although the corolla-tube is almost 6 lin. long. All the Senegambia and Sierra Leone specimens have more or less hairy leaves and peduncles; the same is the case with *Barter*'s specimens from Nupe, and *Mann*'s from Fernando Po. The amount of hairiness varies considerably, and in *Skues*' specimen from the Gambia, the youngest and smallest leaves are quite glabrous, whilst the larger lower ones have pubescent midribs. In a similar way, the Leopoldville specimen, collected by *Dewèvre*, has glabrous leaves, whilst that gathered by *Laurent* has pubescent branchlets and leaves. I originally took *V. africana* in a very wide sense (*Journ. Linn. Soc.* xxx. 87); but renewed examination, additional material and collector's notes convince me that I had gone too far.

9. **V. chaltiana**, *Pierre MS.* Quite glabrous. Branches rather slender, pallid. Leaves oblong to oblong-lanceolate, more or less abruptly acuminate, acute at the base,  $3\frac{1}{2}$ –4 in. long,  $1\frac{1}{2}$ – $1\frac{3}{4}$  in. broad, chartaceous, dull green above, brown beneath when dry; secondary nerves up to 20 on each side, almost straight, rather spreading; petiole very slender, up to 1 in. long. Inflorescences geminate from the young branch-forks, dichotomously or trichotomously corymbiform, loose, many-flowered; peduncles rather slender, up to 2 in. long; bracts caducous; pedicels very slender, up to 8 lin. long. Calyx campanulate, about 3 lin. long,

with a transverse row of small scale-like glands above the base within; lobes oblong, obtuse, reflexed, as long as the tube. Corolla-tube 3 lin. long, wide above the middle, narrowed towards the base, which is again slightly widened, delicately velvety below the stamens within, not twisted; lobes obovate-oblong, slightly oblique, acute,  $4\frac{1}{2}$ –5 lin. long. Stamens inserted above the middle of the corolla-tube; anthers scarcely  $1\frac{1}{2}$  lin. long, tips scarcely exerted, tails rather short. Disc inconspicuous, annular, thin, more or less confluent with the base of the ovary. Carpels connate to half their height. Style  $1\frac{1}{2}$  lin. long.

**Lower Guinea.** French Congo: near Brazzaville, *Chalot*, 5!

10. **V. psilocalyx**, *Pierre MS.* A glabrous shrub, 6–9 ft. high; branches slender, grey. Leaves lanceolate, acuminate, long attenuate at the base, 4–8 in. long,  $1\frac{1}{2}$ – $2\frac{1}{2}$  in. broad, papery; secondary nerves very oblique, gently curved, 6–7 on each side; petiole slender,  $\frac{1}{2}$ –1 in. long. Inflorescences terminal from the youngest branch-forks, few-flowered, umbelliform, multibracteate; peduncle slender,  $1\frac{1}{2}$  in. long; bracts persistent, crowded at the base of the pseudo-umbel, oblong, acute, 4–6 lin. long; pedicels slender, up to  $\frac{1}{2}$  in. long. Calyx subcampanulate, 7–8 lin. long, with a transverse zone of scanty small glands somewhat above the base; lobes oblong, obtuse or shortly acuminate, about as long as the tube. Corolla yellow; tube subcylindric, abruptly constricted at the middle and gradually narrowed towards the mouth, 7–8 lin. long, twisted, pubescent on the filamental ridges, otherwise glabrous within; limb rotate; lobes obovate-elliptic, 6–7 lin. long, crisp, brown when dry. Stamens inserted above the middle; anthers 3 lin. long, tips scarcely exerted, tails long. Disc annular, shorter than the carpels. Berries obliquely obovoid, with a short recurved beak, up to  $1\frac{1}{4}$  in. long; pericarp rather thin when dry, leathery, with slightly raised curved longitudinal ridges. Seeds about  $4\frac{1}{2}$  lin. long, elegantly grooved longitudinally, grooves more or less divided by cross ridges; testa finely honeycombed.

**Lower Guinea.** Gaboon: near Libreville, *Klaine*, 1377! Munda; Sibange Farm, *Soyaux*, 20!

11. **V. Zenkeri**, *Stapp.* Quite glabrous; branches slender, terete, fistular, pale brown or the youngest blackish when dry. Leaves lanceolate to oblong-lanceolate, usually long and finely acuminate, acute to subcuneate at the base, 4–6 in. long,  $1\frac{1}{4}$ –2 in. broad, herbaceous, thin; secondary nerves 6–7 on each side, very oblique, gently curved; petiole slender, up to 6 lin. long. Inflorescences solitary (always?) from the young branch-forks, nodding, of 1 or 2 contracted pseudo-umbels, multibracteate; peduncles very slender, up to 6 in. long; bracts broad-ovate or oblong, obtuse or subobtuse, 3–4 lin. long, crowded at the base of the pseudo-umbels, subpersistent, if the pseudo-umbels are paired, with 2 longer oblong bracts at the base of the dichotomy; pedicels slender, up to 4 lin. long. Calyx wide, subcampanulate, 4–5 lin. long, somewhat fleshy, with a zone of numerous small glands just above the base; lobes rotundate, porrect, slightly shorter than the tube. Corolla-tube stout,

constricted at the middle and mouth, 5-5½ lin. long, twisted, very delicately velvety just below the stamens, otherwise glabrous; limb rotate; lobes obovate-oblong, 4 lin. long, crisp, brown when dry. Stamens inserted above the middle of the corolla-tube; anthers 2½ lin. long, tips shortly exerted, tails straight, subacute. Disc fleshy, annular, not quite half the height of the ovary. Style 3 lin. long.

**Upper Guinea.** Cameroons: Bipinde, in forests, *Zenker*, 944! 1807!

12. **V. diplochlamys**, *K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 149. A shrub or small tree, up to 15 ft. high; branches slender, subquadrangular when young, soon terete, fistular, dark brown when dry, glabrous. Leaves lanceolate to lanceolate-elliptic, acuminate at both ends, 4-7½ in. long, 1¼-3¼ in. broad, herbaceous, thin, glabrous above, very minutely and often sparingly puberulous on the nerves below; secondary nerves 10-14 on each side, oblique, slightly curved; petiole slender, very minutely puberulous, 4-6 lin. long. Inflorescences geminate from the young branch-forks, nodding, dichotomously corymbose or umbelliform, at first very dense, finally somewhat laxer, minutely puberulous usually up to the calyces; peduncles very slender, 2-3 in. long; bracts oblong to lanceolate, subacute, at length deciduous; pedicels up to 3 lin. long. Calyx wide-campanulate, 5-6 lin. long, rather thin, with a transverse zone of numerous small often paired glands some way above the base within; lobes very broad, rotundate or oblong-rotundate, at length reflexed, rather longer than the tube. Corolla greenish or greenish-yellow; tube stout, about 5-5½ lin. long, constricted at the middle and mouth, twisted, very delicately velvety just below the stamens, otherwise glabrous; lobes obovate, reflexed, 2½ lin. long, drying black. Stamens inserted above the middle of the corolla-tube; anthers slightly over 1½ lin. long, tips slightly exerted, tails fine, incurved. Disc annular, fleshy, covering the ovary to half its height. Style 3 lin. long.—*V. bracteata*, Stapf in *Kew Bulletin*, 1894, 22 partly.

**Upper Guinea.** Southern Nigeria: Old Calabar, *Thomson*, 39! Adiaho, *Holland*, 108! Cameroons: Barombi, *Preuss*, 14!

13. **V. bracteata**, *Stapf in Kew Bulletin*, 1894, 22 partly. A glabrous shrub; branches slender, greenish-brown when dry. Leaves lanceolate to oblong-lanceolate, long and acutely acuminate, long attenuate at the base, 4-6 in. long, 1½-2¼ in. broad, herbaceous, thin; secondary nerves about 8 on each side, very oblique, curved, very slender; petiole slender up to ½ in. long. Inflorescences solitary (always?) from the young branch-forks, somewhat nodding, subumbelliform or dichotomously corymbose, few-flowered, glabrous, multi-bracteate; peduncle very slender, up to 3 in. long; bracts persistent, crowded at the base of the pseudo-umbels or corymbs, oblong to lanceolate, subacute, up to 5 lin. long; pedicels very slender, 3-5 lin. long. Calyx campanulate, at length rather wide at the mouth, 4 lin. long, with a ring of small glands at the very base; lobes porrect, rotundate, very broad, about as long as the tube. Corolla-tube much constricted at the middle and towards the mouth, 4½-5 lin. long, slightly

twisted at the middle, tomentose just below the stamens, otherwise glabrous within; lobes broad-obovate, reflexed, 2 lin. long. Stamens inserted above the middle; anthers 2 lin. long, tips just exceeding the mouth, tails moderately long. Disc surrounding the ovary to about half its height, thick, fleshy, free. Style 3 lin. long.

**Upper Guinea.** Sierra Leone: Bagru River, *Mann*, 858!

Var. *β lanceolata*, Stapf. Leaves on the whole narrower than in the type, 1-1 $\frac{3}{4}$  in. broad; secondary nerves 7-11 on each side; petiole  $\frac{1}{2}$  to over 1 in. long. Flowers slightly larger than in the type; corolla-tube 5 $\frac{1}{2}$ -6 $\frac{1}{2}$  lin. long, yellow; lobes 2-3 lin. long, violet-brown, darker at the base.—*V. bracteata*, K. Schum. in Engl. Jahrb. xxiii. 226.

**Upper Guinea.** Cameroons: Yaunde, *Zenker*, 187! 694B! Bipinde, *Zenker*, 870!

*Imperfectly known species.*

14. **V. Boehmii**, K. Schum. in Engl. Pfl. Ost-Afr. C. 317. A shrub; branches moderately stout. Leaves rhomboid or elliptic, acute, attenuate at the base, glabrous above, puberulous on the nerves beneath; petiole short. Panicle dichotomous, divaricate, few-flowered. Calyx-lobes reflexed. Corolla white, scarcely 10 lin. in diam., smelling like glue. Stamens completely included.

**Mozamb. Dist.** German East Africa: Kavinda (Kawendi?), *Boehm*, 37A!

See the note under 7, *V. lutescens*.

15. **V. densiflora**, K. Schum. ex Engl. in Sitz. Ber. Akad. Wiss. Berlin, xvi. (1900), 197 (name only).

**Mozamb. Dist.** German East Africa: Uluguru; Manga Valley, in Tana district, 2000 ft., collector not mentioned.

16. **V. (?) dichotoma**, K. Schum. in Engl. Pfl. Ost-Afr. C. 317. A tree about 60 ft. high, with a regularly dichotomously branched rounded top and glabrous, stout branches. Leaves oblong or subobovate-oblong, shortly and obtusely acuminate, attenuate at the base, glabrous; secondary nerves 11-14 on each side; petioles short; axillary stipules present. Corolla white, fragrant; tube fleshy, somewhat inflated, straight, 7 $\frac{1}{2}$  lin. long; lobes 15 lin. long, membranous. Stamens included. Berries almost as large as those of *Conopharyngia Holstii*, softening and dehiscent after falling.

**Mozamb. Dist.** German East Africa: Kilimanjaro; Kiboso, *Volkens*, 1618. Marangu, *Volkens*, 2076.

I suspect this is a *Conopharyngia*, near *C. usambarensis*.

28. **HOLARRHENA**, R. Br.; Benth. et Hook. f. Gen. Pl. ii. 708.

Calyx small, herbaceous, eglandular within or with 2-5 glands alternating with the sepals; sepals 5, ovate-lanceolate or almost subulate. Corolla salver-shaped; tube slightly widened below the middle, mouth naked; lobes 5, oblong, overlapping to the right, tips not inflexed in bud. Stamens inserted near the base of the corolla-tube;

anthers conniving in a cone, more or less coherent by their tips, included, free from the stigma, linear, apiculate or mucronate, the outer half of each cell decurrent (sometimes minutely) on and adnate to the base of the glabrous connective, adnate tips empty; filaments short, filiform, with a hairy swelling at their base running out into a slender filamental ridge. Disc 0. Carpels 2, free; style very short, filiform; stigma below the anthers, ellipsoid to fusiform, entire, viscous and more or less agglutinated to the hairy swellings at the base of the filaments; ovules numerous, pluriseriate. Mericarps follicular, divaricate, slender, terete, usually curved. Seeds oblong or linear, semiterete, grooved on the flat (ventral) side, with a tuft of reddish hairs at the apex; endosperm scanty; cotyledons foliaceous, complicate; radicle short.—Deciduous trees or shrubs, glabrous or more or less hairy. Leaves opposite or partly subopposite, herbaceous; secondary nerves rather distant; petioles glandular towards the base; stipules 0. Corymbs many-flowered, terminal or pseudo-axillary; flowers white, fragrant.

Species 7; 5 in tropical Africa, 2 in India.

Sepals subulate, 3–5 lin. long . . . . . 1. *H. febrifuga*.

Sepals ovate to lanceolate,  $\frac{3}{4}$ –1½ lin. long.

Corolla 14–15 lin. long . . . . . 2. *H. congolensis*.

Corolla 5–8 lin. long.

Young leaves and branches pubescent . . . . . 3. *H. ovata*.

Young leaves and branches quite glabrous or the leaves sometimes with a fringe of minute hairs in some of the nerve-axils.

Calyx 1–1½ lin. long, densely greyish-puberulous like the whole inflorescence; anther-cells distinctly decurrent on the filament . . . . . 4. *H. africana*.

Calyx  $\frac{3}{4}$ –1 lin. long, ciliolate, otherwise glabrous or loosely (rarely densely) puberulous like the whole inflorescence; anther-cells obscurely decurrent on the filament . . . . . 5. *H. Wulfsbergii*.

1. **H. febrifuga**, *Klotzsch in Peters, Reise Mossamb. Bot.* 277. A small tree, up to 25 ft. high; young branches generally more or less pubescent or tomentose, later on glabrescent, rarely glabrous from the beginning, terete, brown, copiously dotted with lenticels. Leaves elliptic or oblong, rarely ovate or roundish, obtuse, shortly acuminate or acute, rounded or acute at the base, 2–6 in. long, 1½–3 in. broad, hairy on both sides, often tomentose beneath, or glabrescent or quite glabrous; secondary nerves 8–14 on each side; veins in glabrous specimens sometimes distinct; petioles 2–3 lin. long. Corymbs pubescent to almost villous, rarely glabrous; peduncle about 3 lin. or less long; pedicels up to 5 lin. long. Calyx 3–5 lin. long, pubescent, rarely glabrous; sepals subulate, the inner with 1 or 2 small basal glands within. Corolla-tube puberulous, rarely glabrous without, about 6–8 lin. long; lobes oblong or obovate-oblong, as long as the tube or slightly shorter. Anthers slightly over ½ lin. long, decurrent tips very slender, about  $\frac{1}{3}$ – $\frac{1}{4}$  the length of the polliferous part of the anther-cell. Follicles very slender, more or less constricted between the seeds, 10–12 in.

long. Seeds 7-9 lin. long, coma  $1\frac{1}{2}$  in. long.—Engl. Pf. Ost-Afr. A. 33, 76; K. Schum. in Engl. l.c. C. 315, and in Engl. & Prantl, Pflanzenfam. iv. ii. 137. *H. tettensis*, Klotzsch, l.c. 278. *H. glabra*, Klotzsch, l.c. 279. *H. Fischeri*, K. Schum. in Engl. l.c. 316, and in Engl. & Prantl, l.c.

**South Central.** Congo Free State: Katanga; Lukofu, *Verdick*, 27!

**Mozamb. Dist.** German East Africa: Uhoka?, Lake Victoria, *Stuhlmann*, 740! Usambara; Masheua, *Holst*, 8837! Usaramo; Kisangiie, 1000 ft., *Goetze*, 36! Kingani River, *Stuhlmann*, 6579! Dilangita, *Stuhlmann*, 6630! Dindu (Dunda?), *Stuhlmann*, 6413! Khutu; Mbwiga, 1300-1500 ft., *Speke & Grant*! Unyamwezi; Usuri, *Fischer*, 378! Lutanda (Lutindi?), *Fischer*, 376! Uluguru district, *Stuhlmann*! Ndalapori, *Trotha*! Portuguese East Africa: Morambala Mountain, up to 3000 ft., *Waller*! Sena, *Kirk*! Tete, *Peters*! *Kirk*! British Central Africa: Nyasaland; Stevenson Road, 4000-5000 ft., *Scott-Elliot*, 8419! Blantyre, *Buchanan*, 32 Manganja Hills, 1000-3000 ft., *Meller*! Mount Malosa, *Whyte*! Zomba, *Whyte*, 89! Lake Shirwa, *McClounie*, 70! Namasi, *Cameron*, 4! and without precise locality, *Buchanan*, 484! 1114!

The specimens collected by Speke and Grant and by Scott-Elliot represent a perfectly glabrous state and have eglandular calyces (*H. febrifuga*, var. *glabra*, Oliver in Trans. Linn. Soc. xxix. 108); but they differ in no other point from the typical form; on the other hand, *Fischer*, 378, has densely tomentose leaves. *H. febrifuga* is the "Quina" of the Portuguese of Mozambique and used as a tonic and febrifuge. It is mentioned and figured under the native name Kumbanzo in Livingstone, Miss. Trav. 648.

2. **H. congolensis**, *Stapf* in *Kew Bulletin*, 1898, 306. A small tree, up to 12 ft. high; branches drying black, rough with lenticels, sometimes minutely puberulous when quite young, otherwise glabrous. Leaves elliptic-oblong, obtuse or obscurely acuminate, rounded at the base, 3-4 in. long,  $1\frac{2}{3}$ -2 in. broad, papery, glabrous or minutely puberulous along the midrib; secondary nerves 7-9 on each side; veins delicately anastomosing, distinct below; petiole up to 4 lin. long. Corymbs pseudo-lateral, subsessile on short leafy branches, many-flowered, sparingly and minutely puberulous; pedicels 1-3 lin. long, slender. Calyx 1- $1\frac{1}{2}$  lin. long; sepals ovate-lanceolate, acuminate, minutely ciliolate, eglandular. Corolla-tube slender, very minutely puberulous, 6 lin. long; lobes oblong, obtuse, 8-9 lin. long. Anthers linear, apiculate, about 1 lin. long; cells shortly decurrent; filaments  $\frac{1}{3}$  lin. long.—*Stapf* in De Wild. & Durand, *Contrib. Fl. Congo*, i. 37; De Wild. in Bull. Herb. Boiss. 2 sér. i. 35.

**Lower Guinea.** Lower Congo: savannahs between Tchoa and Boma, *Cabra*, 3! Kisantu, *Gillet*, 155!

3. **H. ovata**, *A. DC. Prod.* viii. 414. Young branches pubescent, at length glabrescent, terete, dark reddish-brown or black. Leaves ovate to ovate-oblong, more or less acuminate or obtuse, acute at the base, 3-4 in. long,  $1\frac{1}{2}$ - $1\frac{3}{4}$  in. broad, softly hairy on both sides when young, at length glabrous above; secondary nerves 8-10 on each side; petiole 1-2 lin. long. Corymbs shortly peduncled or subsessile, pseudo-lateral, usually 2 on short leafy branches, semiglobose, loose or dense, 2 in. in diam., spreadingly pubescent; peduncles 1-4 lin. long; pedicels slender, 1-3 lin. long. Calyx densely pubescent, 1 lin. long; sepals

ovate or ovate-lanceolate, subacute, the inner two with 2-1 gland near the base. Corolla puberulous without; tube  $3\frac{1}{2}$ - $4\frac{1}{2}$  lin. long; lobes slightly shorter than the tube. Anthers apiculate,  $\frac{3}{4}$  lin. long, cells very shortly decurrent. Follicles up to  $1\frac{1}{2}$  ft. long. Seeds lanceolate,  $5\frac{1}{2}$  lin. long, coma 2 in. long.—Benth. in Hook. Niger Fl. 450; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 138.

**Upper Guinea.** Gambia: banks of the Gambia, *Ozanne*, 9! and without precise locality, *Brown Lister!* *Whitfield!* French Guinea: Rio Nunez, *Heudelot*, 795! (1795 according to De Candolle).

4. **H. africana**, *A. DC. Prod.* viii. 414. A shrub or small tree; young branches glabrous, rarely very sparingly pubescent, blackish when dry, older ones paler, with numerous conspicuous lenticels, terete. Leaves ovate to oblong, acuminate to subobtusate, acute or subacute at the base, 2- $3\frac{1}{2}$  in. long,  $1\frac{1}{4}$ - $1\frac{1}{2}$  in. broad, always quite glabrous; secondary nerves 8-10 on each side; petiole 2- $2\frac{1}{2}$  lin. long. Corymbs terminal on short lateral few-leaved or leafless shoots, sometimes overtopped by a young long shoot, subsessile, dense,  $1\frac{1}{2}$ -2 in. in diam., minutely greyish pubescent to minutely tomentose; peduncle 1-2 in. long; pedicels slender, 1-4 lin. long. Calyx greyish pubescent to tomentose, 1- $1\frac{1}{2}$  lin. long, eglandular; sepals ovate-lanceolate, subacute. Corolla puberulous without; tube 3-4 lin. long; lobes slightly shorter than the tube. Anthers bluntly apiculate; decurrent cell-tips over  $\frac{1}{2}$  lin. long; filaments  $\frac{1}{4}$  lin. long. Follicles 12 in. long. Seeds oblong, somewhat beaked,  $4\frac{1}{2}$  lin. long; coma  $1\frac{1}{2}$ -2 in. long.—Benth. in Hook. Niger Fl. 450; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 138; Morris in Kew Bulletin, 1896, 47-49 partly. *Rondeletia floribunda*, G. Don, Gen. Syst. iii. 516.

**Upper Guinea.** French Guinea: Bayabaya, by the River Scarcies, *Scott-Elliott*, 4290! near Laya, *Scott-Elliott*, 4469! Sierra Leone: Bagru River, *Mann*, 884! Falaba, *Scott-Elliott*, 5180! and without precise locality, *Afzelius!* *Don!* *Barter!*

*H. floribunda*—a name adopted by Durand & Schinz (*Études Fl. Congo*, i. 190) and K. Schum. (in Durand & De Wild. in Bull. Soc. Bot. Belg. xxxvii. 122) for *H. africana*—from the lower Congo is very likely *H. congolensis*. It is stated to have been collected by Laurent on the caravan routes on the lower Congo.

5. **H. Wulfsbergii**, *Stapf*. A middle-sized tree with slender, somewhat nodding branches; young branches drying black, glabrous, ultimately dotted with numerous pale lenticels. Leaves elliptic or elliptic-oblong, rarely ovate, more or less broadly and shortly acuminate, rarely subobtusate, 3-5 in. long,  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. broad, membranous, glabrous or sometimes with short white hairs in some of the nerve-axils below; secondary nerves 8-11 on each side; petiole slender,  $1\frac{1}{2}$ - $2\frac{1}{2}$  lin. long. Corymbs subsessile, dense, semiglobose,  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. in diam., terminal on very short, often (at the time of flowering) leafless branchlets or overtopped by a young shoot from the axil of the uppermost leaf, and then pseudo-lateral, more or less finely puberulous; peduncle up to 2 lin. long; pedicels slender, up to 4 lin. long. Calyx sparingly or more or less densely minutely tomentose, eglandular within; sepals ovate, subacute,  $\frac{3}{4}$ -1 lin. long. Corolla glabrous or more or less puberulous with-

out, white, fragrant; tube  $3\frac{1}{2}$ –4 lin. long, very slender; lobes obovate-oblong, 2– $2\frac{1}{2}$  lin. long. Anthers mucronulate, over  $\frac{1}{2}$  lin. long; basal tips of cells very short, scarcely decurrent; filament  $\frac{1}{4}$  lin. long. Follicles up to more than 12 in. long. Seeds linear-oblong, slightly narrowed at the upper end, 6 lin. long or slightly longer, hair-tuft  $2\frac{1}{2}$  in. long.—*H. africana*, Wulfsberg, Holarrh. Afr. Inaug. Diss. with plates; L. Planchon, Prod. Apoc. 185; Morris in Kew Bulletin, 1895, 245; 1896, 47–49 partly; K. Schum. in Schlechter, Westafr. Kautschuk-Exped. 306.

**Upper Guinea.** Gold Coast: Aburi, *Brown*, 682! Kwahu, *Johnson*, 654! Acera, *Hornberger* (ex *Wulfsberg*); and without precise locality, *Brown*, 326! Togo: Badja, *Schlechter*, 12969; Waya, *Hornberger* (ex *Wulfsberg*); Agatineo, near the Todjie River, *Merz* (ex *Wulfsberg*). Lagos: Ilaro, *Millen*, 112! 114! Abeokuta, *Irving*! *Barter*, 3334! Ikorodu, *Schlechter*, 12296. Ibadan Forest reserve, *Punch*! and without precise locality, *Denton*! *Moloney*! *Rowland*!

This species yields, according to Wulfsberg, a valuable antidote against dysentery. Vernacular name on the Gold Coast *Kromi* or *Gbomi*, in Lagos *Ireno* or male *Ire*. It is very like *H. africana*; but the inflorescence is usually less hairy, the calyx distinctly smaller, the flowers more slender with a slightly smaller limb, and scarcely decurrent basal anther points.

## 29. PLEIOCERAS, Baill. in Bull. Soc. Linn. Paris, i. 759.

Calyx small; sepals 5, free or almost free, obtuse, imbricate, alternating with scale-like glands. Corolla salver-shaped; tube cylindrical, short, with numerous variously shaped appendages in the mouth; lobes overlapping to the left, obtuse. Stamens inserted in the mouth of the corolla; anthers conniving in a cone, exserted, lanceolate, acute, sagittate; wings rather thin with thick incurved margins; tails slender, long, incurved; foot of connective rather flat, with a decurrent dense tuft of hairs in the centre; filaments distinct, filiform, passing into long slender slightly projecting ridges on the corolla-tube. Disc 0. Carpels 2, free; style filiform; stigma capitate with a small basal frill and a minute cleft tip agglutinated to the hair-tuft of the anthers. Ovules pluriseriate, numerous. Follicles cylindrical, slender, subparallel. Seeds spindle-shaped, covered all over with long soft silky hairs, densest at the base; endosperm fleshy, scanty; cotyledons convolute; radicle short.—Shrubs with slender branches. Leaves herbaceous, opposite, with distant nerves; axillary stipules 0; axillary glands minute, subulate, very scanty. Flowers small, in terminal minutely bracteate many-flowered panicles.

Species 3, endemic.

*Pleioceras* is closely allied to *Wrightia*, of which I know only one species from Africa (Natal). It differs in the small flowers and the seeds, which have not a distinct basal tuft of hairs, but are covered all over with long silky soft hairs, which are densest at and near the base. The hairs are, in the follicle, directed towards the apex.

Corolla-scales 10, 5 opposite to and 5 alternate with the lobes, all from the mouth.

Scales ciliate; pedicels up to 10 lin. long	.	.	1. <i>P. Afzelii</i> .
Scales glabrous; pedicels up to 5 lin. long	.	.	2. <i>P. Barteri</i> .

Corolla-scales 5, opposite to the lobes.

Corolla-tube as long as the lobes; scales from the mouth, thin, linear, 2-fid or 2-horned at the apex; one pair of filiform appendages on each side of each stamen . . . . .

3. *P. Zenkeri*.

Corolla-tube scarcely half as long as the lobes; scales from the lobes somewhat above the mouth, fleshy, subquadrate; a solitary filiform appendage on each side of each stamen . . . . .

4. *P. Gilletii*.

1. **P. Afzelii**, *Stapf*. A shrub; young branches glabrous, chestnut-brown, dotted with numerous lenticels. Leaves oblong, shortly and obtusely acuminate, or sometimes subrostrate,  $1\frac{3}{4}$ – $3\frac{3}{4}$  in. long,  $1$ – $1\frac{1}{4}$  in. broad, glabrous, subcoriaceous; secondary nerves 6–7 on each side; petiole scarcely  $2\frac{1}{2}$  lin. long. Panicle elongate, lax, glabrous; rhachis and branches much compressed; bracts and bracteoles minute; pedicels up to 10 lin. long. Calyx glabrous; sepals ovate, acute,  $1$ – $1\frac{1}{4}$  lin. long, with a flattened gland at the base. Corolla minutely papillose without; tube  $2\frac{1}{2}$  lin. long; lobes obtuse, rather broad, up to  $3$  lin. long; episepalous scales very short, ciliate; epipetalous scales broad, hairy, with bifid tips; a pair of filiform, more or less divided appendages on each side of each stamen. Anthers 2 lin. long.—*Wrightia Afzelii*, K. Schum. in Engl. Jahrb. xxiii. 231.

**Upper Guinea.** Sierra Leone (?), *Afzelius*.

2. **P. Barteri**, *Baill. in Bull. Soc. Linn. Paris*, i. 759. A shrub, 8 ft. high; young branches greyish pubescent or subtomentose, ultimately glabrescent, rarely glabrous, reddish-brown, dotted with small whitish lenticels. Leaves oblong, acuminate, shortly acute or rounded at the base,  $1\frac{1}{2}$ – $5$  in. long,  $\frac{3}{4}$ – $2$  in. broad, glabrous above, minutely pubescent to subtomentose below; secondary nerves 6–10 on each side; petiole up to  $3$  lin. long. Panicles contracted or at length lax, pubescent to subtomentose, rarely almost glabrous; peduncle  $\frac{1}{2}$ – $1\frac{1}{4}$  in. long; bracts small, lanceolate or subulate, deciduous; pedicels very slender, up to  $5$  lin. long. Calyx  $\frac{3}{4}$  lin. long; segments roundish; intracalycular glands flat, large. Corolla orange-coloured or yellowish, papillosely pubescent without; tube 2 lin. long; lobes ovate-oblong, obtuse, as long or almost as long as the tube; episepalous scales thin, small, bifid or entire, glabrous; epipetalous scales thin, subquadrate, 2–3-horned, glabrous; a pair of filiform, more or less divided appendages on each side of each stamen. Anthers over  $\frac{1}{2}$  lin. long. Follicles up to  $1\frac{1}{2}$  ft. long; seeds greenish, 6 lin. long.—K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 186. *Wrightia parviflora*, Stapf in Kew Bulletin, 1894, 121; Oliver in Hook. Ic. Pl. 2345; K. Schum. in Schlechter, Westafr. Kautschuk-Exped. 308.

**Upper Guinea.** Lagos: Eppah, *Barter*, 3278! Ogleessa, *Millen*, 192! near Lagos, *Barter*, 20170! *Moloney*! *Rowland*, 57! *Millen*, 177! Yoruba, *Millson*, 4! Ishagamo, *Schlechter*, 13008. South Nigeria: Adiabo, near Old Calabar, *Holland*, 86!

3. **P. Zenkeri**, *Stapf*. Young branches glabrous, chestnut-brown, at length dotted with numerous small lenticels. Leaves oblong

to subovate, acuminate (often abruptly), rounded or acute at the base, 3-6 in. long,  $1\frac{1}{2}$ - $2\frac{1}{4}$  in. broad, glabrous except the delicately and minutely tomentose nerves below; secondary nerves 6-9 on each side; petiole up to 2 lin. long. Panicle short, wide, greyish, minutely tomentose when young, at length glabrescent, branches spreading; peduncle up to  $1\frac{1}{2}$  in. long; bracts small, lanceolate or subulate; pedicels slender, up to 2 lin. long. Calyx scarcely 1 lin. long; sepals broad-ovate, rounded, minutely tomentose; intracalycular glands small. Corolla papilloso-pubescent without; tube  $1\frac{3}{4}$  lin. long; lobes ovate-oblong, obtuse; episepalous scales replaced by a minute tubercle; epipetalous scales thin, linear, 2-horned, glabrous; a pair of filiform, more or less divided appendages on each side of each stamen. Anthers  $\frac{3}{4}$  lin. long.

**Upper Guinea.** Cameroons: Bijiinde, *Zenker*, 1204A! 1224! 1954! 2307!

4. **P. Gilletii**, *Stapp*. Flowering branches scaberulous, at length rough with numerous small prominent lenticels. Leaves oblong or elliptic-oblong, shortly and acutely acuminate, acute or subacute at the base, about 3 in. long,  $1\frac{1}{2}$  in. broad, subcoriaceous, glabrous, dull green; secondary nerves 5-6 on each side, faint; petiole 2-3 lin. long. Panicles many-flowered, densely and minutely hispidulous; peduncle about  $\frac{1}{2}$  in. long; bracts minute, ovate, acute; pedicels up to 1 lin. long. Calyx 1 lin. long, puberulous; sepals broad-oblong, obtuse, margins hyaline, ciliolate. Corolla very finely papillose without; tube slightly over 1 lin. long; lobes oblong, obtuse,  $2\frac{1}{2}$  lin. long, each with a fleshy subquadrate scale above the base; episepalous scales 0; a solitary filiform appendage on each side of each stamen, about 2 lin. long, divided into 3-4 fine clavellate segments. Staminal column over 1 lin. long; filaments as long as the anthers. Ovary glabrous.

**Lower Guinea.** Lower Congo: Kisantu, *Gillet*, 537!

---

Planchon described (Prod. Apocyn. 108-110) the follicles and seeds of a plant collected by Ballay in Gaboon and supposed to be a *Wrightia*. The follicles are said to reach more than 2 ft. in length, and to be slender, brown or blackish, striate without, yellow within; the seeds are described as being lanceolate, acute at the base, attenuate at the apex into a plumose awn about 5 lin. long, pale brown and prominently striate, enclosing a scanty endosperm and an embryo, the cotyledons of which are complicate and S shaped in cross section. The presence of a plumose terminal awn excludes this plant from *Pleioceras* as well as from *Wrightia*, and the folding of the cotyledons from *Strophanthus*.

### 30. STROPHANTHUS, DC. ; Benth. et Hook. f. Gen. Pl. ii. 714.

Calyx middle-sized to large, herbaceous, rarely scarious, with few to many glands at the base within; sepals 5, imbricate, sometimes foliaceous. Corolla funnel-shaped or campanulate with a short or long cylindrical basal tube; mouth with paired appendages alternating with the lobes; lobes 5, acuminate or produced into very long filiform tails,

rarely obtuse. Stamens inserted at the upper end of the cylindric portion of the corolla-tube; anthers conniving in a cone and projecting into the widened part of the tube, lanceolate, acuminate or sometimes produced into a long bristle, sagittate; wings long, firm, obtusely edged; tails short; foot of connective with a central tuft of closely packed hairs in the upper part and a more or less hairy longitudinal crest below it; filaments distinct but short, filiform, passing into a prominent, more or less hairy ridge decurrent on the corolla-tube. Disc 0. Carpels 2, free; style filiform; stigma capitate, 5-grooved, with a membranous reflexed frill at the base, and a minutely bifid apiculus; ovules numerous, pluriseriate. Mericarps follicular, oblong or spindle-shaped, divaricate. Seeds spindle-shaped, slightly compressed, with an apical plumose awn and a deciduous basal coma; endosperm scanty, fleshy; cotyledons oblong, plano-convex; radicle short.—Shrubs, often scandent, glabrous or more or less hairy, with persistent or deciduous foliage. Leaves opposite, rarely ternate; axillary stipules 0; axillary glands subulate or conical, 2-6, rarely more, at the base of each petiole. Inflorescences terminal, often on the ends of short branches, corymbose, many- or few-flowered or reduced to solitary flowers; flowers mostly showy.

Species about 40 in tropical and South Africa and tropical Asia.

An elaborate bibliographical index of the papers bearing on *Strophanthus* may be found in Payrau, *Strophanthus*, (1900), 165-173.

\*ROUPELLIA.—Sepals scarious; corolla-lobes obtuse or acute, never tailed; anther-tips produced into a fine awn, about 5 lin. long; seeds glabrous.

Sepals and corolla-lobes obtuse . . . . . 1. *S. gratus*.

Sepals and corolla-lobes acute . . . . . 2. *S. Tholloni*.

\*\*EUSTROPHANTHUS.—Sepals herbaceous; corolla-lobes produced into long narrow tails, rarely not caudate (*S. Courmonti* and *S. ecaudatus*); anther-tips acute, mucronate or produced into a short awn, up to 3½ lin. long; seeds more or less hairy.

†Cylindric infra-staminal part of the corolla-tube about as long as the campanulate or cupular supra-staminal part or longer.

Leaves more or less hispid or tomentose, rarely pubescent.

Leafless when in flower.

Leaves acuminate; flowers in terminal cymes, distinctly pedicelled.

Branches and leaves softly pubescent . . . . . 3. *S. Ledieni*.

Branches and leaves densely tomentose . . . . . 4. *S. holosericeus*.

Leaves obtuse; tomentose; flowers in clusters or solitary on very short branchlets, very shortly pedicelled or sessile.

Bracts and sepals broad, ovate; corolla-tube over 1 in. long . . . . . 5. *S. Emini*.

Bracts and sepals linear; corolla-tube 5 lin. long . . . . . 6. *S. Nicholsoni*.

Leaves produced with the flowers.

Very hispid; corolla-tails 4-7 times longer than the tube; anthers included.

Sepals conspicuously shorter than the corolla-tube . . . . . 7. *S. Kombe*.

- Sepals as long as the corolla-tube or longer . . . 8. *S. hispidus*.  
 Rather finely and on the whole more sparingly  
 hispid; corolla-tails not more than twice the  
 length of the tube; anthers exceeding the  
 shallow throat . . . . . 9. *S. bullenianus*.  
 Leaves minutely scabridulous or quite glabrous.  
 Inflorescence distinctly pubescent.  
 Leaves scabridulous . . . . . 10. *S. gracilis*.  
 Leaves quite glabrous.  
 Sepals (at least the outer) with a broad base . . . 11. *S. Preussii*.  
 Sepals narrow, oblong-spathulate . . . . . 12. *S. Barteri*.  
 Inflorescence quite glabrous, like the whole plant  
 (the pedicels rarely slightly pubescent in *S. par-*  
*viflorus*).  
 Calyx 5-6 lin. long; corolla-tube 6-7½ lin. long.  
 Sepals very broad at the base; supra-staminal  
 part of the corolla-tube campanulate;  
 corolla-tails 4-4½ in. long . . . . . 13. *S. bracteatus*.  
 Sepals narrow; supra-staminal part of the  
 corolla-tube cupular; corolla-tails about  
 ½-2 in. long  
 Leaves with 7-9 distinctly prominent  
 secondary nerves on each side . . . . . 14. *S. erythroleucus*.  
 Leaves with 5-6 faint secondary nerves on  
 each side . . . . . 15. *S. parviflorus*.  
 Calyx 2½-4 lin. long; corolla-tube 3-3½ lin. long.  
 Calyx 2½ lin. long; leaves with 4 secondary  
 nerves on each side . . . . . 16. *S. arnoldianus*.  
 Calyx 3½-4 lin. long; leaves with 11-12  
 secondary nerves on each side . . . . . 17. *S. wildemanianus*.
- ††Cylindric infra-staminal part of the corolla-tube much shorter than the widely  
 tubular, campanulate or funnel-shaped supra-staminal part.  
 Corolla-tube 1 in. long or more, rarely smaller, supra-  
 staminal part widely campanulate or funnel-shaped.  
 Corolla-lobes tailed.  
 Flowers generally on short leafless branches,  
 rarely together with quite young leaves . . . 18. *S. sarmentosus*.  
 Flowers produced with the leaves.  
 Leaves often ternate; corolla-tails very short . . . 19. *S. ogorensis*.  
 Leaves opposite; corolla-tails long.  
 Sepals subulate-acuminate; corolla-tube 9-  
 13 lin. long; lobes inclusive of the tails  
 4½-5 in. long . . . . . 20. *S. verrucosus*.  
 Sepals lanceolate, acute; corolla-tube 7 lin.  
 long; lobes inclusive of the tails 2-3  
 in. long . . . . . 21. *S. petersianus*.  
 Corolla-lobes not tailed.  
 Corolla (inclusive of the lobes) 3 in. long; throat  
 scales short . . . . . 22. *S. Courmonti*.  
 Corolla (inclusive of the lobes) 1½ in. long; throat  
 scales filiform, up to 7 lin. long . . . . . 23. *S. ecaudatus*.  
 Corolla-tube 6-10 lin. long, supra-staminal part widely  
 tubular or narrowly funnel-shaped.  
 Leaves softly tomentose . . . . . 24. *S. Schuchardti*.

Leaves glabrous.

Leaves thin, usually 3-4 in. long; corolla minutely puberulous without.

Cymes peduncled; corolla inclusive of the tails 1½-2 in. long; tails 1-1½ in. long . . . 25. *S. Demeusei*.

Cymes subsessile; corolla inclusive of the tails 2½ in. long; tails 1½-1¾ in. long . . . 26. *S. intermedius*.

Leaves firm, less than 3 in. long; corolla glabrous without.

Leaves 2½-3 in. long; corolla inclusive of the tails 1½ in. long . . . 27. *S. congoensis*.

Leaves 1½-1¾ in. long; corolla inclusive of the tails 2½-3 in. long . . . 28. *S. amboensis*.

1. **S. gratus**, *Franch. in Journ. de Bot.* vii. 321. A small glabrous tree or shrub; branches reddish-brown or almost black when dry, dotted with small lenticels. Leaves oblong, shortly acuminate, obtuse or subacute at the base, 3-6 in. long, 2-3 in. broad, coriaceous; secondary nerves about 7 on each side, subhorizontal, very distinct; veins generally inconspicuous; petiole 3-6 lin. long. Cymes terminal, sessile, few- to 12-flowered; bracts ovate, acute, deciduous, 1½ lin. long; pedicels rather stout, up to 4-6 lin. long. Calyx 5-8 lin. long; sepals much imbricate, broad, oblong or obovate, scarious, rounded at the apex. Corolla large, white, or tinged with pink; tube funnel-shaped, 1½ in. long; lobes broad, obovate, ¾-1 in. long; throat scales lanceolate-subulate, glabrous, purple, 5-6 lin. long. Anthers about 6-7 lin. long, tapering into a more or less exserted awn, about 5 lin. long. Ovary glabrous. Follicles obtusely acuminate, minutely lenticellate, 8½-15 in. long, 1¼-2 in. in diam. Seeds glabrous, lanceolate, 7½-9 lin. long, 1-1½ lin. broad; awn 1¾-2½ in. long, naked for about 8-10 lin.; hairs white, 1¼-2½ in. long.—*Franch. in Nouv. Arch. Mus. Paris*, 3 sér. v. 256; and in *Journ. de Bot.* viii. 201-204; *L. Planch. Prod. Apocyn.* 141; *K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 182; *Gilg in Notizbl. Königl. Bot. Gart. Berlin*, iii. 63. *S. stanleyanus*, *Hort. Angl. ex Lemaire, Jard. Fleur.* t. 16. *S. hispidus*, *Hardy & Gallois in Compt. Rend.* lxxxiv. (1877), 261, not of A.P. DC. *S. Ouabaio*, *Holmes in Pharm. Journ.* xxi. (1890), 234. *S. glaber*, *Cornu ex Holmes, Pharm. Journ.* xxiii. (1893), 928. *S. glabre du Gabon*, *Blondel, Stroph. du Comm.* 34 with fig.; *Arnaud in Compt. Rend.* cvii. 1162; *Pax in Engl. Jahrb.* xv. 384; *Franchet, l.c.*, 258, t. 9; *Planchon, l.c.* 64, 66, with plate, 69, fig. 10, 83; *Franchet in Bull. Soc. Linn. Paris*, 2 sér. i. 4; *Payrau, Strophanthus*, 111-118, 161, with figs. *Roupellia grata*, *Wall. & Hook. in Bot. Mag.* t. 4466; *Benth. in Hook. Niger Fl.* 449; *Van Houtte, Fl. Serr.* vi. 181, t. 589; *Lindl. & Paxt. Fl. Gard.* i. 71, fig. 46.

**Upper Guinea.** Sierra Leone, *Afzelius! Whitfield!* Gold Coast: Ashanti; near Assin-Yau-Kumassi, *Cummins*, 44! 55! Lagos, *Millen*, 174! *Rowland!* Niger Delta: Brass, *Burrows!* Cameroons: Bipinde, *Zenker*, 1178! 1923!

**Lower Guinea.** (Gaboon: Glass, near Libreville, *Griffon du Bellay* (perhaps cultivated?).

2. **S. Tholloni**, *Franch. in Journ. de Bot.* vii. 299. A glabrous climbing shrub, up to 25 ft. high; branches dark brown, almost destitute of lenticels. Leaves oblong-lanceolate to elliptic-oblong, acute or acuminate at both ends, 3-5 in. long,  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. broad, coriaceous; secondary nerves 5-7 on each side, faint; veins inconspicuous; petiole 2-3 lin. long. Cymes terminal, subsessile, 4-1-flowered; bracts ovate, acute, 1 lin. long; pedicels 2-3 lin. long. Calyx 6-8 lin. long; sepals oblong, acute, much imbricate, scarious. Corolla large, white and pink, changing to orange or crimson; tube funnel-shaped, 12-14 lin. long; lobes ovate, acute or subacuminate, 9-12 lin. long; throat-scales subulate from a broader base, 9-12 lin. long, with scattered hairs. Anthers about 7 lin. long, passing into a more or less exerted awn, about 5 lin. long. Ovary glabrous.—*Franch. in Nouv. Arch. Mus. Paris*, 3 sér. v. 257, t. viii.; *L. Planch. Prod. Apocyn.* 66; *K. Schum. in Engl. Jahrb.* xxiii. 230.

**Upper Guinea.** Cameroons: Rio del Rey, *Johnston*, 44! Cameroon River, *Mann*, 743! 2222! Lolodorf, *Staudt*, 14! Bipinde, *Zenker*, 1148! 2300! Batanga, *Bates*, 343!

**Lower Guinea.** Gaboon: Ogowé District, *Thollon*, 1762.

A part of the drug called *S. glabre du Gabon* is possibly derived from this species. See also *Franchet in Journ. de Bot.* viii. 203, and *Payrau, Strophanthus*, 115, 161.

3. **S. Ledienii**, *Stein in Gartenflora*, t. 1241. A shrub; branches softly and sparingly pubescent when young, brown, leafless when in flower. Leaves obovate, abruptly cuspidate, cuneate at the base, 4-6 in. long,  $1\frac{1}{4}$ -2 in. broad, softly and finely pubescent on both sides. Cymes sessile, terminal, 3-7-flowered; peduncle 5-10 lin. long; bracts broadly linear, acuminate, 4-5 lin. long, 1 lin. broad; pedicels 5-10 lin. long. Calyx foliaceous, 7 lin. long; sepals linear from an elliptic base, acute. Corolla-tube pale yellow, 10 lin. long; lobes deep yellow, ovate, 6-8 in. long including the tails which are glabrous above, delicately pubescent below; throat-scales purple,  $2\frac{1}{2}$ - $3\frac{1}{2}$  lin. long. Follicles 10-14 in. long, slender, brown, mottled with yellow, coriaceous. Seeds oblong, brown, shortly and finely tomentose; awn  $2\frac{1}{2}$  in. long, naked to the middle, hairs about 10 lin. long.—*Christy, New Comm. Plants and Drugs*, 1887, 28; *Pax in Engl. Jahrb.* xv. 368, 383; *Franch. in Nouv. Arch. Mus. Paris*, 3 sér. v. 270; *K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 182; *Durand & Schinz, Études Fl. Congo*, i. 191; *Gilg in Engl. Jahrb.* xxxii. 155.

**Lower Guinea.** Lower Congo: Vivi, on rocks, *Ledien*.

4. **S. holosericeus**, *K. Schum. & Gilg in Engl. Jahrb.* xxxii. 157. An erect, divaricate shrub; branches densely brownish-tomentose when young. Young leaves oblong, long and acutely acuminate, gradually narrowed at the base, 1 in. long, 7 lin. broad, densely tomentose on both sides, grey below; petiole 1- $1\frac{1}{2}$  lin. long. Cymes terminal, 2-flowered; pedicels densely tomentose, 5-6 lin. long. Calyx densely tomentose, 6- $6\frac{1}{2}$  lin. long; sepals equal, lanceolate, or linear-lanceolate, acute. Corolla-tube densely and finely tomentose without, infra-

staminal part  $7\frac{1}{2}$  lin. long, 2 lin. wide, supra-staminal part gradually widened,  $1-1\frac{1}{2}$  lin. long; lobes long-tailed from a triangular base, densely hairy on both sides; tails very slender, over 4 in. long,  $\frac{1}{2}-\frac{3}{4}$  lin. broad; throat-scales ovate-linear, glabrous. Anther-tips slightly exerted, acute. Ovary long and densely tomentose.

**South Central.** Congo Free State: Mzimu, on Lake Tanganyika, *Descamps*, 30.

Gilg compares this species with *S. Nicholsoni*, Holmes; the description of the flowers seems to me to point rather to *S. Ledienii*.

5. **S. Emini**, *Asch. & Pax in Engl. Jahrb.* xv. 366, 383, *tt.* x. xi. A rambling shrub, up to 12-15 ft. high; branches tomentose when young, glabrescent, greyish-brown. Leaves broad ovate, or elliptic, obtuse or acute, rounded or acute at the base, 4 in. long, 3 in. broad, subcoriaceous, pubescent above, tomentose beneath; secondary nerves 7-4) on each side, distinct below; veins more or less obscured by the tomentum; petiole up to  $2\frac{1}{2}$  lin. long. Flowers in sessile lateral and terminal clusters on leafless elongate branches; bracts broad, ovate, pubescent, 2-3 lin. long; pedicels very short or almost 0. Calyx foliaceous, 5 lin. long, densely pubescent; sepals ovate, obtuse, with the tips more or less recurved. Corolla-tube funnel-shaped, pubescent without, infra-staminal part 7 lin. long, supra-staminal part slightly shorter; lobes long-tailed from an ovate base; tails 3-4 in. long; throat-scales  $3-3\frac{1}{2}$  lin. long. Anthers included, acute. Ovary hispid, Follicles 8-12 in. long, woody, shaggy from closely set cylindrical villous warts, greyish. Seeds oblong, golden-silky,  $1\frac{1}{2}$  lin. long,  $\frac{3}{4}$  lin. broad; awn naked for 8-9 lin., with the hairs up to  $2\frac{3}{4}$  in. long.—Franch. in *Nouv. Arch. Mus. Paris*, 3 sér. v. (1893), 275; K. Schum. in *Engl. & Prantl, Pflanzenfam.* iv. ii. 182, and in *Engl. Pfl. Ost-Afr. C.* 319, *Engl. l.c.* A. 50; K. Schum. in *Engl. Jahrb.* xxviii. 453; Busse in *Tropenpfl.* iv. (1900), 596, 597, v. (1901), 106; Holmes in *Pharm. Journ.* xii. (1901), 487; Gilg in *Engl. Jahrb.* xxxii. 155. *S. Fischeri*, Hartwich in *Arch. Pharm. Bd.* 230, 421. *S. Stuhlmanni*, Pax in *Ber. Deutsch. Pharm. Ges.* iii. 44.

**Mozamb. Dist.** German East Africa: Irangi district, *Fischer*, 382! Ugogo; Ipala, *Stuhlmann*, 354; Mpwapwa, *Stuhlmann*, 263. Ruala River, 2000 ft., *Goetze*, 455! British Central Africa: Urungu; Abercorn and Kituta, ex *Holmes*.

6. **S. Nicholsoni**, *Holmes in Pharm. Journ.* v. (1897) 209. A small shrub, 3-4 ft. high, with the habit of *Ribes sanguineum*; branches densely tomentose when young, at length glabrous, greyish-brown. Young leaves ovate, obtuse, about 5 lin. long, densely velvety, greyish; petioles very short. Flowers in few-flowered clusters or solitary on very short branchlets along the leafless branches of last year's growth; bracts linear; pedicels very short. Calyx  $3-3\frac{3}{4}$  lin. long; sepals erect, unequal, linear, acute. Corolla pubescent all over; infra-staminal part of the tube 3 lin. long, supra-staminal part funnel-shaped, over 2 lin. long, yellow with dark purple lines and spots; lobes ovate-lanceolate, pinkish, tinged with brown, about  $4-4\frac{1}{2}$  lin. long, passing into purplish tails up to  $2\frac{1}{2}-4$  in. long; throat-scales obtuse, 1 lin. long. Anthers and

filaments glabrous. Ovary hairy. Follicles purple, lenticellate,  $5\frac{1}{2}$ –9 in. long. Seeds oblong, 7 lin. long,  $2\frac{1}{2}$  lin. broad, velvety, brownish-white; awn naked for almost 2 in., then plumose for  $2\frac{1}{2}$  in.—Payrau, *Strophanthus*, 133; Gilg in *Engl. Jahrb.* xxxii. 154.

**Mozamb. Dist.** British Central Africa: from Lusengasia in the Senega Country to the upper Loangwa River, *Nicholson!*

7. **S. Kombe**, *Oliv. in Hook. Ic. Pl. t.* 1098. A rambling or climbing shrub; branches hispid tomentose when young, glabrescent, ultimately grey or black, scabrid, dotted with large white lenticels, rather stout. Leaves elliptic or ovate-elliptic, acute or apiculate, obtuse at the base,  $3$ – $3\frac{1}{2}$  in. long,  $1\frac{3}{4}$ – $2\frac{1}{4}$  in. broad, rather thick, densely and coarsely tomentose on both sides when young, glabrescent and scabrid above when mature; nerves 6–7 on each side, rather oblique; veins rather distinct below; petiole very short. Cymes terminal on short branches with the young leaves (sometimes before the leaves), few-flowered, hispid; peduncle very short; bracts subulate, 3 lin. long; pedicels slender, 3–5 lin. long. Calyx hispid-tomentose, 5–7 lin. long; sepals lanceolate-linear or linear-subulate, slightly imbricate at the base. Corolla yellowish-white, pubescent without, infra-staminal part 3–4 lin. long, supra-staminal part campanulate or shortly funnel-shaped, 3–4 lin. long; lobes produced into a long tail from an ovate base; tails 3–5 in. long; throat-scales very short, obtuse, densely papillose. Anthers included, acute,  $2\frac{1}{2}$  in. long. Follicles spreading at right angles, tapering from below the middle, 9–15 in. long, up to 1 in. thick. Seeds lanceolate- to elliptic-oblong, drab to fawn-coloured, silky, 7–9 lin. long; awn naked for 2 in., including the hairs 5–6 in. long.—Fraser in *Journ. Anat. and Physiol.* vii. 142 in footnote; Christy, *New Comm. Plants and Drugs*, No. 9 (1886), 53–61, No. 10 (1887), 9, 10, fig. 3, 14–15, No. 11 (1887), 14; Elborne in *Pharm. Journ.* xvii. 743–747; Gerrard in *Pharm. Journ.* xvii. 923; Blondel, *Stroph. du Comm.* 38, and in *Brit. and Colon. Druggist* (1888), 590, with fig.; Buchanan in *Pharm. Journ.* xviii. 748; Pax in *Engl. Jahrb.* xv. 366, 383, and in *Engl. Pfl. Ost-Afr.* B. 515, 520; K. Schum. in *Engl. & Prantl, Pflanzenfam.* iv. ii. 182, and in *Engl. Pfl. Ost-Afr.* C. 319; Franch. in *Nouv. Arch. Mus. Paris*, 3 sér. v. 273; L. Planch. *Prod. Apocyn.* 49, 53, fig. 6, 54, fig. 7, 56, fig. 8, 82; Perrédés in *Pharm. Journ.* xi. (1900), 241–246, 270, figs. 1–59; Hartwich, *Neue Arzneidrog.* 323; *Brit. Pharmacop.* (1898), 313; White & Humphrey, *Pharmacop.* 471, t. xliii., figs. 2, a and b; Payrau, *Strophanthus*, 71–84, 163, with figs.; Gilg in *Engl. Jahrb.* xxxii. 155. *S. hispidus*, *Oliv. ex Fraser in Proc. Roy. Soc. Edinb.* vii. (1869–70), 101, and in *Trans. Roy. Soc. Edinb.* xxxv. t. iii. (for the greatest part), and in *Journ. Anat. and Physiol.* vii. 139–155; Christy, l.c. No. 10 (1887), 12–13, not of A. DC. *S. hispidus*, var. *Kombe*, Holmes in *Pharm. Journ. and Trans.* xxi. (1890), 233.

**Mozamb. Dist.** German East Africa: Usaramo, 1000 ft., *Goetze*, 24! Dondeland, *Busse*, 563! Portuguese East Africa: Yao Forest, *Steere!* British Central Africa: Nyasaland; Manganja Hills, 2000 ft., *Meller!* Shibusia, *Kirk*, 24A! and without precise locality, *Buchanan*, 1121!

It was first stated by Livingstone in his "Narrative of an Expedition to the Zambesi," 466, that an arrow poison, called "Kombi" by the Manganja, was prepared from a species of *Strophanthus*. The author adds further that Dr. (now Sir John) Kirk experienced a slight case of poisoning by kombi on himself followed by certain symptoms which suggested "that the kombi may turn out a valuable remedy." From the specimens collected by Kirk and Meller in the Manganja country and Kirk's notes, there cannot be any doubt that the *Strophanthus*, referred to by Livingstone, is *S. Kombe*, Oliv. On the other hand, it is not impossible that a part of the seeds which, under the name of kombi seeds, formed the subject of physiological and chemical investigations in some of the papers quoted above, were not derived from this species.

8. **S. hispidus**, A. P. DC. in Bull. Soc. Philom. iii. (1802), 123, t. viii. fig. 2. A tall climbing shrub; branches with stiff spreading yellow hairs when young, glabrescent, scabrid or rather smooth when mature, reddish or dark brown, scantily dotted with small lenticels. Leaves fully developed at the time of flowering, elliptic or oblong, shortly acuminate, rounded or subcordate at the base, 3-6 in. long,  $1\frac{1}{2}$ - $3\frac{1}{2}$  in. broad, membranous, rather firm when quite mature, at first almost tomentose, then loosely hispid, ultimately more or less glabrescent above; secondary nerves 6-10 on each side, like the coarsely reticulating veins much raised below in the old leaves; petiole 0- $1\frac{1}{2}$  lin. long. Corymbs many-flowered, contracted or more often large and loose, terminal on leafy branches; branches and branchlets with stiff spreading yellow hairs; bracts foliaceous, lanceolate, 9-10 lin. long. hispid; pedicels hispid, slender, very short or up to 8 lin. long. Calyx foliaceous, 8-10 lin. long; sepals lanceolate or ovate-lanceolate, tapering into a linear acute or obtuse acumen, hispid on the back and along the margin, glabrous inside. Corolla yellow, puberulous outside, infra-staminal part 3- $3\frac{1}{2}$  lin. long; supra-staminal part cup-shaped or shortly campanulate, 2-3 lin. long; lobes produced from a short ovate base into filiform tails, 3-5 in. long; throat-scales ovate, obtuse,  $\frac{1}{2}$ - $\frac{3}{4}$  lin. long, purple-spotted. Anthers acute, 2 lin. long, included. Follicles divaricate, long acuminate, 10-14 in. long, reddish-brown, coarsely striate, dotted with lenticels. Seeds oblong, greyish or yellowish, silky, 5 lin. long; awn glabrous for 9-10 lin., with the plume  $3\frac{1}{2}$  in. long.—A. P. DC. in Ann. Mus. Hist. Nat. i. (1802) 412, t. 27, fig. 2 (ex Desf.), and *Strophanthus*, iii. 9, t. 4 and 5; A. DC. Prod. viii. 419; Benth. in Hook. Niger Fl. 451; Christy, New Comm. Plants and Drugs, No. 10 (1887), 24, with fig.; Holmes in Pharm. Journ. xxi. (1890), 233; Baill. Arch. Physiol. 1872, 525, and in Bull. Soc. Linn. Paris, ii. 855; Blondel, *Stroph. du Comm.* 14; Baill. in Bull. Soc. Linn. Paris, i. 855, 856. Pax in Engl. Jahrb. xv. 365, 382; Franch. in Nouv. Arch. Mus. Paris, 3 sér. v. 271; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 182, 181, fig. 60; L. Planch. Prod. Apocyn. 33, 36, fig. 7, v.-xv., 41, fig. 2, 82; Köhler, Mediz. Pflanz. ii. t. 194; Hartwich, Neue Arzneidrog. 323; De Wild. & Durand, Contrib. Fl. Congo, i. 41, ii. 40, and in Reliq. Dewevr. i. 155; Payrau, *Strophanthus*, 47-70, 163, with figs.; De Wild. in Bull. Herb. Boiss. 2 sér. i. 34. *S. hirta*, Poir. Dict. Sc. Nat. li. 150.

**Upper Guinea.** Senegambia: Cayor; Longa, *Joret*, Rio Nunez, *Hendelot*, 829! Casamanze River, *Perrottel*! French Guinea: Dantilia, *Scott-Elliot*, 5300! Sierra Leone; Bunce Island, *Kirk*, 38! River Sherboro, *Mann*, 793! and without precise locality, *Smeathman*! Gold Coast: Afrow Plains, *Johnson*, 594B! Lagos: Lagos, *Rowland*! Abeokuta, *Irring*, 188! *Barter*, 3321! Niger Delta: River Nun, *Barter*, 20102! Niger Territory: Nupe, *Barter*, 749! Old Calabar, *Thomson*, 6! *Mann*, 2248! Cameroons, Bipinde, *Zenker*, 1683!

**Lower Guinea.** Gaboon: Corisco Bay, *Mann*! Lower Congo: Kisantu, *Gillet*, 83! Mayombe, *Cabra*.

**South Central.** Congo Free State: Bangala, *Dewèvre*, 866!

*S. thierryanus*, K. Schum. & Gilg in Engl. Jahrb. xxxii. 158, seems to represent a particularly hispid state of *S. hispidus*. There is nothing else in the description to distinguish it from this species except the somewhat shorter corolla-tails, a rather variable character. It was collected by Thierry in the interior of Togo, where it is used by the Moba Tribe for preparing an arrow poison.

9. ***S. bullenianus***, *Mast. in Gard. Chron.* 1870, 1471, fig. 257, excl. fruit. A climbing shrub, 10–40 ft. high; branches slender, sparingly hispid with yellowish spreading hairs, soon glabrescent, reddish-brown, scantily dotted with lenticels. Leaves oblong-elliptic to oblong, suddenly constricted into a narrow linear acumen 6–9 lin. long, rounded or (rarely) acute at the base, 4–6 in. long, 1½–2 in. broad, membranous, very scantily hirsute or almost glabrous above, hirsute or hispid all over, but especially along the nerves below; secondary nerves 8–11 on each side, raised and very distinct below; veins inconspicuous; petiole hispid, 2–4 lin. long. Cymes terminal, peduncled, few-flowered, very lax, scantily hispid; peduncle slender, 6–12 lin. long; bracts filiform or subulate, 3 lin. long; pedicels very slender, up to 7 lin. long. Calyx 4–5 lin. long; sepals linear, more or less hirsute on the back and along the margins, usually somewhat spreading, imbricate at the very base only. Corolla salver-shaped, puberulous without, infra-staminal part of the tube pinkish, about 5 lin. long, supra-staminal part very short, wide and shallow; lobes yellow with purple spots, produced into purple tails 5–11 lin. long; throat-scales very short, ovate, obtuse. Anthers glabrous, acute, 2 lin. long, almost wholly exerted.—Pax in Engl. Jahrb. xv. 368, not 383; Franch. in Nouv. Arch. Mus. Paris, 3 sér. v. 274, excl. the fruit; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 182; Gilg in Engl. Jahrb. xxxii. 155.

**Upper Guinea.** South Nigeria: Old Calabar, *Mann*, 2247! *Thomson*, 22! Fernando Po, *Mann*, 1444!

**Lower Guinea.** Gaboon: Munda; Sibange Farm, *Soyaux*, 55!

The fruit figured by Masters belongs to a species of *Pleioceras*; the same is evidently the case with the fruits and seeds described as those of *S. bullenianus* by Christy, New Comm. Plants and Drugs, No. 9 (1886), 62.

*S. Schlechteri*, K. Schum. in Schlechter. Westaf. Kautschuk Exped. 308 (name only), and K. Schum. & Gilg in Engl. Jahrb. xxxii. 158, collected by Schlechter (12919) between Mafura and Mundame, Cameroons, does not, judging from the description, differ from *S. bullenianus* except in the density of the indumentum.

10. ***S. gracilis***, *K. Schum. & Pax in Engl. Jahrb.* xv. 370. A climbing shrub, 40 ft. high; branches minutely puberulous when young,

soon glabrescent, scabridulous, dark reddish-brown or blackish, scantily spotted with lenticels. Leaves elliptic to oblong, more or less acuminate, rounded at the base, 2-4 in. long,  $1\frac{1}{4}$ - $1\frac{1}{2}$  in. broad, coriaceous, scabridulous with minute scattered hairs on both sides; secondary nerves 5-6 on each side, much raised and distinct below in the mature leaves; veins inconspicuous or a few of them raised and distinct; petiole 2-3 lin. long. Cymes terminal, peduncled, few- to 10-flowered, mostly lax and corymbose, puberulous; peduncle 6-12 lin. long, slender; bracts foliaceous, lanceolate to subulate, narrowed towards the base, obtuse, 3-4 lin. long; pedicels very slender, up to 8 lin. long. Calyx foliaceous, 6-7 lin. long; outer sepals generally ovate-oblong, inner linear-oblong to linear, or all more or less linear, obtuse or acute, minutely scabrid. Corolla yellow or orange with brown or purple streaks and spots, puberulous without and within; infra-staminal tube 3-4 lin. long, supra-staminal part shortly campanulate, 3-5 lin. long; lobes ovate, produced into filiform yellow tails 5-6 in. long; throat-scales ovate, obtuse, papillose,  $\frac{1}{2}$ - $\frac{3}{4}$  lin. long. Anthers included,  $1\frac{1}{2}$  lin. long, densely tomentose on the back, with a short fine point. Ovary hairy. —Franch. in *Nouv. Arch. Mus. Paris*, 3 sér. v. 277; K. Schum. in *Engl. & Prantl, Pflanzenfam.* iv. ii. 182; Gilg in *Engl. Jahrb.* xxxii. 155. *S. scaber*, Pax, l.c. 370; K. Schum. l.c. 182.

**Upper Guinea.** Lagos: Abeokuta, *Irving!* Niger Delta: Nun River, *Mann*, 499! *Barter*, 20111! Brass, *Barter*, 1867! Bonny, *Kalbreyer*, 70! South Nigeria; Old Calabar, *Robb!*

**Lower Guinea.** Gaboon: Munda; Sibange Farm, *Soyaux*, 312! Booue Falls, *Thollon*, 57.

K. Schumann and Pax state that *S. gracilis* differs from *S. scaber* in having quite glabrous branches and corollas, less prominent nerves and broader sepals, the tips of which are recurved. *Soyaux's* specimen (312) from which *S. gracilis* was described, has, however, also minutely puberulous branches and corollas. The nerves are less prominent, but this is due to the leaves being quite young, and I find the sepals so variable in *Mann's* and *Barter's* specimen that this difference also breaks down.

11. **S. Preussii**, *Engl. & Pax in Engl. Jahrb.* xv. 369. A rambling or climbing shrub, up to 12 ft. high; branches glabrous, brown or reddish-brown, dotted with white lenticels. Leaves elliptic or oblong to obovate or ovate, abruptly acuminate, rounded or acute at the base, 2-5 in. long,  $1\frac{1}{2}$ -2 in. broad, membranous, quite glabrous; secondary nerves 6-7 on each side; veins quite inconspicuous. Cymes terminal, peduncled, usually many-flowered, corymbose, minutely puberulous; peduncle from very short to  $1\frac{1}{2}$  in.; bracts foliaceous, thin, pallid, ovate to lanceolate, narrowed towards the base, obtuse or acute, 4-8 lin. long; pedicels up to 4 lin. long. Calyx foliaceous, 7-10 lin. long; outer sepals from a broad ovate base, linear-oblong or linear, inner linear-oblong or linear, glabrous. Corolla minutely pulverulent without and within, cream-coloured to orange, with purple spots and streaks in the throat and purple tails; infra-staminal part 5 lin. long, supra-staminal part campanulate, 4-5 lin. long; lobes ovate, suddenly constricted and produced into filiform tails up to 1 ft. long; throat-scales ovate,

broad, obtuse, papillose. Anthers included,  $1\frac{1}{2}$  lin. long, with a short very fine point, tomentose on the back. Ovary hairy.—Franch. in *Nouv. Arch. Mus. Paris*, 3 sér. xv. 279; K. Schum. in *Engl. & Prantl, Pflanzenfam.* iv. ii. 182, and in *Engl. Jahrb.* xxiii. 230; and in Schlechter, *Westaf. Kautschuk-Exped.* 307; Hiern in *Cat. Afr. Pl. Welw.* i. 670; De Wild. & Durand, *Contrib. Fl. Congo*, i. 41; Gilg in *Engl. Jahrb.* xxxii. 155, 159. *S. bracteatus*, De Wild. & Durand, *Contrib. Fl. Congo*, ii. 41 and *Reliq. Dewevr.* ii. 154, not of Franch.

**Upper Guinea.** Gold Coast: Aburi, *Johnson*, 150! Togo, *Baumann*, 591A! Lagos, *Ojuwaye, Milles*, 27! Otta, *Barter*, 3322! Abeokuta, *Harrison*, 6! interior, *Rowland!* Ishagamo, *Schlechter*. South Nigeria: Old Calabar, *Thomson*, 9! *Monteiro!* *Holland*, 22! 100! Cross River, at Ikorofon, *Holland*, 33! Cameroons: Johann Albrechtshöhe, *Staudt*, 664! Yaunde, *Zenker & Staudt*, 301! 667! *Zenker*, 244! and without precise locality, *Preuss*, 116! Fernando Po, *Mann*, 177!

**Lower Guinea.** Angola: Pungo Andongo; bushy places at Santo Antonio, *Welwitsch*, 5995! Golungo Alto; in woods between the River Delamboa and the Capopa spring, *Welwitsch*, 5996!

**South Central.** Congo Free State: in thickets on a humid plain by the River Congo at Bombati, near Ndobo, 1300 ft., *Thonner*. Bokakata on the River Lulunga, *Dewèvre*, 809!

A pair of follicles collected by G. Mann in Fernando Po in 1860 (about the same time as the flowering specimen No. 177, quoted above) belongs very probably to *S. Preussii*. The follicles are hornshaped with rather obtuse ends, 10 in. long,  $1\frac{1}{2}$  in. in diam., reddish-brown and smooth. The seeds are oblong-lanceolate, obtuse at the base, long acuminate, brown, downy, 5-6 lin. long; the naked foot of the awn measures  $1\frac{2}{3}$ -2 in., the plume  $\frac{3}{4}$ - $\frac{1}{4}$  in.

12. **S. Barteri**, *Franch. in Journ. de Bot.* vii. 323. A small scandent shrub; branches glabrous even when young, reddish-brown, dotted with minute lenticels. Leaves ovate to oblong, shortly acuminate, rounded at the base, 2-2 $\frac{1}{2}$  in. long, 12-16 lin. broad, membranous, firm when mature, quite glabrous; secondary nerves 5-6 on each side, faint; veins inconspicuous. Cymes terminal, peduncled, dichotomous, very loose, minutely puberulous; peduncle  $\frac{1}{4}$ -2 in. long; bracts conspicuous, foliaceous, thin, oblong or ovate from a constricted base, 5 lin. long, obtuse, crisp; pedicels up to 5 lin. long. Calyx foliaceous, 7 lin. long; sepals oblong-spathulate from a narrow base, spreading or with the tips recurved, minutely puberulous. Corolla yellow and chocolate-brown, streaked, puberulous without and within; infra-staminal part of the tube 3 $\frac{1}{2}$  lin. long, supra-staminal part campanulate, 4-4 $\frac{1}{2}$  lin. long; lobes short, ovate, produced into filiform tails 2-3 in. long; throat-scales triangular, 1-1 $\frac{1}{4}$  lin. long, puberulous. Anthers included,  $1\frac{1}{2}$  lin. long, with fine setaceous tips 1 lin. long, densely tomentose on the back. Ovary hairy.—Franch. in *Nouv. Arch. Mus. Paris*, 3 sér. v. 279, t. xi. A.; Gilg in *Engl. Jahrb.* xxxii. 155.

**Upper Guinea.** Lagos: interior, *Rowland!* Abeokuta, *Barter*, 3346!

13. **S. bracteatus**, *Franch. in Journ. de Bot.* vii. 324. A perfectly glabrous climbing shrub; branches very slender and long,

reddish-brown, scantily dotted with small lenticels. Leaves ovate-lanceolate or lanceolate, acuminate, obtuse at the base,  $2\frac{3}{4}$ –4 in. long,  $1-1\frac{1}{2}$  in. broad, papery, firm, whitish beneath; secondary nerves 6–7 on each side, faint; veins inconspicuous; petiole  $2-2\frac{1}{2}$  lin. long. Cymes terminal, dichotomous, very loose, few-flowered; branches 1–2 in. long, multi-bracteate; bracts foliaceous, whitish or yellowish, ovate,  $3-3\frac{1}{2}$  lin. long; pedicels up to 4 lin. long. Calyx foliaceous, 5–6 lin. long; sepals very unequal, outer ones ovate-lanceolate,  $3-3\frac{1}{2}$  lin. broad near the base, inner ones much narrower, all acute. Corolla white, with violet veins minutely puberulous on both sides; infra-staminal part of the tube  $3-3\frac{1}{2}$  lin. long, supra-staminal part tubular-campanulate, 4 lin. long; lobes ovate, produced into filiform tails  $4-4\frac{1}{2}$  in. long; throat-scales very short, ovate, rounded, pulverulent. Anthers included, densely pubescent on the back, distinctly acuminate. Ovary hairy. Follicles slender, 8 in. long,  $7\frac{1}{2}$  lin. thick, brown, glabrous, with oblong or linear lenticels. Seeds fusiform, scantily silky, grey, glabrescent, 6 lin. long; awn plumose almost from the base, with the plume 10 lin. long.—Franch. in *Nouv. Arch. Mus. Paris*, 3 sér. v. 280, t. xii.; Payrau, *Strophanthus*, 104–106, 162, with figs.

**Lower Guinea.** French Congo: by the River Ogowe, above Obombi, *Thollon*, 745, on rocks at Boue, *Thollon*, 744.

Gilg (in *Engl. Jahrb.* xxxii. 159) considers this as identical with *S. Preussii*. I have not seen an authentic specimen.

Franchet (in *Journ. de Bot.* viii. 204) states that Pobéguin collected this species near Grand Bassam, on the Ivory Coast; but his additional remarks make it almost certain that Pobéguin's plant belongs to a distinct species.

14. **S. erythroleucus**, *Gilg in Engl. Jahrb.* xxxii. 160. A perfectly glabrous shrub; branches climbing or pendulous, blackish-brown. Leaves more or less oblong, acutely and obliquely long acuminate, rounded at the base,  $2\frac{2}{3}-4\frac{1}{2}$  in. long,  $1\frac{1}{4}-3\frac{1}{4}$  in. broad, sub-chartaceous; secondary nerves 7–9 on each side, somewhat oblique, slightly prominent on both sides; veins loosely reticulating, inconspicuous; petiole  $1\frac{1}{2}$  lin. long. Flowers in loose 3–7-flowered cymes at the end of the branches and branchlets; peduncle 7–12 lin. long; bracts linear,  $3\frac{1}{2}-4$  lin. long,  $\frac{1}{2}-\frac{3}{4}$  lin. broad; pedicels  $\frac{1}{2}-2\frac{1}{2}$  lin. long. Calyx 5 lin. long; sepals linear or lanceolate-linear, narrow acute or obtuse. Corolla whitish, beautifully marked with red; tube narrow, cylindric to  $4\frac{1}{2}-5$  lin. from the base, then suddenly widened into a saucer-shaped portion 1 lin. high; lobes ovate-oblong, up to 3 lin. long, not quite 2 lin. broad, with filiform tails 10–11 lin. long.

**Upper Guinea.** Cameroons: Batanga, in clearings, *Dinklage*, 841, 1401!

15. **S. parviflorus**, *Franch. in Journ. de Bot.* vii. 324. A graceful, usually perfectly glabrous rambling and climbing shrub; branches very slender and long, reddish-brown; lenticels minute. Leaves oblong or obovate-oblong, abruptly acuminate (acumen up to 6 lin. long), rounded or subcordate at the base,  $2-3\frac{1}{4}$  in. long,  $1\frac{1}{4}-1\frac{1}{2}$  in.

broad, thin, membranous; secondary nerves 5-6 on each side, faint; veins quite inconspicuous; petiole almost 0 or up to 1 lin. long. Cymes terminal, peduncled, few-flowered; peduncle 4-10 lin. long, slender; bracts foliaceous, linear, obtuse, up to 4 lin. long; pedicels slender, up to 4 lin. long, sometimes pubescent. Calyx foliaceous, spreading, 5-6 lin. long; sepals linear-oblong or linear, outer ones broader, more or less obtuse. Corolla white turning yellow, with purple streaks in the throat; infra-staminal part of the tube 4-5 lin. long, supra-staminal part very suddenly widened, wide-cupshaped, 2 lin. long; lobes triangular, 2 lin. long, produced into filiform tails 2 in. long, yellowish-green; throat-scales triangular or linear-obtuse, 1-1½ lin. long, scarlet. Anthers included, almost reaching the mouth, glabrous, mucronate. Ovary glabrous.—Franch. in *Nouv. Arch. Mus. Paris*, 3 sér. v. 281; Hiern in *Cat. Afr. Pl. Welw.* i. 670; De Wild. & Durand, *Contrib. Fl. Congo*, i. 41; Gilg in *Engl. Jahrb.* xxxii. 155. *S. Dewevrei*, De Wild. in *De Wild. & Durand, Contrib. Fl. Congo*, ii. 40 and *Reliq. Dewevr.* 154; Gilg l.c.

**Lower Guinea.** Angola: Golungo Alto; Queta Mountains, rare, *Welwitsch*, 5994!

**South Central.** Congo Free State: Luebo, on the Lulua River, *Laurent!* Nyangwe, on the River Lualaba, *Dewèvre*, 1058.

16. **S. arnoldianus**, *De Wild. & Durand in Comptes-rendus Soc. Bot. Bely.* xxxviii. 206. A rambling, perfectly glabrous shrub; branches slender, dark reddish-brown, sparingly lenticellate. Leaves ovate or broad-elliptic, abruptly and more or less obtusely acuminate, rounded at the base, 2¾-3½ in. long, 1½-2¾ in. broad, chartaceous; secondary nerves 4 on each side; petiole 2½ lin. long. Inflorescences terminal, dichotomous; bracts linear, membranous, 5-6 lin. long, less than ½ lin. broad; pedicels slender, 7-10 lin. long. Calyx 2½ lin. long; sepals subsimilar, lanceolate, ¾-1 lin. broad, acute. Corolla very minutely puberulous on both sides; tube funnel-shaped, 3-3½ lin. long; lobes ovate, 1¾-2 lin. long, abruptly produced into filiform tails 2-2¾ in. long; throat-scales ovate, rotundate, very short. Anthers acuminate, 1½ lin. long, glabrous on the back. Follicles brown, lenticellate. Seeds ovate-elliptic, brown, silky, 6 lin. long, 2 lin. broad.—Gilg in *Engl. Jahrb.* xxxii. 156.

**Lower Guinea.** Lower Congo: Kitobola, in the Cataract district, *Kindt*.

17. **S. wildemanianus**, *Gilg in Engl. Jahrb.* xxxii. 159. A perfectly glabrous climbing shrub; branches slender. Leaves oblong, narrowly acutely and obliquely long acuminate, rounded at the base, 3½-4 in. long, 1½ in. broad, papery; secondary nerves 11-12 on each side, sub-horizontal, like the loosely reticulating veins slightly prominent on both sides; petiole 4-4½ lin. long. Flowers (only known in the young state) in loose, few-flowered cymes on the ends of the branches; peduncle and pedicels slender, the latter 4-4½ lin. long; bracts small, narrow, linear. Calyx 3½-4 lin. long; sepals linear, very acute,

yellowish,  $\frac{1}{2}$  lin. broad. Corolla (in bud) with the tails not quite 1 in. long; tube shorter than the calyx.

**Lower Guinea.** Lower Congo: Kimuenza, Gillet, 2083.

Closely allied, according to Gilg, to *S. arnoldianus*.

18. **S. sarmentosus**, A. P. DC. in Bull. Soc. Philom. Paris, iii. 123, t. viii. fig. 1. A tall, climbing shrub, quite glabrous; branches brown, rough, conspicuously dotted with lenticels. Leaves opposite or ternate, ovate to oblong, more or less acuminate, acute or obtuse at the base, 2-4 lin. long,  $1\frac{1}{4}$ - $2\frac{1}{4}$  lin. broad, firm, papery; secondary nerves 4-5 on each side, faint in young, prominent below in old leaves; veins rather distinct; petiole 2-4 lin. long. Cymes terminal, sessile, few- to 1-flowered on short lateral branches, which are for the most part leafless, or with young leaves or young leafy shoots; bracts ovate or oblong, 2-4 lin. long, acute or obtuse; pedicels very short. Calyx 4-7 lin. long; sepals lanceolate or oblong-lanceolate, acute or acuminate. Corolla white, with pink marks inside, glabrous without, minutely puberulous within; infra-staminal part of the tube 3-3 $\frac{1}{2}$  lin. long, supra-staminal part wide, funnel-shaped or campanulate, 6-9 lin. long; lobes ovate or lanceolate, produced into linear tails 2-2 $\frac{1}{2}$  in. long; throat-scales purple, subulate from a broader base, 3-4 lin. long. Anthers 2 $\frac{1}{2}$  lin. long, terminating in a bristle about  $\frac{3}{4}$  lin. long, glabrous. Follicles spreading horizontally, spindle-shaped, 8-12 in. long, 10 lin. thick, glabrous, almost smooth above, with lenticels in the lower part. Seeds spindle-shaped, brown, silky, 5-6 lin. long; awn 2-3 in. long, naked for  $\frac{3}{4}$ -2 in., hairs up to  $1\frac{1}{4}$  in. long.—A. P. DC. in Ann. Mus. Hist. Nat. Paris, i. 410, t. 27, fig. 1, and *Strophanthus*, ii. 2, 3, t. 1; Poiret in Dict. Sc. Nat. li. 149; A. DC. Prod. viii. 418; Benth. in Hook. Niger Flora, 451; Christy, New Comm. Plants and Drugs, No. 10 (1887), 27; Pax in Engl. Jahrb. xv. 374 (vars. *eusarmentosus* and *pendulus*); Franch. in Nouv. Arch. Mus. Paris, 3 sér. v. 282. and in Journ. de Bot. viii. 204; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 182 partly, and in Engl. Pf. Ost-Afr. C. 319; L. Planch. Prod. Apocyn. 79; Durand & Schinz, Études Fl. Congo, i. 191; De Wild. & Durand, Contrib. Fl. Congo, ii. 40; K. Schum. in Schlechter, Westafr. Kautschuk-Exped. 307; Payrau, *Strophanthus*, 85-87, 163, with figs.; Gilg in Engl. Jahrb. xxxii. 156, 161. Var. *major*, Dewèvre in Journ. Pharm. Anvers, 1894, 5-7 (of abstract). *S. Senegambie*, A. DC. Prod. viii. 418. *S. pendulus*, Kumm. & Hook. in Gray & Doehard, Trav. West Afr. 392, t. C.; A. DC. Prod. viii. 419; Benth. in Hook. Niger Fl. 451. *S. laurifolius*, Pax in Engl. Jahrb. xv. 375 (Perrottet's plant, also of DC. ?); Benth. in Hook. Niger Fl. 451; K. Schum. in Engl. & Prantl. Pflanzenfam. iv. ii. 182. *S. Paroissei*, Franch. in Journ. de Bot. vii. 320, and in Nouv. Arch. Mus. Paris, 3 sér. v. 290, t. xvi.; L. Planch. Prod. Apocyn. 58, 83; Payrau, *Strophanthus*, 88-91, 163, with figs.; De Wild. in Bull. Herb. Boiss. 2 sér. i. 35.

**Upper Guinea.** Senegambia: Richard Toll, *Leprieur*; Cayor, *Leprieur*, and without precise locality, *Leprieur*, 457, 467. *Heudelot*, 337! *Boivin*! Gambia,

*Skues! Ingram! Brown-Lester, 36! Perrottet! French Guinea: Labaya, Paroisse. Sierra Leone: Scott-Elliott, 4512! 5657! Kirk, 39! Don! Sneathman! Hutton! Whitfield! Barter! Mann, 3! Ivory Coast: Grand Bassam, Pobéguin. Gold Coast: Aburi Hills, Johnson, 288! Ashanti: Akroful, Cummins, 23! Togo, Baumann, 93! Agone Mountains, Schlechter, 12962! Lagos: Ebu Metta, Millen, 25! Abeokuta, Irving! Ikirun, Millson! and without precise locality, Moloney! Niger Protectorate: Nupe, Barter, 1325! Old Calabar, Mann, 2246! Thomson, 16!*

**Lower Guinea.** Lower Congo: Kisantu, Gillet; near Lemba, Demeuse, 194! (exclusive of the seeds?), and without precise locality, Laurent.

19. **S. ogovensis**, *Franch. in Journ. de Bot.* vii. 324. A rambling or climbing shrub, quite glabrous; branches brown, dotted with lenticels, the flowering ones rather stout. Leaves mostly ternate, elliptic or ovate-lanceolate, acuminate, obtuse at the base,  $3-3\frac{1}{2}$  in. long,  $1\frac{1}{4}-2$  in. broad, firm, papery, glossy; secondary nerves 5-6 on each side, raised below; reticulation distinct; petiole 7-10 lin. long. Cymes terminal, few- to 1-flowered, subsessile, produced with the mature leaves; bracts numerous, ovate or ovate-lanceolate, acuminate. Calyx 5-6 lin. long; sepals ovate or ovate-lanceolate, acuminate. Corolla large, purple without, whitish within; infra-staminal part of the tube 3-4 lin. long, supra-staminal part wide, funnel-shaped,  $\frac{3}{4}-1$  in. long; lobes ovate gradually passing into a linear tail,  $2-2\frac{1}{2}$  in. long; throat-scales lanceolate-subulate, glabrous, 3 lin. long. Anthers included, glabrous, shortly acuminate. Ovary glabrous.—*Franch. in Nouv. Arch. Mus. Paris, 3 sér. v. 284, t. xv.; Payrau, Strophanthus, 131.*

**Lower Guinea.** French Congo: by the Boue Cataracts, on the River Ogowe, Thollon, 144, 746.

Gilg, in *Engl. Jahrb.* xxxii. 162, considers *S. ogovensis* as identical with the preceding species.

20. **S. verrucosus**, *Stapp*. An erect shrub, 9-10 ft. high, quite glabrous; branches brown or dark grey, dotted with lenticels, more or less rough, with a ring of large thick corky triangular protuberances or ridges below the nodes when old. Leaves ovate to elliptic, acuminate, obtuse at the base,  $2\frac{1}{4}-2\frac{3}{4}$  in. long,  $1-1\frac{3}{4}$  in. broad, firmly membranous; secondary nerves 3-5 on each side, faint; reticulation rather obscure; petiole 4-6 lin. long. Cymes terminal or pseudo-axillary, on leafy branches, subsessile, few- to 1-flowered; bracts subulate, 2 lin. long; pedicels up to  $2\frac{1}{2}$  lin. long. Calyx 5-6 lin. long; sepals subulate-acuminate from a broader base, spreading or with the tips recurved when in flower. Corolla wide, funnel-shaped, glabrous or minutely puberulous within; infra-staminal part of the tube 2-3 lin. long, supra-staminal part 7-10 lin. long; lobes ovate or lanceolate, produced into filiform tails,  $3\frac{1}{2}-5\frac{1}{2}$  in. long; throat-scales subulate from a triangular base, 3 lin. long. Anthers included, glabrous, 3 lin. long, produced into a fine bristle, not quite a line long. Ovary glabrous.—*S. petersianus*, var. *grandiflorus*, N. E. Br. in *Kew Bulletin*, 1892, 126 (excluding the Delagoa Bay plant). *S. sarmentosus*, K. Schum. in *Engl.*

Pfl. Ost-Afr. C. 319 partly. *S. sarmentosus*, var. *verrucosus*, Pax in Engl. Jahrb. xv. 374; Franch. in Nouv. Arch. Mus. Paris, 3 sér. v. 284. *S. grandiflorus*, Gilg in Engl. Jahrb. xxxii. 156, 161 partly.

**Nile Land.** British East Africa: near Mombasa, *Hildebrandt*, 1976!

**Mozamb. Dist.** German East Africa: Usaramo; Dar es Salaam, *Goetze*, 2! Zanguebar, *Kirk*!

*S. petersianus*, var. *grandiflorus*, was based in the first place on specimens collected by Monteiro in Delagoa Bay. They at least suggested the name, and a plant raised from seeds of the same origin was subsequently figured in Bot. Mag. t. 7390 as representing this variety. Unfortunately other specimens, some of which were described simultaneously and independently by Pax as *S. sarmentosus*, var. *verrucosus*, were mixed up with the Delagoa plant. I agree with Gilg in considering Pax's variety *verrucosus* as specifically distinct from *S. sarmentosus*; but it differs just as much from the Delagoa plant, for which the name *grandiflorus* may appropriately be retained, designating it as a distinct species.

21. **S. petersianus**, *Klotzsch* in *Peters, Reise Mossamb. Bot.* 276. A much branched glabrous shrub; branches brown, dotted all over with whitish lenticels. Leaves ovate to rotundate-ovate, more or less acuminate, rounded at the base, 1–2½ in. long, ¾–1⅔ in. broad, papery, firm; secondary nerves about 5–6 on each side, like the veins very faint; petiole 2–2½ lin. long. Cymes terminal on short lateral branches; produced with the mature or the young leaves, sessile, few to 1-flowered; bracts ovate-lanceolate, 2–3 lin. long; pedicels short. Calyx 3½–7 lin. long; sepals lanceolate, acute. Corolla glabrous without, puberulous within; infra-staminal part of the tube 2 lin. long, supra-staminal part wide, funnel-shaped, white, 5–6 lin. long; lobes attenuate from an ovate or lanceolate base into linear lurid-purple tails, total length 2–3 in.; throat-scales subulate, 2–3 lin. long. Anthers terminating in a long fine point.—Pax in Engl. Jahrb. xv. 375; Franch. in Nouv. Arch. Mus. Paris, 3 sér. v. 290; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 182, and in Engl. Pfl. Ost-Afr. C. 319; Gilg in Engl. Jahrb. xxxii. 156.

**Mozamb. Dist.** Portuguese East Africa: Lower Zambesi, *Tete*, *Kirk*! *Peters*! British Central Africa: Nyasaland; Chiromo, *Scott-Elliott*, 2793! and without precise locality, *Buchanan*, 40!

22. **S. Courmonti**, *Sacleux* in *Journ. de Bot.* vii. 322. A scrambling perfectly glabrous shrub; branches reddish-brown, frequently dotted with and rough from whitish lenticels, with a ring of large or small corky protuberances at the nodes when old. Leaves elliptic or oblong to ovate and obovate, shortly or obscurely acuminate, obtuse or acute at the base, 2½–3½ in. long, 1¼–1¾ in. broad, subcoriaceous when mature; secondary nerves about 5 on each side, very oblique and like the reticulation faint, though mostly distinct; petiole up to 5 lin. long. Cymes terminal, sessile, 3–1-flowered; bracts lanceolate, small, very often quite suppressed; pedicels 2–3 lin. long. Calyx 2½–3½ lin. long; sepals oblong to lanceolate, acute, subcarinate on the back, scarious

along the margin. Corolla large, violet without, white, tinged with violet within, scales yellow; infra-staminal part of the tube 4-5 lin. long, gradually widened from the base, supra-staminal part funnel-shaped, wide, up to 1 in. long; lobes ovate-lanceolate, acute, not tailed,  $1\frac{1}{4}$ - $1\frac{3}{4}$  in. long; throat-scales lanceolate or subulate from a broader base, 2-3 lin. long. Anthers glabrous, tapering into a fine point,  $3\frac{1}{2}$  lin. long. Follicles 10 in. long, tapering almost from the base, not rostrate, very woody. Seeds linear-oblong, greyish silky, 6 lin. long; awn naked for about 15 lin., plume 2- $2\frac{1}{2}$  in. long.—Franch. in Arch. Nouv. Mus. Paris, 3 sér. v. 286, and in Bull. Soc. Linn. Paris, 2 sér. i. 4; K. Schum. in Engl. Pfl. Ost-Afr. C. 319 and in Engl. Jahrb. xxviii. 453; Payrau, *Strophanthus*, 92, 93, 162, with figs.; Holmes in Pharm. Journ. xii. (1901), 486-489, fig. 1-7 (including vars. *Kirkii* and *fallax*); Gilg in Engl. Jahrb. xxxii. 157.

**Mozamb. Dist.** German East Africa: Usambara; Tanga, *Heinsen*, 131! Nguru district, *Sacleux*; Uhehe; Ruaha River, 2000 ft., *Goetze*, 453! Portuguese East Africa: Yao Forest, *Steere*! Morambala Mountain, *Waller*! British Central Africa: Nyasaland; Zomba, *Manning*, 78! Lukoma (Likoma Island?), *Bellingham*! Shire Valley, *Waller*! and without precise locality, *Buchanan*, 1219! 1355! Rhodesia: Batoka Country; Manyorene Hill, *Kirk*!

23. **S. ecaudatus**, *Rolfe* in *Bolet. Soc. Brot.* xi. 85. A climbing shrub; branches minutely puberulous when quite young, soon glabrescent, dark reddish-brown, rough with often very numerous lenticels. Leaves obovate to oblanceolate-oblong or lanceolate, very shortly acuminate, cuspidate or acute, acute at the base,  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long, 3-8 lin. broad; margins wavy, coriaceous, glabrous, very pale beneath when young; secondary nerves 5-6 on each side, faint, often inconspicuous; veins inconspicuous; petiole 1-2 lin. long. Cymes generally reduced to 1-2 flowers, terminal on leafy branches, sessile; bracts lanceolate-subulate, 3 lin. long, early deciduous; pedicels finely puberulous up to 3 lin. long. Calyx 5-7 lin. long; sepals oblong, acuminate, with generally recurved tips and often wavy margins, rather firm. Corolla white and glabrous outside, pink inside; infra-staminal part of tube 3 lin. long, supra-staminal part of tube campanulate or widely funnel-shaped, 7 lin. long, more or less puberulous within; lobes ovate-oblong, acuminate, 8-9 lin. long; throat-scales filiform from a triangular base, 5-7 lin. long, deep purple. Anthers glabrous, acuminate, terminating in a fine bristly point,  $3\frac{1}{2}$  lin. long. Follicles 7 in. long, attenuate almost from the base, obtuse, densely verrucose with numerous lenticels. Seeds linear oblong, 5 lin. long, densely silky, yellowish; awn naked for  $1\frac{1}{4}$ - $1\frac{1}{2}$  in., plume  $1\frac{1}{2}$  in. long.—Hiern in Cat. Afr. Pl. Welw. i. 671; Payrau, *Strophanthus*, 94-96, 162, with figs. *S. Welwitschii*, K. Schum. in Engl. & Prantl, Pflanzenfam. Ergänz. Heft, i. 59; Gilg in Engl. Jahrb. xxxii. 157, 162. *Zygonerion Welwitschii*, Bail. in Bull. Soc. Linn. Paris, i. 758.

**Lower Guinea.** Angola: between Pungo Andongo and the Cuanza, *Welwitsch*, 5991 low forest between Cazella and Luxillo, *Welwitsch*, 5926! Malange,

*Marques!* Huilla; Morro de Lopollo, *Welwitsch*, 5990! Chitanda River, between Goudkoppje and Katzele, 4000 ft., *Baum*, 177!

**Mozamb. Dist.** British Central Africa: Urungu; Stevenson Road, *Carson*, in *Herb. Scott-Elliot*, 8316!

A specimen from Fwambo collected by Carson in 1889, differs from 8316 of Scott-Elliot's collection in having smaller flowers on long slender shoots, which spring direct from the ground. There is no other difference, and I suppose it represents merely a starved state.

24. **S. Schuchardti**, *Pax in Engl. Jahrb.* xv. 371. A shrub 4-5 ft. high, with a hemispheric top, very much branched; branches tomentose when young, dark brown, dotted with lenticels. Leaves ovate, obtuse or very obscurely acuminate, truncate or subcordate at the base, about 1-1 $\frac{1}{4}$  in. long,  $\frac{3}{4}$ -1 in. broad, thick, softly tomentose on both sides; secondary nerves 5-6 on each side, faint; veins inconspicuous; petiole 1-2 lin. long. Cymes terminal, sessile, few- to 1-flowered, tomentose; bracts lanceolate, 1-2 lin. long, early deciduous; pedicels up to 6 lin. long. Calyx tomentose, 2 $\frac{1}{2}$ -3 lin. long; sepals lanceolate or linear-oblong, obtuse or subacute. Corolla bright purple outside; limb orange inside, finely puberulous without; infra-staminal part of tube 1 $\frac{1}{2}$ -2 lin. long, supra-staminal part tubular-campanulate, 4-5 lin. long; lobes caudate-linear from an ovate base, 9 lin. long; throat-scales small, lanceolate-linear, glabrous. Anthers shortly acuminate. Ovary hairy.—*Franch.* in *Nouv. Arch. Mus. Paris*, 3 sér. v. 276; *K. Schum.* in *Engl. & Prantl, Pflanzenfam.* iv. ii. 182; *Hiern* in *Cat. Afr. Pl. Welw.* i. 671; *Payrau*, *Strophanthus*, 97-100, 163, with figs.; *Gilg* in *Engl. Jahrb.* xxxii. 154.

**Lower Guinea.** Angola: Huilla; Lopollo and between Ferrao da Sola and Nene, *Welwitsch*, 5992!

*Payrau* describes and figures the seeds as lanceolate-oblong, rounded at the base, gradually tapering at the upper end, slightly reddish-drab, velvety, 5 $\frac{1}{2}$ -6 $\frac{1}{2}$  lin. long, with an awn 5 in. long of which one half or slightly more forms the plume.

25. **S. Demeusei**, *A. Dewèvre in Journ. Pharm. Anvers*, 1894, 8 (*of the reprint*). A climber, quite glabrous (except the corolla); branches brown, dotted with lenticels. Leaves ovate, 3 $\frac{1}{2}$ -4 in. long, 1 $\frac{1}{2}$ -2 $\frac{1}{4}$  in. broad, rounded at the base, subacuminate, thin, membranous; secondary nerves 5-6 on each side, not raised; reticulation faint; petiole 4-6 lin. long. Cymes terminal (or subterminal?) on lateral branches, peduncled, 2-4-flowered; peduncle slender, often curved, 3-4 lin. long; bracts small, early deciduous; pedicels 2-4 lin. long. Calyx 2-2 $\frac{1}{2}$  lin. long; sepals ovate, subacuminate. Corolla puberulous outside; infra-staminal part of tube 2 lin. long, supra-staminal part tubular, 4 lin. long; lobes attenuate into linear tails from a lanceolate base, 1-1 $\frac{1}{2}$  in. long; throat-scales linear from a broader base, 1 lin. long.—*Durand & Schinz*, *Études Fl. Congo*, i. 191; *Gilg* in *Jahrb.* xxxii. 156.

**Lower Guinea.** Congo Free State: Buana, 1960 ft., *Demeuse*, 518!

Very closely allied to *S. intermedius*, *Pax*, and perhaps not specifically distinct.

26. **S. intermedius**, Pax in *Engl. Jahrb.* xv. 375. An arboreal shrub or a climber, quite glabrous (except the corolla); branches reddish-brown, dotted with minute lenticels. Leaves ovate, 2-3 in. long,  $1\frac{1}{4}$ - $1\frac{1}{2}$  in. broad, rounded or subacute at the base, acuminate, thin, membranous; secondary nerves 5-6 on each side, not raised; reticulation faint; petiole 4 lin. long. Cymes terminal, subsessile, few- to 1-flowered; bracts early deciduous; pedicels 3-4 lin. long. Calyx  $2\frac{1}{2}$  lin. long; sepals ovate, acuminate. Corolla deep purple and minutely puberulous outside, orange inside; infra-staminal part of tube  $1\frac{1}{2}$ -2 lin. long, supra-staminal part wide, tubular, 5-6 lin. long; lobes attenuate from a lanceolate base into linear tails,  $1\frac{1}{2}$ - $1\frac{3}{4}$  in. long; throat-scales linear from a broader base, 1 lin. long. Follicles woody, conical, obtuse (*Welwitsch*).—Franch. in *Nouv. Arch. Mus. Paris*, 3 sér. v. 287; Hiern in *Cat. Afr. Pl. Welw.* i. 671; Gilg in *Engl. Jahrb.* xxxii. 156.

**Lower Guinea.** Angola: Golungo Alto; Mountains of Alto Queta, *Welwitsch*, 5999!

27. **S. congoensis**, Franch. in *Journ. de Bot.* vii. 324. A much branched small tree, quite glabrous; branches slender, brown, often once or twice forked. Leaves ovate or ovate-lanceolate,  $1\frac{1}{2}$ -3 in. long,  $1$ - $1\frac{3}{4}$  in. broad, rounded or subcordate at the base, shortly and obtusely acuminate, thin, but rather firm; secondary nerves 4 on each side; veins inconspicuous. Cymes terminal, shortly peduncled, few-flowered; bracts scarious, ovate, acuminate; pedicels short. Calyx  $1\frac{1}{2}$ -2 lin. long; sepals ovate, acute. Corolla glabrous; infra-staminal part of tube 2 lin. long, supra-staminal part tubular-campanulate,  $4\frac{1}{2}$ - $5\frac{1}{2}$  lin. long; lobes ovate, suddenly constricted into a linear tail 5-6 lin. long; throat-scales subulate,  $1\frac{1}{2}$  lin. long. Anthers glabrous, shortly acuminate. Ovary glabrous.—Franch. in *Nouv. Arch. Mus. Paris*, 3 sér. v. 288; Payrau, *Strophanthus*, 131, with fig.; Gilg in *Engl. Jahrb.* xxxii. 156.

**Lower Guinea.** French Congo: by the River Ogoe, *Thollon*.

28. **S. amboensis**, *Engl. & Pax in Engl. Jahrb.* xv. 376. A very much branched glabrous shrub; old branches grey, rough, flowering ones often repeatedly forked, short, brown, dotted with small lenticels. Leaves ovate,  $1\frac{1}{4}$ - $1\frac{3}{4}$  in. long,  $\frac{1}{2}$ - $\frac{3}{4}$  in. broad, rounded or acute at the base, acuminate, firm, membranous; secondary nerves about 5 on each side, like the veins faint, but rather distinct; petiole 2 lin. long. Cymes terminal, often on very short lateral branches, shortly peduncled or subsessile, few- to 1-flowered; bracts small, lanceolate; pedicels up to 3 lin. long. Calyx 2- $2\frac{1}{2}$  lin. long; segments oblong-lanceolate. Corolla glabrous without; infra-staminal part of tube  $2\frac{1}{2}$  lin. long, brownish-red, gradually passing into the funnel-shaped or subtubular supra-staminal part 6-8 lin. long; lobes lanceolate, attenuate into linear bright yellow tails, 2 in. long; throat-scales short, linear-oblong, puberulous. Anthers glabrous, tapering into a long fine

point,  $3-3\frac{1}{2}$  lin. long. Ovary glabrous.—Franch. in Nouv. Arch. Mus. Paris, 3 sér. v. 289; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 182. *S. petersianus*, var. *amboensis*, Schinz in Verhandl. Bot. Ver. Brandenb. xxx. 259; Gilg in Engl. Jahrb. xxxii. 156.

**Lower Guinea.** Angola: in forests by the River Cunene, *Schinz!* near Chihinde, 4000 ft., *Baum*, 59! and without precise locality, *Herb. Ferreira*, 459! German South-west Africa: Amboland, *Schinz*; Hereroland, *Gürick*, 25.

*Imperfectly known species.*

29. **S. asper**, *Oliv. ex L. Planch. Prod. Apocyn.* 61. Seeds whitish, hairy all over (hairs 1 lin. long), 8 lin. long, obtuse at the base; awn  $2\frac{1}{2}$  in. long, naked for  $\frac{1}{2}$  in. from the base, hairs of the plume short, erect.—*S. laineux du Zambèze*, Blondel, *Stroph. du Comm.* 51; Pax in Engl. Jahrb. xv. 384; Payrau, *Strophanthus*, 101-103, with figs.

**Mozamb. Dist.** Zambesi Region, *Elborne*.

Pax suggests that the seeds might belong to *S. petersianus*.

30. **S. minor**, *Christy ex Pax in Engl. Jahrb.* xv. 381, 384, 386. Follicles very slender,  $1-1\frac{2}{3}$  ft. long,  $7\frac{1}{2}$  lin. in diam.; light brown. Seeds 4-7 lin. long or longer, obtuse at the base, brown to greenish, pale or dark, minutely pubescent, at length glabrous; awn naked for  $1\frac{3}{4}$  in. from the base; plumose part 2 in. long, hairs of plume 1 in. long.—Franch. in Nouv. Arch. Mus. Paris, 3 sér. v. 252; L. Planch. *Prod. Apoc.* 44-49, figs. 3, 4, 5; Payrau, *Strophanthus*, 82-84. *S. Niger*, Christy in Pharm. Journ. and Trans. xx. (1889), 318. *S. du Niger*, Blondel, *Stroph. du Comm.* 26.

**Upper Guinea.** Niger Territory, Gold Coast?

Pax suggests that *S. minor* is identical with *S. scaber*.

31. **S. mirabilis**, *Gilg in Engl. Jahrb.* xxxii. 159. A shrub,  $4\frac{1}{2}-6$  ft. high; branches divaricate, numerous, brown and sparingly crispo-pubescent when young, soon glabrescent, at length greyish-brown; internodes very short. Leaves oblong, rounded at the tips, acute at the base,  $7\frac{1}{2}-10$  lin. long,  $2\frac{1}{2}-4$  lin. broad, more or less chartaceous, minutely crispo-puberulous when quite young, soon sparingly scabridulous or quite glabrous; nerves and veins very inconspicuous; petiole  $\frac{1}{2}-\frac{3}{4}$  lin. long. Flowers solitary on the ends of the branches and branchlets; bracts  $1\frac{1}{2}$  lin. long, lanceolate or linear-lanceolate; pedicels very short. Calyx 4- $4\frac{1}{2}$  lin. long, densely covered outside with minute greyish hairs; sepals foliaceous, spatulate-oblong, obtuse. Corolla-tube funnel-shaped to campanulate, sparingly and minutely pubescent,  $5\frac{1}{2}$  lin. long, 3 lin. wide at the mouth; lobes broad-ovate,  $2\frac{1}{2}-3$  lin. long, gradually passing into the linear somewhat fleshy recurved tails which are  $1\frac{1}{4}-1\frac{1}{2}$  in. long; throat-scales fleshy, linear,  $1\frac{1}{2}-2$  lin. long. Follicles narrow, 7-10 in. long,  $5-6\frac{1}{2}$  lin. thick, streaked with white; tips knob-shaped.

**Nile Land.** Galla Country: Gave Libin, near Wonte and Anole, near the Ganale River, 500-600 ft., in dense bush, *Ellenbeck*, 2205!

Gilg says that this species occupies an isolated position in the genus. Not having seen it myself when the key was drawn up, I placed the species here. Since then I have been able to examine an authentic specimen, and have no doubt that it comes nearest to *S. gracilis*.

32. **S. sp.**, *Heckel in Ann. Inst. Colon. Marseille*, iv. 201-208, with plate. Follicles cylindric, obtuse, subemarginate, 6 in. long, 1-1¼ in. in diam. when closed, almost smooth. Seeds oblong, shortly acuminate, velvety, reddish-brown, 6-7 lin. long, 2-2½ lin. broad; awn 1¼-1½ in. long, naked part 2-2½ lin. long; hairs 1¼-1½ in. long.—*Strophanthus d'Autran*, Heckel, l.c.; Payrau, *Strophanthus*, 109-110, with figs.

**Lower Guinea.** Gaboon: Guégué, near Libreville, *Autran*.

33. **S. sp.**, *Pax in Engl. Jahrb.* xv. 384. Follicles 7-10 in. long, 2¼ in. broad, greyish-brown to brown, very hard. Seeds brown, obtuse at the base or subobtuse, 6-6½ lin. long; awn 2½-2¾ in. long, the naked part longer than the plumose.—*Kurzfrüchtiger Strophanthus*, Pax, l.c.

A drug imported, according to Pax, from West Africa, Lake Victoria, Kilimanjaro and the Mozambique Coast.

34. **S. sp.**, *Pax in Engl. Jahrb.* xv. 385. Follicles 10-12 in. long, slender, brownish, moderately hard. Seeds greenish-brown, very acute at the base, 10 lin. long; awn plumose from the base, 10 lin. long; hairs 10-15 lin. long.—*Senegal Strophanthus*, Pax, l.c.

**Upper Guinea.** Upper Senegal.

35. **S. sp.**, *Helbing in Pharm. Journ.* xvii. (1887). 748. Seeds similar to those of *S. Kombe*, but more densely covered with looser, longer, almost white silky hairs.—“*White Strophanthus*,” Helbing, l.c.

**Mozamb. Dist.** Shire Highlands.

### 31. **ISONEMA**, R. Br.; Benth. et Hook. f. *Gen. Pl.* ii. 712.

Calyx small, subcoriaceous; sepals 5, almost free, imbricate, acute, alternating with large 2-3-partite glands. Corolla salver-shaped; tube naked at the mouth, cylindric; lobes with a lateral crisp lobe on the inner (left) side, inflexed in bud, overlapping to the right. Stamens inserted near the mouth of the corolla; anthers conniving in a cone, exserted, lanceolate, sagittate, wings thin with thick incurved margins; tails slender, acute; foot of connective rather flat with a dense tuft of hairs in the centre; filaments filiform, short, passing into long thin much projecting hairy ridges on the corolla-tube. Disc 0. Carpels 2, free; style filiform, long; stigma capitate, 5-grooved, viscous, with a reflexed frill at the base, and a small 2-lobed apiculus, agglutinated to the hair-tuft of the anthers; ovules numerous, multiseriate. Mericarps follicular, cylindric, slender, divaricate; placenta much intruding.

Seeds narrow, linear-oblong, compressed, with an apical and a smaller basal tuft of hairs, not known in the mature state (immature embryo with flat cotyledons).—Glabrous or hairy climbing shrubs. Leaves opposite; secondary nerves conspicuously looping below the margin, distant; axillary stipules 0; axillary glands 0 or obscure. Flowers in terminal pyramidal panicles, middle-sized.

Species 3, endemic.

Young branches rusty tomentose; leaves hirsute below.

Corolla-tube funnel-shaped; ovary nearly quite glabrous . . . . .

1. *I. infundibuliflorum*.

Corolla-tube cylindrical; ovary tomentose . . . . .

2. *I. Smeathmanni*.

Young branches minutely puberulous; leaves glabrous . . . . .

3. *I. Buchholzii*.

1. ***I. infundibuliflorum***, Stapf in *Kew Bulletin*, 1898, 306. A small shrub, about 3 ft. high; young branches brownish tomentose, later on glabrescent, at length blackish. Leaves oblong, acutely acuminate, rounded at the base, 3–4 in. long,  $1\frac{1}{4}$ –2 in. broad, coriaceous, glabrous above, sparingly hirsute on the nerves below; secondary nerves 5–6 on each side, prominent below; petiole 2 lin. long. Panicles solitary or 3 from the branch-tops, 1– $1\frac{1}{2}$  in. long, short, rufo-tomentose; lower branches with 3–6 flowers; upper more reduced; peduncle  $\frac{1}{2}$ – $1\frac{1}{4}$  in. long; bracts minute, caducous; pedicels 2 lin. long. Calyx  $1\frac{1}{2}$  lin. long, puberulous; sepals ovate, acuminate. Corolla red with yellow borders, minutely tomentose without; tube funnel-shaped, 4 lin. long; lobes 3 lin. long, lateral appendix large. Stamens  $3\frac{1}{2}$  lin. long. Ovary tops sparingly hairy.—Stapf in De Wild. & Durand, *Contrib. Fl. Congo* i. 40; De Wild. & Durand, *Illustr. Fl. Congo*, i. v. t. lii.; K. Schum. in Schlechter, *Westafr. Kautschuk-Exped.* 308; De Wild. & Durand, *Reliq. Dewevr. in Ann. Mus. Congo, Bot.* 3 sér., fasc. ii. 154.

**South Central.** Congo Free State: Equateur (Equatorville?), Dewèvre, 554! Coquillatville, Schlechter, 12602.

2. ***I. Smeathmanni***, Roem. & Schultes, *Syst. Veg.* iv. 401. A more or less hairy climber; young branches rusty tomentose, ultimately glabrate and blackish, terete. Leaves oblong, cuspidate or subacuminate, rounded or very slightly cordate at the base, generally 3–4 in. long,  $1\frac{1}{4}$ – $1\frac{3}{4}$  in. broad, coriaceous, hairy on the midrib above, more or less hirsute on the nerves and often between them below, at length often glabrescent; secondary nerves about 6 on each side, much raised below; petiole  $\frac{1}{2}$ –3 lin. long. Panicles narrow, stiff, rusty tomentose; peduncle rather stout, 1– $1\frac{1}{2}$  in. long; bracts small, ovate or lanceolate, acuminate; pedicels from very short to 3 lin. long. Calyx 1 lin. long; sepals broad, ovate, acute, pubescent. Corolla reddish, pubescent outside; tube cylindrical, 4 lin. long; lobes oblong, 3 lin. long; lateral appendix small. Anthers  $1\frac{1}{2}$  lin. long. Ovary tomentose. Follicles velvety, yellowish-brown, 5–6 in. long. Seeds 7 lin. long; apical tuft 2 in. long,

yellowish-brown.—A. DC. Prod. viii. 415; Benth. in Hook. Niger Fl. 450; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 184, fig. 61, E.

**Upper Guinea.** Senegambia, *Heudelot*, 912! Samu Country, *Scott-Elliott*, 4305! Sierra Leone: Bagru River, *Mann*, 824! Kareni to Port Lokko, *Scott-Elliott*, 5814! Liberia: Grand Bassa, *Vogel*, 65! *Ansell*! and without precise locality, *Millen*, 199! Gold Coast, *Burton*!

3. **I. Buchholzii**, *Engl. in Engl. Jahrb.* vii. 340. An almost glabrous climber, 10–20 ft. high; branches terete, dark brown or black in a dry state, minutely rusty puberulous when young, soon quite glabrous. Leaves elliptic or oblong, abruptly and shortly acuminate, rounded at the base,  $2\frac{1}{2}$ – $3\frac{1}{2}$  in. long,  $1\frac{1}{2}$ –2 in. broad, coriaceous, glabrous, shiny above; secondary nerves about 5–6 on each side, rather prominent; petiole 2–3 lin. long. Panicles pyramidal or subcorymbose, puberulous, mostly very loose, up to 6 in. long and broad; peduncle 1 in. long or hardly any; bracts very small, ovate; pedicels 2 lin. long or shorter. Calyx 1 lin. long, minutely pubescent; sepals ovate-lanceolate. Corolla red, very minutely pubescent outside; tube  $\frac{1}{2}$  lin. long; lobes oblong,  $2\frac{1}{2}$  lin. long; lateral appendage rather large. Anthers 1 lin. long. Ovary tomentose.—K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 184.

**Upper Guinea.** Cameroons: Cameroon River, *Mann*, 744! 2211! Mungo, *Buchholz*! Johann Albrechtshöhe, *Staudt*, 481!

*Mann* describes the corolla as red, *Engler* as white.

32. **FUNTUMIA**, Stapf in Proc. Linn. Soc. 1900, 2, and in Hook. Ic. Pl. tt. 2694–2695.

Calyx small, subcoriaceous, with flattened glands inside the base; sepals 5, imbricate, almost free, broad, more or less obtuse. Corolla salver-shaped; tube widened at or just above the middle, very thick and fleshy in the upper part; mouth very narrow, naked; lobes linear to oblong, overlapping to the right. Stamens 5, inserted at the middle of the corolla-tube; filaments very short, stout; anthers conniving in a cone, included, lanceolate, acuminate, sagittate; appendages about as long as the polliniferous part, stout, shortly tailed; foot of connective broad, convex, with a tongue-shaped projection from the middle and a minutely tomentose cushion below passing over the filament into the hairy filamental ridge. Disc tubular, 5-lobed or 5-partite, fleshy. Carpels free, truncate, abruptly contracted into the style, exerted from or shorter than the disc; style filiform; stigma ovoid-ovate, 5-grooved, obscurely apiculate, adnate to the projection of the foot of the connective, profusely exuding glutinous matter; ovules numerous, multiseriate. Mericarps 2, follicular, divaricate, oblong to spindle-shaped, coriaceous or woody. Seeds spindle-shaped with a plumose basal awn; endosperm fleshy, thin; cotyledons contortuplicate.—Trees, sometimes very tall. Leaves opposite, coriaceous; axillary

stipules 0; axillary glands small, numerous. Flowers small or middle-sized, in congested axillary cymes, whitish or yellowish.

Species 3, endemic.

- Flower-buds cylindric, 7-9 lin. long; corolla-lobes linear, distinctly longer than the tube. . . . 1. *F. africana*.  
 Flower-buds conical, 3-6 lin. long; corolla-lobes oblong, shorter than the tube.  
 Corolla-tube glabrous without, constricted near the base; disc exceeding the ovary, 5-crenulate. . . . 2. *F. elastica*.  
 Corolla-tube very minutely pubescent without, constricted just below the middle; disc shorter than the ovary, 5-lobed . . . . 3. *F. latifolia*.

1. ***F. africana***, *Stapf in Proc. Linn. Soc.* 1900, 2. A tree 15-80 ft. high; trunk cylindric; bark grey, smooth; branchlets terete or compressed below the nodes, more or less black when dry. Leaves oblong, rarely ovate-oblong, shortly and abruptly acuminate, attenuated or rounded at the base, 5-9 in. long,  $1\frac{1}{2}$ - $3\frac{1}{2}$  in. broad; margins undulate, quite glabrous above, usually pubescent and always efoveolate in the leaf-axils; secondary nerves 9-10 (rarely 11) on each side, oblique; veins obscure; petiole 2-4 lin. long. Cymes shortly peduncled, many-flowered, dense, glabrous; peduncle 3 lin. long; bracts small, ovate, acute or subacute; pedicels up to 2 lin. long. Calyx  $1\frac{3}{4}$  lin. long; sepals broad-ovate or elliptic, each with several glands at the base. Corolla yellowish, subcylindric and 7-9 lin. long in bud; tube constricted just below the middle, 3-4 lin. long, glabrous; lobes linear, 5-6 lin. long. Disc 5-lobed or 5-partite, shorter than the ovary. Follicles spindle-shaped, acutely acuminate, semiterete, sides slightly keeled. Seeds 6-8 lin. long; awn  $1\frac{1}{4}$ - $1\frac{3}{4}$  in. long, naked at the base, hairs  $2\frac{1}{2}$  lin. long.—*Stapf in Hook. Ic. Pl. tt.* 2696-2697; *Schlechter, Westafr. Kautschuk-Exped.* 236; *De Wild. in Rev. Cult. Colon. x.* (1902), 74. *Kickxia africana*, *Benth. in Hook. Ic. Pl. t.* 1276; *Henriques in Bolet. Soc. Brot. x.* 141; *Stapf in Journ. Linn. Soc.* xxx. 90, and in *Kew Bulletin*, 1895, 244, with plate (excl. the fruit); *K. Schum. in Notizbl. Königl. Bot. Gart. Berlin, i.* 217-221 with figures (excl. the fruit); *Warb. in Tropenpfl. i.* 99-103 with figures (excl. the fruit); *Lecomte in Rev. Cult. Colon. i.* 12-19, 41-47, figs. 1 and 2; *Preuss in Tropenpfl. iii.* 65-71; *Jumelle, Les Plant. à Caoutch.* 68-73, fig. 10 (excl. the fruit); *Preuss in Notizbl. Königl. Bot. Gart. Berlin, ii.* 353-360, t. 2; *De Wild. in Rev. Cult. Colon. vii.* 633, 634 and 747; *Schlechter in Tropenpfl. iv.* 326-330, and 41, 158, 160, 194, 202, 206, 235, 236, 238 (with fig.), 307; *Vilb. in Warb. Plant. à Caoutch.* 201, fig. 14. *K. africana*, vars. *Klainii* and *iners*, *Pierre ex Stapf in Hook. Ic. Pl. tt.* 2696-2697. *K. Zenkeri*, *K. Schum. in Notizbl. Königl. Bot. Gart. Berlin, iii.* 81. *K. Gilletii*, *De Wild. in Rev. Cult. Colon. vii.* 744.

**Upper Guinea.** Sierra Leone: near Kukuna, on the Scarcies River, *Scott-Elliot*, 4506! Bagru River, *Mann*, 817! and without precise locality, *Haydon*! Ivory Coast: Daban, *Jolly*, 174! 1691! Gold Coast: Sehwhi (Sefwhi) and Wam District, *Armitage*! Koforidua, *Johnson*, 434! East Akim, *Johnson*, 692! Togo: in forest on Amedjove Mountain, *Schlechter*, 12979 (ex *Schumann*); very common in

the forests of the Agome Mountains, and in the Boem country, ex *Schlechter*. Southern Nigeria: Bonny, *Kalbreyer*, 82! Opobo, *Holland*, 157! Adiabo, *Holland*, 294! Cross River, at Itu, *Holland*, 5! and at Ekure, *Holland*, 160! Cameroons: forest near Victoria, *Preuss*, 1382! Bipinde, *Zenker*, 2280! 2280A! Upper basin of the Mungo River, ex *Schlechter*. Fernando Po, *Mann*!

**Lower Guinea.** Gaboon: Libreville, *Klaine*, 662! Lower Congo: Kisantu, *Gillet*!

The rubber obtained from this species is sticky like birdlime, and therefore worthless.

2. **F. elastica**, *Stapf in Proc. Linn. Soc.* 1900, 2. A tree, up to 100 ft. high; trunk erect, cylindrical; bark pale, spotted; branchlets terete, blackish when dry. Leaves oblong or lanceolate-oblong, acuminate, attenuate at the base, 5-9 in. long,  $1\frac{1}{4}$ - $2\frac{1}{2}$  in. broad, undulate, quite glabrous, foveolate in the leaf axils; secondary nerves 7-11 on each side, oblique; veins inconspicuous; petiole 2-5 lin. long. Cymes shortly peduncled, many-flowered, dense, glabrous; peduncle up to 3 lin. long; bracts small, broad-ovate, obtuse or subacute; pedicels  $1\frac{1}{2}$ - $2\frac{1}{2}$  lin. long. Calyx 2- $2\frac{1}{4}$  lin. long; sepals very broad, ovate or rotundate; intracalycular glands usually 2 with each sepal. Corolla white or yellowish, conical in bud, up to 6 lin. long; tube constricted above the base,  $3\frac{1}{2}$ -4 lin. long, glabrous without; lobes oblong, obtuse,  $2\frac{1}{2}$ -3 lin. long. Stamens inserted below the middle of the corolla-tube. Disc 5-partite; segments crenate, slightly exceeding the ovary. Follicles oblong-clavate when closed, obtuse or rotundate at the apex, woody, obscurely keeled along the sides, 6 in. long. Seeds 6-9 lin. long; awn  $1\frac{1}{2}$ - $2\frac{3}{4}$  in. long, naked to the middle, hairs up to  $2\frac{1}{2}$  lin. long.—*Schlechter*, Westafr. Kautschuk-Exped. 236; *Stapf in Hook. Ic. Pl. tt.* 2694-95; *De Wild. in Rev. Cult. Colon. x.* 74-76. *Kickxia elastica*, *Preuss in Notizbl. Königl. Bot. Gart. Berlin, ii.* 353-360, t. i.; *Warburg. Kautschukpfl.* 112, 153 and *Plant. à Caoutch.* 205; *Vilb. in Warb. Plant. à Caoutch.* 204, fig. 15, 206, 207; *Schlechter in Tropenpfl. iv.* 109-120; *De Wild. in Rev. Cult. Colon. vii.* 633, 634, 743-747. *K. africana*, *Stapf in Kew Bulletin*, 1895, 244, with plate (the fruit only); *K. Schum. in Notizbl. Königl. Bot. Gart. Berlin, i.* 217-221 with plate (the fruit only); *Warb. in Tropenfl. i.* 99-103 with plate (the fruit only); *Lecomte in Rev. Cult. Colon. i.* 12-19, 41-47, fig. 2 (the fruit only); *Jumelle, Les Plant. à Caoutchouc*, 68-73, fig. 10 (fruit only); *Thonner in De Wild. & Durand, Pl. Thonner. Congol. xii.*; *Henriques, Der Kautschuk*, 18, t. iii.; *Warb. Kautschukpfl.* 110-112 and *Plant. à Caoutch.* 200-205 partly; not of *Benth.*

**Upper Guinea.** Gold Coast: Mampong Hills, *Johnson*, 255! Selwhi (Sefwhi) and Wam Districts, *Armitage*! Ashanti: Assin-Yan-Kumassi, *Cummins*, 217! Lagos: Jebu District, *Milten*, 178! Ibadan, *Olubi*! forests between Ishagamo and Ibadan, *Schlechter*, 12319! and without precise locality, *Punch! Denton*! Southern Nigeria: Old Calabar, *Holland*, 162! *Lloyd!* Abarogba, on the Cross River, *Holland*, 158! 159! 161! between Insofan and Obeyon, *Holland*, 243! Cameroons: right bank of the Mungo River, between Malende and Nyoke, and between Nyoke and Moyoka, *Preuss*, 1381! forests on the Upper Mungo River

as far as the Bakossi Mountains, *Schlechter*; plentiful in the basin of the Ngoko (Goko), and Dscha (Jah) Rivers, *Schlechter*, 12746!

**South Central.** Congo Free State: Ubangi District; Libenge, on the River Lopore, *Mardulier*! North of the Congo at Ngali, *Thonner*, 13! and without precise locality, *Laurent*, 3036! basin of the Upper Ituri, *Arnold*!

This is one of the most important rubber trees of Africa, concerning which much information can be found in *Schlechter's Westafr. Kautschuk-Expedition*. Some of the fruits collected by Holland at Abarogba are remarkably small. Considering the difficulty of distinguishing *F. elastica* from *F. africana* and *F. latifolia* in the absence of flowers or fruits it may be useful to point out that the presence of minute pits (acarodromitia) in the nerve axils on the underside of the leaves of *F. elastica* and their absence in the other species is a convenient and, as it seems, reliable character. Mr. J. H. Holland, who first called my attention to it, found it very useful in the field.

3. ***F. latifolia***, *Stapf ex Schlechter, Westafr. Kautschuk-Exped.* 236.

A tree about 50 ft. high; trunk straight, up to more than 3 ft. in diam.; branchlets somewhat compressed in the upper part, otherwise terete, very minutely pubescent or almost glabrous, blackish when dry. Leaves oblong, lanceolate-oblong or elliptic, abruptly acuminate, rounded, acute or cuneate at the base, 6-10 in. long,  $2\frac{1}{2}$ -4 in. broad, minutely pubescent in bud, soon quite glabrous, margins undulate; nerve-axils efoveolate; secondary nerves 10-15 on each side; veins obscure; petiole 3-5 lin. long. Cymes shortly peduncled, many-flowered, dense, very minutely pubescent; peduncle 2-3 lin. long; bracts small, ovate, acute or subacute; pedicels 1-2 lin. long. Calyx  $1\frac{1}{4}$ - $1\frac{1}{2}$  lin. long; sepals ovate, subacute, sparingly and minutely pubescent on the back, each with two glands at the base. Corolla white, more or less delicately velvety without, short, conical or subcylindric and 6 lin. long in bud; tube constricted just below the middle, 3-4 lin. long; lobes oblong, obtuse,  $2\frac{1}{2}$ -4 lin. long. Stamens inserted at the middle of the corolla-tube. Disc 5-lobed; lobes entire or crenulate, broadly rotundate, surrounding the ovary to  $\frac{2}{3}$  of its height. Follicles lanceolate when closed, acute, 5-6 in. long, laterally acutely 2-carinate, thin, woody. Seeds 9-10 lin. long, more or less covered with long and somewhat deciduous silky hairs; awn 11-12 lin. long, hairs 2 in. long.—*Stapf* in *Hook. Ic. Pl. sub tt.* 2694-2695. *Kickxia latifolia*, *Stapf* in *Kew Bulletin*, 1898, 307 and in *De Wild. & Durand, Contrib. Fl. Congo*, i. 42; *De Wild. & Durand*, l.c., fasc. ii. 41; *Preuss* in *Notizbl. Königl. Bot. Gart. Berlin*, i. 353-359, fig. A-H; *Schlechter* in *Tropenpfl.* iv. 30 and *Westafr. Kautschuk-Exped.* 63, 64, 125 with fig., 236, 307; *Warb. Kautschukpfl.* 112 and *Plant. à Caoutch.* 205; *De Wild.* in *Rev. Cult. Colon.* vii. 633, 634; *De Wild. & Durand, Reliq. Dewevr.* in *Ann. Mus. Congo, Bot. sér. iii. fasc. i.* 157; *Vilb.* in *Warb. Plant. à Caoutch.* 205, fig. 16, 207. *K. Scheffleri*, *K. Schum.* in *Notizbl. Königl. Bot. Gart. Berlin*, iii. 81. *K. congolana*, *De Wild.* in *Rev. Cult. Colon.* vii. 745.

**Lower Guinea.** Lower Congo: Kisantu, *Gillet*, 387!

**South Central.** Congo Free State: along the River Congo at Bangala, *Dewèvre*, 867! near New Antwerp, *Duchesne*, 14! and near Coquilhatville, *Gentil*!

*Schlechter*, 12596. Lake Leopold II, District; Kutu Ibali, Kiri Valley, *Bolle!* Delhez Mission, *Delhez!* near Lusambo, on the River Sankuru, *Luja!*

**Mozamb. Dist.** Zanzibar: Dunga Estate, *Lyne!* German East Africa: Usambara; Lutindi, *Holst*, 3380! Derema, *Scheffler*, 176!

This species does not seem to yield any serviceable rubber.

33. **MASCARENHASIA**, A. DC.; Benth. et Hook.  
f. Gen. Pl. ii. 721.

Calyx small, herbaceous, multiglandular inside the base; sepals almost free, imbricate, ovate or oblong. Corolla salver-shaped; tube cylindric, generally suddenly constricted below the insertion of the stamens, mouth naked; lobes 5, oblong, induplicate-valvate, straight or twisted in bud. Stamens inserted near the mouth or at or below the middle of the corolla-tube; filaments very short; anthers lanceolate, acute or acuminate, sagittate, appendages as long as or longer than the polliferous part, tailed; foot of the connective glabrous, channelled above, with a tongue-shaped projection from the middle, hairy below. Disc large, tubular or cup-shaped, shortly 5-lobed or divided into 5 glands, 4 of which are connate in pairs. Carpels 2, free, exserted from or shorter than the disc; style filiform; stigma oblong or cylindric with a papillose rim at the base and a minute bifid apiculus, tightly attached to the foot of the connective; ovules numerous, pluriseriate. Mericarps follicular, linear, slender, divaricate. Seeds linear-oblong, rather obtuse at both ends with an apical coma; endosperm scanty or 0; cotyledons linear or oblong, slightly undulate in cross section; radicle cylindric.—Shrubs or small trees. Leaves opposite; axillary stipules 0; axillary glands obscure. Flowers usually conspicuous, pink or purple, solitary or in few-flowered fascicles, terminal or pseudo-axillary.

Species 12–15, all but 2 in Madagascar.

Leaves narrowly oblong,  $3\frac{1}{2}$ – $5\frac{1}{2}$  in. long,  $\frac{3}{4}$ – $1\frac{1}{2}$  in. broad; corolla up to 8 lin. long; disc slightly 5-lobed . . . . . 1. *M. variegata*.

Leaves oblong, 3–10 in. long,  $1\frac{1}{2}$ – $2\frac{1}{4}$  in. broad; corolla up to 6 lin. long; disc of 5 glands, distinct or connate in pairs . . . . . 2. *M. elastica*.

1. ***M. variegata***, *Britten & Rendle in Trans. Linn. Soc. ser. 2, Bot. iv. 26, t. vi. figs. 1–3.*—A glabrous shrub; branches terete, pallid. Leaves narrowly oblong, obtuse or obscurely acuminate, acute at the base,  $3\frac{1}{2}$ – $5\frac{1}{2}$  in. long,  $\frac{3}{4}$ – $1\frac{1}{2}$  in. broad, coriaceous, glaucous, at least when mature; secondary nerves about 8 on each side, very faint; petiole 2–3 lin. long. Cymes few-flowered or reduced to a single flower, sessile; bracts minute; pedicel 2–3 lin. long. Calyx 1 lin. long; segments ovate, subacute. Corolla-tube constricted at the middle, 4–5 lin. long; lobes ovate, acuminate, 3 lin. long, densely villous within. Disc

longer than the ovary, slightly 5-lobed. Carpels and style fulvo-puberulous.

**Mozamb. Dist.** British Central Africa: Nyasaland; Mount Mlanje, 6000 ft., *Whyte*, 108!

2. *M. elastica*, *K. Schum. in Notizbl. Königl. Bot. Gart. Berlin*, i. 268 with fig. A tall tree with slender branches, perfectly glabrous. Leaves oblong, obtuse or obtusely and shortly acuminate, acute at the base, 3-10 in. long,  $1\frac{1}{2}$ - $2\frac{1}{4}$  in. broad, coriaceous; secondary nerves about 10 on each side; petiole up to  $1\frac{1}{2}$  lin. long. Cymes axillary and terminal, few-flowered; peduncle about 4 lin. long; pedicels short. Calyx  $1\frac{1}{4}$  lin. long; segments triangular-ovate, acute. Corolla-tube much constricted below the middle, subglobose widened at the base, finely tomentose without, 4 lin. long; lobes oblong, subacute, up to 2 lin. long. Anthers  $1\frac{3}{4}$  lin. long, inserted at the middle. Disc of 5 segments, distinct or connate in pairs, exceeding the ovary. Ovary puberulous at the top; style slightly hairy. Follicles purplish-black, glabrous, subsulcate, 3- $3\frac{1}{2}$  in. long.—*Warb. in Tropenpfl.* iii. (1899), 183, 220, 221, with fig.; *Kautschukpfl.* 115, and *Plant. à Caoutch.* 215; *Vilb. in Warb. Plant. à Caoutch.* 216; *Busse in Tropenpfl.* iv. (1900) 581; *K. Schum. in Notizbl. Königl. Bot. Gart. Berlin*, iii. 43. *M. caustica* (by error), *K. Schum. l.c.* ii. 268.

**Mozamb. Dist.** German East Africa: between Dar-es-Salaam and Mbuffu, near Vikindo, in Vilansi District, *Stuhlmann*; Sachsenwald, near Dar-es-Salaam, *Hedde*; Kola, *Busse*.

The "Mgoa tree" of the natives of Usaramo. It is used for making rubber; but the product is of inferior quality. The wood is said to be excellent timber.

### 34. MALOUETIA, A. DC.; Benth. et Hook. f. Gen. Pl. ii. 708.

Calyx small, subcoriaceous or herbaceous; sepals almost free, obtuse or subacute, imbricate, with 1-2 basal glands within. Corolla salver-shaped; tube cylindrical, slender, somewhat abruptly constricted at the middle or higher up. (often close to the mouth) and slightly wider above the constriction, or with 5 or 10 small scale-like or subconfluent callous tubercles at the mouth. Stamens inserted at the constriction of the corolla-tube; anthers conniving in a cone, included or more or less exerted, subsessile, lanceolate, sagittate; appendages hard, stout; tails very acute; foot of the connective with an abruptly projecting ridge with stiff hairs on the flanks. Disc annular or cupular, entire or 5-lobed. Carpels 2, free, or connate at the base; style filiform; stigma oblong, clavate, densely papillose, with a minute 2-lobed glabrous apiculus, agglutinated to the foot of the connective; ovules numerous, 2-4-seriate. Mericarps follicular, linear, acuminate, slightly constricted between the seeds, more or less spreading. Seeds linear-lanceolate, not comose, more or less concave on the ventral face; endosperm scanty; cotyledons thin, flat or concavo-convex; radicle cylindrical.—Glabrous trees or shrubs. Leaves opposite, subcoriaceous or papery; axillary

stipules 0 or very obscure and joined into a fine rim across the stem; axillary glands scanty and fugacious. Flowers on slender pedicels in few- to many-flowered subsessile umbelliform terminal and pseudo-lateral inflorescences.

Species about 16, 1 in tropical West Africa, the others in tropical America.

1. **M. Heudelotii**, *A. DC. Prod.* viii. 380. Perfectly glabrous; branches terete, dark reddish-brown. Leaves oblong, acuminate, acute at the base,  $3\frac{1}{2}$ – $5\frac{1}{2}$  in. long,  $1\frac{1}{2}$ – $2\frac{1}{2}$  in. broad, thin, papery; secondary nerves 7–9 on each side; petiole 2–3 lin. long. Cymes few-flowered, subsessile; bracts very small; pedicels slender, up to 4 lin. long. Calyx 1 lin. long; sepals ovate, subacute. Corolla white; tube  $5$ – $5\frac{1}{2}$  lin. long, with confluent tubercles at the mouth; lobes oblong, acuminate or cuspidate,  $4\frac{1}{2}$ – $5$  lin. long, puberulous at the base. Disc 5-lobed. Anthers  $1\frac{1}{2}$  lin. long. Follicles 7–10 in. long. Seeds  $1\frac{1}{2}$ – $1\frac{3}{4}$  in. long,  $1\frac{1}{2}$  lin. broad, scantily pubescent at both ends, but chiefly at the upper subulate end.—Benth. in Hook. Niger Fl. 450. *M. africana*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 187.

**Upper Guinea.** Senegambia, *Heudelot*, 714! 890! French Guinea: Scarcies Valley; near Sasseni, *Scott-Elliot*, 4430! 4524! near Bayabaya, *Scott-Elliot*, 4782! near Wallia, *Scott-Elliot*, 4785! Sierra Leone: Kukuna, by the River Scarcies, *Scott-Elliot*, 4242! 4626! Madina, *Scott-Elliot*, 5566!

### 35. ALAFIA, Thouars; Benth. et Hook. f. Gen. Pl. ii. 717.

Calyx small, herbaceous; sepals 5, imbricate, broadly ovate, obtuse, alternating with small intracalycular glands. Corolla salver-shaped; tube cylindrical, slightly widened at or just below the middle, without scales or calli within; mouth usually very narrow; lobes 5, overlapping to the right. Stamens inserted at the middle of the corolla-tube; filaments very short, flattened; anthers conniving in a cone, almost reaching to the mouth of the corolla or shortly exerted, linear to lanceolate, acute, sagittate; appendages longer than the polliferous part; tails short; foot of the connective with a hairy elongated cushion or a tongue-shaped projection. Disc 0. Carpels 2, free, short, very obtuse; style clavate-filiform, passing into the flask-shaped, shortly apiculate stigma which exudes glutinous matter below the constriction attaching it firmly to the foot of the connective; ovules numerous, pluriseriate. Mericarps follicular, slightly spreading, slender, cylindrical. Seeds linear-lanceolate with a deciduous apical coma; embryo unknown.—Scandent shrubs with more or less fistular branches. Leaves opposite, coriaceous; secondary nerves rather distant. Flowers generally in many-flowered terminal or pseudo-axillary corymbs or pseudo-umbels or in few-flowered cymes, rarely solitary.

Species about 12 in tropical Africa and Madagascar.

Flowers white in usually many-flowered corymbs,  
or yellow in few-flowered cymes.

- Leaves large, 7-10 in. long, 4-5½ in. broad . . . 1. *A. grandis*.  
 Leaves smaller.  
 Leaves very abruptly caudate-acuminate;  
 corolla-tube 4-4½ lin. long; style puberulous . . . 2. *A. Schumannii*.  
 Leaves not abruptly caudate-acuminate; corolla-tube about 2 lin. long; style glabrous.  
 Flowers white with a red centre; corolla-lobes slightly shorter to slightly longer than the tube.  
 Corymbs subsessile or shortly peduncled;  
 secondary nerves 9-11 on each side;  
 petiole 2-5 lin. long . . . 3. *A. landolphioides*.  
 Corymbs mostly on long slender peduncles;  
 secondary nerves 6-9 on each side;  
 petiole 1-2 lin. long . . . 4. *A. Barteri*.  
 Flowers yellow with a red centre; corolla-lobes distinctly longer than the tube.  
 Leaves 2-4 in. long, 1-1¾ in. broad;  
 secondary nerves 4-5 on each side,  
 oblique . . . 5. *A. lucida*.  
 Leaves 1½-2 in. long, ½-¾ in. broad;  
 secondary nerves about 8 on each  
 side, very oblique . . . 6. *A. Benthamii*.  
 Flowers white (where known), in 7-2-flowered  
 peduncled pseudo-umbels; intra-calycular glands  
 distinct.  
 Inflorescence delicately puberulous; sepals ovate-  
 lanceolate, acute; anther-cone distinctly  
 exerted . . . 7. *A. Butayi*.  
 Inflorescence glabrous; sepals ovate, obtuse;  
 anther-cone just reaching to the mouth . . . 8. *A. caudata*.  
 Flowers white, in few-flowered subsessile cymes;  
 intra-calycular glands very minute . . . 9. *A. sarmentosum*.

1. *A. grandis*, Stapf. Branches terete, velvety. Leaves broad-elliptic, shortly acuminate or sometimes emarginate, rounded at the base, 7-10 in. long, 4-5½ in. broad, subcoriaceous, rather thick, glossy and glabrous above, hairy below especially on the nerves; secondary nerves 10-12 on each side, arching below the margin and raised like the loosely anastomosing veins. Cymes many-flowered, contracted, finely pubescent or velvety; peduncles very short or up to ¾ in. long; bracts minute, broad-ovate, obtuse; pedicels up to 1½ lin. long. Calyx rather velvety, 1-1½ lin. long; sepals ovate, obtuse. Corolla white with a scarlet throat; tube 2½-3 lin. long, hairy inside below the stamens, velvety without; lobes suborbicular, as long as the tube, somewhat hairy at the mouth. Staminal cone not quite reaching to the corolla-mouth, 2 lin. long. Carpels puberulous.—*Tabernaemontana erythrophthalma*, K Schum. MSS.

Upper Guinea. Cameroons: Yaunde, 2600 ft., Zenker & Staudt, 213! 701!

2. **A. Schumannii**, *Stapp*. Branches greyish when dry, glabrous. Leaves elliptic to broadly oblong, abruptly caudate-acuminate (acumen linear, obtuse, up to 7 lin. long, 1-1½ lin. broad), obtuse or acute at the base, 4-5 in. long, 2-2½ in. broad, subcoriaceous, quite glabrous; secondary nerves 7-8 on each side, oblique; veins faintly raised below, loosely anastomosing; petiole slender, 4-5 lin. long. Corymbs terminal, shortly peduncled, dense, many-flowered, finely pubescent, particularly in the upper part; bracts small, ovate, acute; pedicels slender, up to 2 lin. long. Calyx 1 lin. long, minutely puberulous; sepals ovate, subobtuse; glands conspicuous, denticulate. Corolla glabrous without; tube slightly widened below the middle, rather stout, 4-4½ lin. long; lobes broad, obliquely obovate, 4 lin. long, fimbriate on one side. Staminal cone just reaching the corolla-mouth, 2½ lin. long. Carpels densely and very minutely puberulous also on the inner face with the exception of a small basal area, partly connate at the very base; style cylindric, puberulous, ¾ lin. long.

**Upper Guinea.** Cameroons: Bipinde, *Zenker*, 1662!

3. **A. landolphioides**, *K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 165. A high climbing shrub, quite glabrous except the inflorescences; branches terete, black when dry. Leaves oblong, obovate-oblong or elliptic, obtusely acuminate, acute or rounded at the base, 3½-5½ in. long, 1½-2 in. broad, subcoriaceous, rather thin, somewhat shining and very dark above when dry, olive-brown beneath; secondary nerves 9-11 on each side, straight; veins faint; petiole 2-5 lin. long. Corymbs up to 3 in. in diam., fulvo-velvety all over; peduncles generally very short, rarely up to 1¼ in. long; bracts minute, ovate, obtuse; pedicels 1-1½ lin. long. Calyx puberulous, ½ lin. long; sepals ovate, obtuse. Corolla white or pink with a scarlet throat, 2-2½ in. long; tube densely hairy below the stamens, otherwise glabrous within; lobes broad-elliptic or obovate, 3-4 lin. long, villous near the base, slightly ciliate along the margin on the inner side. Staminal cone not quite reaching to the corolla-mouth, 1½ lin. long. Carpels densely pubescent. Follicles glabrous, 9-12 in. long, 2-3 lin. in diam. Seeds 6-7 lin. long; coma 18-20 lin. long.—*Nerium scandens*, *Thonn. in Schum. & Thonn. Beskr. Guin. Pl.* 148; *A. DC. Prod.* viii. 421.

**Upper Guinea.** French Guinea: River Nunez, *Heudelot*, 626! 776! Gambia, *Whitfield*! Sierra Leone: near Kukuna?, *Scott-Elliot*, 4676! Talla Hills, at Ninia, *Scott-Elliot*, 4809! Bunce Island, *Kirk*, 5! Gold Coast: *Brass*! Aquapim, *Thonning*; Krepí, on the Voita River, *Johnson*, 561! Dahomey, *Poisson*! Lagos: Lagos Island, *Barter*, 20218! *Millen*, 173! Ebute Metta, *Millen*, 77! Abeokuta, *Irving*, 145! Ikirun, *Millson*, 6! Southern Nigeria: Onitsa, *Barter*, 1326 partly!

4. **A. Barteri**, *Oliv. in Hook. Ic. Pl. t.* 1992. A scandent shrub, quite glabrous except the inflorescence; branches terete, olive-green also when dry, rarely blackish. Leaves obovate or elliptic, shortly and often obscurely acuminate or with rounded tips, acute or rounded at the base, 2½-4 in. long, 1½-1¾ in. broad, subcoriaceous, rather thick,

dark above, pale green beneath; secondary nerves 6-9 on each side; veins very faint; petiole 1-2 lin. long. Corymbs rather lax with the primary branches mostly elongate and spreading, up to  $3\frac{1}{2}$  in. in diam., scantily and very minutely puberulous; peduncle 1- $1\frac{1}{2}$  in. long; bracts minute, ovate; pedicels up to 2 lin. long. Calyx  $\frac{3}{4}$  lin. long, scantily puberulous or almost glabrous; sepals ovate, obtuse. Corolla white, fragrant; tube 2 lin. long, hairy below the stamens, very minutely puberulous above them; lobes broad, elliptic or almost orbicular, 2 lin. long, villous or glabrous near the base, villous-ciliate on the inner margin. Staminal cone reaching to the corolla-mouth,  $1\frac{1}{2}$  lin. long. Carpels densely pubescent. Follicles very slender, glabrous, 1 ft. long; seeds 8 lin. long, coma  $1\frac{3}{4}$  in. long—K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 165, and in Schlechter, Westafr. Kautschuk. Exped. 306.

**Upper Guinea.** Gold Coast: Kwahu, 2000 ft., *Johnson*, 664! Lagos: Lagos, *Millen*, 132! *Punch*, 19! Oshogbo, *Millson*! Ishagamo, *Schlechter*, 12301; Interior, Rowland! Southern Nigeria: Onitsa, *Barter*, 1321!

5. **A. lucida**, *Stapf* in *Kew Bulletin*, 1894, 122. A tall, scandent shrub, up to 40 ft. high, quite glabrous except the inflorescences; branches blackish when dry. Leaves obovate to oblong or elliptic, obtuse or obscurely acuminate, acute to cuneate at the base, 2-4 in. long, 1- $1\frac{3}{4}$  in. broad, more or less coriaceous, shining and dark above, pallid below; secondary nerves 4-5 on each side, oblique; veins very lax, faint; petiole up to  $2\frac{1}{2}$  lin. long. Corymbs shortly peduncled or sessile, many-flowered or reduced to few-flowered cymes, very finely, and sometimes scantily, puberulous; peduncle up to 6 lin. long; bracts minute; pedicels slender, up to  $2\frac{1}{2}$  lin. long. Calyx almost glabrous,  $\frac{1}{2}$ - $\frac{3}{4}$  lin. long; sepals ovate. Corolla fragrant, yellow with a red centre; tube  $1\frac{3}{4}$ -2 lin. long; hairy within below the stamens, otherwise glabrous or very minutely puberulous; lobes obliquely truncate-obovate, ciliate on the inner side, 3-5 lin. long. Anther-tips very shortly exerted. Carpels slightly pubescent. Follicles 7-12 in. long, glabrous.—K. Schum. in Engl. Jahrb. xxiii. 231. *A. cuneata*, *Stapf*, l.c. 122; *Hiern* in *Cat. Afr. Pl. Welw.* i. 673. *A. reticulata*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 165. *Wrightia Stuhlmannii*, K. Schum. in Engl. Pf. Ost-Afr. C. 319, and in Engl. & Prantl, l.c. 183.

**Upper Guinea.** Niger Delta: banks of the River Nun, *Mann*, 491! Old Calabar River, *Mann*, 2245! Cameroons: Yaunde, *Zenker & Staudt*, 145! Bipinde, *Zenker*, 1450!

**Nile Land.** Uganda: Entebbe Forest, *Whyte*, A! *Makon*! and without precise locality, *Johnston*!

**Lower Guinea.** Gaboon: Muni (Danger) River, *Mann*, 1752! Angola: Golungo Alto; in dense forests of Alto Queta and near Camilungo, *Welwitsch*, 5953! Loanda, *Welwitsch*, 5954!

**Mozamb. Dist.** German East Africa: Karagwe; Bukoba, *Stuhlmann*, 3611!

6. **A. Benthamii**, *Stapf*. A climbing shrub, 15-30 ft. high; young branches minutely tomentose, soon glabrescent, terete, divaricate. Leaves obovate, oblong or obtusely lanceolate, obtuse or obscurely acuminate, cuneate at the base,  $1\frac{1}{2}$ -2 in. long, 4-9 lin. broad, coriaceous, quite glabrous; secondary nerves very oblique, about 8 on each side; veins branching and running from the marginal loops towards the midrib; nerves and veins raised on both sides; petiole 3-5 lin. long. Cymes few-flowered, minutely puberulous, very shortly peduncled; bracts minute; pedicels 2- $3\frac{1}{2}$  lin. long. Calyx not quite 1 lin. long; sepals ovate, obtuse. Corolla yellow with a deep red centre; tube 2 lin. long; lobes ciliolate, 4 lin. long. Staminal cone reaching to the mouth of the corolla, 1 lin. long. Carpels minutely pubescent. Follicles glabrous, 5 in. long.—*Ectinocladus Benthamii*, Baill. Hist. Plantes, x. 211 (name only); Stapf in Journ. Linn. Soc. xxx. 88; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 165.

**Upper Guinea.** Sierra Leone: by the Scarcies River, near Mofari, *Scott-Elliott*, 4440! Southern Nigeria: Old Calabar, *Thomson*, 117!

7. **A. Butayei**, *Stapf*. Young branches very minutely pubescent, soon glabrescent, blackish when dry: Leaves oblong to oblong-lanceolate, gradually acuminate (acumen up to 5 lin. long, obtuse), rounded at the base, 2-3 in. long,  $\frac{3}{4}$ - $1\frac{1}{4}$  in. broad, thinly coriaceous, glabrous; secondary nerves about 5 on each side, rather inconspicuous like the very lax venation; petiole 1- $1\frac{1}{2}$  lin. long. Flowers in sessile or shortly peduncled terminal many-flowered finely pubescent pseudo-umbels; peduncles up to 3 lin. long, slender; pedicels 3 lin. long. Calyx 1 lin. long, scantily pubescent; intra-calycular glands 3, distinct; sepals ovate-lanceolate, acute, ciliolate. Corolla glabrous without; tube 3 lin. long, constricted at the middle and narrowly cylindric below, pubescent within near the insertion of the stamens; lobes obliquely ovate-oblong, as long as the tube. Staminal cone distinctly exserted, 2 lin. long. Ovary pubescent, chiefly upwards.

**Lower Guinea.** Lower Congo: between Dembo (Ndembo) and the River Kuango, *Butaye*!

*A. Butayei* differs from *A. caudata* in the narrower leaves (which are always rounded at the base), the pubescent inflorescences, the ovate-lanceolate acute calyces and the distinctly exserted staminal cone.

8. **A. caudata**, *Stapf* in *Kew Bulletin*, 1894, 123. A climbing shrub, 12-25 ft. high, perfectly glabrous; branches very slender, brown or black when dry. Leaves oblong to ovate or lanceolate, caudate-acuminate (acumen 3-6 lin. long), rounded or acute at the base,  $2\frac{1}{2}$ - $3\frac{1}{2}$  in. long, 1- $1\frac{1}{2}$  in. broad, dark above, very pallid below when dry, very thin; secondary nerves about 6 on each side, very faint; veins quite obscure; petiole  $1\frac{1}{2}$ -2 lin. long. Flowers in 7-2-flowered contracted pseudo-umbels; peduncle slender, up to 4 lin. long; bracts minute; pedicels very slender, up to  $3\frac{1}{2}$  lin. long. Calyx glabrous,  $\frac{3}{4}$  lin. long, intra-calycular glands distinct; sepals ovate, obtuse.

Corolla white, slightly scented; tube hairy within below the stamens, otherwise glabrous,  $2\frac{1}{2}$ –3 lin. long; lobes broad, ovate, slightly longer than the tube. Staminal cone reaching or very slightly exceeding the corolla-mouth, scarcely  $1\frac{1}{2}$  lin. long. Carpels pubescent.—Hiern in Cat. Afr. Pl. Welw. i. 673.

**Lower Guinea.** Angola: Golungo Alto; in dense forests on the mountains of Queta, *Welwitsch*, 5938! 5955! 6692!

9. **A. sarmentosa**, *Staff* in *Kew Bulletin*, 1894, 123. A tall climber with long drooping glabrous branches. Leaves oblong, obtusely and shortly acuminate, obtuse or acute at the base, up to  $3\frac{1}{2}$  in. long and  $1\frac{1}{4}$  in. broad, thin, more or less shiny, quite glabrous; secondary nerves 5–7 on each side, faint like the lax venation; petiole 2 lin. long. Cymes small, subsessile, few-flowered, very minutely puberulous; bracts minute; pedicels slender, short. Calyx almost glabrous, minutely ciliolate, not quite 1 lin. long; intracalycular glands minute. Corolla white, scarlet and velvety at the mouth, vanilla-scented; tube scantily hairy below the stamens, otherwise glabrous,  $2\frac{1}{2}$  lin. long; lobes oblong, obtuse,  $2\frac{1}{2}$  lin. long. Staminal cone reaching the corolla-mouth,  $1\frac{3}{4}$  lin. long. Carpels glabrous.—Hiern in Cat. Afr. Pl. Welw. i. 674.

**Lower Guinea.** Angola: Golungo Alto; in the less dense thickets on the mountains of Queta, above Ndele, rather rare, *Welwitsch*, 5965!

*Imperfectly known species.*

10. **A. microstylis**, *K. Schum.* in *Engl. Jahrb.* xxiii. 1896, 230. Branches compressed when young, soon terete, quite glabrous, drying black. Leaves oblong or oblong-lanceolate, shortly and obtusely acuminate, acute at the base,  $1\frac{1}{4}$ – $3\frac{3}{4}$  in. long,  $\frac{1}{2}$ – $1\frac{1}{3}$  in. broad, glabrous, glossy; secondary nerves over 10 on each side, raised above and below; petiole very slender, up to  $1\frac{1}{2}$  lin. long. Racemes or panicles 5–8-flowered, terminal; bracts triangular-lanceolate,  $1\frac{1}{2}$  lin. long. Calyx glabrous,  $\frac{3}{4}$  lin. long; segments ovate, acute; glands conspicuous. Corolla-tube 3 lin. long; lobes obliquely lanceolate, obtuse, 7 lin. long. Anther-cone  $1\frac{1}{2}$  lin. long, slightly exerted (?). Ovary hairy along the angles (?).

**Nile Land.** Uganda: Ntebbi (Entebbe), 4300 ft., *Stuhlmann*, 1474; and without precise locality, *Stuhlmann*, 1262.

*K. Schumann* compares this plant with *A. lucida*, from which he says it differs in the narrow corolla-lobes and much longer tube. He quotes the locality where *Stuhlmann* collected No. 1474 as Nsebbi, and the date as January. This stands evidently for Ntebbi (Entebbe) where *Stuhlmann* was in January 1891, and I suspect, in spite of certain discrepancies, that it is the same plant which *Whyte* collected near Entebbe and which I referred to *A. lucida* above.

11. **A. orientalis**, *K. Schum.* in *Notizbl. Königl. Bot. Gart. Berlin*, iii. 84, name only.

**Mozamb. Dist.** German East Africa: Usambara; probably in the Handei Mountains, *Scheffler*.

36. **HOLALAFIA**, Stapf in Kew Bulletin, 1894, 123.

Calyx small, herbaceous; sepals 5, imbricate, broad, obtuse, alternating with 5 conspicuous glands. Corolla salver-shaped; tube cylindric, narrow at the base, then suddenly widened, without scales or calli within, scarcely constricted at the mouth; lobes broad, obtuse, overlapping to the right. Stamens inserted below the middle of the corolla-tube; filaments very short, flattened; anthers conniving in a cone, included, linear-lanceolate, acuminate, sagittate; appendages as long as or longer than the polliferous part; tails short; foot of the connective glabrous above, with a tongue-shaped projection and a tomentose cushion extending to the broad filamental ridge below. Disc 0. Ovary syncarpous, more or less imperfectly 2-celled, ovoid, pubescent; style filiform, passing into the flask-shaped shortly apiculate stigma, which exudes glutinous matter attaching it firmly to the foot of the connective; placentas meeting and even fused in the lower part of the ovary, receding higher up; ovules numerous, pluriseriate. Fruit follicular (?).—A large climbing shrub. Leaves opposite, remotely nerved, coriaceous; axillary stipules distinct, acute, resinous inside; axillary glands few. Flowers rather showy, in dense many-flowered terminal corymbs.

Species 1, endemic.

1. **H. multiflora**, Stapf l.c. Glabrous, climbing up to 40 ft.; young branches rather stout, fistular, brown or black when dry. Leaves elliptic or oblong, rarely obovate, very obtuse to shortly acuminate, rotundate or subcordate (rarely acute) at the base, 4–6 in. long,  $2\frac{1}{2}$ – $3\frac{1}{2}$  in. broad, subcoriaceous, shining above, rather dull beneath; secondary nerves 5–9 on each side, oblique, gently curved, prominent beneath, finely channelled above; veins lax, slightly raised; petiole 2–6 lin. long. Corymbs up to 3 in. in diam.; peduncle stout, up to  $\frac{1}{2}$  in. long; bracts ovate, obtuse, small; pedicels slender, up to 6 lin. long. Calyx  $1\frac{1}{2}$ –2 lin. long; sepals ovate, obtuse. Corolla white with a red spot in the centre, fragrant; tube 5 lin. long, very delicately puberulous without; lobes obliquely truncate-obovate, 6 lin. long and broad. Anther-cone  $1\frac{3}{4}$  lin. long.—Stapf in Hook. Ic. Pl. t. 2350; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 189, Nachtr. 284; De Wild. & Durand, Contrib. Fl. Congo, i. 42, ii. 41; Reliq. Dewevr. ii. 157. *Alafia malouetioides*, K. Schum. l.c. 164. *A. major*, Stapf in Kew Bulletin, 1898, 307, and in De Wild. & Durand, Contrib. Fl. Congo, i. 41; De Wild. & Durand, Reliq. Dewevr. ii. 155.

**Upper Guinea.** Lagos: Ibadan Forest, *Punch*, 49! 51! Cameroons: Rio del Rey, *Johnston*, 44! Yamde, 2600 ft., *Zenker & Staudt*, 120! *Zenker*, 257! Bipinde, *Zenker*, 1170! 1555! Fernando Po, *Mann*, 1164!

**South Central.** Congo Free State: Wangata, *Dewèvre*, 649! 673; Bangala, *Demeuse*; Lokanda, *Dewèvre*, 1107!

The fruit of *Holalafia* is not known in the mature state. There are, however, two parts of a very young fruit with *Zenker's* specimen (257) which have the appear-

ance of follicles ; but they are in too bad a condition to allow a closer examination  
The longer of the two is 8 in. long and  $3\frac{1}{2}$  lin. broad.

37. **PYCNOBOTRYA**, Benth. in Benth. et Hook. f. Gen.  
Pl. ii. 715.

Calyx small, subcoriaceous, eglandular ; sepals almost free, imbricate, ovate, obtuse. Corolla funnel-shaped-campanulate ; tube very short with 5 much projecting ridges extending from the sinuses towards the base and with 5 others alternating with them and slightly raised ; lobes 5, oblong, obtuse, overlapping to the left. Stamens inserted near the base of the corolla-tube ; filaments very short, flattened ; anthers conniving in a cone, included, lanceolate, acute, sagittate ; appendages much shorter than the polliniferous part ; tails very short, subacute ; foot of the connective broad, with a large papillose projecting cushion in the centre. Disc 0. Carpels 2, free. Style very short ; stigma capitate, very minutely papillose except on the minute bifid apiculus ; ovules 4 in each carpel, 2-seriate. Fruit unknown.—Climbing shrubs. Leaves opposite or in whorls of 3, coriaceous, with faint and closely set parallel nerves ; axillary stipules 0 ; axillary glands scanty, minute. Flowers small, in few- or many-flowered contracted cymes, gathered in terminal, often many-flowered, leafy panicles or corymbs.

Species 2, endemic.

Although the fruit of this genus is not known, the limited number of ovules and the fact that the upper 2 show signs of early decay make it almost certain that the fruit is not of the usual *Echitideæ* type. In the arrangement and the peculiar venation of the leaves, *Pycnobotrya* very much resembles certain species of *Pleiocarpa* and *Polyadoa* with which it has, however, not much in common in other respects.

- Leaves lanceolate,  $\frac{3}{4}$  to 1 in. broad ; panicles leafy,  
many-flowered, up to 3 in. long . . . . . 1. *P. nitida*.  
Leaves oblong to oblanceolate or obovate,  $\frac{3}{4}$ – $1\frac{1}{2}$  in.  
broad ; corymbs up to 1 in. long . . . . . 2. *P. multiflora*.

1. **P. nitida**, Benth. in Hook. Ic. Pl. t. 1183. A scandent shrub, 50 ft. high ; branches terete, very finely rusty-tomentose when young, soon glabrescent and black when dry. Leaves opposite or ternate, lanceolate, obtusely acuminate, cuneate at the base,  $2\frac{1}{2}$ – $3\frac{1}{2}$  in. long,  $\frac{3}{4}$ –1 in. broad, shining and glabrous above, paler, dull and dotted with black glands, and minutely rusty-papillose on the midrib below ; secondary nerves scarcely 1 lin. distant, with fainter parallel veins between them ; petiole slender, 2–3 lin. long. Panicle very many-flowered, compound, often leafy, finely rusty-tomentose all over ; peduncle  $\frac{1}{2}$ –1 in. long ; bracts minute, ovate to lanceolate, acute ; pedicels up to  $\frac{1}{2}$  lin. long. Calyx  $\frac{1}{2}$  lin. long. Corolla glabrous, 2 lin. long in the mature bud ; tube  $\frac{3}{4}$  lin. long. Anthers  $\frac{1}{2}$  lin. long.—K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 162.

**Lower Guinea.** GAOON : Cerisco Bay ; Mount John, on the Kongui River, Mann, 1809!

2. **P. multiflora**, *K. Schum. MSS.* Branches terete, very finely rusty-tomentose when young, soon glabrescent and black when dry. Leaves opposite or ternate, oblong to oblanceolate or obovate, 2-4 in. long,  $\frac{3}{4}$ -1 $\frac{1}{2}$  in. broad, acute or subcuneate at the base, abruptly and obtusely acuminate, glabrous and shining above, dotted with black glands below; secondary nerves scarcely 1 lin. distant, with fainter parallel veins between; nervation slightly prominent and much more conspicuous above; petiole slender, 2-3 lin. long. Inflorescence corymbose, about 1 in. long, much overtopped by the uppermost pair of leaves, finely rusty- or fusco-tomentose all over; peduncles up to 9 lin. long; bracts very minute; pedicels up to  $\frac{1}{2}$ - $\frac{3}{4}$  lin. long. Calyx not quite  $\frac{1}{2}$  lin. long. Corolla glabrous, 3 lin. long in the mature bud, purple (?); tube  $\frac{7}{8}$  lin. long; anthers slightly over  $\frac{1}{2}$  lin. long.

**Upper Guinea.** Cameroons: Bipinde, *Zenker*, 1274! 2063!

38. **BAISSEA**, A. DC.; Benth. et Hook. f. Gen. Pl. ii. 719.

Calyx small, herbaceous to subcoriaceous, eglandular within or usually with 5 intracalycular glands; sepals 5, almost free, imbricate, ovate-lanceolate to rotundate. Corolla funnel-shaped or campanulate; tube widest or slightly constricted at the mouth, usually with fleshy projecting calli or scales just above the insertion of the stamens and dense obversely triangular patches of white reflexed hairs between them, otherwise without appendages; lobes 5, mostly very narrow, overlapping to the right. Stamens inserted above the base of the corolla-tube; filaments very short, stout; anthers conniving in a cone, not exceeding the corolla-tube, lanceolate, acuminate, sagittate; appendages about as long as the polliniferous part, distinctly tailed; foot of connective hollowed and glabrous above, with a cushion of dense hairs below passing over the filament into the short hairy filamental ridge. Disc cupular, subtruncate, sinuate or 5-lobed. Carpels 2, slightly inferior, free, subtruncate, usually hairy; style short, obconical (or cylindric at the base); stigma campanulate with 5 pits (exuding glutinous matter) in the middle, and with a short or long and subulate apiculus; ovules numerous, pluriseriate. Mericarps follicular, usually cylindric, very slender. Seeds linear-lanceolate, truncate at the tip, acute at the base, with a deciduous apical coma; endosperm fleshy, rather copious; cotyledons flat; radicle short.—Tall climbing shrubs. Leaves opposite; secondary nerves distinct, numerous and fine; transverse veins more or less conspicuous; axillary stipules and glands 0. Flowers in terminal and axillary, sometimes leafy panicles or corymbs, composed of few-flowered cymes, rarely in short few-flowered cymes; corollas white or purple.

Species 21, endemic.

This description excludes the Indian and Malayan species referred by some authors to *Baissea*. They constitute a distinct genus, *Cleghornia*, Wight (See Hua in Bull. Soc. Linn. Paris, 2 sér. i. 9, 12).

Hua (in Compt. Rend. Acad. Paris, cxxxiv. 856-858) has pointed out the close affinity of *Zygodia axillaris*, Benth., one of the species on which the genus *Zygodia*

was based, with certain species of *Baissea*, and consequently transferred it to this genus. In this I concur entirely with him. He maintains the other species of *Zygodia*, of which he saw only *Z. urceolata*, in the genus *Zygodia*; but, even with this emendation the two genera are not perfectly homogeneous. I have indicated this by dividing each of them into two sections, viz., *Eubaissea* and *Guerkea*, and *Euzygodia* and *Hualla*. They are in so far parallel sections, as *Eubaissea* and *Hualla* possess supra-staminal scales, though of a somewhat different disposition, whilst *Guerkea* and *Euzygodia* have none. I do not consider myself justified to go beyond this, as we know these plants very imperfectly, each of the species of *Zygodia*, for instance, being known only from a single collection and mostly a single specimen.

\*EU-BAISSEA.—Corolla-tube with fleshy calli or scales just above the insertion of the stamens.

Panicle glabrous or only the peduncle, the lower part of the rachis and the bracts more or less pubescent.

Calyx 2 lin. long; leaves with 11–12 secondary

nerves on each side, raised on both surfaces . . . . . 1. *B. calophylla*.

Calyx  $\frac{3}{4}$ –1 lin. long; leaves with 4–9 secondary nerves on each side, raised below and channelled above.

Corolla-tube  $1\frac{1}{2}$ – $1\frac{3}{4}$  lin. long; lobes up to 8 lin. long; secondary nerves 7–9 on each side, equally conspicuous . . . . . 2. *B. erythrosticka*.

Corolla-tube  $3\frac{1}{2}$  lin. long; lobes 5 lin. long; secondary nerves 4–6 on each side, the lower very conspicuous, the upper faint . . . . . 3. *B. ochrantha*.

Panicle pubescent, minutely tomentose or finely furfuraceous all over.

Intra-calycular glands 0; corolla-lobes 2–6 (rarely only  $1\frac{1}{2}$ ) times longer than the tube; stigmatic apiculus short.

Leaves small ( $\frac{1}{2}$ –1 in. long, 3– $5\frac{1}{2}$  lin. broad); corolla-tube  $1\frac{1}{2}$  lin. long; lobes up to 10 lin. long . . . . . 4. *B. Wulferstii*.

Leaves larger and corolla-lobes shorter than in the preceding species.

Corolla-tube loosely villous in the throat; ovary hairy.

Corolla-lobes 5– $7\frac{1}{2}$  lin. long . . . . . 5. *B. multiflora*.

Corolla-lobes not exceeding 4 lin. in length. Leaves elliptic-oblong, rounded at the base; inflorescence moderately lax with filiform branchlets . . . . . 8. *B. angolensis*.

Leaves more or less lanceolate to oblong, acute or cuneate at the base; inflorescence very loose with capillary branchlets . . . . . 6. *B. laxiflora*.

Corolla-tube glabrous in the throat; ovary glabrous . . . . . 7. *B. Thollonii*.

Intra-calycular glands 5 (very rarely 3); corolla-lobes usually as long as or slightly longer than the tube (3 times as long in *B. major* and *B. tenuiloba*); stigmatic apiculus usually fine, subulate.

Corolla-lobes 3 times as long as the tube.

- Sepals ovate-lanceolate,  $1\frac{1}{4}$ – $1\frac{3}{4}$  lin. long; corolla-tube  $2$ – $2\frac{1}{2}$  lin. long; lobes linear,  $6$ – $7\frac{1}{2}$  lin. long . . . . . 9. *B. major*.
- Sepals ovate,  $\frac{3}{4}$  lin. long; corolla-tube  $1\frac{1}{2}$ – $1\frac{3}{4}$  lin. long; lobes long caudate-acuminate from an ovate base,  $4$ – $6$  lin. long . . . . . 17. *B. tenuiloba*.
- Corolla-lobes as long as the tube or slightly longer.
- Leaves more or less oblong, truncate at the base; petiole from less than  $\frac{1}{2}$  to  $\frac{3}{4}$  lin. long.
- Leaves very shortly acute or subobtusate; flowers in few-flowered axillary and sometimes also terminal cymes or panicles, not exceeding the supporting leaves.
- Flowers about 2 lin. long, in subsessile or very shortly peduncled small cymes . . . . . 10. *B. axillaris*.
- Flowers over 3 to 4 lin. long, paniced . . . . . 11. *B. zygodioides*.
- Leaves subacuminate; panicles many-flowered, more or less dichotomous, leafy; corolla campanulate . . . . . 12. *B. Baillonii*.
- Leaves variously shaped, never truncate at the base; petiole  $1\frac{1}{2}$ – $11$  lin. long.
- Calyx 1 lin. long; stigmatic apiculus very short, conical; young branches and very thin leaves pale green . . . . . 13. *B. Welwitschii*.
- Calyx  $\frac{1}{2}$ – $\frac{3}{4}$  lin. long; stigmatic apiculus subulate to setiform; branches more or less brown or blackish, leaves very rarely pale green.
- Corolla not constricted at the mouth; flower-buds usually cylindrical from an ovoid base (or ovoid in *B. brachyantha*).
- Supra-staminal calli united into a transverse ring.
- Leaves elliptic-lanceolate, quite glabrous below; corolla  $5\frac{1}{2}$  lin. long . . . . . 14. *B. odorata*.
- Leaves oblong, with tufts of rust-coloured hairs in the nerve-axils below; corolla  $3\frac{1}{2}$  lin. long . . . . . 15. *B. ogowensis*.
- Supra-staminal calli not united.
- Corolla 4 lin. long . . . . . 16. *B. leonensis*.
- Corolla  $2\frac{1}{2}$  lin. long . . . . . 17. *B. brachyantha*.
- Corolla more or less constricted at the mouth; flower-buds ovoid . . . . . 18. *B. tenuiloba*.
- Leaves elliptic to ovate, usually shortly acuminate; shortly acute or rounded at the base; petiole  $4$ – $6$  lin. long . . . . . 19. *B. elliptica*.
- Leaves oblong-elliptic, long acuminate, acute at the base; petiole  $8$ – $11$  lin. long . . . . . 20. *B. dichotoma*.
- \*\*GUEBBA.—Corolla-tube without supra-staminal calli . . . . . 21. *B. gracillima*.

1. **B. calophylla**, Stapf. A climbing shrub, up to 30 ft. high, almost perfectly glabrous; young branches greyish-green, somewhat

compressed near the tips, terete below. Leaves obovate, suddenly contracted into a linear or sublinear narrow acumen (about  $\frac{1}{2}$  in. long), more or less cuneate towards the base, 5-7 in. long, 2-3 in. broad, subcoriaceous, quite glabrous; secondary nerves 11-12 on each side, very oblique, straight, like the midrib much raised below, less so (but distinctly) above; transverse veins numerous, parallel, raised on both sides, subhorizontal; petiole rather stout, 3-4 lin. long. Panicles over  $\frac{1}{2}$  ft. long, very lax, pubescent below, glabrous above; peduncle  $2\frac{1}{2}$  in. long; lower bracts at the base of the primary branches sometimes foliaceous, white, upper very small, lanceolate to subulate, all pubescent; lowest branches up to 3 in. long, undivided for  $\frac{2}{3}$  of their length; pedicels slender, up to 4 lin. long. Calyx oblong-ovoid, 2 lin. long, glabrous; segments ovate-lanceolate or oblong, subobtuse, ciliolate, thin; intra-calycular glands 5. Corolla white with red streaks in the throat; tube wide-funnel-shaped, 3 lin. long, glabrous without and above the minute calli within; lobes linear, obtuse, 7 lin. long, over 1 lin. broad. Anthers scarcely 2 lin. long; connective scantily pubescent on the back. Disc distinct. Carpels hairy at the top. Style obconical, glabrous, much shorter than the conical shortly apiculate stigma, the lower edge of which projects into a pflaxed rim.—*Codonura calophylla*, K. Schum. in Engl. & Prantl, Pflanzenfam. Nachtr. 285.

**Upper Guinea.** Cameroons: Yaunde, *Zenker & Staudt*, 135! Lolodorf, *Staudt*, 136!

2. **B. erythrosticta**, *K. Schum. MSS.* A glabrous climber; young branches slender, greenish. Leaves lanceolate to oblong-elliptic, long acuminate (acumen up to nearly 1 in. long), acute or minutely cordate at the base,  $2\frac{1}{2}$ -9 in. long,  $1\frac{1}{4}$ - $3\frac{3}{4}$  in. broad, papery, pale green, quite glabrous; secondary nerves 7-9 on each side, very oblique, much raised below, channelled above; transverse veins subhorizontal; petiole 1-3 lin. long, stout. Flowers in very lax few-flowered terminal and axillary glabrous panicles or pseudo-umbels; peduncle slender, up to 1 in. long; lower bracts sometimes foliaceous, thin, upper minute, lanceolate; pedicels up to 4 lin. long. Calyx 1 lin. long, nearly or quite glabrous; sepals ovate-lanceolate, acute or subacute, thin, each with a pair of glands at the base. Corolla funnel-shaped; tube campanulate, not quite  $1\frac{3}{4}$  lin. long, glabrous without and above the obscure calli within; lobes long-caudate from a linear-lanceolate base, up to 8 lin. long. Anthers almost  $1\frac{1}{2}$  lin. long, puberulous on the back. Disc sinuate. Ovary pubescent at the top; style obconical, short, very minutely papillose; stigma campanulate, shortly bifid at the apex.

**Upper Guinea.** Cameroons: Bipinde, *Zenker*, 2278A!

3. **B. ochrantha**, *K. Schum. MSS.* A glabrous climber; branches terete (except at the compressed tips), greenish. Leaves elliptic to ovate-oblong, gradually acuminate, (acumen linear, very obtuse, up to  $\frac{1}{2}$  in. long), acute at the base, 2- $4\frac{1}{2}$  in. long, 1-2 in. broad, chartaceous, glabrous except for tufts of rusty-coloured hairs in the nerve-axils;

secondary nerves 4-6 on each ſide, channelled above, the loweſt 2-3 on each ſide conſpicuous, very oblique and ſtrongly curved, the upper faint, almoſt ſtraight; tertiary nerves and tranſverſe veins ſlightly oblique; petiole 2-3 lin. long. Cymes 3-1-flowered, terminal, glabrous; peduncle very ſlender  $\frac{1}{2}$ - $\frac{3}{4}$  in. long; bracts minute, deciduous; pedicels filiform,  $\frac{1}{2}$ -1 in. long. Calyx ſemigloboſe, blackiſh,  $\frac{3}{4}$  lin. long, glabrous; ſegments rotundate, margins ſubhyaline; intra-calyceular glands 5, diſtinct. Corolla funnel-shaped; tube campanulate,  $3\frac{1}{2}$  lin. long, glabrous without and above the ovate calli within; lobes linear from a lanceolate baſe, obtuſe, 5 lin. long, 1 lin. broad. Anthers over  $1\frac{1}{2}$  lin. long, minutely villous on the back. Diſc diſtinct, ſinuouſ. Ovary pubeſcent at the top; ſtyle obconic-cylindric,  $\frac{3}{4}$  lin. long, minutely puberulous; ſtigma campanulate-conic with a ſhort bifid apex.

**Upper Guinea.** Cameroons: Bipinde, *Zenker*, 2044!

4. **B. Wulſhorſtii**, *Schinz in Bull. Herb. Boiſſ.* iv. 816. A climbing ſhrub; young branches finely rufo-pubeſcent, at length glabreſcent, reddiſh-brown. Leaves lanceolate to ovate- or elliptic-oblong, obtuſe or ſubacute, rounded at the baſe,  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long,  $3$ - $5\frac{1}{2}$  lin. broad, at length coriaceous, finely pubeſcent when young, ſoon glabreſcent; ſecondary nerves very faint, 10-11 on each ſide; petiole up to  $\frac{3}{4}$  lin. long, pubeſcent. Flowers in (often very numerous) 2-1-flowered axillary cymes or the uppermoſt cymes gathered into a ſmall panicle; peduncle filiform, very ſhort to  $\frac{1}{2}$  in. long, denſely rufo-pubeſcent like the whole infloreſcence; bracts ſubulate, up to 1 lin. long; pedicels up to  $2\frac{1}{2}$  lin. long. Calyx open, rufo-pubeſcent, up to  $1\frac{1}{2}$  lin. long, eglandular; ſepals oblong-linear, obtuſe. Corolla ſweet-ſcented, white; tube wide funnel-shaped up to 2 lin. long, pubeſcent without, glabrous within and ſtreaked with red above the rather obſcure calli; lobes linear, up to 10 lin. long. Anthers 2 lin. long, minutely pubeſcent on the back. Diſc very ſhallow, ſinate. Ovary ſparingly hairy on the top; ſtyle cylindric below, thickened above, delicately papilloſe; ſtigma campanulate-conic with a ſhort bifid apiculus. Follicles glabrous, 7 in. long.—*B. ſpectabilis*, *Hua in Bull. Soc. Linn. Paris*, 2 ſér. i. 10.

**Lower Guinea.** Angola: Huilla, *Autunes*, 391; by the Cunene River below its junction with the River Chitanda, 3600 ft., *Baum*, 118! Amboland: Ompanda, *Wulſhorſt*, 2!

**South Central.** Angola?: Upper Zambesi, *Jalla*!

5. **B. multiflora**, *A. DC. Prod.* viii. 424. A climber, 60 to 80 ft. high; young branches ſlender, more or leſs ruſty- or fulvo-tomentoſe, ultimately glabreſcent. Leaves elliptic to oblong, ſhortly or obſcurely acuminate, rounded or more or leſs acute at the baſe,  $1\frac{1}{2}$ - $3\frac{1}{2}$  in. long, 1-2 in. broad, chartaceous, finely ruſty tomentoſe all over in bud, very ſoon glabreſcent above and between the nerves below, at length ſometimes quite glabrous except for ſmall tufts of hairs in the nerve-axils; ſecondary nerves 5-7 on each ſide, channelled above; tranſverſe veins fine, but diſtinct; petiole 1- $2\frac{1}{2}$  lin. long. Panicles

slender, pyramidal, 2–15 in. long, finely rusty- or fulvo-tomentose; lowest bracts sometimes foliaceous and coloured, upper small, lanceolate to subulate, 1–2 lin. long; pedicels very short or up to 4 lin. long. Calyx 1–1½ lin. long, puberulous to minutely tomentose; sepals lanceolate, acute or obtuse, eglandular. Corolla white, funnel-shaped; tube subcampanulate, 2–3 lin. long, puberulous without, scantily pubescent within in the upper part; supra-staminal calli ovate, distinct; lobes linear-lanceolate to linear, long tapering, 5–7 lin. long. Staminal cone not quite 1 lin. long, reaching to or beyond the middle of the corolla-tube; anthers more or less hairy on the back. Style puberulous, obconic from a cylindric base; stigma with a short bifid apiculus; ovary pubescent. Follicles finely rusty tomentose, up to 16 in. long, obtuse. Seeds 8 lin. long; coma reddish, 1–1½ in. long.—Hook. Niger Fl. 452; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 172; Hua in Bull. Soc. Linn. Paris, 2 sér. i. 7, 9; Chevalier, Géogr. Bot. Sénégal, 223. Hua in Compt. Rend. Acad. Paris, cxxxiv. 856, 857.

**Upper Guinea.** Senegambia: in the forests of Ferlo, *Heudelot*, 186! Cape Nase, *Dollinger*, 45! Gambia: Albreda, *Perrotet*, 480! on the south bank of the River Gambia, *Brown-Lester*, 14! and without precise locality, *Whitfield*! Rio Nunez, *Whitfield*! Futa Jallon, *Heudelot*, 601! 597!

Var.  $\beta$  *caudiloba*, Stapf. Leaves slightly larger, thinner and more acuminate than in the type, quite glabrous except in the nerve-axils. Anthers and style very sparingly hairy.—*B. caudiloba*, Stapf in Journ. Linn. Soc. xxx. 90; Hua in Bull. Soc. Linn. Paris, 2 sér. i. 10.

**Upper Guinea.** Sierra Leone: near Ninia, Talla Hills, *Scott-Elliot*, 4807!

Var. *caudiloba* is perhaps only a particularly glabrous state of *B. multiflora*. The other extreme is represented by Hua's *B. Heudelotii* (Bull. Soc. Linn. Paris, 2 sér. i. 9), although it is less marked off from the type. The leaves of the type specimen of *B. multiflora* are not glabrous, as described by A. De Candolle.

6. ***B. laxiflora***, *Stapf in Kew Bulletin*, 1894, 124. A graceful climber up to 39 ft. high; branches very slender, minutely puberulous when young. Leaves oblanceolate or oblong, acuminate, acute or cuneate at the base, up to 3 in. long, 1 in. broad, papery, quite glabrous except for small tufts of hairs in the nerve-axils; secondary nerves about 5 on each side, slender; transverse veins faint, subhorizontal; petiole up to 2 lin. long. Cymes 3–1-flowered, axillary on very short peduncles or very loosely arranged in axillary and terminal panicles, branched from the base, up to 4 in. long, very minutely puberulous; rhachis and branches subcapillary; pedicels very slender, up to 2½ lin. long; bracts minute, ovate. Calyx very minutely pubescent, ¾ lin. long, eglandular; sepals ovate, subacute. Corolla funnel-shaped; tube subcampanulate, very minutely puberulous without, villous in the throat, 1½–2½ lin. long, supra-staminal calli much projecting, almost cornute; lobes lanceolate from a subauriculate base 3–4 lin. long. Anthers not quite 1 lin. long, pubescent on the back. Carpels hairy at the top; style rather slender, obconic-cylindric, minutely puberulous; stigma subcampanulate with a short bifid apiculus. Follicles very slender, up to more than 2 ft. long; seeds linear, 1 in. long; coma 1 in. long.—*Stapf*

in Hook. Ic. Pl. t. 2342; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 172; Hua in Bull. Soc. Linn. Paris, 2 sér. i. 10.

**Upper Guinea.** Southern Nigeria: by the Old Calabar River, *Mann*, 2258! Cameroons: Bipinde, *Zenker*, 1056! 1902!

**Lower Guinea.** Gaboon: Libreville, *Klaine*, 89! and without precise locality, *Klaine*, 311! Corisco Bay; Muni (Danger) River, *Mann*, 1756!

7. **B. Tholloni**, *Hua* in Bull. Soc. Linn. Paris, 2 sér. i. 10. Leaves lanceolate, acutely acuminate, the upper up to 2 in. long,  $\frac{3}{4}$  in. broad, papery, quite glabrous except in the nerve-axils; secondary nerves very oblique, 6-7 on each side, slightly raised below; transverse veins horizontal, delicate; pedicels slender, up to 2 lin. long. Cymes few-flowered, terminal and axillary, gathered in lax leafy panicles, loosely pubescent in the upper part; peduncles filiform, glabrous, up to  $\frac{3}{4}$  in. long; bracts small, lanceolate to subulate; pedicels 2 lin. long. Calyx 1 lin. long, very sparingly pubescent, eglandular. Corolla-tube subcampanulate,  $2\frac{1}{2}$  lin. long, sparingly and minutely puberulous without; throat glabrous; supra-staminal calli distinct, much projecting; lobes linear, very narrow and acute, 5 lin. long. Anthers not quite 1 lin. long, hairy on the back. Ovary quite glabrous; style obconical, minutely papillose; stigma subcampanulate, with a short bifid apiculus.

**Lower Guinea.** French Congo: by the River Ogowe, *Thollon*, 852!

8. **B. angolensis**, *Stapp* in *Kew Bulletin*, 1894, 126. A graceful and rather weak but tall climber with drooping branches, 4-7 ft. long; young branches minutely pubescent, hairs rather persistent. Leaves elliptic-oblong, shortly and acutely acuminate, rounded at the base,  $1-2\frac{1}{2}$  in. long,  $\frac{1}{2}$ -1 in. broad, subcoriaceous, minutely pubescent on the nerves in a very young state, soon glabrous except in the nerve-axils, secondary nerves 4-5, rarely 6; transverse veins rather inconspicuous; petiole 1 lin. long. Cymes in terminal or in terminal and lateral slender raceme-like or pyramidal panicles, minutely pubescent; rhachis and branchlets filiform; bracts lanceolate to subulate,  $1-1\frac{1}{2}$  lin. long; pedicels up to  $1\frac{1}{2}$  lin. long. Calyx minutely pubescent, 1 lin. long; sepals ovate-lanceolate, subacute, eglandular. Corolla white, tinged with pink, very sweet-scented, subcampanulate; tube minutely puberulous without, villous in the throat,  $2-2\frac{1}{2}$  lin. long; supra-staminal calli short, ovate; lobes lanceolate from an ovate auriculate base, acuminate, 3-4 lin. long. Anthers reaching beyond the middle of the corolla-tube,  $\frac{3}{4}$  lin. long, glabrous or very sparingly hairy on the back. Carpels puberulous at the top; style obconic-cylindric, minutely puberulous. Stigma campanulate with a short bifid apex.—Hiern in Cat. Afr. Pl. Welw. i. 675; Hua in Bull. Soc. Linn. Paris, 2 sér. i. 10.

**Lower Guinea.** Angola: Golungo Alto; by thickets on slopes along the Cuango rivulet, rather rare, *Welwitsch*, 5967!

*Guerkea congolana*, De Wild. & Durand in Comptes-rendus Soc. Bot. Belg. xxxviii. 94, collected by Capt. Cabra on the Lower Congo may belong to this species.

9. **B. major**, *Hiern in Cat. Afr. Pl. Welw.* i. 675. A powerful climber; young branches very minutely rusty tomentose, soon glabrescent. Leaves obovate-oblong, acuminate, rounded or almost cordate at the base, 1-4½ in. long, ¾ to 2 in. broad, thinly coriaceous, shining when fresh, dull and olive-green or brown when dry, very minutely pubescent on the nerves below when young, soon glabrous except for some tufts of rusty hairs in the nerve-axils; secondary nerves 6-9 on each side; transverse nerves fine, distinct. Cymes 2-1-flowered, in slender panicles, 2-2½ in. long, very minutely rusty tomentose; bracts linear-lanceolate, 2-3 lin. long; pedicels up to 1½ lin. long. Calyx 1¼-1¾ lin. long, very minutely pubescent; sepals ovate-lanceolate, acuminate, intra-calyx glands 5, minute. Corolla white, fragrant; tube campanulate, 2-2½ lin. long, glabrous without and in the throat; supra-staminal calli knob-shaped; lobes linear, 6-7½ lin. long. Staminal cone ¾ lin. long; anthers glabrous on the back. Carpels pubescent on the top; style obconic-cylindric, minutely papillose; stigma campanulate with a short bifid apiculus. Follicles linear, acuminate.—*B. angolensis*, var. *major*, Stapf in Kew Bulletin, 1894, 126.

**Lower Guinea.** Angola: Pungo Andongo; in damp thickets in the Præsidium, *Welwitsch*, 5966!

10. **B. axillaris**, *Hua in Compt. Rend. Acad. Paris*, cxxxiv. 857. A climbing shrub, 8-10 ft. high; young branches densely fulvo-tomentose, terete, spreading at wide angles in one plane. Leaves distichous, oblong or ovate-oblong, shortly acute or subacute, truncate or subcordate at the base, 1-1½ in. long, 6-9 lin. broad, thinly coriaceous, hirsute on the midrib above and on the nerves below, ultimately glabrescent; secondary nerves about 6 on each side; veins obscure; petiole ½-1 lin. long. Cymes 3-5 lin. long, subsessile or shortly peduncled, densely pubescent; bracts very minute, ovate; pedicels up to 1 lin. long. Calyx finely pubescent, ¾ lin. long; sepals roundish ovate, obtuse. Corolla yellow, funnel-shaped-campanulate, 1¾-2½ lin. long, minutely pubescent outside, glabrous in the throat, supra-staminal calli transversely oblong; lobes lanceolate-ovate, rather shorter than the tube. Staminal cone reaching to the middle of the tube; anthers ⅔ lin. long, glabrous on the back. Disc distinct. Carpels pubescent above the disc; style obconic from a cylindrical base, sparingly papillose above; stigma campanulate with a subulate, bifid apiculus.—*Zygodia axillaris*, Benth. in Hook. Ic. Pl. t. 1184; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 164; Hiern in Cat. Afr. Pl. Welw. i. 673.

**Upper Guinea.** Lagos: Yewa Mala, Punch, 77! Old Calabar River, *Mann*, 2301! Cameroons: Johann Albrechts Höhe, *Staudt*, 518! Bipinde, *Zenker*, 2316!

**Lower Guinea.** Angola: Golungo Alto; Queta Mountains, and Mata de Trombeta, *Welwitsch*, 5960! 5963! Quibolo, *Welwitsch*, 5962!

11. **B. zygodiioides**, *Stapf*. Young branches slender, rufo-tomentose, at length glabrescent. Leaves rather crowded, oblong to

ovate- or obovate-oblong, very shortly acute or subobtuse, truncate at the base, 1-2 $\frac{3}{4}$  in. long, 6-10 lin. broad, papery, scantily hairy on the nerves below when young, soon quite glabrous except for small tufts of hairs in the nerve-axils; secondary nerves about 6-7 on each side, raised below, faint above; transverse veins delicate; petiole  $\frac{1}{2}$ - $\frac{3}{4}$  lin. long, rufo-tomentose. Panicles axillary and terminal, few-flowered, not or scarcely exceeding the supporting leaves, finely rufo-pubescent; peduncle very slender, up to  $\frac{3}{4}$  in. long; bracts minute, ovate, acute; pedicels up to 2 lin. long. Calyx slightly over 1 lin. long, sparingly pubescent; sepals ovate-oblong, acute; intra-calycular glands 5, minute. Corolla funnel-shaped, very minutely pubescent without; tube 1 $\frac{1}{2}$ -2 lin. long, glabrous in the throat, supra-staminal calli transversely oblong; lobes lanceolate-linear, as long as or slightly longer than the tube; staminal cone not quite reaching the mouth; anthers  $\frac{3}{4}$  lin. long, glabrous on the back. Disc shallow. Carpels pubescent on the top; style obconic, minutely papillose; stigma campanulate, with a subulate 2-fid apiculus.—*Oncinotis zygodioides*, K. Schum. in Engl. Jahrb. xxiii. 227.

**Upper Guinea.** Sierra Leone, *Afzelius*!

12. **B. Baillonii**, *Hua* in *Bull. Soc. Linn. Paris*, 2 sér. i. 8, 11. A climbing shrub; young branches finely rufo-tomentose, soon glabrescent, very slender. Leaves oblong, subacuminate, truncate at the base, very variable in size, up to 3 in. long and 10 lin. broad, papery, very sparingly pubescent on the nerves below or finally quite glabrous except in the nerve-axils; secondary nerves 6-8 on each side; transverse veins very delicate; petiole  $\frac{1}{2}$  lin. long, minutely rufo-tomentose. Panicles terminal, leafy, obovoid, up to 3 in. long, or more reduced from the leaf-axils, more or less dichotomous, finely rusty-tomentose or furfuraceous; bracts small, ovate-lanceolate; pedicels up to 2 lin. long. Calyx  $\frac{3}{4}$  lin. long, minutely pubescent; sepals ovate, subacute; intracalycular glands minute, about 3. Corolla campanulate, very minutely puberulous without; tube wide, 1 $\frac{1}{2}$  lin. long, glabrous in the throat; supra-staminal calli triangular; lobes ovate-lanceolate, as long as the tube. Staminal cone almost reaching to the mouth; anthers minutely pubescent on the back. Disc sinuous. Carpels pubescent on the top; style obconic-cylindric, glabrous below, papillose above; stigma depressed-campanulate, with a bifid short apiculus. Follicles very slender, up to 3 ft. long, sparingly furfuraceous, constricted between the seeds. Seeds  $\frac{3}{4}$  in. long.—*Hua* in *Compt. Rend. Acad. Paris*, cxxxiv. 857.

**Lower Guinea.** French Congo: banks of the River Ogowe, *Thollon*, 262! near Lambarene, on the River Ogowe, *Thollon*, 711!

13. **B. Welwitschii**, *Stapp* ex *Hiern* in *Cat. Afr. Pl. Welw.* i. 675. A graceful, copiously lactescent climber; young branches very slender, minutely pubescent, pale green when dry. Leaves obovate or elliptic, acuminate (acumen slender, up to 4 lin. long), usually acute at the base, 2-2 $\frac{1}{2}$  in. long,  $\frac{3}{4}$ -1 in. broad, papery, pale green, almost

glaucous, glabrous or very minutely pubescent on the midrib; secondary nerves 5-7 on each side, fine; transverse veins inconspicuous (though distinct under a lens); petiole slender, up to 2 lin. long. Cymes few-flowered, contracted, axillary and terminal; peduncles very slender, up to 4 lin. long; bracts minute; pedicels up to 1 lin. long. Calyx minutely and scantily pubescent, 1 lin. long; intra-calycular glands 5, minute; sepals broad-ovate, obtuse. Corolla dirty white with purple streaks in the throat, funnel-shaped, glabrous without; tube 2 lin. long, glabrous in the throat; supra-staminal calli minute, transversely linear; lobes linear from an ovate base, gradually tapering, 3 lin. long. Staminal cone reaching almost to the corolla-mouth; anthers  $1\frac{1}{2}$  lin. long, minutely silky on the back. Disc shallow, sinuate. Carpels minutely puberulous on the top; style minutely papillose, obconical; stigma with a short conical bifid apiculus.—K. Schum. in Engl. & Prantl, Pflanzenfam. Ergänzt. 59. *Perinerion Welwitschii*, Baill. in Bull. Soc. Linn. Paris, i. 758; K. Schum. l.c. iv. ii. 174.

**Lower Guinea.** Angola: Golungo Alto; outskirts of forests on the mountains of Alto Queta, rather rare, *Welwitsch*, 5932!

14. **B. odorata**, *K. Schum. MSS.* A climbing shrub, quite glabrous except the inflorescences; young branches compressed, later on terete, greyish-brown. Leaves elliptic-lanceolate, gradually acuminate (acumen obtuse, up to  $\frac{1}{2}$  in. long), acute to subcuneate at the base,  $2-2\frac{1}{2}$  in. long,  $\frac{3}{4}-1$  in. broad, almost papery; secondary nerves 6-8 on each side, oblique, fine; transverse veins at very acute angles with the secondary nerves; petiole  $1\frac{1}{2}-2$  lin. long, slender. Panicles very lax, short, terminal and lateral, the terminal subcorymbiform about  $1-1\frac{1}{4}$  in. long, the lower often reduced to 3-1-flowered cymes, adpressedly and minutely pubescent in all parts; branches filiform; bracts minute, lanceolate; pedicels very slender, up to 5 lin. long. Calyx subsemiglobose,  $\frac{2}{3}-\frac{3}{4}$  lin. long, adpressedly pubescent, blackish; sepals rotundate-ovate; intra-calycular glands 5, distinct, though small. Corolla funnel-shaped; tube subcampanulate,  $2\frac{1}{2}$  lin. long, finely pubescent without; throat glabrous; supra-staminal calli transversely linear, more or less united into a ring; lobes linear, subobtuse, 3 lin. long. Anthers 2 lin. long, pubescent on the back. Disc shallow, sinuate. Ovary-top black-pubescent. Style very short, obconic, minutely puberulous; stigma semiglobose-campanulate with a slender bifid apex.

**Upper Guinea.** Cameroons: Bipinde, *Zenker*, 2072!

15. **B. ogowensis**. *Hua in Bull. Soc. Linn. Paris*, 2 sér. i. 10. A powerful climbing shrub, quite glabrous except the inflorescences and nerve-axils; young branches compressed near the tips, soon terete, blackish when dry. Leaves oblong, acuminate (acumen rather broad subacute or obtuse, 2-4 lin. long), acute at the base,  $2\frac{1}{2}-3\frac{1}{2}$  in. long,  $1\frac{1}{4}-1\frac{1}{2}$  in. broad, papery, with small tufts of rust-coloured hairs in the nerve-axils below; secondary nerves 10-12 on each side, with almost

parallel tertiary ones between them and the transverse veins, subhorizontal; nervation and reticulation slightly raised on both sides, faint; petioles slender, 4–9 lin. long. Cymes few- or many-flowered, in axillary or terminal usually ovoid or obovoid panicles, very minutely furfuraceous, blackish; peduncles very slender, 4–9 lin. long; bracts minute; pedicels filiform, up to  $1\frac{1}{2}$  lin. long. Calyx globose-ovoid,  $\frac{3}{4}$  lin. long; sepals ovate, subacute, with a scanty extremely delicate tomentum like that of the pedicels; intra-calycular glands 5, minute. Corolla white with crimson streaks in the throat, funnel-shaped; tube subcampanulate, not quite  $1\frac{1}{2}$  lin. long, minutely papillose without, glabrous in the throat, calli transversely linear, more or less united into a ring; lobes linear, obtuse, over 2 lin. long. Anthers not quite 1 lin. long, minutely papillose on the back. Disc shallow, sinuate. Ovary-top pubescent; style obconical, rather slender, puberulous; stigma campanulate, with a long bifid subulate apex.—Hua in Compt. Rend. Acad. Paris, cxxxiv. 857.

**Lower Guinea.** French Congo: Adalina, on the River Ogowe, *Soyaux*, 278! Gaboon: Libreville, *Klaine*, 9! and without precise locality, *Klaine*, 305!

16. **B. leonensis**, *Benth. in Hook. Niger Fl.* 452. A climbing shrub; branches covered with a very fine dark rusty furfuraceous tomentum when young, soon glabrescent. Leaves oblong, rarely elliptic, acuminate at both ends or acute at the base,  $2\frac{1}{2}$ – $4\frac{1}{2}$  in. long,  $\frac{3}{4}$ – $1\frac{3}{4}$  in. broad, subcoriaceous, perfectly glabrous, rarely with tufts of hairs in the nerve-axils; secondary nerves 8–12 on each side, raised on both surfaces; transverse veins very close and fine, raised on both surfaces; petiole slender, 3–6 lin. long. Panicles few- to many-flowered, axillary and terminal, the lower often much reduced, the upper more compound; peduncles very slender, up to  $\frac{1}{2}$  in. long, covered like the rest of the inflorescence with the same kind of tomentum as the young branches; bracts small, shortly lanceolate; pedicels up to  $1\frac{1}{2}$  lin. long. Calyx subsemiglobose,  $\frac{3}{4}$  lin. long, minutely furfuraceous; sepals ovate, acute; intra-calycular glands 5. Corolla white, with red streaks in the throat, funnel-shaped; tube 2 lin. long, minutely furfuraceous without, glabrous in the throat; supra-staminal calli short, thick, transversely linear; lobes lanceolate, 2 lin. long. Staminal cone almost reaching to the corolla-mouth; anthers 1 lin. long, glabrous on the back. Disc faint, sinuous. Carpels puberulous from the disc upwards; style obconic, papillose; stigma campanulate with a fine subulate bifid apiculus.—K. Schum. in Engl. & Prantl, *Pflanzenfam.* iv. ii. 172; Stapf in *Journ. Linn. Soc.* xxx. 89; Hua in *Bull. Soc. Linn. Paris*, 2 sér. i. 10.

**Upper Guinea.** Sierra Leone: highlands about Bafodeya, *Scott-Elliot*, 5500! and without precise locality, *Don! Vogel!* 119! Gold Coast: Aburi Hills, *Johnson*, 283! Aquapim, 1400 ft., *Murphy* in *Herb. Johnson*, 674!

17. **B. brachyantha**, *Stapf in Kew Bulletin*, 1894, 125. A climbing shrub; young branches covered with a very fine, dark, rusty

furfuraceous tomentum, soon glabrous. Leaves lanceolate to elliptic, obtusely acuminate, acute at the base, 2-3 in. long,  $\frac{3}{4}$ -2 in. broad, subcoriaceous, quite glabrous except in the nerve-axils; secondary nerves oblique, 8-10 on each side; transverse veins close and fine, subhorizontal; petiole slender, up to 6 lin. long. Flowers in axillary and terminal, mostly peduncled pseudo-umbels or short panicles, up to 2 in. long, covered like the remainder of the inflorescence with the same kind of tomentum as the young branches; bracts minute, ovate, acute; pedicels up to 2 lin. long. Calyx semiglobose, very minutely tomentose,  $\frac{3}{4}$  lin. long; sepals ovate, obtuse; intra-calycular glands 5. Corolla short funnel-shaped, very minutely furfuraceous without; tube scarcely  $1\frac{1}{4}$  lin. long, glabrous in the throat; supra-staminal calli transversely linear; lobes rather thick, ovate-lanceolate, as long as the tube or slightly longer. Staminal cone reaching to the corolla-mouth; anthers glabrous on the back. Disc sinuous. Carpels puberulous on the top; style obconical, minutely papillose; stigma campanulate, with a setiform apiculus.—Staff in Hook. Ic. Pl. t. 2243; Hua in Bull. Soc. Linn. Paris, 2 sér. i. 11.

**Upper Guinea.** Sierra Leone: Bagru River, *Mann*, 854!

18. **B. tenuiloba**, *Staff* in *Kew Bulletin*, 1894, 124. An erect or climbing shrub, 12-20 ft. high; branches long and slender, covered with a very minute dark rusty furfuraceous tomentum when young, soon glabrous. Leaves oblong to oblong-elliptic, acuminate (acumen obtuse, up to 8 lin. long), acute, rarely rounded at the base,  $2\frac{1}{2}$ - $4\frac{1}{2}$  in. long,  $1\frac{1}{4}$ -2 in. broad, thinly subcoriaceous, quite glabrous, except for tufts of rufous hairs in the nerve-axils; secondary nerves 6-8 on each side, oblique; transverse veins very fine, close, subhorizontal; petiole slender, up to 6 lin. long. Cymes subumbelliform, few-flowered, arranged in slender axillary and terminal panicles, usually sessile or on short branches on the common rhachis, covered more or less with the same kind of tomentum as the young branches, panicles up to 3 in. long; bracts minute, shortly lanceolate; pedicels  $1\frac{1}{2}$  lin. long. Calyx semiglobose, minutely black-furfuraceous,  $\frac{3}{4}$  lin. long; sepals ovate, subacute, or obtuse; intra-calycular glands 5. Corolla dark purple or violet, whitish in the centre, subcampanulate; tube  $1\frac{1}{2}$ - $1\frac{3}{4}$  lin. long, very minutely furfuraceous without; throat glabrous; supra-staminal calli transversely linear, distinct; lobes long-caudate, acuminate from an ovate base, 4-6 lin. long. Anthers not quite 1 lin. long, with spreading hairs on the back. Disc very shallow, sinuate. Carpels puberulous at the top; style obconical, short and stout, minutely papillose; stigma campanulate, with a setiform bifid apex.—Hua in Bull. Soc. Linn. Paris, 2 sér. i. 10. *B. uropetala*, Hua, l.c. 12. *Guerkea uropetala*, K. Schum. in *Engl. Jahrb.* xxiii. 228.

**Upper Guinea.** Niger Delta: Bonny River, *Mann*, 504! *Kalbreyer*, 73! Cameroons: Cameroon River, *Mann*, 2187! Bipinde, *Zenker*, 1627! Yaunde, *Zenker*, 722 (ex *Schumann*).

Flowers sometimes occur with the tails of the corolla-lobes not developed. Such flowers are very like those of *B. elliptica*. De Wild. & Durand quote (*Reliq.*

Dewevr. 157) *Guerkea uropetala*, as collected by Dewèvre near Wangata on the Middle Congo. Dewèvre, in a note cited in the same place, describes the plant as a decumbent shrub with red flowers growing on ant-hills.

19. **B. elliptica**, *Staff.* A climbing shrub, quite glabrous, except the inflorescences and sometimes the nerve-axils; young branches compressed, at length terete, fuscous when dry. Leaves elliptic to ovate, rarely oblong-elliptic, acutely or subacutely acuminate, shortly acute or rounded at the base, 2-3 in. long, 1-2 in. broad, papery or thinly coriaceous, quite glabrous, rarely with small tufts of rufous hairs in the nerve-axils; secondary nerves 5-7 on each side, oblique, faint; transverse veins subhorizontal, obscure; petiole 4-6 lin. long, slender. Cymes subumbelliform, gathered in lax more or less divaricate axillary and terminal panicles; lower panicles more slender and very loose, up to 3 in. long, the upper often paired, the terminal 3-4-nate, more compound, 1-2 in. long, all finely blackish-furfuraceous; peduncles up to 1 in. long, very slender; bracts minute; pedicels filiform up to 1 lin. long. Calyx campanulate-ovoid,  $\frac{3}{4}$  lin. long, finely furfuraceous; sepals ovate, subacute, intra-calycular glands 5. Corolla finely papillose without, campanulate; tube  $1\frac{3}{4}$ -2 lin. long, glabrous within above the transverse subsemicircular calli; lobes subulate-linear, from a broader base, about as long as the tube or rather shorter. Anthers not quite 1 lin. long, minutely papillose on the back otherwise glabrous or with 1 or 2 hairs. Disc shallow, sinuous. Ovary-top pubescent; style short, obconical, papillose; stigma campanulate, with a subulate apex.

**Upper Guinea.** Cameroons: Yaunde, *Zenker & Staudt*, 722! Bipinde, *Zenker*, 1257A! 1286!

K. Schumann quotes "Zenker, 722" from Yaunde as the type of his *Guerkea uropetala*. A specimen, however, of Zenker & Staudt 722 from Yaunde, received as *Guerkea uropetala* from Berlin does not answer to the description of that species, as it has corollas half as long with lobes rather shorter than the tube, not conspicuously longer. Possibly the label was misplaced.

20. **B. dichotoma**, *Staff* in *Kew Bulletin*, 1894, 125. A climbing shrub; young branches minutely rusty-furfuraceous, soon glabrescent. Leaves oblong-elliptic, gradually tapering into a long acute or sub-obtuse acumen, acute at the base, up to 4 in. long and  $1\frac{1}{2}$  in. broad, subcoriaceous, fulvo-tomentose in bud, soon quite glabrous except for tufts of rufous hairs in the nerve-axils; secondary nerves 6-8 on each side, oblique; transverse veins very fine, faint; petiole slender, 8-11 lin. long. Cymes in compound axillary and terminal panicles or corymbs with spreading branches and branchlets, covered with the same kind of tomentum as the young branches, up to  $2\frac{1}{2}$  in. long; bracts minute ovate or lanceolate, acute; pedicels up to  $1\frac{1}{2}$  lin. long. Calyx minutely furfuraceous or tomentose,  $1\frac{1}{2}$  lin. long; sepals rotundate, obtuse; intra-calycular glands 5. Corolla very finely furfuraceous without; tube urceolate, not quite 2 lin. long; throat glabrous, supra-staminal calli transversely linear; lobes ovate-lanceolate, subacute, as long as the

tube. Staminal cone  $\frac{3}{4}$  lin. long, reaching slightly beyond the middle of the tube; anthers with spreading hairs on the back. Disc shallow, sinuate. Carpels puberulous on the top; style short, obconical, papillose; stigma campanulate, with a subulate apex.—*Hua* in Bull. Soc. Linn. Paris, 2 sér. i. 11. *Guerkea floribunda*, K. Schum. in Engl. & Prantl, Pflanzenfam, iv. ii. 180.

**Lower Guinea.** Gaboon: Munda; Sibange Farm, *Soyaux*, 393!

21. **B. gracillima**, *Hua* in Bull. Soc. Linn. Paris, 2 sér. i. 12. Young branches compressed, covered with a very fine rusty furfuraceous tomentum, soon glabrous and terete. Leaves oblong to obovate-oblong, acutely acuminate (acumen up to  $\frac{1}{2}$  in. long), rounded (rarely subacute) at the base, 3–5½ in. long, 1–2¼ in. broad, papery, quite glabrous except for rufous tufts of hairs in the nerve-axils; secondary nerves 7–10 on each side; transverse veins subhorizontal, fine, not very close; petiole 2–3 lin. long. Cymes subumbelliform, gathered in large compound terminal leafy panicles, 4–6 in. long and as broad, puberulous, especially in the upper part; branches up to 3 in. long; bracts minute, ovate, acute; pedicels very short, up to  $\frac{3}{4}$  lin. long. Calyx semi-globose, very minutely pubescent,  $\frac{1}{2}$  lin. long; sepals ovate, subobtuse; intra-calycular glands 5. Corolla whitish, tubular-campanulate, minutely pubescent without; tube 1 lin. long, throat glabrous; supra-staminal calli 0; lobes rather fleshy, linear, obtuse, almost as long as the tube. Staminal cone reaching to the corolla-mouth, 1 lin. long; anthers villous on the back. Disc 5-lobed. Carpels puberulous on the top; style very short, obconical, smooth; stigma oblong-campanulate with a subulate apex. Follicles very slender, constricted between the seeds, 8 in. long.—*B. micrantha*, *Hua*, l.c. 11. *Guerkea gracillima*, K. Schum. in Engl. Jahrb. xxiii. 228.

**Upper Guinea.** Cameroons: Yaunde, *Zenker & Staudt*, 124! 684!

**Lower Guinea.** French Congo: Loudima, *Thollon*, 1360! Forests of Mayombe, *Thollon*, 1129!

*Incompletely known species.*

22. **Oncinotis (?) axillaris**, *K. Schum. in Engl. Jahrb. xxiii. 226*. A climbing shrub; young branches tetragonal, very minutely puberulous, soon glabrous and terete, blackish when dry. Leaves oblong-lanceolate or subobovate-oblong, shortly and very acutely acuminate, rounded at the base, 1–1¾ in. long, 5–8 lin. broad herbaceous, hispidulous on the midrib below; petiole scarcely 1½ lin. long. Flowers in axillary fascicles or 5–6-flowered cymes; inflorescences minutely puberulous, scarcely 4 lin. long; pedicels short. Calyx puberulous,  $\frac{3}{4}$  lin. long. Corolla campanulate; tube puberulous without, 2½ lin. long; lobes 3½–4 lin. long. Anthers  $\frac{1}{2}$  lin. long, sparingly hairy on the back. Ovary sparingly pubescent on the top.

**Lower Guinea.** Angola: Pungo Andongo, *Mechow*, 569.

This is almost certainly a species of *Baissea*, although it seems to have the inflorescence of a *Zygodia*.

23. **Guerkea schumanniana**, *De Wild. & Durand in Comptes-rendus Soc. Bot. Belg.* xxxviii. 128. A climbing shrub; branches slender, terete, velvety, compressed when young. Leaves oblong or obovate, shortly acuminate, obtuse or subcordate at the base,  $1-1\frac{3}{4}$  in. long,  $\frac{1}{2}-1$  in. broad, sparingly hairy above, long hairy on the nerves below; secondary nerves about 5 on each side, slightly raised on both surfaces. Panicles few-flowered, shorter than the leaves, minutely tomentose; peduncle 5 lin. long. Calyx  $\frac{3}{4}$  lin. long; sepals oblong-ovate. Corolla subcampanulate, minutely tomentose without; tube  $1\frac{1}{4}$  lin. long; lobes as long as the tube. Ovary hairy. Follicles elongate, brown, velvety, 3-6 in. long. Seeds ovate-lanceolate, flattened, 9 lin. long; coma 11 lin. long.

**South Central.** Congo Free State: Bangala, *Dewèvre* (flowers); Bumba, on the River Congo, *Dewèvre* (fruits).

The description answers very well to the genus *Baissea*, and Hua (in *Compt. Rend. Acad. Paris*, cxxiv. 857) points out that *G. schumanniana* is actually identical with *B. axillaris*, Staff.

39. **ZYGODIA**, Benth. in Benth. et Hook. f. *Gen. Pl.* ii. 716.

Calyx small, herbaceous, with 3-5 very minute intracalycular glands, rarely eglandular; sepals 5, free or nearly so, slightly imbricate, ovate, acute or obtuse. Corolla campanulate or urceolate, naked at the mouth, with or without minute callous scales some way above the insertion of the stamens and with dense obversely triangular patches of white reflexed hairs between them; lobes short, ovate, overlapping to the right. Stamens inserted below the middle of the corolla-tube; filaments extremely short, stout; anthers conniving in a cone, included, lanceolate, acute, sagittate; appendages as long as or longer than the polliferous part; tails short, subobtusate; foot of the connective broad, with a faint central ridge and hairy cushion at the base. Disc cupular, entire or slightly 5-lobed. Carpels 2, free, slightly inferior, more or less fused with the disc; style very short, usually obconic; stigma conic or conic-ellipsoid, with a bifid apiculus; ovules numerous, pluriserial. Mericarps follicular, divaricate, cylindric, slender. Seeds unknown.—Scandent shrubs. Leaves opposite, small, thinly coriaceous, with the petioles twisted so as to be all in one plane; axillary stipules and glands 0. Flowers inconspicuous, in small very short axillary cymes.

Species 5, endemic.

\*EZZYGODIA.—No callous scales in the corolla-tube.

Young branches densely fulvo-tomentose; leaves rhombic . . . . . 1. *Z. urceolata*.

Young branches finely fulvo-pubescent or puberulous, soon glabrescent; leaves obovate-oblong . . . . . 2. *Z. subsessilis*.

\*\*HUALLA.—With minute callous scales some way above the insertion of the stamens.

Top of ovary hairy.

Nerves very fine, but distinct like the veins; leaves thin, papery . . . . . 3. *Z. myrtifolia*.

Nerves and veins obscure, at least in the old leaves ;	
old leaves coriaceous . . . . .	4. <i>Z. melanocephala</i> .
Top of ovary glabrous . . . . .	5. <i>Z. kindengensis</i> .

1. **Z. urceolata**, *Stapf in Kew Bulletin*, 1894, 122. A climbing shrub ; young branches densely fulvo-tomentose, terete, spreading at wide angles, flexuose. Leaves all in one plane, rhomboid-lanceolate, acute at both ends, 1 in. long, 6 lin. broad, thinly coriaceous, hirsute on the midrib above, and on the nerves below, ultimately glabrescent ; secondary nerves faint, about 6-7 on each side. Cymes crowded, sessile or subsessile, 2-3 lin. long, rufo-pubescent ; bracts oblong or linear-oblong ; pedicels almost 0. Calyx pubescent,  $\frac{1}{2}$  lin. long with 2-3 very minute intra-calycular glands ; sepals ovate, obtuse. Corolla urceolate,  $1\frac{1}{4}$  lin. long, glabrous without, hairy within, except at the base, without supra-staminal scales ; tube 2-3 times as long as the roundish lobes ; stamens inserted on a slight glabrous swelling of the corolla-tube ; anthers sparingly hairy on the top. Disc distinct. Carpel-tops hairy. Style very short, obconic ; stigma almost bell-shaped, with a small apiculus.—Hua in *Compt. Rend. Acad. Paris*, cxxxiv. 858.

**Lower Guinea.** Angola : Golungo Alto, *Welwitsch*, 5961!

2. **Z. subsessilis**, *Benth. in Hook. Ic. Pl. sub t.* 1184. Young branches very slender, terete, pubescent with minute curled or flexuose hairs. Leaves rather variable in shape and size, obovate-oblong, acuminate, rounded or acute at the base,  $1\frac{3}{4}$ -3 in. long,  $\frac{3}{4}$ - $1\frac{2}{5}$  in. broad, thinly coriaceous, shiny, glabrous above, except on the midrib, minutely hairy on the midrib and in the nerve-axils below ; secondary nerves 5-6 on each side ; veins fine but distinct in the young, obscure in the old leaves ; petiole rather stout,  $\frac{1}{2}$  lin. long. Cymes about 4 lin. long, rusty pubescent ; peduncle 2 lin. long ; bracts linear-oblong, or ovate ; pedicels scarcely any. Calyx minutely pubescent,  $\frac{3}{4}$  lin. long with 5 minute intracalycular glands ; sepals oblong-ovate, subobtuse. Corolla glabrous without, pubescent within except at the base, without supra-staminal scales (known from buds only). Stamens inserted on a slight glabrous swelling of the corolla-tube. Anthers hairy on the back. Disc distinct. Carpel-tops pilose.

**Lower Guinea.** Lower Congo, *Smith*!

3. **Z. myrtifolia**, *Benth. in Hook. Ic. Pl. sub t.* 1184. A climbing shrub ; young branches very slender, terete, pubescent with minute curled or flexuose hairs. Leaves obovate-lanceolate to oblong, acute or acutely acuminate, acute to rounded at the base,  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. long, 7-9 lin. broad, thin, shiny, scantily and minutely hairy on the midrib above and below, soon glabrescent ; secondary nerves 6-8 on each side, very fine but distinct like the loosely anastomosing veins, and slightly raised on both sides ; petiole thin, 1 lin. long. Cymes dense, about

3-4 lin. long, rusty pubescent; peduncle fine, 1-2 lin. long; bracts lanceolate to linear; pedicels extremely short or 0. Calyx finely pubescent,  $\frac{3}{4}$  lin. long, with a few very minute intracalycular glands; sepals oblong, acute. Corolla subcampanulate,  $1\frac{1}{2}$ - $1\frac{3}{4}$  lin. long, glabrous outside, hairy within except at the base; supra-staminal scales distinct, rather remote from the base of the filament; lobes ovate, acute, as long as the tube. Anthers hairy on the back. Disc distinct. Carpel-tops pilose.

**Mozamb. Dist.** German East Africa: Usaramo; Bagamoyo, *Kirk!*

4. **Z. melanocephala**, *Staff.* A climbing shrub; young branches slender, minutely rusty pubescent, soon glabrescent. Leaves oblong, shortly acuminate, rounded at the base,  $1\frac{3}{4}$ - $2\frac{1}{4}$  in. long, 8-10 lin. broad, thin at the time of flowering, ultimately coriaceous, bearded in the nerve-axils below, shiny and pubescent on the midrib above; secondary nerves 6-8 on each side, fine, distinct in the young, often obscure in the old leaves; petiole 1 lin. long. Cymes dense, rusty pubescent; peduncle  $2\frac{1}{2}$  lin. long; bracts linear; pedicels short or 0. Calyx finely pubescent, 1 lin. long, without intracalycular glands; sepals ovate, acute. Corolla subcampanulate, 2 lin. long, glabrous without, hairy within except at the base; supra-staminal scales distinct, rather remote from the base of the filament; tube hairy within; lobes ovate-oblong equalling the tube. Anthers hairy on the back. Disc distinct. Carpels pilose at the top. Follicles slender, spreading, up to 8 in. long.—*Oncinotis melanocephala*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 179, and in Engl. Pfl. Ost-Afr. C. 319.

**Mozamb. Dist.** German East Africa: Usambara; Misosul, on the River Buruka, *Holst*, 2217!

Very near *Z. myrtifolia*, Benth.

5. **Z. kindengensis**, *K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 164. A climbing shrub. Young branches very slender, rusty pubescent. Leaves oblong, acutely acuminate, acute or rounded at the base,  $1$ - $1\frac{3}{4}$  in. long, 4-6 lin. broad, papery, glabrous, except along the midrib above and the bearded nerve-axils below; secondary nerves 6-8 on each side, fine, but distinct; petiole  $1\frac{1}{2}$  lin. long. Cymes few-flowered, rusty pubescent; peduncle  $1$ - $1\frac{1}{2}$  lin. long; bracts linear; pedicels short. Calyx finely pubescent, 1 lin. long with 5 very minute intracalycular glands; sepals linear. Corolla subcampanulate,  $1\frac{3}{4}$ -2 lin. long, glabrous without except at the base; supra-staminal scales distinct, somewhat remote from the base of the filament; tube finely hairy within; lobes ovate, acute, as long as the tube. Anthers hairy on the back. Disc distinct. Carpels glabrous.—K. Schum. in Engl. Pfl. Ost-Afr. C. 318.

**Mozamb. Dist.** German East Africa: Usaramo; Kidenge, *Stuhlmann*, 6344!

40. **ONCINOTIS**, Benth. ; Benth. et Hook. f. Gen. Pl. ii. 718.

Calyx small, eglandular within, rarely with 5 minute glands alternating with the sepals; sepals imbricate, ovate, acute or obtuse. Corolla salver-shaped; tube short, widest at the middle, densely tomentose within except at the very base, with 5 ligulate scales in the mouth alternating with the lobes and projecting obliquely into the mouth; lobes overlapping to the right, spreading or reflexed. Stamens inserted somewhat above the corolla-base; filaments very short, stout, arching over the ovary, densely hairy on the inner side; anthers conniving in a cone, included, sublinear, sagittate; appendages as long as the polliniferous part; tails short, very obtuse, recurved; foot of the connective with a faint central ridge in the upper part and a cushion of short papillæ at the base. Disc cupular, 5-lobed or 5-partite. Carpels 2, free, shortly exserted and free from the disc. Style very short, passing into the short spindle-shaped stigma; apiculus 2-lobed. Mericarps follicular, spindle-shaped, divaricate. Seeds lanceolate, with an apical cone. Embryo unknown.—Glabrous or hairy scandent shrubs. Leaves opposite; secondary nerves usually distant; axillary stipules and glands 0. Panicles axillary or axillary and terminal, consisting of opposite or subopposite, few- to many-flowered contracted cymes; flowers inconspicuous.

Species 10, 8 in tropical Africa, 1 in Natal and 1 in Madagascar.

Glabrous except the inflorescences (and sometimes also the branch-tips) which are very delicately rusty pubescent or minutely tomentose.

Secondary nerves 9–14 on each side, straight.

Calyx with 5 small but distinct glands within; secondary nerves 9–11 on each side; throat-scales very short . . . . . 1. *O. glandulosa*.

Calyx eglandular within; secondary nerves 12–14 on each side; throat-scales elongate.

Leaves 3–3½ in. long, 1¼ in. broad; petiole 3–4 lin. long; secondary nerves 2–3 lin. apart; calyx 1 lin. long . . . . . 2. *O. nitida*.

Leaves 3½–4¾ in. long, 1½–2 in. broad; petiole up to 9 lin. long; secondary nerves 3–5 lin. apart; calyx 1½ lin. long . . . . . 3. *O. Batesii*.

Secondary nerves 5–9 on each side, usually gently curved in the outer half, more oblique than in the 2 preceding species.

Leaves oblong to elliptic-oblong, 1½–2¼ in. broad, shortly acute or obtuse at the base.

Young branches compressed; leaves gradually acuminate; calyx 1½ lin. long . . . . . 4. *O. campanulata*.

Young branches terete; leaves abruptly acuminate; calyx 1 lin. long . . . . . 5. *O. glabrata*.

Leaves more or less lanceolate, up to 1 in. broad, long acute at the base . . . . . 6. *O. tenuiloba*.

More or less hairy all over, at least when young.

Hirsute, at last glabrescent; bracts and sepals narrow . . . . . 7. *O. gracilis*.

Stellate-tomentose; bracts and sepals very broad . . . . . 8. *O. hirta*.

1. **O. glandulosa**, *Staff.* Quite glabrous except the inflorescence. Young branches terete or slightly compressed near the tip, greyish-brown. Leaves oblong, acutely acuminate, subacute at the base, 3-5 in. long,  $1\frac{1}{4}$ - $1\frac{1}{2}$  in. broad, papery, glossy; secondary nerves 9-11 on each side, straight, slightly oblique, finely channelled above, prominent below; reticulation rather loose, raised below; petiole very slender, 4-6 lin. long. Panicles lateral and terminal, rather numerous and unequal, the longest sometimes nodding,  $\frac{1}{2}$ -2 in. long (excluding the peduncle), more or less linear in outline; peduncle hardly any or up to  $\frac{3}{4}$  in. long, compressed, glabrous like the lower part of the rhachis; flowers often in clusters at the nodes of the rhachis or the ends of the lowest branches; bracts minute, caducous; pedicels very delicately ferruginous-tomentose, up to 1 lin. long. Calyx  $1\frac{1}{2}$  lin. long; sepals elliptic, obtuse, thin, very delicately pubescent, with small glands within alternating with them. Corolla-tube inflated, 2 lin. long; delicately tomentose above the middle without; throat-scales tubercle-shaped,  $\frac{1}{4}$  lin. long; lobes broad-oblong, 2 lin. long. Anthers  $1\frac{1}{2}$  lin. long.

**Upper Guinea.** Cameroons: Bipinde, in forests, *Zenker*, 1552!

2. **O. nitida**, *Benth. in Hook. Niger Fl.* 451. A scandent shrub, perfectly glabrous except the inflorescences; young branches compressed, ultimately terete, brown when dry. Leaves oblong, abruptly acuminate, acute to acuminate at the base, 3- $3\frac{1}{2}$  in. long,  $1\frac{1}{4}$  in. broad, thinly coriaceous, glossy on both sides; secondary nerves 12-14, straight and parallel, connected by short submarginal loops; veins conspicuous, subparallel, running from the marginal nerve to the midrib, like the nerves raised below; petiole slender, 3-4 lin. long. Panicles slender, axillary, 1-2 in. long, or elongate, compound, terminal, leafy or leafless; bracts ovate or oblong-ovate, caducous; pedicels minutely pubescent, up to 1 in. long. Calyx  $1\frac{1}{2}$  lin. long, pubescent; sepals ovate, obtuse or acute. Corolla-tube 2 lin. long; lobes lanceolate-oblong, subacute, 2 lin. long; throat-scales subulate,  $\frac{3}{4}$  lin. long. Anthers slightly over 1 lin. long.—*K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 179.*

**Upper Guinea.** Sierra Leone, *Vogel*, 63!

3. **O. Batesii**, *Staff.* A scandent shrub, perfectly glabrous except the inflorescences; branches terete, dull brown when dry. Leaves oblong, acuminate, acute at the base,  $3\frac{1}{2}$ - $3\frac{3}{4}$  in. long,  $1\frac{1}{2}$ -2 in. broad, coriaceous, somewhat glossy on both sides; secondary nerves about 12 on each side, straight and parallel, connected by distinct marginal loops, with fine branched veins running from the margin towards the midrib; petiole up to 9 lin. long. Panicles simple or compound, terminal and subterminal, 2-4 in. long, minutely rusty tomentose in the upper part, leafy or leafless; bracts caducous; pedicels  $1-1\frac{1}{2}$  lin. long. Calyx  $1\frac{1}{2}$  lin. long; sepals ovate-elliptic or elliptic, obtuse, very minutely rusty tomentose along the middle of the back, densely ciliate. Corolla greenish-yellow; tube 2 lin. long; lobes oblong,

subobtusely, 2 lin. long; throat-scales linear, up to  $\frac{3}{4}$  lin. long. Anthers slightly over 1 lin. long.

**Upper Guinea.** Cameroons: Efulen, *Bates*, 403!

4. **O. campanulata**, *K. Schum. in Engl. Jahrb.* xxiii. 227. Quite glabrous except the inflorescences. Young branches compressed, at length terete, reddish-brown or brown. Leaves oblong to elliptic-oblong, acuminate, shortly acute or obtuse at the base, 3 to more than 5 in. long,  $1\frac{1}{4}$ – $2\frac{1}{4}$  in. broad, papery, thin; secondary nerves 7–9 on each side, oblique, very slender, finely channelled above, slightly prominent below; reticulation rather loose, inconspicuous below; petiole 5–8 lin. long, slender. Panicles lateral and terminal, more or less nodding, many- or few-flowered, linear or lanceolate, or if short ovate in outline, up to  $2\frac{1}{2}$  in. long (without the peduncle) and to  $1\frac{1}{4}$  in. wide at the base, delicately and minutely rusty-tomentose, at length glabrescent in the lower parts; peduncle slender, much compressed, glabrous, up to 2 in. long; bracts minute, early deciduous; pedicels very short, the longest up to  $1\frac{1}{2}$  lin. long. Calyx  $1\frac{1}{2}$  lin. long; sepals rotundate-elliptic, very obtuse, thin, delicately pubescent, glandular. Corolla-tube inflated,  $1\frac{3}{4}$ –2 lin. long, delicately and minutely tomentose without above the middle; throat-scales linear from a broad base, thick, over  $\frac{1}{2}$  lin. long, conspicuous; lobes ovate-oblong, obtuse,  $1\frac{1}{2}$  lin. long. Anthers  $1\frac{1}{4}$  lin. long.

**Upper Guinea.** Cameroons: Yaunde, *Zenker & Staudt*, 19, 530! 544!

5. **O. glabrata**, *Stapf ex Hiern in Cat. Afr. Pl. Welw.* i. 674. A very tall climber, perfectly glabrous except the inflorescences; branches terete, brown when dry. Leaves oblong, abruptly acuminate, shortly acute or rounded at the base,  $2\frac{1}{2}$ –4 in. long,  $1\frac{1}{2}$ – $1\frac{3}{4}$  in. broad, papery, usually glossy on both sides; secondary nerves 5–9; veins joining in a loose slightly raised network; petiole slender, 6 lin. long. Flowers in slender often paired axillary panicles,  $1\frac{1}{2}$ –4 in. long, or reduced almost to racemes, very finely rusty puberulous; bracts minute, caducous; pedicels  $1\frac{3}{4}$  lin. long or hardly any. Calyx 1 lin. long, finely pubescent; sepals ovate, obtuse, ultimately recurved at the tips. Corolla greenish-yellow, very finely pubescent without, subcylindric in bud; tube  $1\frac{1}{2}$ –2 lin. long; lobes oblong, as long as the tube; throat-scales  $\frac{1}{2}$  lin. long, linear-oblong. Follicles lanceolate, with a curved acumen, over 4 in. long, glabrous. Seeds  $5\frac{1}{2}$  lin. long; coma  $1\frac{1}{2}$  lin. long.—*Motandra glabrata*, *Baill. in Bull. Soc. Linn. Paris*, i. 760; *K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 164.

**Lower Guinea.** Angola: Golungo Alto; in forests by the Ambaca Road, *Welwitsch*, 5957! in forests on the Queta Mountains, *Welwitsch*, 5958! banks of the River Coango, *Welwitsch*, 6014!

6. **O. tenuiloba**, *Stapf in Kew Bulletin*, 1898, 307. A climbing shrub, quite glabrous except the young branchlets and inflorescences; young branches delicately tomentose, soon glabrous, slender. Leaves lanceolate to lanceolate-oblong, acutely acuminate, acute at the base,

2½–3 in. long, 1 in. broad, thinly coriaceous; secondary nerves about 5 on each side, very oblique; transverse veins loose; petiole slender, 2–3 lin. long. Panicles from the axils of the upper leaves, ovate to lanceolate in outline, 1½–2 in. long, slender, delicately and minutely tomentose; peduncle up to ½ in. long; bracts minute, caducous; pedicels up to 1½ lin. long. Calyx ¾ lin. long; sepals ovate-oblong, subacute, delicately pubescent, eglandular within. Corolla greenish-yellow, delicately and minutely tomentose without; tube 1½ lin. long; lobes linear, up to 3 lin. long; throat-scales filiform, obtuse, not quite ½ lin. long. Anthers 1 lin. long.—Stapf in De Wild. & Durand, Contrib. Fl. Congo, i. 41; De Wild. & Durand, Ill. Fl. Congo, 131, t. lxxvi.; Reliq. Dewevr. 156.

**South Central.** Congo Free State: near the Inkassa River, *Dewèvre*, 883!

7. *O. gracilis*, *Stapf in Kew Bulletin*, 1894, 124. A climbing shrub; branches terete, spreadingly rufo-hirsute. Leaves obovate-oblong, acuminate, rounded or subacute at the base, 3–3¼ in. long, 1½ in. broad, membranous, fulvo-hirsute when young, glabrescent above; secondary nerves 5–6 on each side; petiole 6 lin. long. Flowers in axillary, slender, hirsute, racemes or panicles; peduncle 6–9 lin. long, slender; bracts lanceolate, small, early deciduous; pedicels very short or 0. Calyx ¾ lin. long, tomentose; sepals ovate or lanceolate-ovate, acute. Corolla greenish-yellow, fragrant, minutely tomentose without, very slender, almost subulate in bud; tube 1½ lin. long; lobes linear-oblong, as long as or slightly longer than the tube. Follicles spindle-shaped divaricate, 6–7 in. long, brown, glabrescent. Seeds spindle-shaped, 8 lin. long; coma 2 in. long.

**Upper Guinea.** Gold Coast: Kwahu, 2000 ft., *Johnson*, 658! Lagos: Ollaro, *Millen*, 106! on the road to Igbessa, *Millen*, 189!

8. *O. hirta*, *Oliv. in Hook. Ic. Pl. t.* 1232. A very tall climber, more or less yellowish-green in all parts and covered with a stellate tomentum; branches terete, densely fulvo-tomentose. Leaves oblong or obovate-oblong, shortly acuminate or apiculate, rounded at the base, 3½–4½ in. long, 1½–2¼ in. broad, membranous, fulvo-tomentose on both surfaces, ultimately more or less glabrescent above; secondary nerves 6–7 on each side; petiole 2–3 lin. long. Panicles axillary, fulvo-tomentose, 2½–4½ in. long; bracts broad, ovate, tomentose, 1–1½ lin. long; pedicels very short or 0. Calyx 1 lin. long, tomentose; sepals broad ovate, obtuse. Corolla yellowish or greenish, finely tomentose outside; tube slightly longer than the calyx; lobes oblong, apiculate, as long as the tube, throat-scales linear-oblong. Follicles cylindrical, obtuse, densely fusco-tomentose.—Hiern in Cat. Afr. Pl. Welw. i. 674. *Motandra welwitschiana*, *Baill. in Bull. Soc. Linn. Paris*, i. 760; *K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii.* 164; *De Wild. & Durand in Mém. Soc. Bot. Belg.* xl. 24.

**Lower Guinea.** Loango: near Makunga, *Soyaux*, 147! Angola: Golungo Alto; in thickets at the base of the Quilombo Quiaacatubia Mountains, in Queta and between Ponte de Luis Simoes and Camilungo, *Welwitsch*, 5956!

*Imperfectly known species.*

9. **O. chlorogena**, *K. Schum. in Schlechter, Westafr. Kautschuk-Expéd.* 307. A liane with yellow flowers.

**Upper Guinea.** Lagos: in forest near Ikoradu, *Schlechter*, 12996!

10. **O. subsessilis**, *K. Schum. l.c.* Flowers whitish with 5 purple streaks in the throat.

**Upper Guinea.** Lagos: Yoruba; Ishagamo, *Schlechter*, 12310.

41. **MOTANDRA**, *A. DC.*; *Benth. et Hook. f. Gen. Pl. ii.* 715.

Calyx small, herbaceous, eglandular; sepals almost free, imbricate, ovate, obtuse. Corolla slightly funnel-shaped to salver-shaped; tube cylindric or almost so, comparatively wide, with 5 longitudinal grooves outside and corresponding slightly projecting ridges inside descending from the sinuses to the middle, and there touching a ring of hairs consisting of 5 supra-staminal arches; mouth naked; lobes linear-oblong or ovate, overlapping to the right. Stamens inserted above the base of the corolla-tube; filaments filiform-clavate, short; anthers conniving into a cone, included, linear, terminating in a minutely plumose mucro, sagittate; appendages slightly shorter than the polliniferous part; tails short, very obtuse, recurved; foot of the connective projecting, glabrous above, papillose below. Disc cupular, 5-lobed, fleshy. Carpels 2, free, slightly inferior, adnate to the disc up to or beyond the middle; style very short; stigma spindle-shaped, 2-lobed, lobes linear; ovules pluriseriate, numerous. Mericarps follicular, lanceolate in outline, divaricate. Seeds oblong, obtuse at both ends, with a long deciduous apical coma; endosperm scanty. Cotyledons foliaceous, thin; radicle short.—Scandent shrubs. Leaves opposite, papery; secondary nerves distant; axillary stipules 0; axillary glands 0. Panicles terminal, rather loose; flowers inconspicuous.

Species 3 endemic.

Bracts very small, inconspicuous; flowers white; corolla-lobes longer than the tube.

Panicles linear, when elongated usually not more than 1 in. wide; leaves with patches of white hairs in the nerve-axils below . . . . . 1. *M. guineensis*.

Panicles pyramidal, up to more than 3 in. wide at the base; leaves usually without patches of hairs in the nerve-axils below . . . . . 2. *M. pyramidalis*.

Br cts foliaceous, up to  $3\frac{1}{2}$  lin. long; flowers yellow; corolla-lobes shorter than the tube . . . . . 3. *M. Lujæi*.

1. **M. guineensis**, *A. DC. Prod.* viii. 423. A small, more or less scandent shrub; young branches slender, densely fulvo-tomentose, ultimately glabrescent and reddish-brown. Leaves oblong to oblong-lanceolate or obovate, acuminate, (acumen short or up to  $\frac{3}{4}$  in. long, narrow), obtuse at the base, 2-4 in. long, 1-1 $\frac{3}{4}$  in. broad, fulvo-tomen-

tose in bud, soon glabrescent, with tufts of hairs in the nerve-axils; secondary nerves 5-7 on each side; veins faint; petiole tomentose, 2-3 lin. long. Panicle 1-6 in. long, 1 in. broad, usually linear or lanceolate in outline when more than 1 in. long, fulvo-tomentose all over; peduncle very short or up to 1 in. long; bracts subulate, small; pedicels up to 3 lin. long. Calyx  $\frac{3}{4}$  lin. long, tomentose. Corolla white, fragrant, almost subulate in bud; tube  $1\frac{1}{4}$  lin. long, minutely puberulous without; lobes up to 2 lin. long. Follicles divaricate, lanceolate, acuminate, with the acute acumen slightly incurved, densely tomentose, 4 in. long.—K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 164; De Wild. & Durand, Contr. Fl. Congo, i. 41 and ii. 41, and Reliq. Dewevr. 155. *Echites guineensis*, Thonn. in Schumach. & Thonn. Beskr. Guin. Pl. 149. *E. paniculata*, Thonn. ex A.DC. l.c.

**Upper Guinea.** Gold Coast: Aquapim, *Thonning*; Aburi Hills, *Brown*, in *Herb. Johnson*, 684! Kwahu, *Johnson*, 642! Dahomey: Bassila, *Poisson*! Lagos: near Lagos, *Millen*, 145! Ibadan Road, *Millen*, 114! Oyo, *Barter*, 3411! Interior, *Rowland*! *Millson*, 16! Southern Nigeria: Onitsa, *Barter*, 1636! Cameroons: Yaunde, *Zenker & Staudt*, 794! Batanga, *Bates*, 403!

**South Central.** Congo Free State: Upper Congo; Kasongo, *Dewèvre*, 995. Stanleyville, *Demeuse*, 423!

2. ***M. pyramidalis*, Staff.** A robust shrub, climbing far and high; branchlets fulvo-tomentose. Leaves oblong, acuminate, obtuse at the base,  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. long,  $\frac{3}{4}$ -1 in. broad when young, deep green, papery, finely tomentose when quite young, soon glabrescent, at length almost glabrous except the midrib and secondary nerves which retain more or less of the delicate rusty tomentum, sometimes with minute patches of hairs in the nerve-axils, glossy above; secondary nerves 7-8 on each side; petiole rusty-velvety, up to  $3\frac{1}{2}$  lin. long. Panicle more or less pyramidal, up to 5 in. long and to more than 3 in. broad, rather lax, fulvo-tomentose all over; peduncle very short or up to 1 in. long; bracts subulate, very small or suppressed; pedicels very short or the terminal up to 2 lin. long. Calyx 1 lin. long, fulvo-tomentose. Corolla white; tube minutely puberulous outside except at the base, 2 lin. long; lobes up to  $2\frac{1}{2}$  lin. long. Follicles lanceolate, acuminate with the acumen incurved, densely tomentose, about 6 lin. long.—*M. guineensis*, Hiern in Cat. Afr. Pl. Welw. i. 672, not of A.DC.

**Lower Guinea.** Angola: Golungo Alto; towards Ambaca and in the forests of the highest ridges of Alto Queta, *Welwitsch*, 5964! and fruit 1118!

3. ***M. Lujæi*, De Wild. & Durand in Mém. Soc. Bot. Belg. xl. 23.** A shrub; branchlets rufo-tomentose when young, at length glabrous. Leaves ovate or obovate-elliptic, acuminate (acumen apiculate), rounded or subcordate at the base,  $1\frac{1}{2}$ -4 lin. long,  $\frac{3}{4}$ - $1\frac{3}{4}$  in. broad, dark green and glabrous above except on the finely puberulous nerves, scantily hairy below on the nerves and with tufts of hairs in the nerve-axils; secondary nerves 5-6 on each side, prominent below; reticulation distinct below; petiole  $1\frac{1}{2}$ -2 lin. long, velvety. Panicles short; bracts foliaceous, up to  $3\frac{1}{2}$  lin. long, with reddish hairs; pedicels short, lengthening after

flowering; calyx 2 lin. long, greenish-brown; sepals ovate-lanceolate, velvety, 1 lin. long. Corolla-tube rufo-tomentose without,  $1\frac{3}{4}$ - $2\frac{1}{2}$  lin. long; lobes ovate,  $\frac{3}{4}$  lin. long, yellow, glabrous within, brownish-tomentose without. Follicles densely brownish-velvety, acute,  $2\frac{1}{2}$  in. long (immature?). Seeds  $3\frac{1}{2}$  mm. long, 1 mm. broad.

**South Central**, Congo Free State: Kassai District; Lubuc, *Luja*, 274, 287.

This is stated to yield great quantities of a white latex which coagulates in very elastic masses.

*Imperfectly known species.*

4. **M. rostrata**, *K. Schum. in Schlechter, Westafrik. Kautschuk-Exp.*, 307. A liane with white flowers. Perhaps identical with *M. guineensis*.

**Upper Guinea**. Lagos: Ishagamo, *Schlechter*, 12312.

42. **ADENIUM**, Roem. & Schult.; Benth. et Hook. f. *Gen. Pl.* ii. 722.

Calyx 3-4 lin. long, herbaceous, eglandular within; sepals 5, lanceolate or subulate. Corolla funnel-shaped or campanulate from a short cylindrical base, with paired small or obscure scales in the mouth; scales more or less confluent at the base and forming obtriangular pockets, alternating with the lobes; lobes 5, broad, twisted, overlapping to the right. Stamens inserted at the base of the widened portion of the corolla tube; filaments very short; anthers conniving in a cone, projecting into the widened part of the corolla-tube, lanceolate, with long filiform terminal appendages, sagittate; basal appendages much longer than the polliniferous part, distinctly tailed; foot of the connective channelled and glabrous in the upper part, with a projection in the centre and a brush-like cushion below decurrent on the filament and passing into the tomentose filamental ridges. Disc 0. Carpels 2, free; style filiform, short; stigma campanulate, capitate, with a basal rim and a minute bifid apiculus, agglutinated to the foot of the connective; ovules very numerous, pluriseriate. Mericarps follicular, divaricate or reflexed. Seeds linear-oblong, covered with reversed hairs, with a deciduous coma at either end; endosperm very thin; cotyledons short, convolute; radicle much longer than the cotyledons.—Succulent shrubs, often with swollen stems and fleshy branches. Leaves in spirals and terminal fascicles, rather fleshy; axillary stipules 0; axillary glands subulate, conspicuous, several in each leaf-axil. Cymes few-flowered, terminal, subsessile; flowers pink or purple, showy.

About 12 species; 6 in tropical Africa, 2 in South Africa, 1 in Socotra, and 3-4 in Arabia, some of them very closely allied.

Widened part of the corolla-tube glabrous within; apical  
anther-tails reaching slightly beyond the middle of  
the corolla-tube . . . . .

1. *A. bœhmianum*.

Widened part of the corolla-tube more or less villous within; apical anther-tails reaching to the corolla-mouth or exerted.

Flowers produced at the same time as the leaves.

Leaves obovate-cuneate,  $1\frac{1}{2}$ -3 times as long as broad.

. . . . . 2. *A. coëtaneum*.

Leaves linear or linear-oblong, at least 4-5 times as long as broad.

Leaves 4-10 lin. broad, tomentose or rarely glabrous; flowers in paired racemes.

. . . . . 3. *A. speciosum*.

Leaves  $\frac{3}{4}$ -4 (rarely-6) lin. broad, quite glabrous; flowers solitary or in few-flowered subsessile cymes.

. . . . . 4. *A. somalense*.

Flowers produced before the leaves; leaves glabrous.

Corolla buds and lobes obtuse . . . . . 5. *A. Honghel*.

Corolla buds and lobes caudate-cuspidate . . . . . 6. *A. multiflorum*.

1. **A. bœhmianum**, *Schinz in Verhandl. Bot. Ver. Brandeno.* xxx. 259. A shrub, 9-12 ft. high; young branches softly tomentose. Leaves broadly obovate-cuneate, rounded or more or less notched at the apex, gradually or suddenly narrowed into the basal cuneate portion,  $3\frac{1}{2}$ -4 in. long, 2-2 $\frac{1}{2}$  in. broad, rather coriaceous, softly and loosely tomentose on both sides, glaucous; secondary nerves subhorizontal, distinct,  $1\frac{1}{2}$ -2 $\frac{1}{2}$  lin. apart; petiole up to 1 lin. long. Cymes terminal or pseudo-axillary, tomentose; bracts triangular-lanceolate, 2-3 lin. long; pedicels slender, up to 6 lin. long. Calyx 3 lin. long; sepals subulate-lanceolate, hairy. Corolla peach-coloured, purple in the throat, scentless, more or less hairy without; infra-staminal part of the tube 2 $\frac{1}{2}$  lin. long, with 5 hairy lines within, glabrous at the base, supra-staminal part 1 in. long, wide funnel-shaped, glabrous within; throat-scales obscure, almost wholly confluent; lobes obovate, very broad, 1-1 $\frac{1}{4}$  in. long, rounded, sometimes obscurely cuspidate. Anthers 2 $\frac{1}{2}$  lin. long, hairy on the back; apical tails 5 lin. long.

**Lower Guinea.** German South-west Africa: Amboland; Olukonda, *Schinz*, 216! Upingtonia and in the Northern and North-eastern parts of Hereroland, *Schinz*.

2. **A. coëtaneum**, *Stapf*. A shrub, 1-3 ft. high, with a very short fleshy trunk and succulent branches, generally more or less hairy when quite young, and tapering from a very thick base (20 in circumference) to less than 1 in. in diam. Leaves obovate-cuneate, rounded or slightly retuse at the apex and usually minutely cuspidate, very gradually tapering towards the base,  $1\frac{1}{2}$ -4 in. long,  $\frac{3}{4}$ -1 $\frac{1}{2}$  in. broad, succulent, stiff, more or less tomentose, especially when young, soon glabrescent or quite glabrous (even in bud); secondary nerves quite invisible or very faint, oblique, the middle ones 3-4 lin. apart; petiole very short or 0. Cymes 2-flowered, contracted, sessile, terminal, from a bunch of leaves, minutely tomentose or glabrous; bracts lanceolate to subulate, 2-3 lin. long; pedicels up to 2 lin. long. Calyx hairy, 5-5 lin. long; sepals lanceolate. Corolla pink or crimson, more or less pubescent without; infra-staminal part of the tube  $3\frac{1}{2}$ -5 lin. long, with 5 hairy lines

descending from the filaments almost to the middle, otherwise glabrous within, supra-staminal part wide, tubular or rather funnel-shaped, 8–15 lin. long, sparingly villous in the throat with 5 descending hairy lines; throat-scales short, decurrent on one side and confluent below, forming an obversely sagittate pocket; lobes oblong or obovate, slightly longer than broad, 8–12 lin. long, obscurely acuminate, usually minutely cuspidate. Anthers 3 lin. long; apical tails reaching to or beyond the corolla-mouth.—*A. speciosum*, Oliv. in Trans. Linn. Soc. xxix. 108 not of Fenzl. *A. No. 2*, Oliv. l.c. *A. obesum*, Balf. f. in Trans. Roy. Soc. Edin. xxxi. 161 partly; K. Schum. in Engl. Pfl. Ost-Afr. C. 319, and in Engl. Jahrb. xxviii. 453 (?) not of Roem. & Schult.

**Nile Land.** Uganda: Bari district, *Speke & Grant*, 766! Upper Nile, Freeman & Lucas, 75! British East Africa: East shore of Lake Rudolf, *Wellby*, 98! 20–60 miles inland from Mombasa, *Binns! Johnston!* near Mombasa, *Hildebrandt*, 105 B! Jomvu, *Wakefield!* Ribe, *Wakefield!* Witn, *Thomas*, 130!

**Mozamb. Dist.** German East Africa: around Kilimanjaro, *New!* Usambara Tanga, *Volkens*, 145! on a plain by the Wami River, *Hildebrandt*, 1005 Usaramo; Muhonyera, *Speke & Grant!* Uluzuru; steppe forest, near Behobelo, north of Kongulio, *Stuhlmann*, 9319 (ex *Schumann*).

This species is undoubtedly very closely allied to *A. obesum*, Roem. & Schult.; but in this the flowers are produced on leafless branches, the leaves are not so conspicuously cuneate and the corolla-lobes almost orbicular.

3. ***A. speciosum***, *Fenzl in Sitzungsab. Akad. Wien. Math.-Nat.* li. 140. Trunk conical, 4 ft. high or more, 2–3 ft. thick at the base, scantily branched at the top; young branches silky-tomentose, elongate. Leaves oblanceolate or linear-oblong, rounded at the apex or slightly retuse, mucronulate, rather suddenly or (rarely) gradually narrowed at the base, 2–4 in. long, 4–10 lin. broad, softly tomentose on both sides, rarely glabrous; secondary nerves oblique, very faint,  $2\frac{1}{2}$ –3 lin. apart; petiole stout, very short or 0. Inflorescence racemose, forked almost from the base, few- or many-flowered; branches stout,  $1\frac{1}{2}$ –3 in. long, tomentose, with numerous subulate bracts 2–3 lin. long; pedicels very short and stout. Calyx hairy, 3– $3\frac{1}{2}$  lin. long; sepals subulate from a triangular base. Corolla deep pink; infra-staminal part 4–5 lin. long, with 5 hairy lines descending to or beyond the middle, glabrous at the base within, supra-staminal part funnel-shaped,  $\frac{3}{4}$ –1 in. long, villous within; throat-scales very short, decurrent on one side, confluent at the base, forming an obversely sagittate pocket; lobes suborbicular, minutely cuspidate. Anthers  $3\frac{1}{2}$  lin. long; apical tails reaching to the mouth. Follicles linear-spindle-shaped, tomentose, reflexed, 5–7 in. long. Seeds 5 lin. long, striate; coma 10–12 lin. long, reddish.

**Nile Land.** South-West Kordofan: Jebel (Mount) Hedra, *Kotschy*, 399! Sennar; near Fazokl, and Jebel Akaro, *Kotschy*, 399!

4. ***A. somalense***, *Balf. f. Trans. Roy. Soc. Edin.* xxxi. 162. A shrub, perfectly glabrous, except the inflorescence; branches succulent, from 1–6 lin. thick. Leaves linear-oblong to linear, mucronulate, shortly acute at the base,  $1\frac{1}{2}$ – $2\frac{1}{2}$  in. long, 1–9 lin. broad, succulent, midrib

distinct, otherwise nerveless; petiole very short or 0. Cymes subsessile, few- to 1-flowered, terminal or pseudo-axillary, more or less hairy; bracts subulate; pedicels 2 lin. long. Calyx 3 lin. long, hairy; sepals lanceolate, subulate. Corolla pink; infra-staminal part of the tube 3-3½ lin. long with 5 hairy lines descending almost to the middle, glabrous below, supra-staminal part wide funnel-shaped or tubular, 7 lin. long, with 5 villous lines inside; throat-scales small, scarcely decurrent, confluent and forming an obversely triangular pocket; lobes obovate, shortly acuminate, 6 lin. long. Anthers 2-2½ lin. long; apical tails exerted.—Schweinf. & Volkens, *Liste Pl. Voy. Ghika-Comanesti Somal.* 9.

**Nile Land.** Somaliland: Berbera, *Playfair*, 3! "Djedagnio," *Miss Edith Cole!* Darror, *James & Thrupp!* and without precise locality, *Mrs. Lort Philips.*

5. **A. Honghel**, *A. DC. in DC. Prod.* viii. 412, *not of Lindl.* A shrub, 6-10 ft. high, with a large trunk and soft-wooded stout branches, glabrous except the inflorescence and tips of the branches, leafless when in flower. Leaves obovate-oblong, obtuse, mucronulate, narrowed towards the base, 3-4 in. long, 8-10 lin. broad, glabrous; secondary nerves oblique; petiole 0 (?). Cymes much contracted, 2-10-flowered, terminal, sessile, preceded by more or less numerous deciduous triangular indurated bud-scales, hairy; bracts lanceolate, 2-3 lin. long; pedicels very short. Calyx 3-4 lin. long, hairy; sepals lanceolate. Corolla crimson; infra-staminal part of the tube 4-5 lin. long with 5 hairy lines descending almost to the middle, glabrous below, supra-staminal part tubular or funnel-shaped, 9-12 lin. long, scantily villous within; throat-scales obscure, almost wholly confluent and forming an obversely triangular pocket; lobes rotundate-ovate, 6-8 lin. long, very minutely or not at all mucronate. Anthers 2-2½ lin. long; apical tails more or less exerted. Follicles 4-6 in. long. Seeds 6 lin. long, coma 1 in. long.—Hook. *Niger. Fl.* 450

**Upper Guinea.** Lower Senegal region: Oualo; Lampsar, *Roger*, 133! Oualo and Galam, *Leprieur, Perrotet!* Niger Territory: Borgu; near Wawa, *Barter*, 711!

The plant figured by Lindley in *Bot. Reg.* xxxii. tab. 54 as *A. Honghel* is *A. arabicum*, Balf. f., *Bot. Socotra*, 161.

6. **A. multiflorum**, *Klotzsch in Peters, Reise Mossamb. Bot.* 279, t. xlv. A shrub 4-8 ft. high, leafless when in flower; branches succulent, stout, glabrous except at the very tips when young. Leaves obovate to oblong, subacute or obtuse, acute or subacuminate at the base, 2-3 in. long, 9-15 lin. broad, subcoriaceous; midrib rather thin; nerves faint, though usually distinct, very oblique; petiole 1-2 lin. long. Cymes much contracted, 5-15-flowered, terminal, sessile, preceded by more or less numerous deciduous triangular indurated bud-scales, hairy; bracts lanceolate, 2-3 lin. long; pedicels up to 2 lin. long. Calyx 3-4 lin. long, hairy; sepals lanceolate. Corolla white or pink, conspicuously cuspidate in bud; infra-staminal part of the tube 3-4 lin. long, with 5 hairy lines descending almost to the middle, glabrous below, supra-staminal part funnel-shaped, villous within, 9-12 lin. long; throat-

scales small, confluent and forming an obversely triangular pocket; lobes broad ovate, shortly acuminate and conspicuously cuspidate. Anthers 3 lin. long, densely villous; apical tails exerted. Follicles reflexed, spindle-shaped, finely tomentose, 7 in. long. Seeds 6 lin. long, coma 15 lin. long.

**Mozamb. Dist.** Portuguese East Africa; Lower Zambesi; Tete, *Peters*; opposite Sena, *Kirk*, 97! Sena Hill, *Kirk*! British Central Africa: Nyasaland: between Matope and Livingstonia, *Scott*!

Probably also near Delagoa Bay and in the Transvaal.

#### 43. **PACHYPODIUM**, Lindl.; Benth. et Hook. f. Gen. Pl. ii. 722.

Calyx small, herbaceous, eglandular within; sepals 5, ovate or lanceolate. Corolla salver-shaped, with the cylindric tube widened below the middle, constricted at the base, or funnel-shaped to campanulate with a short cylindric basal tube, naked at the mouth; lobes 5, twisted, overlapping to the right. Stamens inserted above the constriction; filaments very short, flattened; anthers conniving in a cone, included, linear-lanceolate, acuminate or acute, sagittate; appendages longer or shorter than the polliniferous part; tails sometimes very short; foot of the connective channelled and glabrous above, with a tongue-shaped projection and sometimes a brush-like cushion below, decurrent on the filament and passing into the hairy filamental ridges. Disc cupular, slightly 5-lobed or replaced by 2-5 distinct glands. Carpels 2, free; style filiform, short; stigma subcylindric with an annular rim or membrane at the base, very obscurely and obtusely 2-lobed; ovules numerous, pluriseriate. Mericarps follicular, 2, erect or spreading, elongate, spindle-shaped. Seeds oblong, with an apical coma; endosperm scanty; cotyledons ovate-cordate, flat; radicle short.—Succulent shrubs, sometimes with a much swollen trunk. Leaves in spirals, subsessile, stipulate; stipules transformed into rigid spines or the leaves suppressed with the exception of a terminal rosette, and the spinous stipules crowded more or less irregularly on the swollen branches. Cymes terminal, few- or many-flowered, sessile or peduncled; flowers pink, white, or yellow.

Species 12, 1 in tropical Africa; 5 in South Africa, 6 in Madagascar.

1. **P. Lealii**, *Welw. in Trans. Linn. Soc.* xxvii. 43, t. xvi. A shrub, 10-15 ft. high, full of a watery, resinous and viscid juice, covered with pairs of rigid spines. Trunk succulent, 2-3 ft. in circumference near the base, grey, sparingly branched from the middle; young branchlets and spines purplish. Leaves in spirals, few, usually only near the tips of the young branchlets, oblong-lanceolate, scarcely 1 lin. long, membranous, with a strong midrib terminating in a subulate acumen, soon deciduous; stipules spiny, 1-1½ in. long. Cymes many-flowered, glabrous, up to 6-7 in. in diam.; peduncle stout, of variable length; pedicels stout, 1½-4 lin. long; bracts scale-like, triangular, acute, soon deciduous. Calyx glabrous 1½-2 lin. long; sepals ovate, acuminate.

Corolla sweet-scented; tube purple, cylindrical, widened at the middle,  $1\frac{1}{2}$ – $1\frac{3}{4}$  in. long, hairy within below the stamens; limb  $2\frac{1}{2}$ –3 in. in diam., white inside, pink on the back; lobes broad, obliquely ovate, the inner margin crisp. Anthers  $4\frac{1}{2}$ –5 lin. long. Disc cupular, slightly 5-lobed. Follicles spreading at a right angle when mature, spindle-shaped, compressed, 3–5 in. long, glabrous. Seeds obovoid, compressed,  $3\frac{1}{2}$  lin. long, coma 2–3 times as long.—Hiern in Cat Afr. Pl. Welw. i. 676.

**Lower Guinea.** Angola: Bumbo; in dry rocky thickets between Quitibe de Baixo and Quitibe de Cima, common, 1500 ft., *Welwitsch*, 1510! between Umpupe and Palmfontein, 2900 ft., *Baum*, 21!

## ORDER LXXXV. ASCLEPIADEÆ. (By N. E. Brown.)

Flowers regular, hermaphrodite. Calyx of 5 free sepals or rarely 5-lobed; segments imbricate, usually with minute processes at their base within. Corolla hypogynous, gamopetalous, regular, 5-lobed, reflexed, rotate, campanulate, infundibuliform, hypocrateriform, urceolate, or tubular; lobes imbricate, contorted, or valvate in æstivation, often recurved or connate at their tips; tube within or at its mouth sometimes furnished with variously shaped lobules, flaps, keels, or processes, which are distinct or connate and usually alternate with the corolla-lobes, forming part or the whole of the *corona*. Stamens 5, inserted at or near the bottom or rarely at the middle or mouth of the corolla-tube, alternating with the corolla-lobes; filaments sometimes free, but more usually connate into a tube around the ovary (forming, with the anthers and their terminal appendages, the *staminal column*), with the apex of the tube often united to the dilated part of the style; anthers not connate with each other, free or united to the dilated part of the style, 2-celled, dehiscing by apical, longitudinal, or transverse slits; margins of the anthers or their basal prolongations below the pollen-cells more or less horny and wing-like (the *anther-wings*), usually projecting outwards, the adjacent wings of each pair of anthers nearly meeting and forming between them very narrow fissures leading to the stigmatic cavities; connectives of the anthers often produced into membranous (or rarely fleshy or inflated) terminal appendages, or apiculate or unappendaged; appendages sometimes connate. Staminal-column usually furnished with variously shaped free or more or less connate appendages, which often have keels or processes on their inner face and are disposed in 1–3 series, forming the *corona* or part of it. Pollen-contents of each anther-cell granular or united into one or two waxy masses formed of an indefinite number of pollen-grains, and attached in pairs or in fours, sometimes directly, but more usually by means of arm-like processes (the *caudicles*), to each of the 5 small or minute, horny or rarely soft, turgid or bilobed bodies (the *pollen-carriers*), which rest, one on each of the 5 angles of the dilated part of the style, the whole forming the *pollinia*, the masses attached to each pollen-carrier always being derived from the cells of two different but

adjacent anthers; when granular, each granule is formed of 4 pollen-grains united together, and, on the dehiscence of the anthers, the whole is loosely contained in the horny, spoon- trumpet- or trowel-shaped or bifid pollen-carriers. Pistil superior, formed of 2, 1-celled, many-ovuled (very rarely 1-ovuled) carpels, free below, but with their styles united above and dilated into a pentagonal disk, which is flat or depressed, with or without a small, central, simple or bilobed apiculus, or convex or pyramidal or prolonged into a short or long beak of variable form (termed the apical part of the style in the following descriptions), which is entire, bilobed, bifid, or dilated at the apex, or rarely there arises from the disk 2, 5 or 7 style-like processes. On the angles of the dilated part of the style are seated the pollen-carriers, and immediately beneath them behind the fissures between the anther-wings are the 5 stigmatic cavities. Ovules numerous or very rarely few or solitary, anatropous, pendulous, imbricate in several series on the projecting placenta. Fruit of two parallel or divaricate follicles, or by abortion of one follicle, variable in form, smooth, echinate or winged, dehiscing by the ventral suture and usually liberating the placenta. Seeds usually numerous, very rarely few or solitary, imbricate, flat or cochleate usually with a broad or narrow margin, crowned with a tuft of long silky hairs or rarely densely fringed all round with them, very rarely without a tuft of hairs at one end; testa rather thick or sub-crustaceous; albumen thin or none; embryo straight, nearly or quite filling the seed; cotyledons flat; radicle superior.—Herbs or shrubs often with a tuberous rootstock or fleshy roots. Juice milky or watery. Stems simple or branched, often twining, sometimes succulent and leafless, with terete or angular branches, which are often toothed or spiny at the angles. Leaves opposite or whorled, rarely alternate, thin or fleshy. Flowers very variable in size and form, solitary or few or many together, in umbels, umbel-like cymes, fascicles, or racemes, axillary, lateral between the bases of the leaves, or terminal.

A large Order of over 1800 species widely spread throughout the Tropical and Subtropical regions of the earth, a few in the Temperate regions.

This Order is well marked by the peculiar structure of its pollen apparatus, coronal appendages and stigma, but in other characters it is similar to *Apocynaceæ*. In having the pollen contents of each anther-cell combined into a waxy mass and united by caudicles in pairs to the pollen-carriers, it is unique among Dicotyledonous orders, and in this character resembles the *Orchideæ* among Monocotyledons. The stigmas are also very remarkable, not only are there 5 stigmas or rather stigmatic points, whilst there are only 2 carpels, but they are completely hidden from view behind the anther-wings and can only be seen by careful dissection or by making transverse sections of the dilated part of the style; the only openings to the stigmas are the 5 narrow fissures formed by the contiguous anther-wings (the rigid horny margins of the anthers). No other Order has a similar structure, a detailed account of which and of the manner of fertilisation will be found in the Transactions of the Linnean Society, ser. 2, Bot. ii. 75 and 173, tt. 16, 24–26.

The Order is of no great importance economically, many species are poisonous, some are medicinal and the tubers of several are greedily eaten by the natives, as are likewise the fleshy stems of the tribe *Stapelieæ*. Several species have tough fibres that might be of economic use. The *Asclepiadeæ* are a very difficult group to

study, but they may be conveniently divided into primary groups in accordance with the character of the pollen, which it is always necessary to examine before any generic identification of an unknown plant of this Order can be made. The pollen is of 4 distinct types, as follows:—1. Granular and loosely contained in the more or less spathulate or bifid pollen-carriers, not attached to the latter; this type characterises the tribe *Periploceæ*. 2. United into very minute waxy masses, 4 or 2 of which are sessile upon a very minute quadrate, pale-coloured pollen-carrier; this type characterises the tribe *Secamoneæ*. 3. United into waxy masses, which are opaque without a pellucid margin, usually not very minute, and are attached in pairs by caudicles to the dark-coloured pollen-carriers; to this type belong the tribes *Cynancheæ* with pendulous pollen-masses, and *Marsdeniæ* with erect or horizontal pollen-masses. 4. United into waxy masses which are pellucid on one margin or at the apex, and attached in pairs by caudicles to the pollen-carriers; to this type the tribes *Ceropegieæ* and *Stapelieæ* belong.

In the following descriptions, the dimensions of the dried flowers I have examined are always taken after having boiled them in water and will thus often be found to considerably exceed similar measurements made of them in a dried state, thus more nearly approaching the dimensions of the living flowers. Owing to their fleshy nature, the coronal-lobes, when subjected to much pressure, often have their original form quite altered if not totally destroyed; this has led to much discrepancy in various descriptions of the same plant. In preparing the following descriptions I have therefore always selected flowers for examination (usually 3 or 4 from each specimen when the material was sufficient,) that were saved from undue pressure by their proximity to the stem or other thick parts, such flowers always giving a better and more correct idea of the form of the coronal-lobes when alive than do flowers that have been badly pressed. In the measurements given, the length of the coronal-lobes is always intended to include any horn or other appendages they may have, unless otherwise expressed or when such appendages are horizontal or reflexed. The term "conoid," applied to the apical part of the style in some of the following descriptions, is used in the same sense as originally employed by Schott to describe the appendix of the spadix of many Aroids, where that organ is much elongated and slightly tapers from or near the base to an obtuse apex.

TRIBE. I. *Periploceæ*.—*Filaments of the stamens free (see also Xysmalobium barbigerum). Anthers triangular or oblong, their connectives produced beyond the cells into short terminal points (apiculate), or into small dilated, membranous or somewhat fleshy appendages, connivent over the apex of the style and frequently connate at their tips. Pollen-contents of each anther-cell of numerous loose granules, each granule formed of 4 pollen-grains united in tetrads. Pollen-carriers spathulate, trumpet-shaped, or trowel-shaped, sometimes bipartite, horny, furnished with an adhesive gland at their base, not attached to the pollen-grains, but holding them loosely in their concave upper part.*

- |   |                 |
|---|-----------------|
| Coronal-lobes none; flowers small, in dichotomous or trichotomous cymes . . . . .   | 8. BASEONEMA.   |
| Coronal-lobes very minute, entirely adnate to the staminal-filaments, easily overlooked; flowers very small, crowded in small long-peduncled clusters . . . . . | 1. GYMNOLEMA.   |
| Corona indistinct, annular, with 5 very short lobules adnate to the base of the staminal-filaments; flowers moderately large in long lax panicles . . . . .     | 4. BATESANTHUS. |
| Coronal-lobes 5, distinct, entire, or 2-10-fid, entirely free or only adnate just at their base to the staminal-filaments, alternating with the corolla-lobes.  |                 |

Corolla always with a distinct campanulate or cylindrical tube, but the flowers are sometimes very small and the tube short.

Coronal-lobes arising from the corolla-tube clearly above the insertion of the stamens below the middle or at the base of the corolla-tube.

Coronal-lobes arising at or a little above the middle of the corolla-tube; erect or twining shrubs. (See also *Tacazzea rosmarinifolia*.)

Coronal-lobes arising in the sinuses at the mouth of the corolla-tube; erect or twining shrub

Coronal-lobes arising at the insertion of the stamens above the middle or at the top of the corolla-tube; herbs with a tuberous rootstock, dwarf; rarely twining . . . . .

Corolla lobed nearly to the base; tube reduced to a mere ring; coronal-lobes arising from the corolla at the insertion of the stamens and often adnate to them at the base; stems long, twining or straight, usually woody. (See also *Raphionacme linearis*, and *R. splendens*, which have a very reduced corolla-tube, but are dwarf herbs.)

Coronal-lobes short and very broad, with or without a dorsal process; stipules distinct, toothed or frill-like . . . . .

Coronal-lobes long, filiform, subulate, linear or linear-lanceolate, simple or divided above into 2-3 filiform segments; stipules (except in *Tacazzea floribunda*) none, or represented by a mere line connecting the bases of the petioles.

Anthers glabrous . . . . .

Anthers more or less hairy . . . . .

Corona double, radiating; outer lobes obtusely trigonous; inner lobes obovate-oblong, boat-shaped, obovate at the apex . . . . .

2. CRYPTOLEPIS.

3. STOMATOSTEMMA.

10. RAPHIONACME.

5. CHLOROCODON.

9. TACAZZEA.

7. PERIPLUCA.

6. OMPHALOGONTUS.

TRIBE II. **Secamoneæ**.—*Filaments of the stamens connate into a tube, and adnate at the top to the dilated part of the style. Anthers erect or ascending, with more or less fimbriated appendages. Pollen-contents of each anther-cell consisting of two distinct but exceedingly minute waxy masses, or the two masses more or less combined into one, attached in fours or in pairs to each of the pollen-carriers; when apparently in pairs the seemingly single pollen-mass is sometimes more or less separable into two. Pollen-carriers minute, subquadrate, rather soft, pale in colour.*

Coronal-lobes laterally flattened or subulate; pollen-masses distinctly 4 to each pollen-carrier . . . . .

Coronal-lobes dorsally flattened; pollen-masses apparently 2 to each pollen-carrier, but each mass sometimes separable into two . . . . .

11. SECAMONE.

12. TOXOCARPUS.

TRIBE III. **Cynancheæ**.—*Stamens with the filament-part when present connate into a tube, sometimes very short and ring-like (filaments free in Xysmalobium barbigerum); anthers adnate to the dilated part of the style, with*

a membranous appendage. Pollen-contents of each anther-cell united into one waxy mass. Pollen-masses opaque, without a pellucid margin, attached in pairs to each of the pollen-carriers by short or long caudicles, from which they are pendulous in the anther-cells. Pollen-carriers turgid, rarely flattened, with a dorsal suture, hard and horny, varying from reddish-brown to black.

Corona very small and inconspicuous, arising from the filament-part of the staminal-column, easily overlooked and may be thought to be absent.

Apex of the style produced into a beak much beyond the anthers.

Corona of 5 minute teeth or lobes alternating with the sessile anthers at their base . . . . . 13. MICROSTEPHANUS.

Corona of 5 minute fleshy tubercles opposite the anthers, near the middle of the short filament part of the staminal column . . . . . 14. PODOSTELMA.

Apex of the style not produced beyond the anthers, corona of 5 fleshy tubercles. (See also *Tylophora* and *Xysmalobium Holubii*, and *X. decipiens*). . . . . 32. TYLOPHOROPSIS.

Corona distinct, in 1 or 2 series.

Corona of 5 free lobes arising from the corolla-tube, none on the staminal-column, but sometimes inserted on the corolla just above its base . . . . . 15. GLOSSONEMA.

Corona simple or double, arising from the staminal-column or at its very base in the angle where the column and corolla unite.

Corona double, i.e. in two series.

Outer corona annular or cup-shaped, often pentagonal, truncate, shortly lobed or denticulate.

Leafless fleshy twiners or bushes; inner coronal-lobes not spurred at the base . . . . . 26. SARCOSTEMMA.

Leafy twiners; inner coronal-lobes spurred at the base . . . . . 27. DEMIA.

Outer corona flattened out and adpressed to the base of the corolla, obscurely lobulate; inner coronal-lobes oblong, refracted and accumbent on the outer corona . . . . . 28. DIPLOSTIGMA.

Corona in one series, no outer corona, but often furnished with appendages on the inner face of the lobes or tube formed by their union.

Coronal-lobes connate into a tube or cup, at least at their base, 5- or 10-lobed or toothed at the top and sometimes with minute teeth between the principal teeth, with or without a tooth, lobe, thickening or keels within in front of the 5 principal lobes or teeth.

Corona with the 5 principal teeth or lobes alternating with the corolla-lobes, often furnished with appendages or keels within . . . . . 30. CYNANCHUM.

Corona with its 5 deeply concave-hooded lobes opposite the corolla-lobes . . . . . 31. SOLENOSTEMMA.

Corona of 5 distinct lobes usually quite free, occasionally confluent at the base, but

never connate into a tube, sometimes having 5 minute teeth (which are often concealed under the anther-wings,) alternating with them at their base.

Coronal-lobes opposite to the corolla-lobes and connivent in a cup. . . . . 29. PROSOPOSTELMA  
(and *Cynanchum schistoglossum*).

Coronal-lobes alternating with the corolla-lobes and opposite to the anthers, free to their base or partly or entirely adnate to the staminal-column.

Stem twining.

Corolla saucer-shaped, not lobed to more than half-way down; coronal lobes erect, lanceolate-attenuate, gibbous at the base . . . . . 25. OXYSTELMA.

Corolla not saucer-shaped, lobed to much more than half-way down.

Coronal-lobes dorsally flattened, usually thin, with or without keels, thickenings or appendages on their inner face. . . . . 30. CYNANCHUM.

Coronal-lobes laterally flattened, adnate to the backs of the anthers, with free tips . . . . . 24. PENTATROPIS.

Coronal-lobes obconic, trumpet- or slipper-shaped, truncate or rounded at the apex, with a short inflexed horn on the inner side . . . . . 23. PENTARHINUM.

Stem not twining.

Flowers in racemes, small corymbs, or densely spirally arranged around the terminal part of the peduncle, which elongates as the flowers successively develop.

Coronal-lobes dorsally flattened, thin . 30. CYNANCHUM.

Coronal-lobes not dorsally flattened, thick and fleshy, beaked or bifid at the apex . . . . . 17. KANAHIA.

Flowers strictly umbellate, all arising from the same point.

Coronal-lobes laterally flattened, with an upcurved spur at the base. . 16. CALOTROPIS.

Coronal-lobes not spurred at the base.

Coronal-lobes usually long, spreading at the base then incurved over the staminal-column, often dilated at the apical part, flat, with or without a pair of contiguous erect flat lobes or keels on the basal part, sometimes reduced to the basal part with its contiguous lobes, without the terminal part, but then

always radiately spreading;  
staminal column sessile,  
with very broad rigid anther-  
wings forming a broad truncate  
cone . . . . .

22. PACHYCARPUS.

Coronal-lobes laterally flattened or  
at least measuring as much  
from front to back as they do  
in breadth, cucullate or com-  
plicate or channelled down the  
face or with the margins in-  
flexed and forming a tooth at  
the apex middle or base on  
each side, with or without a  
horn or other appendage within  
the cavity; staminal-column  
sessile or stipitate, usually  
barrel-shaped . . . . .

21. ASCLEPIAS.

Coronal-lobes fleshy, solid, very  
thick, with or without keels or  
teeth on the inner face, or, if  
dorsally flattened, then with  
only 1 rather stout median  
keel, but no horn or tongue-  
like process on their inner face  
and not produced into a long  
horn-like point at their apex . . . . .

18. XYSMALOBIUM.

Coronal-lobes dorsally flattened or  
if concave or with incurved  
margins then always broader  
than they measure from front  
to back, rather thin, often  
with a terminal horn, usually  
with 2 parallel keels (never  
with 1 only,) and with or  
without 1 or more horns or  
appendages on the inner face . . . . .

19. SCHIZOGLOSSUM.

Coronal-lobes petal-like, coloured,  
complicate and claw-like at the  
basal part, which bears 2-3  
teeth, expanded above into a  
flat petaloid blade . . . . .

20. MARGARETTA.

TRIBE IV. *Marsdeniæ*.—*Stamens with filaments connate into a tube; anthers erect or incumbent on the top of the style and adnate to its dilated part at their base, with a membranous flat or inflated appendage. Pollen-contents of each anther-cell united into one waxy mass. Pollen-masses opaque, without a pellucid margin, attached in pairs to the pollen-carriers by long or short caudicles, erect or ascending or horizontal when in the anther-cells, or the caudicles attached to their middle, but never entirely pendulous, sometimes very minute and the caudicles extremely slender. Pollen-carriers hard and horny, with a dorsal suture, dark-coloured or rarely pale.*

\*Corona of 5 distinct fleshy lobes or 5 pairs of ridges  
arising from and adnate to the corolla-tube, none

- on the staminal-column or occasionally an inconspicuous ring at its base . . . . . 37. GYMNEMA.
- \*\*Corolla double, in two distinct series.
- Outer corona of 5 distinct lobes or of a membranous ring, inserted at the sinuses of the corolla, inner corona of 5 distinct lobes on the staminal-column opposite the anthers . . . . . 38. ANISOPUS.
- Outer corona of 5 fleshy lobes united in a ring at their base, inserted at the base of the corolla opposite the corolla-lobes and close to the fleshy annular inner corona on the staminal-column . . . . . 34. ONCOSTEMMA.
- \*\*\*Corona simple; lobes in one series, but sometimes with appendages on their inner face, opposite the anthers, free or connate into a tube, arising from the staminal-column or in the angle formed by the union of the staminal-column with the corolla.
- Corolla tubular, toothed, with 5-10 teeth within in front of or alternating with the principal teeth; anthers with large inflated appendages . . . . . 41. FOCKEA.
- Corona annular, thick, crenate, surrounding the short staminal-column under the anthers . . . . . 35. NANOSTELMA.
- Corona of 5 distinct lobes or tubercles.
- Coronal-lobes tubercle-like and entirely adnate to the staminal-column or radiating from its base, or, in *Sphærocodon melananthus*, of 5 incurved-erect teeth on the middle of the filamental part of the staminal-column.
- Flowers in simple umbels or umbel-like cymes; stems erect . . . . . 36. SPHÆROCODON.
- Flowers in umbel-like clusters scattered along the axis of a simple or branched inflorescence, rarely sessile at the nodes; stems twining except in *T. orthocaulis*. (See also *Tylophoropsis*, which differs in having the pollen-masses pendulous from horizontal caudicles) . . . . . 33. TYLOPHORA.
- Coronal-lobes with their basal part adnate to the staminal-column shortly free above and adpressed to the backs of the anthers, rarely entirely free, not tubercle-like, or if tubercular at the base, then with a free erect point.
- Corolla-tube more or less inflated at the base; coronal-lobes with a process on the inner face of their free apical part . . . . . 40. PERGULARIA.
- Corolla rotate or with a campanulate, globose-campanulate or urceolate tube; coronal-lobes without a process on the inner face of their free apical part . . . . . 39. MARSDENIA.

TRIBE V. *Ceropegieæ*.—*Stamens with their filaments connate into a tube and adnate at the top to the dilated part of the style. Anthers erect or incumbent on the top of the style, with or without an apiculus or a short terminal appendage. Pollen-contents of each anther-cell united into one waxy mass. Pollen-masses pellucid along the inner margin or at the apex, attached in pairs to the pollen-*

carriers by short caudicles, erect, ascending, or horizontal in the anther-cells, never pendulous. Pollen-carriers sometimes with a wing-like expansion on each side, horny, hard, dark-coloured. Stems herbaceous or fleshy, often twining, with well-developed leaves, rarely leafless and then without distinct angles.

N.B. Possibly *Oncostemma* and *Nanostelma* may belong to this tribe, but the pollen-masses are not described and I have not seen specimens of them.

Corolla-tube usually elongated and more or less inflated at the base, or if short, then distinctly longer than broad and rather narrow, never broadly campanulate.

Corona of 5 erect  $\Lambda$ -shaped lobes adnate to the staminal-column, with free margins . . . . . 43. ORTHANTHERA.

Corona double; the outer cup-shaped, entire or 5-10-toothed, or of 5 bifid or bipartite lobes more or less adnate to the inner coronal-lobes and often appearing to form one series with them, or reduced to minute pouches alternating with the stamens; inner corona of 5 lobes opposite the anthers.

Flowers sometimes solitary, but usually 2 to many in sessile or pedunculate fascicles or simple umbel-like cymes at the nodes or terminal, rarely simply racemose along the peduncle or with the peduncle bearing 2-3 few-flowered fascicles scattered along it, and then with the pedicels not more than  $\frac{1}{4}$ - $\frac{1}{3}$  in. long . . . . . 44. CEROPEGIA.

Flowers in 2 to several fascicles scattered along a simple peduncle or along the branches of a cymose panicle; pedicels very slender, more than  $\frac{1}{3}$  in. long . . . . . 45. RIOCREUXIA.

Corolla-tube short and not longer than broad, or none, and the corolla rotate or saucer-shaped.

Corona of 5 small lobes with hairy tips, inserted on the corolla at the sinuses between the lobes, and sometimes with an inconspicuous fleshy ring at the base of the staminal-column . . . . . 42. LEPTADENIA.

Corona double, entirely arising from the staminal-column, none on the corolla.

Flowers in pairs in a terminal raceme or lax panicle 47. TENARIS.

Flowers 1-4 at the nodes or many in a terminal umbel . . . . . 46. BRACHYSTEMA.

TRIBE VI. *Stapelieæ*.—*Pollen-masses and other characters as in Ceropegieæ, but differing as follows. Stems thick and fleshy, 3- to many-angled, usually dwarf, erect or procumbent, tuberculate-tessellate, or toothed along the angles, leafless or the teeth tipped with rudimentary or small subulate fleshy leaves, or the tubercles or teeth bearing stout conical or spine-like or slender bristles. Flowers fleshy. Corona arising from the staminal-column, none on the corolla.*

Stems cylindrical, tessellately several-angled, not spiny or bristly . . . . . 48. ECHIDNOPSIS.

Stems not tessellate, often spiny-toothed or with bristle-like tips to the tubercles.

- Limb of the corolla nearly entire, with 5 subulate points, the lobes being almost obsolete; stems with numerous angles formed of tubercles tipped with stout spine-like bristles . . . . . 51. HOODIA.
- Limb of the corolla distinctly and often deeply 5-lobed.
- Stems thick, the numerous angles formed of confluent tubercles tipped with a simple bristle, or rarely very blunt and pointless; corolla small, rotate or sub-campanulate . . . . . 50. TRICHOCAULON.
- Stems 6-12-angled; tubercles of the angles tipped with three bristles, the two side ones deflexed; corolla large, tubular-funnel-shaped . 53. TOVAREZIA.
- Stems 4-6-angled.
- Corolla with the base of the sinuses between the lobes produced into small triangular teeth . 54. HUERNIA.
- Corolla without teeth in the sinuses between the lobes.
- Outer corona cup-shaped or annular and entire or variously toothed, or of 5 small pouches alternating with the anthers, or of 5 more or less deeply bifid lobes which have their margins more or less adnate to the basal part of the inner coronal-lobes or are nearly free.
- Corolla 3-5 in. in diam., with a very small tube; tips of inner coronal-lobes dilated, inflexed . . . . . 52. EDITHCOLEA.
- Corolla usually under 1 in. rarely  $1\frac{1}{2}$ -3 in. in diam.; tips of inner coronal-lobes not dilated . . . . . 49. CARALLUMA.
- Outer corona of 5 spreading lobes free to their base, entire, emarginate, or 2-4-toothed at the apex; corolla star-like, usually but not always without a distinct tube . 56. STAPELIA.
- Outer corona in one piece, disk-like, pentagonal, resting on the raised rim of the disk of the corolla and closing the spurious tube formed by it; inner coronal-lobes rhomboidal-ovoid; corolla-lobes more or less folded lengthwise, and often into narrow vertical plates . . . 57. DUVALIA.
- Outer corona absent; inner coronal-lobes very stout, 4-angled in cross-section in the lower part, adnate to the staminal-column for half their length . . . . . 55. HUERNIOPSIS.

1. **GYMNOLÆMA**, Benth. in Benth. et Hook. f. Gen. Pl. ii. 740.

Calyx minute, 5-partite. Corolla very small, campanulate, 5-lobed to below the middle; lobes overlapping to the left in bud. Corona of 5 minute quadrate lobes, entirely adnate to the filaments of the stamens except a very narrow margin at the apex. Stamens arising at the mouth of the short corolla-tube; filaments short, free; anthers ovate-oblong, apiculate, connivent over the very shortly conical apex of the style, and united to the dilated part of it at their base. Pollen granular. Follicles narrowly lanceolate-fusiform, acuminate, smooth. Seeds crowned with a tuft of hairs.—A shrub. Leaves opposite. Flowers very small, crowded in small long-peduncled congested corymbs or heads, which are composed of several very small spike-like cymules. *Macropelma*, K. Schum. in Engl. Pf. Ost-Afr. C. 321. *Sacleuxia*, Baill. Hist. Pl. x. 265; and see Pierre in Bull. Soc. Linn. Paris, 1898, 65.

Species 1, endemic.

Allied to *Cryptolepis*, but differing in having the very minute coronal-lobes adnate to the filaments of the stamens: they were overlooked by Bentham, and are not represented in the figure of the plant.

1. **G. Newii**, Benth. in Hook. Ic. Pl. xii. 74, t. 1186. A woody shrub or climber (?) with a reddish bark, pubescent in the young parts. Leaves subsessile or very shortly petiolate,  $2\frac{1}{2}$ – $3\frac{3}{4}$  in. long, 4–10 lin. broad, varying from linear-lanceolate to oblong-lanceolate, acuminate, minutely velvety on both sides. Peduncles axillary, solitary, slender, 1– $5\frac{1}{2}$  in. long, pubescent, bearing a small congested head of several small sessile several-flowered cymules, that gradually elongate into little spikes 1–2 lin. long; bracts  $\frac{1}{2}$ – $\frac{3}{4}$  lin. long, ovate, acute, pubescent, deciduous; pedicels 1– $1\frac{1}{2}$  lin. long, elongating to 2– $2\frac{1}{2}$  lin. long when in fruit. Corolla about  $1\frac{1}{3}$  lin. in diam., glabrous; tube  $\frac{1}{3}$ – $\frac{1}{2}$  lin. long; lobes  $\frac{3}{4}$ –1 lin. long, rather more than  $\frac{1}{2}$  lin. broad, ovate, acute. Coronal-lobes about  $\frac{1}{5}$  lin. long,  $\frac{1}{3}$  lin. broad, transversely oblong, broader than the staminal filaments and entirely adnate to them, truncate at the apex and forming a transverse ridge at the base of the anthers. Follicles  $1\frac{1}{2}$  in. long, 2– $2\frac{1}{2}$  lin. thick, puberulous. Seeds 3 lin. long,  $\frac{3}{4}$ –1 lin. broad, narrowly ovate-lanceolate, flattish.—K. Schum. in Engl. Pf. Ost-Afr. C. 320. *Gymnolaima Newii*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 211. *Sacleuxia salicina*, Baill. Hist. Pl. x. 265; K. Schum. in Engl. Jahrb. xxiii. 232; and in Engl. & Prantl, Pflanzenfam. iv. ii. 226. *Macropelma angustifolium*, K. Schum. in Engl. Pf. Ost-Afr. C. 321; in Engl. & Prantl, Pflanzenfam. iv. ii. 213, fig. 63, F, G; and in Engl. Jahrb. xxiii. 232.

**Nile Land.** British East Africa: Kikumbulu, 2500–3000 ft., *Scott-Elliot*, 6149! Maungu, *Scott-Elliot*, 6162!

**Mozamb. Dist.** Zanzibar, ex *Baillon*. German East Africa: Kilimanjaro, *New!* Merue, *Fischer*, 383 (ex *K. Schumann*).

2. **CRYPTOLEPIS**, R. Br.; Benth. et Hook. f. Gen. Pl. ii. 740.

Calyx 5-partite. Corolla-tube campanulate; lobes overlapping and more or less twisted to the left when in bud, at each angle between them, within, is a minute pocket-like flap (sinus-pocket), which is sometimes a direct continuation of the margin of one lobe adnate to the inner face of the adjacent lobe between its margin and mid-line, and sometimes arises from the inner face of both lobes near their margins, but quite distinct from the latter, truncate or produced into a tooth or filiform process, in the latter case resembling a second coronal-whorl. Corona of 5 filiform or fleshy lobes or processes arising from about the middle of the corolla-tube some distance above the insertion of the stamens, but sometimes decurrent down to the latter, alternating with the corolla-lobes. Stamens inserted towards the base of the corolla-tube; filaments free; anthers more or less triangular, with the connective produced into a fleshy apiculus, united at their base to the dilated part of the style, more or less connivent in a cone. Pollen granular. Pollen-carrier more or less spatulate. Style shortly conical at the apex, shorter than the anthers. Follicles linear-terete or ovate, smooth. Seeds crowned with a tuft of hairs.—Erect or twining shrubs. Leaves opposite or whorled, rarely subfasciculate on the short flowering shoots. Flowers small or of moderate size, arranged in axillary, sublateral, or terminal cymes, or rarely subsolitary. *Curroria*, Planch. ex Benth. in Hook. Niger Fl. 457. *Ectadiopsis*, Benth. in Benth. et Hook. f. Gen. Pl. ii. 741.

Species several; the genus extends from Cashmere through the tropics of the Old World to Madagascar and Natal.

The sinus-pockets should perhaps be regarded as belonging to the corona.

- Leaves of the short lateral flowering shoots crowded, subfasciculate, linear-spathulate; flowers solitary . . . . . 1. *C. decidua*.
- Leaves all opposite or in whorls of 3, rarely alternate, pairs or whorls distant; flowers in 2 to many-flowered cymes or panicles. (In 16, *C. suffruticosa* they are sometimes solitary).
- Leaves cordate and stem-clasping at the base,  $2\frac{1}{2}$ –4 in. broad . . . . . 2. *C. hypoglauca*.
- Leaves acute or rounded at the base, usually less than 2 in. broad.
- Leaves oblong, emarginate or subtruncate at the apex, mucronate . . . . . 6. *C. obtusa*,
- Leaves usually acute or acuminate, sometimes obtuse at the apex.
- \*Corolla-lobes 3–6 lin. long.
- Cymes lax, several-flowered, with branches 3–4 in. long; coronal-lobes ovate . . . . . 3. *C. apiculata*.
- Cymes lax, 3–7-flowered, with branches  $\frac{1}{4}$ –1 in. long; coronal-lobes triangular, acute . . . . . 4. *C. triangularis*.

- Cymes lax, 2-3-flowered; coronal-lobes, subulate . . . . . 5. *C. microphylla*.
- Cymes compact, 7-15-flowered, with branches 1-2 lin. long; coronal-lobes clavate . . . . . 8. *C. producta*.
- \*\*Corolla-lobes 1-2 lin. long.
- Corolla pubescent within at the base of the lobes and in the throat of the tube. (N.B.—The hairs are not visible when wet).
- Cymes obovate, flat-topped; corolla shortly pointed in bud.
- Leaves linear; corolla-lobes  $\frac{1}{2}$  lin. broad. . . . . 7. *C. Hensii*.
- Leaves lanceolate or oblong-lanceolate; corolla-lobes  $\frac{3}{4}$ -1 lin. broad . . . . . 9. *C. Baumii*.
- Cymes dense, rounded or subglobose; corolla very obtuse in bud . . . . . 10. *C. Brazzæi*.
- Corolla glabrous within.
- Flowers 20 or more in a cyme, rather congested.
- Leaves 3-nerved at the base; sinus-pockets truncate, entire or denticulate . . . . . 11. *C. Welwitschii*.
- Leaves not 3-nerved at the base; sinus-pockets produced into long filiform processes . . . . . 12. *C. angolensis*.
- Flowers 3-16 in a cyme, not congested.
- Leaves lanceolate to elliptic-oblong, 2-5 times as long as broad.
- Corolla acute or acuminate in bud, its lobes  $\frac{2}{3}$ - $\frac{3}{4}$  lin. broad . . . . . 13. *C. oblongifolia*.
- Corolla obtuse in bud, its lobes 1-1 $\frac{1}{4}$  lin. broad . . . . . 14. *C. Elliotii*.
- Leaves linear or linear-lanceolate 4 $\frac{1}{2}$ -12 times as long as broad . . . . . 15. *C. nigritana*.
- Flowers solitary or in 2-flowered cymes . . . . . 16. *C. suffruticosa*.

1. **C. decidua**, *N. E. Br.* A shrub with straight slender branches, having a pale grey (glaucous?) bark and rather distant nodes, from which arise short, and proportionately stout lateral shoots  $\frac{1}{8}$ - $\frac{1}{4}$  in. long, bearing leaves and flowers. Leaves subfasciculate on the lateral shoots,  $\frac{3}{4}$ -1 in. long, 1-2 lin. broad, linear or linear-spathulate, obtuse or subacute, gradually narrowing to the base, subsessile, glabrous. Flowers solitary in the axils of the leaves, one or two (or more?) in each tuft of leaves; pedicels 3-7 $\frac{1}{2}$  lin. long, bracteate at about the middle, slender, glabrous. Sepals 1 lin. long, lanceolate, acuminate. Corolla-tube campanulate, 1 lin. long; lobes lanceolate or linear-lanceolate, 3 lin. long, twisted in the bud, glabrous. Coronal-lobes arising from the middle of the corolla-tube, 1 $\frac{1}{2}$ -2 lin. long, filiform or subulate. Anthers connivent, acuminate. Style shorter than the anthers, conical at the apex.—*Curroria decidua*, Planch. ex Benth. in

Hook. Niger Fl. 457; Engler in Engl. Jahrb. x. 244; xix. 148; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 219; Walp. Ann. iii. 69.

**Lower Guinea.** Angola, *Curror!* Hereroland: near Salem, 1800 ft., *Marloth*, 1455 (ex *Engler*), near Sorissoris, Gurich, 50 (ex *Engler*).

The primary leaves of the main branches are not present upon the specimens I have seen, and they are undescribed.

2. ***C. hypoglauca***, K. Schum. in Engl. Pfl. Ost-Afr. C. 320. A large woody climber with glabrous stems. Leaves distant, sessile,  $3\frac{1}{2}$ –5 in. long,  $2\frac{1}{4}$ –4 in. broad, and probably larger, oblong, elliptic-oblong or elliptic-obovate, very broadly rounded with a reflexed short cuspidate point at the apex, cordate and stem-clasping at the base, quite glabrous, glaucous beneath. Panicles lateral at the nodes, few-branched and few-flowered, 5 in. or more long, including the 3 in. long peduncle, quite glabrous in all parts; bracts  $\frac{1}{2}$ – $\frac{3}{4}$  lin. long, ovate, acute; pedicels  $1$ – $1\frac{1}{4}$  lin. long, stout. Sepals  $1\frac{1}{4}$  lin. long, ovate-oblong, acute. Corolla-tube  $1\frac{1}{2}$  lin. long, funnel-shaped; lobes 3 lin. long, ovate, rather abruptly narrowed into a linear, obtuse, spirally twisted point, glabrous; sinus-pockets minute, truncate, not ciliate. Coronal-lobes inserted just above the middle of the corolla-tube, their tips not reaching to the sinuses, rhomboidal-ovoid, thick and fleshy, obtusely pointed, connivent over the staminal-column. Anthers triangular-acuminate, connivent over the short conical apex of the style.—K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 219.

**Mozamb. Dist.** German East Africa: Usambara; Amboni, *Holst*, 2728!

3. ***C. apiculata***, K. Schum. in Engl. Pfl. Ost-Afr. C. 320. Stem twining, glabrous, light brown, with many pale lenticels. Leaves spreading, glabrous; petiole  $\frac{1}{4}$ – $\frac{1}{2}$  in. long; blade  $2\frac{1}{2}$ – $4\frac{3}{4}$  in. long,  $1\frac{1}{4}$ – $2\frac{1}{4}$  in. broad, oblong or elliptic-oblong, shortly and abruptly acute, cuneately rounded or acute at the base, narrowly revolute at the margin, whitish beneath. Peduncles  $1$ – $1\frac{1}{2}$  in. long. Cymes once or twice dichotomously branched; branches 3–4 in. long,  $\frac{1}{3}$  lin. thick, racemously many-flowered, with internodes  $\frac{1}{4}$ – $\frac{1}{2}$  in. long, glabrous; bracts  $\frac{1}{2}$ –1 lin. long, ovate, acute, glabrous; pedicels  $\frac{1}{2}$  in. long, moderately stout, glabrous. Sepals  $1\frac{1}{2}$ – $1\frac{3}{4}$  lin. long, oblong, obtuse, glabrous. Corolla quite glabrous; tube  $1\frac{3}{4}$ –2 lin. long, campanulate; lobes 5 lin. long,  $\frac{3}{4}$  lin. broad, lanceolate-linear, tapering to a point, spirally twisted; sinus-pockets truncate, not ciliate. Coronal-lobes  $\frac{1}{2}$  lin. long, arising from the middle of the corolla-tube and just reaching to the sinuses, rhomboid-ovate, acute, thick and fleshy. Anthers triangular, very acute, connivent over the conical acute apex of the style.—K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 219.

**Mozamb. Dist.** German East Africa: Usambara; Amboni, *Holst*, 2564!

Very closely allied to *C. capensis*, Schlechter, a native of Natal, but differing from that species in its stouter cyme-branches, shorter corolla-tube, and in the coronal-lobes reaching to the top of the tube.

4. **C. triangularis**, *N. E. Br. in Journ. Linn. Soc.* xxx. 92. A glabrous climber, with blood-red resinous juice. Leaves spreading; petiole 2-4 lin. long; blade 1-3 in. long,  $\frac{1}{2}$ - $1\frac{1}{4}$  in. broad, elliptic or elliptic-oblong, acuminate at the apex, acute or rounded at the base, deep green, not shining above, yellowish-green beneath, with the lateral veins slightly but distinctly prominent. Cymes terminal on short lateral shoots, dichotomous or trichotomous, laxly 3-7-flowered, with branches  $\frac{1}{4}$ -1 in. long; bracts  $1\frac{1}{2}$ -2 lin. long, ovate, obtuse; pedicels 3-6 lin. long. Sepals 2 lin. long, 1 lin. broad, ovate, subobtusate. Corolla-tube campanulate, 2 lin. long; lobes  $\frac{1}{2}$  in. long, lanceolate-linear, auricled on one side within at the base, twisted to the left in bud, yellow; sinus-pockets truncate, not ciliate. Coronal-lobes inserted at the middle of the corolla-tube, triangular, with nearly equal sides and acute or rounded angles. Anthers connivent over the conical apex of the style.—Hiern in *Cat. Afr. Pl. Welw.* i. 676. *C. sanguinolenta*, Schlechter, Westafr. Kautschuk-Exped. 308. *Pergularia sanguinolenta*, Lindl. in *Bot. Mag.* t. 2532; and in *Trans. Hort. Soc.* 1826, vi. 72; Decne. in *DC. Prod.* viii. 619.

**Upper Guinea.** Gambia, *Leprieur!* Sierra Leone: near Lumbaraya, *Scott-Elliott*, 5013! and without precise locality, cultivated specimen, *Don!* Lagos: Yoruba; Abeokuta, in rocky places, *Barter*, 3359! and without precise locality, *Rowland!* Niger Territory: Nupe, *Barter*, 1333!

**Lower Guinea.** Angola: Pungo Andongo; by thickets in the deep valleys of the rocks of the Præsidium, *Welwitsch*, 5993!

This plant was introduced by G. Don into the Royal Horticultural Society's garden at Chiswick, where it flowered in August 1823, and was described by Lindley as a *Pergularia*. I had not made this identification until immediately after my description of it was published in the *Journal of the Linnean Society* or I should have adopted Lindley's specific name. The sap is described as blood-red in colour. Probably *C. Barteri*, K. Schum. in *Engl. & Prantl, Pflanzenfaun.* iv. ii. 219, belongs here, but the description is very insufficient, and I have not seen a specimen.

5. **C. microphylla**, *Baill. in Bull. Soc. Linn. Paris*, 1889, ii. 804 (84 *by error*). A much-branched shrub, with milky juice; stems scrambling or twining, slender, glabrous, slightly rough on the youngest parts, becoming smooth with age, nodose from the projecting leaf-scars. Leaves with scaberulous petioles 1 lin. long; blade  $\frac{3}{4}$ - $1\frac{1}{2}$  in. long,  $4\frac{1}{2}$ - $8\frac{1}{2}$  lin. broad, oblong-ovate, acute or shortly acuminate, or the lowermost obtuse and apiculate, rounded at the base, dull green and microscopically scaberulous (densely covered with glandular points, *Welwitsch*) above, glaucous beneath. Cymes terminal or axillary, 2-3- (rarely more-) flowered; peduncles 4-6 lin. long, slender, glabrous; pedicels  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, minutely bracteate below the middle, glabrous. Sepals  $\frac{3}{4}$  lin. long and nearly as broad, ovate, subobtusate, subglabrous, or very minutely puberulous. Corolla whitish, glabrous; tube  $1\frac{1}{2}$  lin. long, campanulate (swollen above the base, *Welwitsch*); lobes 3- $3\frac{1}{2}$  lin. long, linear-lanceolate, obtuse, more or less wrinkled and crisped; sinus-pockets scarcely evident, not ciliate. Coronal-lobes

inserted at the middle of the corolla-tube,  $\frac{1}{4}$  lin. long, rather stout, fleshy, terete-subulate, erect.—Hiern in Cat. Afr. Pl. Welw. i. 676.

**Lower Guinea.** Lower Congo? Kimuënza, *Gillet!* Angola: Golungo Alto; Alto Queta, in shady forests, *Welwitsch*, 5939! Queta Mountains, *Welwitsch*, 5940!

6. **C. obtusa**, *N. E. Br. in Kew Bulletin*, 1895, 110. Stem twining, glabrous. Leaves petiolate, glabrous; petiole 2–5 lin. long; blade  $\frac{3}{4}$ –3 in. long,  $\frac{1}{3}$ – $1\frac{1}{4}$  in. broad, oblong, obtuse, retuse or emarginate, mucronate, rounded or more or less cuneate at the base. Cymes 1–2 in. long, pedunculate, dichotomous, laxly 6–10-flowered, glabrous in all parts, axillary, mostly from both axils, and often arranged in elongated leafless narrow panicles 3–12 in. long, at the ends of the lateral shoots; peduncles  $\frac{1}{3}$ –1 in. long; bracts  $\frac{1}{2}$ –1 lin. long, lanceolate, acute; pedicels 1–2 lin. long. Sepals  $\frac{3}{4}$  lin. long, ovate, subacute. Corolla acuminate, with twisted æstivation in bud; tube 1 lin. long; lobes 3 lin. long, linear-lanceolate; sinus-pockets truncate, not ciliate. Coronal-lobes arising from the middle of the corolla-tube,  $\frac{1}{2}$  lin. long, fleshy, lanceolate, acuminate. Anthers acuminate, connivent. Follicles 3–5 in. long,  $2\frac{1}{2}$ –3 lin. thick, fusiform-terete, acuminate, smooth, reflexed when ripe. Seeds 3 lin. long,  $\frac{2}{3}$ –1 lin. broad, oblong-lanceolate, flat, with a central keel on one side, convex on the other, minutely tuberculate, blackish-brown.—K. Schum. in Engl. Pf. Ost-Afr. C. 424, and in Engl. & Prantl, Pflanzenfam. iv. ii., 219. *C. obtusa*, K. Schum. in Engl. Pf. Ost-Afr. C. 320.

**Mozamb. Dist.** German East Africa: east coast of Lake Nyasa, *Johnson*, 56! and without precise locality, *Stuhlmann*, 7827 (ex *K. Schumann*), Portuguese East Africa: Mozambique, *Forbes!* Lower valley of the River Shire, *Meller!* Lower Zambesi; between Tete and the coast, *Kirk!* Zambesi Delta; Luabo River, *Kirk*, 38! Shupanga, *Kirk!* British Central Africa: Nyasaland; Kondowe to Karonga, 2000–6000 ft., *Whyte!* Boruma, on the Zambesi, *Menyharth*, 829!

Also at Delagoa Bay.

I have not seen *Stuhlmann's* specimen which Dr. Schumann described in 1895 as *C. obtusa*, but judging from the very imperfect description, I believe it to be this plant.

7. **C. Hensii**, *N. E. Br.* Stem twining, rather slender, glabrous, wrinkled in the dried state, but not rough with raised points, dark reddish-brown. Leaves very spreading, glabrous on both sides; petiole  $\frac{3}{4}$ –1 lin. long; blade  $1\frac{1}{2}$ – $2\frac{1}{2}$  in. long,  $1\frac{1}{2}$ – $3\frac{1}{3}$  lin. broad, linear, acute, rounded at the base. Cymes sublateral at the nodes 7–8 in. long including the short peduncle, flat-topped, many-flowered, with ascending branches, compact, glabrous; bracts  $\frac{1}{3}$ – $\frac{1}{2}$  lin. long, ovate, acute; pedicels 1–2 lin. long. Sepals  $\frac{1}{2}$  lin. long, oblong, obtuse, glabrous, very minutely ciliate. Corolla campanulate, glabrous outside, pubescent at the base of the lobes and in the throat and around the mouth of the tube within, white, shortly pointed in the bud; tube  $\frac{3}{4}$  lin. long; lobes 1 lin. long,  $\frac{1}{2}$  lin. broad, oblong, obtuse and very oblique at the apex

sinus-pockets truncate, ciliate. Coronal-lobes arising at the middle of the corolla-tube, fleshy, subulate, obtuse, strongly incurved, pubescent. Anthers acuminate, connivent in a cone.

**Lower Guinea.** Lower Congo : Ntombi River, near Lutete, *Hens*, A, 227!

Very near *C. Baumii*, N. E. Br., differing in its linear leaves and more fleshy (and in the dried state darker coloured) corolla, which has very much narrower lobes, more oblique at the apex.

8. **C. producta**, N. E. Br. Stem apparently of scrambling habit, minutely scabrid. Leaves opposite or alternate; petiole  $\frac{1}{2}$ –1 lin. long; blade  $\frac{1}{2}$ – $1\frac{1}{3}$  in. long,  $\frac{1}{3}$ – $\frac{2}{3}$  in. broad, oblong, obtuse, apiculate, rounded or subcuneate at the base. Cymes axillary sessile or subsessile, about  $\frac{2}{3}$  in long and  $\frac{3}{4}$  in. in expanse, 7–15-flowered; bracts minute, ovate, acute; pedicels  $1\frac{1}{2}$ –2 lin. long, glabrous. Sepals 1 lin. long,  $\frac{2}{3}$  lin. broad, oblong, obtuse, glabrous. Corolla quite glabrous inside and out; tube  $1\frac{1}{2}$  lin. long, campanulate; lobes 3 lin. long, 1 lin. broad, narrowly oblong, obtuse, erect or ascending; sinus-pockets produced into linear truncate or minutely bifid teeth  $\frac{1}{4}$  lin. long, resembling a second series of coronal-lobes. Coronal-lobes arising from the middle of the corolla-tube,  $\frac{1}{3}$  lin. long, clavate, obtuse, glabrous. Staminal column  $\frac{1}{2}$  lin. long; anthers with subulate tips, connivent in a cone.

**Lower Guinea.** Angola : Amboella; by the River Kubango, above Knimarva, 3600 ft., *Baum*, 457!

In having the sinus-pockets produced into distinct lobes, this plant resembles *C. angolensis*, Welw., and belongs to the same group of species, the flowers however are very much larger and the coronal-lobes quite different.

9. **C. Baumii**, N. E. Br. Stem flexuose or twining, not scabrid, wrinkled in the dried state, reddish-brown. Leaves spreading, glabrous; petiole 1–2 lin. long; blade  $1-1\frac{3}{4}$  in. long, 5–7 lin. broad (or larger?), lanceolate or oblong-lanceolate, acute, rounded at the base. Cymes sublateral at the nodes,  $\frac{3}{4}$ – $1\frac{1}{3}$  in. long including the short peduncle,  $\frac{2}{3}$ – $\frac{3}{4}$  in. in diam., much branched, compact, corymbose, many-flowered, glabrous; branches erect or ascending; bracts  $\frac{1}{3}$ – $\frac{1}{2}$  lin. long, ovate, acute; pedicels  $1-1\frac{3}{4}$  lin. long. Sepals  $\frac{3}{4}$  lin. long,  $\frac{1}{2}$  lin. broad, oblong-ovate, obtuse, glabrous. Corolla  $2\frac{1}{2}$  lin. in diam., campanulate, shortly pointed and slightly twisted in bud, glabrous outside, pubescent at the base of the lobes around the mouth of the tube within, tube  $\frac{3}{4}$  lin. long; lobes  $1\frac{1}{4}$ – $1\frac{1}{3}$  lin. long,  $\frac{3}{4}$ –1 lin. broad, oblong, obtuse, erect, spreading, or recurved at the tips; margin of the sinus-pockets ciliate with rather long hairs. Coronal-lobes inserted at the middle of the corolla-tube much above the insertion of the stamens,  $\frac{1}{3}$ – $\frac{1}{2}$  lin. long, fleshy, subulate, acute, incurved, resembling fish-hooks, sparsely pubescent or hairy. Staminal column  $\frac{1}{2}$  lin. long; anthers deltoid, very acute, connivent in an acute cone over the conical apex of the style.

**Lower Guinea.** Angola : Amboella; by the River Longa, below Napalanka, 3700 ft., *Baum*, 577!

Very closely allied to *C. Brazzæi*, Baill., but differing in having less congested cymes, which in outline are wedge-shaped or obconical and not subglobose, the flower-buds are more pointed, more twisted, and the corolla-lobes are longer and not ciliate. The texture and colour of the flower in the dried state are also quite different, that of *C. Brazzæi* being darker in colour and more fleshy than in *C. Baumii*.

10. **C. Brazzæi**, Baill. in *Bull. Soc. Linn. Paris*, 1889, ii. 803 (83 by error). Stem twining, rather slender, smooth. Leaves spreading, glabrous; petiole 1-2½ lin. long; blade 1½-2½ in. long, ¼-1 in. broad, varying from elliptic-oblong to elliptic, acute, obtusely rounded at the base, more or less distinctly 3-nerved. Cymes axillary, subsessile, small, dense, subglobose, many-flowered, glabrous; bracts ½ lin. long, ovate, acute; pedicels 1-2 lin. long, glabrous. Sepals ½-¾ lin. long, ovate, obtuse, minutely ciliate. Corolla very obtuse in bud, pubescent in the throat of the tube and on the base of the lobes within, glabrous outside, white; tube 1 lin. long, campanulate; lobes 1 lin. long, ⅔-¾ lin. broad, oblong, obtuse, sparsely and very minutely ciliate; margin of the sinus-pockets ciliate. Coronal-lobes arising from the middle of the corolla-tube, ½ lin. long, fleshy, subulate, obtuse or acute, incurved like fish-hooks, sparsely hairy. Anthers acuminate connivent. —Hiern in *Cat. Afr. Pl. Welw.* i. 678. *C. Brazzæi*, Henriques in *Bolet. Soc. Brot.* xvi. 67. *C. Sizenandi*, Rolfe in *Bolet. Soc. Brot.* xi. 86.

**Lower Guinea.** Angola: Malange, *Marques*, 15! 63 (ex *Henriques*); Pungo Andongo; plentiful in the thickets of the Præsidium, *Welwitsch*, 4197! Huilla; at Monino, *Welwitsch*, 4207! banks of the River Lovo, *Marques*, 217 (ex *Henriques*).

The hairs inside the corolla of this and the allied species can scarcely be seen if the corolla is examined in a wet state.

11. **C. Welwitschii**, Hiern in *Cat. Afr. Pl. Welw.* i. 677, not of *Schlechter*. A small shrub, erect, scrambling or decumbent; branches more or less flexuose, minutely scaberulous, reddish. Leaves spreading, glabrous; petiole ½-1 lin. long; blade ¾-2 in. long, 1½-10 lin. broad, varying from linear or linear-lanceolate to elliptic, acute, rounded or subacute at the base, more or less distinctly 3-nerved. Cymes axillary, subsessile, small, densely many- (rarely less than 20-) flowered, minutely bracteate; pedicels 1-2 lin. long. Sepals ¾ lin. long, ovate, obtuse, minutely ciliate. Corolla glabrous on both sides, white; tube 1 lin. long, campanulate; lobes 1¼ lin. long, ¾-1 lin. broad, oblong, obtuse, not ciliate; sinus-pockets truncate, entire or denticulate, not ciliate. Coronal-lobes arising from the middle of the corolla-tube, ½ lin. long, fleshy, subclavate, obtuse or subacute. Anthers acuminate, connivent in a cone. —*C. myrtifolia*, *Schlechter* in *Journ. Bot.* 1895, 301, name only; Hiern in *Cat. Afr. Pl. Welw.*, i. 677. *Ectadiopsis Welwitschii*, Baill. (not of Britten). *E. lanceolata*, Baill. and *E. myrtifolia*, Baill. in *Bull. Soc. Linn. Paris*, 1889, ii. 802-803 (82-83 by error); K. Schum. in *Engl. & Prantl, Pflanzenfam.* iv. ii. 219.

**Lower Guinea.** Angola: Huilla; near Huilla, in thickets amongst short grass, *Welwitsch*, 4203! in thickets near Lopollo, *Welwitsch*, 4206!

The leaves of this plant seem to vary very much in breadth.

Var. *β luteola*, Hiern in Cat. Afr. Pl. Welw. i. 677. A sarmentose shrublet  $\frac{1}{2}$ -1 $\frac{1}{2}$  ft. high. Flowers yellowish.

**Lower Guinea.** Angola: Huilla; in thickets near Huilla, *Welwitsch*, 4205!

I doubt if this is in any way distinct from the typical form.

*Ectadiopsis scandens*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 219, should probably be referred to *C. Welwitschii*. It is described as follows: A twining shrub. Margins of the sinus-pockets of the corolla-lobes not ciliate. Common in Angola.

*Cryptolepis scandens*, Schlechter, Westafr. Kautschuk-Exped. 308, name only, collected in sandy soil near Dolo, not far from Stanley Pool, in Lower Congo, *Schlechter*, 12451. This is stated to be identical with *Ectadiopsis scandens*, K. Schum., but, as there is not a word of description to support this view, I am doubtful of the determination, especially as the specimens distributed by the Berlin authorities under this name have the sinus-pockets ciliate, and thus entirely disagree with *Ectadiopsis scandens* in the only distinctive character assigned to it.

12. **C. angolensis**, *Welw. ex Hiern in Cat. Afr. Pl. Welw. i. 677.* Rootstock woody. Stems of the type specimens 8-10 in. high, erect, reddish-brown, rough with minute raised points; but according to *Welwitsch's* note on the label it forms a decumbent, scrambling or rarely twining shrub, 2-4 ft. high, with milky juice. Leaves ascending or somewhat spreading, perfectly glabrous; petiole 1-2 lin. long; blade 1-2 in. long, 3-6 lin. broad, lanceolate, acute, cuneate at the base, not 3-nerved. Cymes axillary, sessile or subsessile, densely many-flowered; bracts minute, rounded, very minutely ciliate; pedicels 1-1 $\frac{3}{4}$  lin. long, rather thick. Sepals  $\frac{3}{4}$  lin. long,  $\frac{1}{2}$  lin. broad, oblong, obtuse, very minutely ciliate. Corolla obtuse in bud, quite glabrous, white, fragrant; tube  $\frac{1}{2}$ - $\frac{2}{3}$  lin. long, campanulate; lobes 1 $\frac{1}{2}$ -1 $\frac{2}{3}$  lin. long,  $\frac{2}{3}$  lin. broad, oblong, obtuse; sinus-pockets produced into filiform processes  $\frac{3}{4}$  lin. long, giving the appearance of two series of coronal-lobes, apparently slightly tortuous. Coronal-lobes arising above the middle of the corolla-tube,  $\frac{3}{4}$ -1 lin. long, subulate, acute, slightly curved somewhat like the letter S. Anthers acuminate, connivent or connate in a cone.

**Lower Guinea.** Angola: Huilla; in sandy thickets near Lopollo, *Welwitsch*, 4204!

This is very similar to *C. Welwitschii*, Hiern, in general appearance, but differs in the leaves not being 3-nerved at the base, and in the very different coronal-lobes and filiform processes of the sinus-pockets. The type consists of two specimens, which are, as described above, and I am inclined to think, from the statement on *Welwitsch's* label, that he did not distinguish this plant from *C. Welwitschii*; certainly the specimens show no signs of a sarmentose decumbent or twining habit. I find the plant quite glabrous on all parts, not "pulverulent-puberulous" on the leaves and calyx as stated in the original description, where the filiform processes of the sinus-pockets are not noted.

13. **C. oblongifolia**, *Schlechter in Journ. Bot. 1896, 315.* An erect branching shrub. Branches usually rather long, slender, reddish-brown, minutely scabrous. Leaves ascending, glabrous; petiole  $\frac{1}{2}$ -1 $\frac{1}{4}$  lin. long; blade  $\frac{1}{2}$ -2 in. long,  $\frac{1}{4}$ - $\frac{2}{3}$  in. broad, 2-5 times as long as broad,

varying from narrowly lanceolate to oblong-elliptic, acute or obtuse and apiculate, cuneate or rounded at the base, pallid beneath. Cymes subaxillary, subsessile, or on peduncles up to  $\frac{3}{4}$  in. long, 3-16-flowered, not dense, trichotomous,  $\frac{1}{2}$ - $\frac{3}{4}$  in. in diam.; bracts  $\frac{1}{2}$ -1 lin. long, ovate, obtuse; pedicels 1-1 $\frac{1}{2}$  lin. long. Sepals  $\frac{2}{3}$ - $\frac{3}{4}$  lin. long, oblong, obtuse, minutely ciliate at the apex. Corolla quite glabrous, yellowish-green, ovoid and rather acute or acuminate in bud; tube  $\frac{2}{3}$ -1 lin. long, campanulate; lobes 1 $\frac{1}{2}$ -1 $\frac{3}{4}$  lin. long,  $\frac{2}{3}$ - $\frac{3}{4}$  lin. broad, oblong or lanceolate, oblong, obtuse; sinus-pockets entire or produced into a minute tooth, not ciliate. Coronal-lobes inserted at the middle of the corolla-tube,  $\frac{1}{4}$ - $\frac{1}{3}$  lin. long, subrhomboid, subterete or clavate, obtuse or acute, fleshy. Anthers deltoid, very acuminate. Follicles diverging at an angle of about 80°, 3-3 $\frac{3}{4}$  in. long, about  $\frac{1}{4}$  in. thick, narrowly fusiform, gradually tapering from about the middle to a subacute point, glabrous. Seeds about 4 lin. long, 1 lin. broad, narrowly oblong, convex on one side, concave with a central ridge on the other, minutely scabrous.—*Ectadium oblongifolium*, Meisn. in Hook. Journ. Bot. 1843, 542 (442 by error); Hochst. in Flora, 1844, 827; Walp. Rep. vi. 481. *Secamone acutifolia*, Sond. in Linnaea, xxiii. 76; Walp. Ann. iii. 48. *Ectadiopsis oblongifolia*, Benth. in Benth. & Hook. f. Gen. Pl. ii. 471; Schlechter in Engl. Jahrb. xviii. Beibl. 45, 14; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 219. *E. acutifolia*, Benth. in Benth. & Hook. f. Gen. Pl. ii. 741; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 219.

**Nile Land.** Uganda: Ankole; on dry grassy hills on the East side of Lake Albert Edward, *Scott-Elliot*, 8066!

**Mozamb. Dist.** Portuguese East Africa: between Massi Kessi & Revue, *Hon. Mrs. Evelyn Cecil*, 239!

Also in South Africa.

14. **C. Elliotii**, *Schlechter in Journ. Bot.* 1895, 300. Stems erect, branching, scaberulous. Leaves  $\frac{1}{2}$ -1 in. long, 3-6 lin. broad, on petioles  $\frac{1}{2}$ -1 lin. long, elliptic-oblong, about equally subobtuse at both ends, apiculate, margins revolute, glabrous on both sides, whitish or glaucous beneath. Cymes lax, terminal, corymbose, the main branches 3-10 lin. long, glabrous, ultimate cymules 3-4-flowered; pedicels 1-1 $\frac{1}{4}$  lin. long, glabrous. Sepals 1 lin. long,  $\frac{2}{3}$ - $\frac{3}{4}$  lin. broad, oblong or elliptic-oblong, very obtusely rounded at the apex, minutely ciliate. Corolla glabrous, ovoid, and obtuse in bud; tube 1 lin. long, campanulate; lobes 1 $\frac{1}{2}$  lin. long, 1-1 $\frac{1}{4}$  lin. broad, somewhat rhomboidal-oblong in outline, obtuse and unequal sided, that side which is on the inside when in the bud being broadest and produced into a distinct angle at the middle; sinus-pockets truncate, not ciliate. Coronal-lobes arising from the middle of the corolla-tube, rather less than  $\frac{1}{2}$  lin. long, fusiform-clavate, acute, incurved.

**Mozamb. Dist.** German East Africa: Urundi Hills, *Scott-Elliot*, 8372!

Schlechter also included a specimen of *C. oblongifolia*, Schlechter under this name, but I have retained his name for the present plant, as it is evident that it is

upon this plant with the terminal inflorescence that he has based his description, but the flowers are not in racemes as he describes. It differs from *C. oblongifolia* in its broader corolla lobes and more obtuse buds.

15. **C. nigritana**, *N. E. Br.* A virgate shrub, growing to a height of 4 ft., glabrous in all parts; branches straight, slender, rough with minute raised points. Leaves opposite or occasionally 3 in a whorl; petiole  $\frac{1}{2}$ -1 lin. long, blade  $1\frac{1}{2}$ - $3\frac{1}{2}$  in. long,  $\frac{1}{8}$ - $\frac{1}{2}$  in. broad,  $4\frac{1}{2}$ -12 times as long as broad, linear to linear-lanceolate, acute or acuminate; base obtuse. Cymes axillary, subsessile, or very shortly pedunculate, 10-20-flowered; bracts 1 lin. long, ovate-lanceolate, acute; pedicels 1-2 lin. long. Sepals  $\frac{1}{2}$ -1 lin. long, ovate, acute or obtuse, minutely and sparsely ciliate. Corolla-tube  $1-1\frac{1}{4}$  lin. long, campanulate; lobes  $1\frac{1}{2}$ - $1\frac{3}{4}$  lin. long,  $\frac{1}{2}$ - $\frac{2}{3}$  lin. broad, narrowly oblong or lanceolate, obtuse, twice as long as the tube, pale yellow; sinus-pockets truncate, not ciliate. Coronal-lobes arising from the middle of the corolla-tube,  $\frac{1}{2}$  lin. long, fleshy, clavate, rhomboidal or oblong-spathulate, obtuse or acute, sometimes incurved at the point.—*C. Welwitschii*, Schlechter in Journ. Bot. 1895, 301, excl. syn., name only. *Ectadiopsis nigritana*, Benth. in Hook. Ic. Pl. xii. 75, t. 1187. *E. nigritiana*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 219. *E. nigritana*, Benth. var. *congesta*, K. Schum. in Engl. Jahrb. xxiii. 232. *E. Welwitschii*, Britten in Trans. Linn. Soc. ser. 2, iv. 26, not of Baill.

**Upper Guinea.** Togo, *Büttner*, 404! Niger Territory: Nupe, *Barter*, 1324!

**Nile Land.** Uganda: Ankole; east of Lake Albert Edward, *Scott-Elliot*, 8065!

**Mozamb. Dist.** Lake Tanganyika, *Cameron!* Portuguese East Africa: Lower Shire Valley, Morambala Mountain, 1500 ft., *Kirk!* British Central Africa: Nyasaland; Stevenson Road, 5000-6000 ft., *Scott-Elliot*, 8264! 8314! West shore of Lake Nyasa, 1600 ft., *Kirk!* Manganja Hills, 2000 ft., *Kirk!* Shire Highlands, *Buchanan*, 251! Mandala, *Scott-Elliot*, 8450! Mount Mlanji, *Whyte*, 134! and without precise locality, *Buchanan*, 1091!

The tough, stringy bark is used by the natives for making fishing-nets.

Probably the plant from Nyasaland, referred to as *E. Welwitschii*, by Schumann in Engl. Pf. Ost-Afr. C. 320, belongs here.

16. **C. suffruticosa**, *N. E. Br.* Stems solitary, 1-2 ft. high, arising from a thick woody rhizome, very much branched, flattened in the upper part, sulcate, glabrous, minutely papillose at the apex only. Leaves sessile,  $\frac{3}{4}$ - $2\frac{2}{3}$  in. long,  $\frac{3}{4}$ -5 lin. broad, varying from linear to lanceolate, acuminate at the apex, acute or somewhat rounded at the base, subcoriaceous, marginate, glabrous on both sides; veins finely reticulate, prominent on both sides. Flowers solitary or in 2-flowered pedunculate cymes; peduncles  $1\frac{1}{2}$ -4 lin. long; bracts 2, subulate; pedicels  $1-2\frac{1}{2}$  lin. long. Sepals  $\frac{3}{4}$  lin. long, ovate, obtuse, minutely ciliate. Corolla yellow; tube 1 lin. long; lobes 2 lin. long, oblong,

acute, their sinus-pockets variable, truncate, emarginate or subulate. Coronal-lobes arising about  $\frac{3}{4}$  lin. above the base of the corolla-tube,  $\frac{1}{3}$  lin. long, fleshy.—*Ectadiopsis suffruticosa*, K. Schum. in Engl. Jahrb. xxviii. 453.

**Mozamb. Dist.** German East Africa: Uhehe; Iringa, 5000 ft., *Goetze*, 665.

Unknown to me.

*Imperfectly known species.*

17. **C. laxa**, *Baill. in Bull. Soc. Lin. Paris*, 1889, ii. 804 (84 by error). Twining, glabrous. Leaves small, ovate, acute, white beneath. Cymes pedunculate, lateral, lax and few-flowered. The fruit is formed of two long follicles, slender and glabrous, divergent, fornicate.

**Tropical Africa.** *Brazza*, 126 (ex *Baillon*).

I have not seen this plant.

18. **C. Barteri**, *K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 219. Leaves acute or acuminate, concolorous on both sides. Cymes few-flowered. Pedicles long.

**West Tropical Africa**, ex *K. Schumann*.

I have not seen this, and the description is quite inadequate for identification, but, as suggested on p. 245, it may be the same as *C. triangularis*, N. E. Br.

19. **Ectadiopsis Büttneri**, *K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 219. A twining shrub. Margin of the sinus-pockets of the corolla-lobes ciliate.

**Lower Guinea.** Lower Congo; Leopoldville, near Stanley Pool (ex *K. Schumann*).

I have not seen a specimen of this plant.

The description is insufficient for identification and applies equally to at least three species.

### 3. STOMATOSTEMMA, N. E. Br.

Calyx 5-partite. Corolla-tube broadly campanulate; lobes overlapping to the left in bud. Corona of 5 fleshy clavate lobes inserted in the sinuses between the corolla-lobes. Stamens inserted near the base of the corolla-tube; filaments free; anthers united at their base to the dilated part of the style, connivent in a cone, triangular, with the connective produced into a fleshy apiculus, glabrous. Pollen granular. Pollen-carriers with the margins inrolled so as to nearly form an oblique-mouthed tube, broadly ovate when flattened out, grooved down the back. Style shortly conical at the apex, shorter than the anthers. Follicles and seeds not seen.—A climbing or bushy shrub, with milky juice. Leaves opposite. Flowers of moderate size, in few-flowered cymes, axillary form both axils and terminal.

Species 1, also in South Africa.

I have generically separated this plant from *Cryptolepis*, chiefly on account of the position of the coronal-lobes. These are much more distant from the stamens than they are in *Cryptolepis*, occupying the same place that the sinus-pockets do in that genus and probably represent the same organs, whilst the coronal-lobes of *Cryptolepis* (arising at the middle of the corolla-tube), are not represented in *Stomatostemma*. The corolla also differs from that of *Cryptolepis* in being more inflated and more obtuse when in bud, and in having a much broader tube and broader lobes than in any species of that genus. The generic name is formed from *στομα*, a mouth, and *στεμμα*, a crown, in allusion to the position of the corona at the mouth of the corolla-tube.

1. **S. Monteiroæ**, N. E. Br. A small bush 4-5 ft. high, or a climber, glabrous in all parts. Leaves  $1\frac{1}{4}$ -3 in. long,  $\frac{1}{4}$ - $\frac{3}{4}$  in. broad, oblong, lanceolate or cuneate-obovate, obtuse or acute, sometimes apiculate, narrowed at the base into a 1-2 lin. long petiole. Cymes 1-1 $\frac{1}{2}$  in. long, few-flowered, terminal and subcorymbose, or arranged along the terminal part of the stem and branches in a racemose manner; pedicels 3-4 $\frac{1}{2}$  lin. long, with two minute bracts at about the middle. Sepals 1-1 $\frac{1}{2}$  lin. long, ovate-oblong, obtuse. Corolla about 1 in. in diam., cream-coloured with a purple-brown centre, somewhat inflated ellipsoid and obtuse when in bud; tube 2-3 lin. long, broadly campanulate; lobes  $\frac{1}{2}$  in. long, 2-2 $\frac{1}{2}$  lin. broad, oblong, obtuse, with revolute margins. Coronal-lobes inserted at the sinuses of the corolla, 1 lin. long; clavate, fleshy, dark purple-brown or blackish in the dried state. Anthers acuminate, connivent over the short conical apex of the style, whitish or yellowish.—*Cryptolepis Monteiroæ*, Oliver in Hook. Ic. Pl. xvi. t. 1591.

**Mozamb. Dist.** British Central Africa: Ngamiland; near Lake Ngami, *McCabe*, 10!

Also at Delagoa Bay and in the Transvaal.

This species is stated by Mr. McCabe, on his label, to be a "small bush or tree growing among rocks," whilst Mrs. Monteiro, who collected it at Delagoa Bay, and Mr. Galpin who collected it near Barberton in the Transvaal, both state that it is a climber. But I cannot find the least difference in the flowers from the different localities. It would appear that in the more humid coast region the plant is a climber with broader leaves and a somewhat lax inflorescence, whilst in the drier inland region it becomes a bush with narrower leaves and a more compact inflorescence.

#### 4. **BATESANTHUS**, N. E. Br. in Hook. Ic. Pl. t. 2500.

Calyx 5-partite. Corolla rotate or rotate-campanulate, very deeply 5-lobed; lobes broad, overlapping to the left in bud. Corona indistinct, arising from the bottom of the corolla, annular, with 5 very short lobules, which are adnate to the base of the filaments of the stamens. Stamens 5; filaments free; anthers erect, oblong, appendaged at the apex, connivent over the apex of the style, united to the dilated part of it at their base, and cohering by their appendages at the apex. Pollen granular. Pollen-carrier with a rhomboid deeply divided blade

on a short slender stalk. Style shortly conical at the apex. Follicles stout, erect, parallel, united at their base. Seeds flattened, keeled on one face, densely fringed all round with very long white hairs, otherwise glabrous.—A twining shrub with milky juice. Leaves opposite, large, petiolate. Stipules frill-like reflexed. Flowers moderately large, in long lax panicles.—*Perithryx*, Pierre in Bull. Soc. Linn. Paris, 1898, 65.

Monotypic, endemic.

A remarkable genus, very similar to *Chlorocodon* in habit and stipules, but with a coronal structure more like that of *Gymnolæma*.

1. **B. purpureus**, *N. E. Br. in Hook. Ic. Pl.* t. 2500. A woody twiner; stems glabrous, slightly verrucose, chocolate-coloured. Leaves distant; petiole  $1\frac{1}{4}$  in. long; blade 6–7 in. long,  $3-3\frac{1}{2}$  in. broad, oblong or elliptic-oblong, cuspidate-acute, cordate at the base, glabrous on both sides. Stipules interpetiolar, transverse, reflexed, toothed, very conspicuous. Panicle axillary, about 1 ft. long, including the 3–4 in. long peduncle, lax, its branches  $1\frac{3}{4}-2$  in. distant, opposite,  $\frac{3}{4}-2\frac{1}{4}$  in. long, 1–3-flowered; bracts 1 lin. long, ovate-lanceolate, acute, very deciduous leaving a ring-like scar; pedicels 3–7 lin. long, glabrous. Sepals  $1-1\frac{1}{2}$  lin. long,  $\frac{3}{4}$  lin. broad, ovate, subacute, glabrous, minutely ciliolate. Corolla large, rotate or with the lobes campanulately spreading, dark purple, 5-lobed to within  $1\frac{1}{2}$  lin. of the base; lobes 9 lin. long,  $5-5\frac{1}{2}$  lin. broad, elliptic-oblong, very obtusely rounded at the apex, glabrous on both sides, not ciliate. Corona indistinct, annular, shortly 5-lobed; lobes adnate to the base of the staminal-filaments, emarginate. Staminal-filaments, about  $\frac{1}{3}$  lin. long, linear; anthers  $\frac{3}{4}$  lin. long, linear-oblong, connate at the apex by their short ovate appendages, quite glabrous. Style shortly conical at the apex, acute. Follicles about  $4\frac{1}{2}$  in. long,  $\frac{3}{4}$  in. thick, fusiform, shortly beaked, erect, parallel, connate for about  $\frac{3}{4}$  in. at their base, glabrous. Seeds 4–5 lin. long,  $1\frac{3}{4}-2$  lin. broad, lanceolate or ovate-lanceolate, compressed, acutely keeled on one side, fringed all round the margin (but more densely at the two ends), with very long white hairs, otherwise glabrous, blackish.—K. Schum. in Engl. & Prantl, Pflanzenfam. Nachtr. zum. ii.–iv. 286, and Nachtr. ii., zum. ii.–iv. 60.—*Perithryx glabra*, Pierre in Bull. Soc. Linn. Paris, 1898, 66.

**Upper Guinea.** Cameroons: Efulen, *Bates*, 383!

**Lower Guinea.** Gaboon: Libreville, on the Gaboon River, *Klaine*, 513!

When enclosed in the follicles, some of the hairs around the margin of the seeds are reflexed so as to conceal the glabrous sides, but they probably spread out when the seeds are liberated from the follicle.

5. **CHLOROCODON**, Hook. f.; Benth. et Hook. f. Gen. Pl. ii. 745.

Calyx 5-partite. Corolla campanulate-rotate, 5-lobed nearly to the base; lobes overlapping to the left in bud. Corona of 5 lobes arising from the base of the staminal-filaments, free to their base, very

broadly obovate or obreniform, with or without an erect or incurved dorsal process. Stamens arising from the base of the corolla; filaments very short and broad; anthers large, triangular, adhering to the style, connivent in a cone, connate at the tips. Pollen granular. Style not exceeding the anthers, conical at the apex.—Large climbers with opposite cordate leaves, well developed frill-like stipules, and axillary panicles of moderate sized flowers.

Species 2, one found also in Natal.

Allied to *Tacazzia*, but differing in the broad basal part of the coronal-lobes, and in the large frill-like stipules, which (with the exception of *T. stipularis*, N. E. Br.), are absent in *Tacazzia*.

Coronal-lobes with a linear dorsal process . . . . 1. *C. Whiteii*.  
Coronal-lobes without a dorsal process . . . . 2. *C. ecornutus*.

1. **C. Whiteii**, *Hook. f. in Bot. Mag. t.* 5898. Stem climbing, minutely pubescent. Leaves distant, spreading; petiole  $1\frac{1}{4}$ – $2\frac{1}{4}$  in. long; blade 4–7 in. long, 3–5 in. broad; cordate-ovate or cordate-elliptic, cuspidate, glabrous or minutely subscabrous-pubescent on both sides, or softly pubescent beneath. Stipules forming a reflexed toothed frill, connecting the petioles. Flowers in axillary pedunculate paniculate cymes  $2\frac{1}{2}$ –6 in. long, minutely puberulous on the branches and pedicels; bracts 2–3 lin. long, oblong-lanceolate, acute or acuminate; pedicels 6–9 lin. long. Sepals 2– $2\frac{1}{2}$  lin. long, 1– $1\frac{1}{2}$  lin. broad, ovate, acute, glabrous or puberulous. Corolla subrotate, 5-lobed nearly to the base; lobes 5–6 lin. long, 3 lin. broad, ovate-oblong, subobtuse, glabrous, very minutely ciliate along one margin, purple, with the margins and a short central stripe at the base green. Coronal-lobes very broadly obovate, fleshy, white, 1 lin. long,  $1\frac{3}{4}$ –2 lin. broad, having a widely spreading, subulate, linear or linear-lanceolate, purple dorsal process 2– $2\frac{1}{2}$  lin. long, acute or bifid at the apex. Follicles 3–4 in. long,  $1\frac{1}{2}$ – $1\frac{3}{4}$  in. thick, ovoid-lanceolate, obtuse, widely divergent.—*Engl. & Prantl, Pflanzenfam. iv.* 215 & 217, fig. 64, O–Q; *Gard. Chron.* 1895, xviii. 234 & 243, fig. 48, erroneous as to the corona; *Hiern in Cat. Afr. Pl. Welw. i.* 680; *Wood & Evans, Natal Pl. i.* 27, t. 31. *Periploca latifolia*, *K. Schum. in Engl. Pf. Ost.-Afr. C.* 321, and in *Engl. Jahrb. xxiii.* 232.

**Upper Guinea.** Cameroons: Yaunde, *Zenker*, 589! 1397!

**Lower Guinea.** Angola: Bumbo; in rocky places near the River Braco, *Welwitsch*, 4221! Pungo Andongo; Barrancos de Songue, *Welwitsch*, 4220! along streams throughout the Præsidium, *Welwitsch*, 4218! in forests, *Welwitsch*, 4219! Golungo Alto; mountains of Queta, *Welwitsch*, 4211! 6013!

**Mozamb. Dist.** German East Africa: Karagwe; Bukoba, *Stuhlmann*, 1619. British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 168!

Also in Natal, where it is called by the natives “Mundi” or “Umundi,” the root being used as a tonic. According to *Buchanan* the seeds are “said to be used as an arrow poison.”

The flowers are represented in the *Botanical Magazine* as being pale greenish with a purple blotch at the base of the lobes, but in the dried flowers of the type specimen and in all the living flowers I have seen, the colour is as described above. *Messrs. Wood & Evans*, however, describe a form with “dull greenish-white flowers.”

In the *Gardener's Chronicle* the dorsal processes of the coronal-lobes are inaccurately represented as being incumbent on the backs of the anthers, instead of spreading, which is their natural position in the open flower.

2. **C. ecornutus**, *N. E. Br.* (*ecornuta* by error) in *Kew Bulletin*, 1895, 111. Stem, leaves, stipules, and inflorescence as in *C. Whiteii*, but more glabrous. Sepals 1 lin. long and broad, orbicular or elliptic, very obtusely rounded, glabrous. Corolla 9–10 lin. in diam., glabrous; lobes 4 lin. long,  $2\frac{1}{2}$  lin. broad, oblong, obtuse. Coronal-lobes about  $\frac{1}{3}$  the length of the anthers, fleshy, transverse and subbilobed or broadly obcordate, no dorsal process.—K. Schum. in *Engl. & Prantl, Pflanzenfam.* iv. ii. 215, & in *Engl. Pfl. Ost-Afr. C.* 425.

**Nile Land.** British East Africa: Ribe, near Mombasa, *Wakefield!*

The corolla is rather smaller and dries a darker colour than that of *C. Whiteii*.

6. **OMPHALOGONUS**, Baillon in *Bull. Soc. Linn. Paris*, 1889, ii. 812.

Sepals imbricate. Corolla rotate, ovoid in bud; lobes overlapping to the left, at length spreading. Corona double, spreading, with the radiating lobes adnate to the corolla within; outer lobes obtusely trigonous, obtuse; inner lobes obovate-oblong, boat-shaped, concave in the middle, obcordate at the apex. Stamens 5, affixed to the bottom of the corolla; filaments slender, free; anthers apiculate, setose. Pollen granular. Pollen-carrier obovate.—A glabrous twiner. Leaves opposite, large, cordate, acuminate, richly penninerved. Cymes lateral from one axil, about equalling the petiole, pedunculate, loosely dichotomous.—K. Schum. in *Engl. & Prantl, Pflanzenfam.* iv. ii. 221. *Omphalagonus*, Baill., *Hist. des. Pl.* x. 300.

Species 1, endemic, unknown to me, but appears to be allied to *Chlorocodon*.

1. **O. calophyllus**, Baillon in *Bull. Soc. Linn. Paris*, ii. 812, and *Hist. Pl.* x. 300, name only, no description beyond the above.

**Mozamb. Dist.** Zanzibar, ex Baillon.

7. **PERIPLOCA**, L.; Benth. et Hook. f. *Gen. Pl.* ii. 746.

Calyx 5-partite. Corolla rotate, 5-lobed nearly to the base; lobes overlapping and slightly twisted to the left in bud. Corona of 5, filiform or linear lobes, arising from the corolla at or a little above the insertion of the stamens and opposite to them, simple or divided, with or without a more or less broadly dilated base, which is often more or less spreading on and adnate to the base of the corolla-lobes, and usually two-keeled within. Stamens arising from the corolla a little above its base; filaments free, short; anthers adnate to the style at their base, hairy on the back or at the base, with the connective produced into an apiculus, by which they are usually connate at their tips. Pollen granular. Style shorter than the anthers, convex

or subtruncate at the apex. Follicles smooth. Seeds crowned with a tuft of hairs.—Twining or erect shrubs, rarely leafless. Leaves opposite. Flowers of moderate size, or small, in lax axillary or terminal cymes.

Species several; the genus extends into North Africa, the Canaries, S. Europe and through the Orient into India and China.

*Leptadenia visciformis*, Vatke in Oesterr. Bot. Zeitschr. 1876, 146, may belong to this genus.

Corolla-lobes bearded within.

Branches rather stout, stiff and usually leafless . . . 1. *P. aphylla*.

Branches slender; leaves long, linear . . . 2. *P. linearifolia*.

Corolla-lobes glabrous within, but with a velvety

sheen; leaves elliptic-oblong . . . 3. *P. nigrescens*.

1. **Periploca aphylla**, *Decne. in Jacquem. Voy. Bot.* 109 t. 116.

A branching glabrous or puberulous shrub, with stiff moderately stout leafless branches, or sometimes the young shoots bear small oblong or linear-oblong obtuse or acute leaves 2-6 lin. long,  $\frac{3}{4}$ -1 $\frac{1}{2}$  lin. broad, on very short petioles. Cymes terminal on very short lateral branches, 5-20-flowered; bracts minute, obtuse; pedicels 1 $\frac{1}{2}$ -3 lin. long, glabrous or puberulous. Sepals  $\frac{3}{4}$ -1 lin. long,  $\frac{2}{3}$ - $\frac{3}{4}$  lin. broad, ovate or ovate-oblong, obtuse, glabrous or puberulous. Corolla rotate. 6-7 lin. in diam.; lobes 2 $\frac{1}{2}$ -3 lin. long, 1 $\frac{1}{2}$ -1 $\frac{3}{4}$  lin. broad, oblong-ovate, obtuse or subacute, glabrous on the back, bordered on the inner face near the margin with long white hairs, glabrous on the central part, with a slightly raised lanceolate boss down the middle, formed of minute, densely crowded papillæ. Coronal-lobes 3 $\frac{1}{2}$  lin. long; basal part transversely oblong, truncate, with two wing-like keels down the inner face, one near each margin; apical part filiform, erect, tortuous. Stamens hairy on the back of the deltoid-ovate anthers; filaments glabrous. Follicles widely divergent, 3-4 in. long,  $\frac{1}{4}$  in. thick, terete, acuminate, glabrous or puberulous.—DC. Prod. viii. 499; Boiss. Fl. Orient. iv. 50; Hook. f. Fl. Brit. Ind. iv. 12; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 216.

**Nile Land.** Nubia: near the coast, about 21° N. latitude, *Bent!* Soturba Mountains, *Schweinfurth*, 238! 340!

Also in Egypt, and extending through Arabia and Persia into the plains of Northwest India.

2. **P. linearifolia**, *Dill. & Rich. in Ann. Sc. Nat. sér. 2*, xiv 263. A glabrous climber. Leaves 1 $\frac{1}{2}$ -3 $\frac{1}{2}$  in. long, 1-3 lin. broad, linear, acute. Cymes lax, several flowered, pedunculate, axillary and terminal, often forming large compound cymes at the ends of the branches; bracts  $\frac{1}{2}$  lin. long, ovate. Sepals  $\frac{3}{4}$  lin. long, ovate, obtuse.

Corolla rotate, 5 lin. in diam.; lobes 2 lin. long,  $\frac{3}{4}$  lin. broad, with revolute margins, bearded within except along the middle. Coronal-lobes subulate-filiform, minutely hairy, shortly dilated at the base and two-keeled within, with the edges of the dilated part adnate to the corolla. Stamens hairy on the back of the filaments and anthers.

Follicles  $3\frac{1}{2}$ –5 in. long, 2 lin. thick, terete-attenuate, straight, horizontally diverging, sometimes solitary.—A. Rich. Tent. Fl. Abyss. ii. 33. Decne. in DC. Prod. viii. 498; Engl. Hochgebirgsfl. Trop. Afr. 341. K. Schum. in Engl. Pfl. Ost.-Afr. C. 321; in Engl. Jahrb. xxviii. 454; and in Engl. & Prantl, Pflanzenfam. iv. ii. 216. *P. linearis*, Hochst. ex Decne. in DC. Prod. viii. 498.

**Nile Land.** Abyssinia: Tigre; on Mount Sholoda, *Schimper*, 365! 1857! near Adowa, *Quartin Dillon & Petit!* near Mai Gouagoua, *Quartin Dillon!* Samen; near Enjedcap, *Schimper*, 1332! Begemeder, *Schimper*, 226! Amba Sea, *Schimper!* Shoa: Chakka Mountains, *Roth*, 417! and without precise locality, *Schimper*, 987!

**Mozamb. Dist.** German East Africa: Kilimanjaro, at Marangu, 4600 ft., *Volkens*, 269! Usambara; Heboma, *Holst*, 2573! Ukame; South Uluguru, 3900 ft., *Goetze*, 226 (ex *Schumann*).

3. *P. nigrescens*, *Afzel. Stirp. Guin. Med. Sp. Nov.* i. 2. Stem twining, glabrous. Leaves distant; petiole  $\frac{3}{4}$ – $1\frac{1}{2}$  in. long; blade  $3$ – $5\frac{1}{2}$  in. long,  $1\frac{1}{4}$ – $3\frac{1}{2}$  in. broad, oblong or elliptic-oblong, cuspidate, rounded, subtruncate or subcordate at the base, glabrous on both sides, glaucous beneath. Panicles axillary, 2–3 in. long, glabrous; bracts 1 lin. long, oblong-ovate, obtuse; pedicels 3–5 lin. long. Sepals  $1\frac{1}{4}$ – $1\frac{1}{2}$  lin. long and broad, very broadly ovate, obtuse. Corolla rotate, glabrous, dark red inside (*Holland*), nearly black (*Barter*), with a velvety sheen; tube very short; lobes 4–5 lin. long,  $2\frac{1}{2}$ –3 lin. broad, reflexed, oblong, obtuse, with one margin produced at the apex into an oblique membranous inflexed or cochleate auricle. Coronal-lobes 3–4 lin. long, filiform or linear, not dilated at the base, usually divided above the middle into 2–4 filaments, of which the middle 1–2 are usually tortuous in the upper part, and the lateral pair short and spreading, rarely undivided. Stamens hairy on the filaments and backs of the ovate-oblong anthers. Follicles (according to *Afzelius*), about 17 in. long, horizontal or slightly reflexed, lanceolate-attenuate, 2-edged, angles acute.—Hiern in Cat. Afr. Pl. Welw. i. 681; K. Schum. in Engl. Jahrb. xxiii. 232. *P. Afzelii*, G. Don, Syst. Gard. iv. 163. *P. Preussii*, K. Schum. in Engl. Jahrb. xvii. 117; and in Engl. & Prantl, Pflanzenfam. iv. 216 and 217, fig. 64, R—V. De Wild. & Durand, Contrib. Fl. Congo, ii. fasc. 2, 41. *P. nigricans*, Schlechter, Westafr. Kautschuk-Exped. 308. *Parquetina gabonica*, Baill. in Bull. Soc. Linn. Paris, ii. (1889) 806 (86 by error); & Hist. Pl. x. 294; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 218.

**Upper Guinea.** Sierra Leone, *Afzelius!* *Don!* *Barter!* *Scott-Elliott*, 4206! 5631! *Mann*, 845! Niger Territory: New Calabar, at Degama, *Holland*, 127! Old Calabar, *Thomson*, 43! Ikun, in a village near Ododobo, *Holland*, 261! Cameroons: Bipinde, *Zenker*, 863! between Mokonye and Kumba Ninga, *Preuss*, 151 (ex *Schumann*).

**Lower Guinea.** Gaboon: Munda; Sibange Farm, *Soyaux*, 406! *Büttner*, 402 (ex *Schumann*); Como River, *Bates*, 465! Gaboon River, *Mann!* woods near Libreville, *Schlechter*, 12,822, and without precise locality, *Duparquet!* Loango; Lagoa of Chinechocho, *Soyaux*, 46 (ex *Schumann*). Lower Congo, *Smith!* Lower Congo and between Sambo and Yanga, *Cabra* (ex *De Wildeman & Durand*);

Kisantu, Gillet (ex De Wildeman & Durand). Angola: Pungo Andongo; among bushes in Sobato de Mussengue, Welwitsch, 4232! and without precise locality, Welwitsch, 4225.

**South Central.** Congo Free State: Wangata, Demeuse (ex De Wildeman & Durand). Lubue, Luja (ex De Wildeman & Durand).

## 8. BASEONEMA, Schlechter & Rendle in Journ. Bot. 1896, 97.

Calyx-lobes 5. Corolla 5-lobed almost to the base, reflexed; lobes linear-oblong. Corona none. Stamens 5, inserted at the base of the corolla-lobes and alternating with them; filaments free, broadly dilated, thick, fleshy and contiguous at the base, filiform above; anthers erect. linear-oblong, acute, adnate in their lower part to the dilated apex of the style and connivent over it in an obtuse cone, cohering at their tips, glabrous. Within the stamens and alternating with them are 5 minute free rounded lobules. Style rather slender in the lower part, abruptly dilated into a stout fleshy conical mass at the apex, obtuse, shorter than the anthers. Pollen granular. Follicles not seen.—Apparently a shrub. Leaves opposite, petiolate. Flowers small, in dichotomous or trichotomous cymes.

Endemic, monotypic.

This genus only differs from *Tacazzea* in being entirely destitute of a corona; in all other characters it is identical with that genus.

1. **B. Gregorii**, Schlechter & Rendle in Journ. Bot. 1896, 97, t. 356, fig. B. Apparently a woody plant, with long straight branches, subglabrous or slightly puberulous; internodes up to 5 in. long. Leaves opposite, spreading; petiole  $3\frac{1}{2}$ –5 lin. long; blade  $1\frac{1}{2}$ – $2\frac{1}{4}$  in. in length and breadth, nearly circular, very shortly and obtusely apiculate, cordate at the base, very shortly velvety-pubescent on both sides, but more sparsely above. Cymes pedunculate, dichotomous or trichotomous, glabrous; peduncle 6–13 lin. long; branches 2– $3\frac{3}{4}$  in. long, spreading, several-flowered; pedicels  $\frac{3}{4}$ –1 in. long, rather slender, glabrous, except at the apex, which is rather densely pubescent and thickened under the calyx; bracts about  $\frac{1}{2}$ – $\frac{3}{4}$  lin. long, narrowly oblong, obtuse, densely pubescent with short spreading hairs. Sepals  $\frac{1}{2}$ – $\frac{2}{3}$  lin. long,  $\frac{1}{3}$ – $\frac{1}{2}$  lin. broad, ovate, obtuse, densely pubescent, recurved. Corolla reflexed, lobed almost to the base; lobes  $3\frac{1}{2}$ – $3\frac{3}{4}$  lin. long,  $1\frac{1}{4}$ – $1\frac{1}{2}$  lin. broad, linear-oblong, obtuse, narrowly reflexed along the margins, tomentose on the back, glabrous, on the inner face minutely ciliate on one margin. Corona none. Filaments of the stamens 1 lin. long, dilated at their basal third into a broad semicircular fleshy mass, above which they are filiform; anthers about  $1\frac{1}{4}$  lin. long, linear-oblong, acute, adhering to the dilated apex of the style, connate at the tips.—Engl. & Prantl, Pflanzenfam. Nachtr. zum ii.–iv. 286.

**Nile Land.** British East Africa: East Ongalea Mountains, at Kinani Gregory, 14!

## 9. TACAZZEA, Decne. ; Benth. et Hook. f. Gen. Pl. ii. 745.

Calyx 5-partite. Corolla 5-lobed almost to the base, rotate or campanulate ; lobes overlapping and often slightly twisted to the left. Corona of 5 lobes, arising from the corolla at the base of the stamens and often shortly adnate to their filaments, alternating with the corolla-lobes, filiform or linear, simple or divided above into 2 or 3 filiform segments. Stamens inserted at or near the base of the corolla ; filaments free above, usually more or less combined at their base with an inner series of 5 minute subquadrate emarginate or bifid alternating lobules into a ring or very short tube ; anthers attached at their base to the dilated part of the style, and connivent over it in a cone, with cohering tips, glabrous. Pollen granular. Style shorter than the anthers, conical at the apex. Follicles diverging. Seeds crowned with a tuft of hairs.—Twining or erect shrubs with milky juice. Leaves opposite or whorled. Stipules usually represented by a transverse line connecting the petioles, rarely toothed. Flowers small, in axillary, paniculate or corymbose cymes, usually from both axils.—*Leptopatia*, Harvey, Gen. South Afr. Pl. ed. 2, 231. *Echmolepis*, Decne. ; Benth. et Hook. f. Gen. Pl. ii. 741.

Species about 14, confined to Tropical and South Africa.

The flowers of most of the species are very similar in appearance and structure, and it is difficult to obtain distinctive characters from them. In most of the species the veins of the leaves are densely reticulate, and the midrib often has a series of apparently fleshy processes or glands scattered along the upper side. *Tacazzea* is very closely related to *Periploca* and *Raphionacme*, and technically can only be distinguished from the former by the glabrous anthers. The fleshy processes on the midrib, however, do not occur in *Periploca*. In Bentham & Hooker's *Genera Plantarum*, *Tacazzea* is said to differ from *Periploca* by the inflorescence arising from both axils of the opposite leaves, whilst in *Periploca* it arises from one axil only ; but this character does not hold good, as 3 out of the 10 or 11 species of *Periploca* have cymes arising from both axils, whilst in *Tacazzea* they sometimes arise from one axil only of each pair of leaves. The habit and taller and more woody stems of *Tacazzea* readily distinguish it from *Raphionacme*, besides which, the short united part of the corolla does not form a distinct campanulate tube as in *Raphionacme* ; in the latter genus, however, there are one or two species without a distinctly campanulate tube to the corolla, and then there is nothing but habit to distinguish the two genera ; this is so distinct, however, that once properly recognised, it can never be mistaken.

Leaves linear or linear-lanceolate.

Leaves less than 1 lin. broad ; coronal-lobes divided into 3 long filaments . . . . . 1. *T. africana*.

Leaves 3-4 lin. broad ; coronal-lobes subulate, undivided, short . . . . . 4. *T. rosmarinifolia*.

Leaves not linear ner linear-lanceolate, varying from  $\frac{1}{4}$ -4 in. broad.

Leaves of the exceedingly short lateral flowering shoots fascicled, small, partly concealing the small 1-4-flowered cymes . . . . . 2. *T. volubilis*.

Leaves of the flowering shoots in distant pairs or whorls, of moderate size or large ; cymes or panicles 6- to many-flowered.

- Pedicels  $1\frac{1}{2}$  in. or more long; veins of the leaves numerous horizontal . . . . . 3. *T. pedicellata*.
- Pedicels not more than  $\frac{2}{3}$  in. long; veins of the leaves not horizontal.
- Leaves glabrous beneath.
- Leaves acuminate at the apex, rounded or subcuneate at the base . . . . . 9. *T. conferta*.
- Leaves rather abruptly apiculate at the apex, cordate or emarginate at the base.
- Panicles  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. long . . . . . 10. *T. Barteri*.
- Panicles 4-8 in. long . . . . . 11. *T. Tholloni*.
- Leaves puberulous, pubescent or tomentose beneath.
- Leaves 4 or more times as long as broad, not cordate at the base . . . . . 5. *T. venosa*.
- Leaves  $1\frac{1}{4}$ -3 times as long as broad.
- Calyx quite glabrous.
- Stem glabrous; leaves rounded at the base . . . . . 8. *T. nigritana*.
- Stem pubescent; leaves emarginate or cordate at the base . . . . . 13. *T. apiculata*.
- Calyx more or less puberulous hairy or tomentose.
- Stipulary line between the bases of the petioles very thick and prominent, with stout reflexed and erect teeth . 12. *T. floribunda*.
- Stipulary line slender or indistinct or wanting, neither prominent nor toothed
- Panicles very lax, with very slender branches; leaves whorled . . . . . 7. *T. verticillata*.
- Panicles pyramidal, with the flowers more or less collected at the ends of the branches.
- Stem erect; leaves opposite or whorled; petioles  $\frac{1}{4}$ - $\frac{1}{2}$  in. long. 6. *T. Welwitschii*.
- Stem climbing; leaves opposite; petioles  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long . . . . . 14. *T. Kirkii* & }  
13. *T. apiculata*, var. j

1. ***T. africana***, *N. E. Br.* Stem twining, pale greyish-brown, glabrous. Leaves distant, spreading,  $1\frac{1}{4}$ -4 in. long,  $\frac{1}{3}$ - $\frac{1}{2}$  lin. broad, subsessile, linear, acute, margins strongly involute, glabrous on both sides. Cymes axillary, or terminating short axillary shoots that bear 2-4 leaves, arising from both axils, loosely trichotomous, 1- $1\frac{1}{2}$  in. long; peduncle and branches of the cyme slender, glabrous; bracts minute,  $\frac{1}{3}$ - $\frac{1}{2}$  lin. long, glabrous; pedicels  $1\frac{1}{2}$ -2 lin. long, slender, glabrous. Sepals  $\frac{1}{3}$ - $\frac{1}{2}$  lin. long, deltoid-ovate, acute, glabrous. Corolla 5-lobed almost to the base, rotate, about  $4\frac{1}{2}$  lin. in diam., white; lobes 2 lin. long,  $\frac{2}{3}$  lin. broad, linear-oblong, very obtuse, with revolute margins, glabrous on both sides. Coronal-lobes filiform, trifold, erect in the lower half, then abruptly bent inwards and divided into 3 at the bend, lateral divisions shortest, erect, middle one bent down and then

upwards, all filiform, tortuous and intermingled over the top of the stamens and style; the entire lobe  $1\frac{1}{2}$ – $1\frac{3}{4}$  lin. long, the undivided part rather more than  $\frac{1}{2}$  lin. long. Stamens about  $\frac{1}{2}$  lin. long; filaments very short, about  $\frac{1}{4}$  as long as the glabrous anthers, the lobules alternating with them very rudimentary and not forming a very evident ring.—*Pleurostelma africanum*, Schlechter in Journ. Bot. 1895, 303, t. 351, inaccurate; K. Schum. in Engl. & Prantl, Pflanzenfam. Nachtr. zum ii.–iv. 285. *Schlechterella africana*, K. Schum. in Engl. & Prantl, Pflanzenfam. Nachtr. ii. zum ii.–iv. 60.

**Mozamb. Dist.** British East Africa: without precise locality, but, according to the number, was probably collected between Maungu Mountain and Mbuyuni, in Taita district, growing in red sand, *Scott-Elliot*, 6175!

I can find no character to separate this plant from *Tacazzea*; the coronal-lobes may be compared with those of *T. venosa*, var. *Martini*, N. E. Br. except that they are trifold instead of bifid. They are inaccurately described and figured in the *Journal of Botany*.

2. **T. volubilis**, N. E. Br. Stem climbing, stout, woody, more or less branching, greyish-brown, with small scattered tubercles, glabrous. Leaves and flowers fascicled on very short (2–6 lin. long) stout lateral branches. Leaves very shortly petiolate,  $\frac{1}{2}$ –1 in. long, 2– $3\frac{1}{2}$  lin. broad, lanceolate-oblong, obtuse or subacute, cuneately narrowed towards the base, subtomentose or velvety-pubescent on both sides. Cymes subterminal on the short lateral branchlets, umbel-like, 3–4-flowered, subsessile or with peduncles,  $\frac{1}{2}$ – $1\frac{1}{2}$  lin. long; pedicels 1– $1\frac{1}{2}$  lin. long, tomentose. Sepals  $\frac{3}{4}$ –1 lin. long,  $\frac{2}{3}$ – $\frac{3}{4}$  lin. broad, ovate, subacute, tomentose. Corolla 5-lobed nearly to the base, rotate,  $5\frac{1}{2}$  lin. in diam., quite glabrous; lobes  $2\frac{1}{2}$  lin. long,  $1\frac{1}{3}$  lin. broad, oblong, obtuse, with a thick fleshy subquadrate sulcate tubercle at their base. Coronal-lobes inserted at the base of the stamens at the sinuses of the corolla, and connected in a ring at the base with the tubercles on the corolla-lobes, 2 lin. long, simple, filiform, spreading in the basal part, then inarched in a bold curve over the stamens, tortuous at the apex. Filaments of the stamens  $\frac{1}{3}$  lin. long, glabrous, anthers  $\frac{1}{2}$  lin. long, oblong, apiculate, glabrous, connivent or slightly cohering at their tips over the very short conical apex of the style. *Raphionacme volubilis*, Schlechter in Journ. Bot. 1895, 302.

**East Tropical Africa.** Ruwenzori Expedition, without locality or number, *Scott-Elliot*!

This plant in no way resembles a *Raphionacme*, its structure and habit is entirely that of *Tacazzea*.

3. **T. pedicellata**, K. Schum. in Engl. Jahrb. xvii. 115. Stem somewhat quadrangular in the younger parts (in the dried state), slightly scabrous, dark red-brown. Leaves with sparsely puberulous petioles 3–5 lin. long; blade 2– $4\frac{1}{2}$  in. long,  $\frac{1}{2}$ – $1\frac{1}{2}$  in. broad, oblong-lanceolate, acute or shortly acuminate, rounded at the base, quite glabrous on both sides; veins numerous, horizontal, straight and parallel, intramarginal vein about  $\frac{1}{2}$  line distant from the margin.

Cymes subsessile, very lax, 3-6-flowered; pedicels  $1\frac{1}{2}$ - $2\frac{1}{4}$  in. long, slender, glabrous, with one or two pairs of bracts towards the base; bracts  $\frac{1}{2}$  lin. long, very broadly ovate, acute, with a few hairs on the back. Sepals  $\frac{3}{4}$  lin. long, broadly ovate, acute, minutely ciliate, and with a few minute hairs on the back. Corolla lobed nearly to the base; lobes 3 lin. long, oblong, obtuse, with a short subrectangular fleshy boss at their base. Coronal-lobes longer than the corolla-lobes, filiform, erect, tortuous. Lobules alternating with the stamens about as long as the filaments and reaching to the gland of the pollen-carrier, quadrate, truncate.—K. Schum. in Engl. & Prantl, Pflanzenfam, iv. ii. 216; Durand & Schinz, Études Fl. Congo, i. 192.

**South Central.** Congo Free State: Monbuttu; Munza, Schweinfurth, 3483! 3488!

Var.  $\beta$  *occidentalis*, N. E. Br. Stem terete or scarcely angular, greyish. Leaves  $2\frac{1}{2}$ - $3\frac{3}{4}$  in. long,  $1$ - $1\frac{3}{4}$  in. broad, broader in proportion to their length than in the type; veins more conspicuous, more reticulate, primary ones more distant; intramarginal vein  $\frac{3}{4}$ - $1\frac{1}{2}$  lin. distant from the margin. Flowers as in the type, white.

**Upper Guinea.** Lagos: Eglessa, Millen, 130 of 1893 collection!

4. **T. rosmarinifolia**, N. E. Br. Stem erect, terete, somewhat woody, very minutely puberulous, with a brown bark; internodes  $\frac{3}{4}$ -1 in. long. Leaves in whorls of 3, spreading (or alternate and ascending); petiole  $2$ - $2\frac{1}{2}$  lin. long; blade  $2\frac{1}{3}$ - $2\frac{2}{3}$  ( $3$ - $4\frac{1}{4}$ ) in. long,  $1\frac{1}{2}$ - $2$  ( $1\frac{1}{2}$ - $4$ ) lin. broad, linear, very acute and pungent-mucronate at the apex, cuneate or slightly rounded at the base, glabrous, with minute fleshy acute processes scattered along the midrib above, minutely white-tomentose beneath, reticulately veined on both sides, narrowly revolute along the margins. Cymes axillary, usually from 2 axils of each whorl, ascending, puberulous, trichotomously branched, 11-15 flowered; peduncle  $\frac{1}{3}$ -1 in. long, slender; branches 3-5 lin. long; bracts  $\frac{1}{2}$ -1 lin. long, lanceolate, acute; pedicels 2-4 lin. long. Sepals  $\frac{3}{4}$ -1 lin. long,  $\frac{1}{2}$ - $\frac{2}{3}$  lin. broad, ovate, acute, puberulous. Corolla lobed to  $\frac{1}{2}$  lin. above its base, quite glabrous; lobes 2 lin. long,  $\frac{3}{4}$  lin. broad, oblong, sub-obtuse. Coronal-lobes about  $\frac{1}{2}$  lin. long, stoutly subulate, acute or obtuse, very thick and fleshy, incurved, inserted with the stamens at the middle of the very short corolla-tube, but adnate up to the sinuses of the latter; at their base are 2 small obtuse lobules embracing the staminal filaments. Staminal-column about  $\frac{2}{3}$  lin. long; anthers connivent over the apex of the style, connate at their tips, glabrous.—*Echmolepis rosmarinifolia*, Decne. in DC. Prod. viii. 493; K. Schum. Engl. & Prantl, Pflanzenfam. iv. ii. 220.

**Lower Guinea.** Angola: Amboella; at the Nambali (Kubango) River, 4000 ft., Baum, 245! and without precise locality, Newton! Angola, without indication of the collector, in *Herb. Museum d'Histoire Naturelle, Paris!*

The above description, with the exception of the few words and figures in brackets, is made from the type specimen of *Echmolepis rosmarinifolia*, Decne., kindly lent by the Director of the Museum d'Histoire Naturelle, Paris. The few words and figures in brackets are added from Baum's specimen, which only differs in having alternate and rather larger leaves, a similar difference occurs in *T. Welwitschii*,

Baill. Decaisne has erroneously described the coronal-lobes as sagittate, I find them as described above.

5. **T. venosa**, *Decne. in DC. Prod.* viii. 493. Stems apparently erect, pubescent, becoming glabrous with age. Leaves petiolate, ascending; petiole  $\frac{1}{2}$  in. long; blade  $2\frac{1}{2}$ –5 in. long,  $\frac{1}{2}$ – $1\frac{1}{2}$  in. broad, lanceolate, acute, subacute at the base, glabrous above, tomentose beneath. Panicles  $1\frac{1}{2}$ –4 in. long, glabrous in all parts; bracts  $1$ – $1\frac{1}{2}$  lin. long, broadly ovate, acute; pedicels 2–8 lin. long. Sepals  $\frac{3}{4}$ –1 lin. long, broadly ovate, subobtuse or acute. Corolla lobed nearly to the base; lobes 2–3 lin. long, oblong or ovate-oblong obtuse. Coronal-lobes filiform, tortuous, about  $\frac{1}{2}$ – $\frac{3}{4}$  as long as the corolla-lobes. Lobules alternating with the stamens, half as long as the filaments, shortly and obtusely bifid. Follicles  $1\frac{3}{4}$ – $2\frac{3}{4}$  in. long, 7–8 lin. thick, lanceolate or ovate-lanceolate, acuminate, glabrous.—A. Rich. Tent. Fl. Abyss. ii. 32; Engl. Hochgebirgsfl. Trop. Afr. 341; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 216. *Periploca venosa*, Hochst. ex Decne. in DC. Prod. viii. 493.

**Nile Land.** Galabat: Matamma district, *Schweinfurth*, 191! 192! Abyssinia: Waldubba district, *Steudner*, 749! Tigre; banks of the River Tacazze, below Jelajeranne, *Schimper*, 636! Begemeder; Asmotsch, 5700 ft., *Schimper*, 1345!

Var.  $\beta$  *Martini*, N. E. Br. Sepals very broadly elliptic or nearly circular, very obtuse. Coronal-lobes about as long as the corolla-lobes, flat and linear at the base, divided  $\frac{1}{2}$ – $\frac{2}{3}$  of the way down into two filiform segments.—*T. Martini*, Baill. in Bull. Soc. Linn. Paris, ii. (1889) 808 (88 by error).

**Nile Land.** Nubia, *Martin-Saint-Auge* (ex *Baillon*). Galabat; region of Matamma, *Schweinfurth*, 197!

6. **T. Welwitschii**, *Baill. in Bull. Soc. Linn. Paris*, ii. (1889) 807 (87 by error). Stems several from a thick rootstock, 4–7 ft. high, erect, tomentose, rarely subglabrous on the older parts, ending in a long inflorescence of paniculate cymes. Leaves opposite, whorled or occasionally alternate; petiole 3– $7\frac{1}{2}$  lin. long; blade  $1\frac{3}{4}$ – $3\frac{1}{2}$  in. long, 1–2 in. broad, oblong, elliptic-oblong, or occasionally obovate-oblong, rarely ovate, obtuse, apiculate, cordate or rounded at the base, nearly glabrous or shortly and sparsely hairy above, whitish tomentose beneath. Panicles 2–4 in. long, with very numerous flowers; peduncles, pedicels, bracts and sepals all densely hairy or subtomentose; pedicels 3–6 lin. long; bracts  $1\frac{1}{2}$  lin. long, ovate, acuminate. Sepals 1 lin. long, broadly ovate, acute. Corolla lobed nearly to the base; lobes 3 lin. long, narrowly oblong, obtuse, blackish-purple, veined. Coronal-lobes exceeding the corolla-lobes, about  $3\frac{1}{2}$  lin. long, erect, filiform, tortuous in the upper part, adnate at their base to the lower half of the filaments, which are united with the alternating shortly bifid lobules into a ring or short tube. Follicles acuminate, diverging, slightly incurved, tomentose.—Hiern in Cat. Afr. Pl. Welw. i. 678.

**Lower Guinea.** Angola: Pungo Andongo; in thickets between Luxillo and Cazella, *Welwitsch*, 4208! Quilanga, *Welwitsch*, 4210! Huilla; in the sandy wooded thickets of Catumba, *Welwitsch*, 4209! Amboella; by the Kubango River, near Chirambu, 3900 ft., *Baum*, 276!

This has been distributed from Berlin as *T. verticillata*, K. Schum., from which it is quite distinct, the inflorescence being widely different.

7. **T. verticillata**, K. Schum. in *Engl. Jahrb.* xvii. 115. Stems puberulous, becoming glabrate. Leaves verticillate; petiole  $2\frac{1}{2}$ –4 lin. long; blade 1– $2\frac{1}{2}$  in. long,  $\frac{1}{2}$ – $1\frac{1}{2}$  in. broad, ovate-oblong or oblong, obtuse and mucronate or shortly acuminate at the apex, rounded or truncate at the base, glabrous above, pale greyish-tomentose beneath, both sides reticulate. Panicles 3– $4\frac{1}{2}$  in. long, very lax, in whorls of three along the terminal part of the stem, the lower in the axils of leaves, the upper with the leaves reduced to small bracts; bracts of the panicles  $\frac{1}{2}$ –1 lin. long, ovate, acute, pubescent; pedicels slender, 3–5 lin. long, puberulous, as are also the slender branches of the panicle. Sepals  $\frac{3}{4}$  lin. long, ovate, acute, puberulous. Corolla rotate; lobes  $2\frac{1}{2}$ –3 lin. long, linear-oblong, obtuse or subacute, with narrowly revolute margins, glabrous. Coronal-lobes filiform, erect, 3– $3\frac{1}{2}$  lin. long, adnate at their base to the lower half of the filaments, which are united with the alternating shortly bifid lobules into a ring or short tube.—K. Schum. in *Engl. & Prantl*, Pflanzenfam. iv. ii. 216.

**Lower Guinea.** Near Kitamba, Buchner, 612!

Kitamba is stated to be in Gaboon in the original description, this appears to be an error, and probably Kitamba on the River Kuango, in Angola, is intended.

8. **T. nigritana**, N. E. Br. in *Kew Bulletin*, 1895, 248. Stem glabrous. Leaves spreading; petiole  $\frac{3}{4}$  lin. long; blade  $2\frac{1}{2}$ –3 in. long, 10–13 lin. broad, oblong, slightly narrowing towards the shortly cuspidate-acute apex, obtuse at the base, glabrous above, covered with a short close pubescence beneath. Panicles 2 in. long, pedunculate, quite glabrous in all parts; peduncles  $\frac{1}{2}$ – $\frac{3}{4}$  in. long; pedicels 2– $3\frac{1}{2}$  lin. long; bracts  $\frac{1}{2}$ – $\frac{3}{4}$  lin. long, broadly ovate, obtuse, deciduous. Sepals  $\frac{1}{2}$  lin. long, broadly ovate, subacute, glabrous. Corolla lobed nearly to the base; lobes 2– $2\frac{1}{2}$  lin. long, glabrous. Coronal-lobes 3 lin. long, filiform, erect, tortuous, adnate at the base to the lower half of the filaments, which are united with the alternating shortly bifid lobules into a short tube.

**Upper Guinea.** Lower Niger: Aboh, Barter, 486!

9. **T. conferta**, N. E. Br. in *Kew Bulletin*, 1895, 247. Stem minutely puberulous on the younger parts, becoming glabrous. Leaves spreading, petiolate; petiole  $\frac{1}{2}$  in. long, puberulous; blade  $2\frac{1}{2}$ –4 in. long, 1– $1\frac{5}{8}$  in. broad, oblong or oblong-lanceolate, acuminate, subacute or rounded at the base, quite glabrous on both sides. Panicles corymb-like, sessile or with a peduncle up to  $\frac{1}{2}$  in. long; branches 1– $2\frac{1}{2}$  in. long, ending in a raceme of 3–7 secondary peduncles  $\frac{1}{2}$ –1 in. long, which bear small clusters of 6–8 flowers; bracts  $\frac{3}{4}$ –1 lin. long, broadly ovate, acute, brown, glabrous; pedicels 2–3 lin. long, and, like the peduncles and branches of the panicle, minutely puberulous. Sepals  $\frac{3}{4}$ –1 lin. long, broadly ovate, obtuse or subacute, minutely ciliate.

Corolla lobed nearly to the base; lobes 2–2½ lin. long, broadly oblong, very obtuse with a small apical notch. Coronal-lobes 2¼–2½ lin. long, rather stout, filiform, inrolled in the upper part, very shortly connate at the base. No lobules alternating with the filaments.

**Nile Land.** Abyssinia: Efat, *Roth* (154) 407!

10. **T. Barteri**, *Baill. in Bull. Soc. Linn. Paris*, ii. (1889) 808 (88 *by error*). Stem twining, more or less pubescent. Leaves spreading, petiolate; petioles ½–1 in. long; blade 1½–3 in. long, ⅝–1½ in. broad, almost exactly oblong, obtuse, shortly apiculate, subcordate at the base, quite glabrous on both sides. Panicles 1–2½ in. long, pubescent at the base of the peduncle, otherwise glabrous; pedicels 2–3 lin. long, glabrous; bracts ¾ lin. long, ovate or elliptic-ovate, obtuse, glabrous. Sepals ¾ lin. long, broadly ovate, obtuse, glabrous. Corolla lobed nearly to the base; lobes 3–3½ lin. long, narrowly oblong, obtuse, glabrous, pale yellow. Coronal-lobes 4 lin. long, filiform, erect, tortuous, adnate at the base to the lower half of the filaments. Lobules alternating with the stamens, nearly as long as the filaments, subquadrate, shortly bifid. Follicles 2 in. long, ½ in. thick at the base, tapering to a rather stout point.

**Upper Guinea.** Niger Territory: Nupe, *Barter*, 1086!

Baillon describes the leaves as “not cordate, rounded at the base,” but in the specimen at Kew they are decidedly more or less deeply notched at the base.

11. **T. Tholloni**, *Baill. in Bull. Soc. Linn. Paris*, ii. (1889) 807 (87 *by error*). “Entirely glabrous. Leaves oval-cordate, often apiculate, pale and strongly veined beneath. The lateral inflorescences are very compound, with the principal divisions opposite, 4–8 in. long. The subulate scales of the corona are very long and very narrow, folded upon themselves in the bud, united into a ring at the base. The summit of the style, above the pentagonal dilation, presents a capitellate and two-lobed cone.”

**Lower Guinea.** Congo, *Brazza*, 507.

I have not seen this species, the above is a translation of the description given, from which it would appear to be something like *T. apiculata*, but glabrous.

12. **T. floribunda**, *K. Schum. in Engl. Jahrb.* xxx. 381. Stem twining, puberulous in the young state, minutely tuberculate. Leaves petiolate, spreading; petiole ¾–1¾ in. long, with a pair of glands or fleshy processes at its apex; blade 4–6 in. long, 2½–4 in. broad, elliptic or elliptic-ovate, shortly cuspidate-acute or apiculate, broadly rounded at the base, glabrous or with a few minute scattered hairs above, puberulous or downy beneath, scarcely tomentose; midrib without fleshy processes along its upper side. Stipulary line very distinct, thick and projecting, with short stout reflexed and erect teeth. Panicles axillary, 5–7 in. long (or larger?), rather lax, with very spreading branches 1¼–4 in. long, somewhat trichotomously divided, tomentose or minutely

velvety and minutely tuberculate; bracts  $\frac{3}{4}$ – $1\frac{1}{4}$  lin. long, lanceolate, acute, puberulous; pedicels 2–4 lin. long, minutely tomentose. Sepals 1 lin. long,  $\frac{3}{4}$  lin. broad, broadly ovate, acute, minutely tomentose and ciliolate. Corolla rotate, lobed nearly to the base; lobes 2– $2\frac{1}{2}$  lin. long,  $1\frac{1}{4}$ – $1\frac{1}{2}$  lin. broad, oblong, obliquely bilobulate at the apex, glabrous, minutely papillose on the inner face. Coronal-lobes  $2\frac{1}{2}$ –3 lin. long,  $\frac{1}{3}$  lin. broad at the base, stout, lanceolate-linear tapering to a filiform tortuous apex; alternating lobules subquadrate, emarginate, inflexed.

**Nile Land.** Uganda: Ruwenzori district; Kivata, in forest, 6000–8000 ft., *Scott-Elliot*, 7688!

**Mozamb. Dist.** German East Africa: Usafua; on the Ngosi or Poroto Mountains, 7200 ft., *Goetze*, 1289!

Allied to *T. apiculata*, Oliv., but with larger leaves, well marked stipules, a different pubescence, and much stouter and shorter coronal-lobes.

13. **T. apiculata**, *Oliver in Trans. Linn. Soc.* xxix. 108, t. 72. Stem twining, more or less pubescent or tomentose. Leaves spreading; petiole  $\frac{1}{2}$ – $1\frac{1}{2}$  in. long; blade 2–5 in. long, 1– $3\frac{1}{2}$  in. broad, oblong or elliptic-oblong, obtuse, broadly rounded or emarginate and shortly cuspidate-apiculate at the apex, emarginate or cordate at the base, glabrous above, whitish and densely puberulous or very minutely tomentose beneath. Panicles  $2\frac{1}{2}$ –6 in. long, more or less pubescent on the lower part of the peduncle, elsewhere glabrous; bracts  $\frac{1}{2}$ –1 lin. long, ovate, obtuse, glabrous; pedicels 3–9 lin. long, glabrous. Sepals  $\frac{3}{4}$  lin. long, broadly ovate, obtuse, brick-red, glabrous. Corolla lobed nearly to the base; lobes 3 lin. long, oblong, obtuse, red, glabrous. Coronal-lobes 5 lin. long, filiform, erect, tortuous in the upper part, adnate at the base to the lower half of the filaments, which are united with the alternating shortly bifid lobules into a short tube. Follicles  $2\frac{1}{2}$ –3 in. long, 5 lin. thick at the base, tapering gradually to a point, glabrous, horizontally diverging, not reflexed. K. Schum. in *Engl. & Prantl, Pflanzenfam.* iv. ii. 217, fig. 64, L; in *Engl. Pfl. Ost.-Afr.* C. 320; in *Engl. Jahrb.* xxviii. 454; and in *Ann. Istit. Bot. Roma*, vii. 36. *T. apiculata*, Oliv. var. *glabra*, K. Schum. in *Engl. Jahrb.* xvii. 116 in a note, and in *Engl. & Prantl, Pflanzenfam.* iv. ii. 216.

**Nile Land.** Somaliland: near the River Genom, *Riva*, 1093 (ex *Schumann*). White Nile: near Gondokoro, *Speke & Grant!* at Kam, *Schweinfurth*, 961! and at Fashoda, *Schweinfurth*, 1070! Blue Nile, *Muriel*, L, 17! Jur: Jur Ghattas, *Schweinfurth*, 1958! Bongo: Ngoli (Nyoli), *Schweinfurth*, 4075! Uganda: Madi; on the banks of the Madi Stream, *Speke & Grant*, 711!

**Mozamb. Dist.** German East Africa: Ukami; in South Uluguru, 3000 ft., *Goetze*, 223 (ex *K. Schumann*).

Var.  $\beta$ , *benedicta*, *Scott-Elliot* in *Journ. Linn. Soc.* xxx. 91. Leaves varying from oblong-lanceolate or ovate and acute or acuminate, to elliptic-oblong and very obtusely rounded and shortly mucronate at the apex, rounded or cordate at the base, glabrous above, whitish-tomentose beneath with much longer hairs than in the type. Panicle rather more compact than in the type. Calyx sometimes with some minute hairs on the basal part.

**Upper Guinea.** French Guinea: Sulimania; by the River Dantilia, *Scott-Elliot*, 5269! Cameroons: Sanaga, *Zenker*, 1448!

This variety, according to Scott-Elliot, is called "*Wak wange*" by the natives, who rub the powdered leaves on the skin to destroy "craw-craw" or itch. It may, perhaps, rather belong to *T. Kirkii*, than to *T. apiculata* since the more compact panicles and longer pubescence are as in *T. Kirkii*, but until the follicles are known I leave it where Scott-Elliot has placed it.

14. **T. Kirkii**, *N. E. Br. in Kew Bulletin*, 1895, 248. Stem twining, more or less tomentose. Leaves spreading; petioles  $\frac{1}{2}$ – $1\frac{1}{2}$  in. long; blade  $1\frac{1}{4}$ –4 in. long,  $1$ – $2\frac{1}{4}$  in. broad, elliptic or elliptic-oblong, very obtusely rounded or emarginate and shortly cuspidate-apiculate at the apex, cordate or obtusely rounded at the base, glabrous above, whitish-tomentose beneath. Panicles 2–4 in. long, more or less pubescent or subtomentose; bracts  $1$ – $1\frac{1}{2}$  lin. long, broadly ovate, acute, more or less hairy down the middle on the back; pedicels  $1\frac{1}{2}$ –4 lin. long, usually with a few scattered hairs upon them. Sepals 1 lin. long, broadly ovate, acute, more or less pubescent with spreading hairs, Corolla lobed nearly to the base; lobes  $2\frac{1}{2}$  lin. long, oblong, obtuse, glabrous. Coronal-lobes 4 lin. long, filiform, sometimes bifid at the apex, erect, tortuous in the upper part, adnate at the base to the lower half of the stamens, which are united with the alternating, shortly bifid lobules into a ring. Follicles  $1\frac{1}{2}$ – $2\frac{3}{4}$  in. long,  $3\frac{1}{2}$ – $4\frac{1}{2}$  lin. thick at the base, gradually tapering to a point, slightly reflexed, tomentose or softly pubescent.—*Leptopætia*, Harv. Gen. South Afr. Pl. ed. 2, 231.

**Mozamb. Dist.** Portuguese East Africa: Lower Zambesi; near Tete, *Kirk!* at Lupata, *Kirk!* British Central Africa: Boruma, on the Zambesi, *Menyharth*, 833!

Also in Natal, *Gerrard*, 1796, upon which the genus *Leptopætia*, Harv. was founded, but no specific name given to it.

*T. Kirkii* very closely resembles *T. apiculata*, Oliv. (of which it may be only a variety), but differs in its more compact panicles, shorter pedicels, hairy calyx, tomentose reflexed follicles, and the much longer hairs which form the pubescence on the underside of the leaves. See also note under *T. apiculata*, var. *benedicta*.

10. **RAPHIONACME**, Harv.; Benth. et Hook. f. Gen. Pl. ii. 475.

Calyx 5-partite. Corolla-tube distinct, campanulate (almost wanting in *R. splendens*); lobes 5, erect, spreading or reflexed, often with two narrow ridges on their basal half, overlapping to the left and more or less twisted in the bud. Corona of 5 free entire bifid trifid or tripartite lobes, inserted at or upon the base of the staminal filaments, above the middle of the corolla-tube or at its mouth, alternating with the corolla-lobes. Stamens inserted above the middle or at the mouth of the corolla-tube; filaments free; anthers adhering to the style

at their base, conniving in a cone, and connate at their tips. Pollen granular. Style not exceeding the anthers, conical at the apex. Follicles often solitary by abortion, short or long, lanceolate, fusiform, or linear-terete. Seeds crowned with a tuft of hairs.—Herbs with tuberous rootstock, often furnished with an elongated woody neck; juice milky. Stem herbaceous, usually dwarf, simple or branched, rarely twining. Leaves opposite. Flowers small or of moderate size, in few- or many-flowered cymes or clusters, terminal, or in the forks of the stem, or subaxillary from one axil, rarely from both.—*Apoxyantha*, Hochst. in Flora, 1843, 78. *Zucchellia*, Decne. in DC. Prod. viii. 492. *Zacutaea*, Baill. in Bull. Soc. Linn. Paris, ii. (1889) 806 (86 by error); and Hist. Pl. x. 295. *Rhaphiacme*, K. Schum. in Engl. Jahrb. xvii. 117. *Raphiacme*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 220.

Species 18–20, natives of Tropical and South Africa.

In the structure of its flowers this genus is nearly related to *Tacazzea*, from which most of the species may be distinguished by the presence of a distinct (but sometimes short) campanulate tube to the corolla, or failing that, by the inflorescence being terminal or from one axil only of each pair of leaves, and by the much dwarfer more herbaceous habit. The ridges on the base of the corolla-lobes probably represent another coronal whorl in a rudimentary state; in some cases they appear to be directly continuous with the base of the staminal-filaments. When the coronal-lobes are trifid, the lateral teeth are sometimes clearly seen to originate outside of the longer middle tooth and perhaps represent an exterior whorl of processes although usually more or less combined with the more developed middle tooth.

Corolla-lobes 7–10 lin. long; inflorescence terminal.

Coronal-lobes rectangular, trifid, with the middle tooth longest, subulate or filiform . . . . . 1. *R. grandiflora*.

Coronal-lobes ovate at the base, tapering to a long acuminate point . . . . . 2. *R. linearis*.

Coronal-lobes filiform . . . . . 3. *R. splendens*.

Corolla-lobes 2–4 lin. long.

Flowers in a terminal globose head; leaves narrow . . . . . 4. *R. globosa*.

Flowers in a terminal corymbose cyme; leaves broad . . . . . 5. *R. angolensis*.

Cymes axillary and terminal, longer than the subtending leaves or bracts, arranged along the terminal part of the stem and its branches, forming a rather large paniculate or corymbose inflorescence, coronal-lobes simple, filiform.

Stamens  $2\frac{1}{2}$  lin. long,  $\frac{2}{3}$  as long as the coronal-lobes; corolla-lobes  $3\frac{1}{2}$ –4 lin. long . . . . . 6. *R. jurensis*.

Stamens  $1-1\frac{1}{4}$  lin. long, not half as long as the coronal-lobes.

Corolla-lobes  $3\frac{1}{2}$  lin. long . . . . . 7. *R. excisa*.

Corolla-lobes  $2-2\frac{1}{2}$  lin. long . . . . . 8. *R. Brownii*.

Cymes axillary, shorter than the subtending leaves.

Flowers in dense subglobose many-flowered clusters . . . . . 9. *R. Welwitschii*.

Flowers in small shortly branched cymes.

Coronal-lobes linear-lanceolate, bifid at the apex . . . . . 10. *R. lanceolata*.

Coronal-lobes 3-5- (rarely 10-) fid, the middle tooth longest, filiform or subulate.

Leaves  $1\frac{1}{2}$ -8 in. long.

Leaves linear or strap-shaped; stems erect 11. *R. longifolia*.

Leaves broad, oblong or obovate-oblong; stems twining . . . . . 12. *R. denticulata*.

Leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long, lanceolate; stems twining . . . . . 13. *R. Loandæ*.

1. ***R. grandiflora***, *N. E. Br. in Kew Bulletin*, 1895, 111. Stem 10-12 in. high, simple (always?), more or less hairy. Leaves rather few, the lower rather crowded,  $1\frac{1}{4}$ -3 in. long,  $\frac{1}{2}$ -1 in. broad, obovate or elongate-obovate, obtuse; the upper distant, 4-4 $\frac{1}{2}$  in. long,  $\frac{1}{4}$ -1 in. broad, lanceolate or linear-lanceolate, acute, all acutely narrowed at the base into a very short petiole, hairy on both sides or on the nerves and margins only. Peduncles 1-2, terminal or subracemose at the top of the stem, 2-3-flowered; bracts 3-5 lin. long, linear or subulate, hairy; pedicels 4-7 lin. long, hairy. Sepals 3-4 lin. long, lanceolate-attenuate, hairy. Corolla  $1\frac{1}{4}$  in. in diam., glabrous; tube campanulate,  $\frac{1}{4}$  in. long; lobes 7-8 lin. long, 3-4 lin. broad, oblong or ovate-oblong, subobtuse, with two parallel fleshy ridges on their basal half. Coronal-lobes arising at the mouth of the corolla-tube, 5 lin. long, erect, rectangular, 3-toothed, lateral teeth short, middle tooth linear, about as long as the rest of the lobe, with two minute teeth in front of it at its base. Anthers large, triangular with a horny callosity on each side at their base, their tips connate in a blunt cone over the rather large conical apex of the style.—*Raphiacme grandiflora*, K. Schum. in Engl. Pfl. Ost-Afr. C. 425, and in Engl. & Prantl, Pflanzenfam. iv. ii. 221.

**Mozamb. Dist.** British Central Africa: Niomkolo near Lake Tanganyika, Carson, 5 of 1890 collection! Nyasaland; near Blantyre, Last!

2. ***R. (Raphiacme) linearis***, *K. Schum. in Engl. Jahrb.* xvii. 117. Stems erect, 20-24 in. high, simple, leafy, puberulous. Leaves sessile,  $\frac{1}{2}$ - $5\frac{1}{2}$  in. (usually  $3\frac{1}{2}$ - $4\frac{1}{2}$  in.) long,  $1\frac{1}{2}$ -2 lin. broad, linear, attenuate-acuminate, margins revolute, puberulous, scabrid above. Flowers large, in a terminal few-flowered scorpioid raceme. Bracts linear or subulate. Pedicels  $\frac{1}{2}$ -2 in. long, puberulous. Sepals 4 $\frac{1}{2}$ -5 lin. long, lanceolate-triangular, acuminate, puberulous. Corolla rotate, 5-lobed nearly to the base, lobes 8-10 lin. long, oblong-lanceolate, puberulous outside. Coronal-lobes 4-4 $\frac{1}{2}$  lin. long, about  $1\frac{1}{3}$  lin. broad at the ovate base, thence tapering to a long acuminate point. Anthers sagittate,  $3\frac{1}{2}$  lin. long, filaments  $\frac{1}{2}$  lin. long.—*Raphiacme linearis*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 217, fig. 64, M-N & 221.

**Lower Guinea.** Angola; Malange, *Mechow*, 359 partly.

Var.  $\beta$  **glabra**, *K. Schum. in Engl. Jahrb.* xvii. 118. Glabrous in all parts.

**Lower Guinea.** Angola: Kitamba, on the River Kuango, *Buchner*, 569; Malange, *Mechow*, 359 partly.

I have not seen this species.

3. **R. splendens**, *Schlechter in Journ. Bot.* 1895, 301. Stem erect, simple, 6–8 in. high, minutely puberulous. Leaves distant, the two or three lower pairs reduced to mere rudiments or scales, the upper broken off in the specimens seen, their short remains (petioles?) linear, subterete, velvety. Flowers few (3–4 on the specimens seen), large, arranged in a lax terminal cyme, erect; pedicels about 1 in. long, puberulous. Sepals 1–1½ lin. long, ¾ lin. broad, ovate, acuminate, puberulous, minutely ciliate. Corolla 5-lobed nearly to the base; tube exceedingly short, ¾–1 lin. long; lobes 9–10½ lin. long, 3–3½ lin. broad, oblong, obtuse, reflexed, puberulous outside, glabrous within, bright rosy-purple with whitish margins. Coronal-lobes arising from the base of the staminal filaments, 1 in. long, erect, filiform, very shortly and broadly dilated at the base, simple or bifid at the apex, glabrous. Filaments of the stamens 2½ lin. long, abruptly dilated at the base, where they are transversely oblong, thick, fleshy, and complicatedly 2-keeled on the inner side, glabrous; anthers 3 lin. long, linear, glabrous, connivent over the tapering angular apex of the style, and connate at their tips. Pollen-carriers with a deeply bifid lanceolate blade.

**East Tropical Africa.** Without locality, *Scott-Elliot!*

This species is remarkable for its very few leaves, and large flowers. There are no lateral lobules to the coronal-lobes as described by Schlechter, who has evidently mistaken the base of the staminal filaments for coronal-lobes, the latter are quite simple, or occasionally bifid at the apex.

4. **R. globosa**, *K. Schum. in Engl. Jahrb.* xvii. 118. Stem erect, simple, puberulous, leafy nearly to the apex. Leaves distant, 2¼–5¼ in. long, ¼–½ in. broad, on petioles 1–2 lin. long, elongate-lanceolate or linear-lanceolate, minutely pubescent and slightly rough to the touch. Flowers in terminal globose heads ¾ in. in diam., on peduncles ½–1½ in. long; bracts 1–2½ lin. long, subulate or filiform; pedicels 1–1½ lin. long, pubescent. Sepals 2–2½ lin. long, subulate from an ovate base, puberulous, ciliate. Corolla-tube 2–2¼ lin. long, campanulate, with 5 small pockets within at the base, lobes 2½ lin. long, spreading, very minutely puberulous outside, white. Coronal-lobes arising at the mouth of the corolla-tube, divided into three filiform segments, the middle one 2 lin. long, the lateral about 1 lin. long.—Hiern in *Cat. Afr. Pl. Welw.* i. 679. *Raphiacme globosa*, *K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 221.

**Lower Guinea.** Angola: Malange, *Mechow*, 327! Huilla; in thickets near Loppo, *Welwitsch*, 4178:

5. **R. angolensis**, *N. E. Br. in Kew Bulletin*, 1895, 248. Stems 1–2 ft. high, branching or simple, erect, or decumbent in the lower part, purplish, pubescent with short curved hairs, as are also both sides of the leaves, peduncles, pedicels, bracts, calyx and outside of the corolla. Leaves 1–2¾ in. long, ½–1¾ in. broad, on petioles 2–7 lin. long, elliptic or elliptic-oblong, about equally obtuse at both ends, or sometimes subacute at the base, “somewhat fleshy” (*Welwitsch*). Cymes terminal,

corymbose,  $1\frac{1}{2}$ –2 in. in diam., many-flowered; pedicels 2–6 lin. long; bracts subulate,  $1$ – $1\frac{1}{2}$  lin. long. Sepals  $1\frac{1}{2}$ –2 lin. long, lanceolate, acuminate. Corolla-tube campanulate, 2 lin. long; lobes oblong or oblong-lanceolate, acute,  $\frac{1}{4}$  lin. long, with two short subparallel fleshy ridges upon their base, violet-purple. Coronal-lobes arising at the mouth of the corolla-tube,  $2\frac{1}{2}$  lin. long, subulate, erect, scarcely exceeding the anthers. Stamens with broad linear filaments  $\frac{1}{10}$  in. long, and narrow linear-oblong anthers of about the same length, connate at their tips. Young follicles tomentose.—Hiern in Cat. Afr. Pl. Welw. i. 678. *Raphionacme angolensis*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 220. *Zucchellia angolensis*, Decne. in DC. Prod. viii. 492. *Zucatea angolensis*, Baill. in Bull. Soc. Linn. Paris, ii. (1889) 806 (86 by error); and Hist. Pl. x. 295; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 221.

**Lower Guinea.** Angola: Pungo Andongo; on the higher rocks of the Præsidium, *Welwitsch*, 4201! 4202!

6. **R. jurensis**, *N. E. Br.* Plant  $1$ – $1\frac{1}{2}$  ft. (or more?) high. Stem minutely puberulous, brown. Leaves not seen fully developed, those on the flowering part of the stem reduced to linear rudiments,  $1$ – $1\frac{1}{2}$  lin. long, densely puberulous. Flowers from the axils of the upper part of the plant or axillary and terminal, solitary or in pairs or on 2–3-flowered puberulous peduncles, which are really the branches of a sessile cyme. Bracts minute,  $\frac{1}{2}$  lin. long, ovate or lanceolate, brown, puberulous. Pedicels 3–5 lin. long, puberulous. Sepals  $\frac{2}{3}$  lin. long,  $\frac{2}{5}$ – $\frac{1}{2}$  lin. broad, ovate or ovate-lanceolate, acute, puberulous. Corolla thinly puberulous outside, glabrous within, grey-violet (*Brown*); tube 2 lin. long, campanulate; lobes  $3\frac{1}{2}$ –4 lin. long,  $1\frac{1}{4}$  lin. broad, oblong, subobtusely, very spreading or probably reflexed. Coronal-lobes inserted with the stamens at the sinuses of the corolla, shortly adnate to the base of the filaments, filiform,  $3\frac{1}{2}$ –4 lin. long, erect, tortuous at the tips, without lateral teeth at their base, but alternating with them at the middle of the base of the corolla-lobes are 5 small fleshy tubercles. Stamens much exserted,  $\frac{2}{3}$  as long as the coronal-lobes; filaments  $1\frac{1}{2}$  lin. long, broadly dilated at the base and rather broad in the upper part where attached to the dilated part of the style; anthers 1 lin. long, deltoid-oblong, obtuse, connivent in a cone over the apex of the style, glabrous. Pollen-carriers  $1\frac{1}{3}$  lin. long, spatulate, with the claw part tubular, open down the outer side, and the apical part expanded into a flat elliptic obtuse entire blade. Style much exserted from the corolla-tube, slightly shorter than the anthers, slender in the lower part, abruptly dilated in the upper part into a narrow cone  $1\frac{1}{3}$  lin. long.

**Nile Land.** British East Africa: Jur; between Jur and Wau Rivers, *Brown*!

7. **R. excisa**, *Schlechter* in *Journ. Bot.* 1895, 301. A dwarf erect herb 6–8 in. high, corymbosely branched; branches puberulous. Leaves few and distant, spreading or ascending,  $1\frac{1}{4}$ – $1\frac{1}{2}$  in. long,

about  $1\frac{1}{3}$  lin. broad, linear, subobtusely, narrowed at the base into a petiole  $\frac{1}{2}$ –1 lin. long, nearly glabrous above except along the midrib and margins, puberulous beneath. Peduncles lateral and terminal,  $\frac{1}{2}$ – $1\frac{1}{4}$  in. long, compressed, puberulous, dichotomously 2-flowered, forming a terminal lax corymbose inflorescence; pedicels  $\frac{1}{3}$ – $\frac{1}{2}$  in. long, puberulous. Sepals  $\frac{2}{3}$  lin. long, ovate-lanceolate, very acute, sparsely puberulous. Corolla-tube 1 lin. long, subglobose, constricted at the mouth, with 10 depressions on the upper half (2 at the base of each lobe), glabrous; lobes  $3\frac{1}{2}$  lin. long,  $1$ – $1\frac{1}{4}$  lin. broad, oblong-lanceolate, obtuse, glabrous on both sides, minutely rugulose outside, apparently longitudinally folded. Coronal-lobes 3 lin. long, filiform, erect and tortuous or somewhat incurved at the apex, arising from the very shortly dilated fleshy base of the staminal filaments. Stamens about  $1\frac{1}{4}$  lin. long.

**East Tropical Africa.** Without locality. *Scott-Elliot!*

The original description of this plant is very inaccurate, I find that the coronal-lobes have no lateral inflexed lobules whatever.

8. **R. Brownii**, *Scott-Elliot in Journ. Linn. Soc.* xxx. 91. Rootstock tuberous. Stem branching, a foot or more high, with long internodes, minutely puberulous. Leaves sessile,  $\frac{1}{2}$ – $1\frac{1}{4}$  in. long,  $\frac{1}{3}$ – $\frac{1}{2}$  lin. broad, linear-filiform, subobtusely, the uppermost reduced to very short subulate bracts. Inflorescence terminal, lax, composed of 2–3 pairs of opposite cymes on each branch, which are 4–6 flowered, unilateral, and ultimately elongate into racemes  $1$ – $1\frac{1}{2}$  in. long, minutely papillose-puberulous in all parts; bracts  $\frac{1}{2}$ –1 lin. long, subulate; pedicels 4–7 lin. long, slender. Sepals  $\frac{3}{4}$ –1 lin. long,  $\frac{1}{2}$  lin. broad, ovate, acute. Corolla campanulate; tube  $1\frac{1}{2}$  lin. long; lobes  $2$ – $2\frac{1}{2}$  lin. long,  $1$ – $1\frac{1}{4}$  lin. broad, oblong-lanceolate, obtuse and more or less cochleate at the apex, glabrous inside, pink. Coronal-lobes arising at the base of the stamens,  $2\frac{1}{2}$ –3 lin. long, subulate, papillate-puberulous. Stamens 1 lin. long, with the basal half of the filaments very broad, transversely oblong, very abruptly contracted into the short filiform upper part; anthers ovate-triangular, connivent, with minute cylindrical free appendages at the apex about  $\frac{1}{4}$  as long as the anthers. Follicles erect, not at all divergent, 5–6 in. long, about 2 lin. thick, linear-terete, subterulose, with a slender attenuate apex, minutely puberulous.

**Upper Guinea.** Sierra Leone: on dry schistose rocks near Falaba, *Scott-Elliot*, 5179!

*Raphiacme browneana*, Schlechter, Westafr. Kautschuk-Exped. 308, from hills near Quamikrum, in Togo, *Schlechter*, 12956, may be intended for the above species. I have not seen it, and there is no description.

9. **R. Welwitschii**, *Schlechter & Rendle in Journ. Bot.* 1896, 97. Tuber depressed-hemispherical, 3–5 in. in diam. Stems  $2$ – $2\frac{1}{2}$  ft. high, erect or twining, puberulous. Leaves in 5–6 distant pairs on each stem; petiole  $2$ – $3\frac{1}{2}$  lin. long; blade  $1$ – $1\frac{1}{2}$  in. long, 5–10 lin. broad, obovate-oblong, very obtuse, rounded or subcuneate at the base, softly velvety on both sides, whitish beneath. Flowers in dense axillary

subglobose sessile many-flowered clusters; pedicels about 1 lin. long, tomentose. Sepals 1 lin. long,  $\frac{3}{4}$ – $\frac{5}{6}$  lin. broad, broadly ovate, obtuse, tomentose. Corolla-tube about 1 lin. long; lobes oblong, obtuse, 2–2 $\frac{1}{4}$  lin. long, 1 $\frac{1}{4}$ –1 $\frac{1}{3}$  lin. broad, glabrous on both sides. Coronal-lobes arising from the base of the staminal filaments, trifid to the base; side teeth or lobes  $\frac{1}{2}$  lin. long; middle lobe 1 $\frac{3}{4}$ –2 lin. long, nearly  $\frac{1}{2}$  lin. broad at the base, flat, subulate-attenuate. Filaments of the stamens  $\frac{1}{2}$  lin. long, linear-oblong, shortly dilated at the base; anthers ovate, with short obtuse appendages, connivent.—Hiern in Cat. Afr. Pl. Welw. i. 678.

**Lower Guinea.** Angola: Ambaca; in thickets between Halo and Zamba, Welwitsch. 4234!

10. **R. lanceolata**, Schinz in *Verhandl. Bot. Ver. Brandenb.* xxx. 263. Entire plant pubescent with minute curved hairs. Rootstock with a long woody and tortuous neck about 4 lin. thick, producing annual branching terete stems 9–12 in. high. Leaves  $\frac{3}{4}$ –2 in. long, 2–6 lin. broad, on petioles 1–3 lin. long, lanceolate, acute or subacute, the pubescence sometimes very sparse on the upper surface. Cymes axillary, shorter than the leaves, 3–7-flowered; peduncles 1–4 lin. long; pedicels 1 $\frac{1}{2}$ –4 lin. long; bracts 1 lin. long, subulate. Sepals 1 lin. long, lanceolate, acute. Corolla-tube 1 $\frac{1}{4}$  lin. long, lobes about 2 $\frac{1}{2}$  lin. long, 1 $\frac{1}{4}$ –1 $\frac{1}{2}$  lin. broad, oblong, obtuse, greenish stained with mauve at the tips, outside rather densely pubescent, inside glabrous. Coronal-lobes arising at the mouth of the corolla-tube, twisted and connivent over the staminal column, concealing it, 2–3 $\frac{1}{2}$  lin. long, lanceolate, bifid at the apex or occasionally entire, basal part erect, apical part first abruptly bent inwards and downwards then erect, greenish. Stamens very abruptly and very shortly dilated at the base of the filaments; anthers oblong, connivent, apiculate.

**Lower Guinea.** German South-west Africa: Ovamboland; Omukangua, Schinz, 168! Omandongo, Schinz, 167! Okasima Ka Namutenya, Schinz!

Var.  $\beta$  *latifolia*, N. E. Br. Leaves 1 $\frac{1}{2}$ –2 in. long,  $\frac{1}{2}$ –1 $\frac{1}{4}$  in. broad, varying from narrowly oblong or lanceolate to elliptic or elliptic-oblong, subacute, rounded or subcuneate at the base.

**Mozamb. Dist.** British Central Africa: Bechuanaland; in the northern Kalahari desert, near Chukutsa Salt-pan, 3000 ft., Lugard, 260! Rhodesia: Buluwayo, Rand, 284! Ngamiland; Kwebe Hills, 3200 ft., Mrs. Lugard, 71! Kwebe, Lugard, 69! 98! Lake Ngami, Chapman!

According to Captain Lugard, the plant grows to a height of 1–3 ft. and has milky juice.

11. **R. longifolia**, N. E. Br. in *Kew Bulletin*, 1895, 110. Stems 4–10 in high, erect, simple, pubescent with minute curved hairs, as are also the leaves, peduncles, bracts, pedicels, calyx, and outside of the corolla. Leaves 5–8 pairs to each stem, 1 $\frac{1}{2}$ –8 in. (usually 3–6 in.) long, including the 2–4 lin. long petiole, 2–6 lin. broad, varying from linear to linear-lanceolate or linear-oblong, usually subobtuse, sometimes bluntly apiculate. Cymes axillary, rather dense and many-flowered;

peduncles 1-2 lin. long; bracts  $\frac{1}{2}$ -1 lin. long, lanceolate, acute; pedicels 1-3 lin. long. Sepals  $\frac{3}{4}$  lin. long, ovate, acute. Corolla-tube 1 lin. long, campanulate; lobes  $2\frac{1}{2}$ -3 lin. long, lanceolate, acute, glabrous within, green. Coronal-lobes arising at the mouth of the corolla-tube, tripartite; lateral segments  $\frac{1}{3}$ - $1\frac{1}{4}$  lin. long, varying from narrow deltoid-lanceolate to subulate, middle segment 2- $2\frac{1}{2}$  lin. long, subulate, erect, tortuous at the apex. Stamens with filiform filaments very shortly dilated at their base; anthers oblong, connate at their tips.—*Raphiacme longifolia*, K. Schum. in Engl. Pfl. Ost-Afr. C. 425, and in Engl. & Prantl, Pflanzenfam. iv. ii. 221.

**Mozamb. Dist.** Portuguese East Africa: Lower Shire Valley; on Morambala Mountain, 1900-2000 ft., *Kirk!* British Central Africa: Nyasaland; Manganja Hills, *Kirk!*

12. **R. denticulata**, *N. E. Br.* Tuber growing to 6 in. in diam., depressed. Stem 2-3 ft. long, twining, minutely velvety-pubescent. Leaf-pairs 4-6 in. apart, spreading; petiole 7-13 lin. long, rather stout, velvety-pubescent; blade  $3\frac{1}{2}$ -6 in. long,  $1\frac{1}{3}$ - $3\frac{1}{3}$  in. broad, oblong or obovate-oblong, obtuse at the apex, rounded or cuneately narrowed into the petiole at the base, velvety-pubescent on both sides, dark green with paler veins above, pale green beneath. Cymes axillary, 2-16-flowered, velvety-pubescent; peduncles 1- $1\frac{1}{2}$  lin. long; pedicels  $1\frac{1}{2}$ -2 lin. long. Sepals small,  $\frac{1}{2}$ - $\frac{3}{4}$  lin. long, and nearly as broad, broadly ovate, obtuse, pubescent, dull purplish-tinted. Corolla-tube  $1\frac{1}{4}$ - $1\frac{1}{2}$  lin. long,  $1\frac{1}{2}$ -2 lin. in diam., campanulate, glabrous; lobes fleshy, 3 lin. long,  $1\frac{2}{3}$ - $2\frac{1}{2}$  lin. broad, ovate or oblong, obtuse, reflexed, with recurved margins, so as to present a convex upper surface, puberulous outside, minutely papillate within, dull purple with an olive-green area at the apex. Coronal-lobes  $2\frac{1}{2}$  lin. long, erect; basal half 2 lin. broad, transversely oblong, with two thick keels inside; apex abruptly produced into a central subulate point, and the lateral angles each with 2 (or rarely 4) small subulate teeth, purple-tinted throughout or olive-green in the upper part, purple at the base. Filaments of the stamens dull purple; anthers ovate, apiculate, connivent over the apex of the style, white.

**Mozamb. Dist.** British Central Africa: Nyasaland, *Mahon!*

Described from a plant cultivated at Kew. It is allied to *R. scandens*, *N. E. Br.*, but has larger leaves, larger flowers and very different coronal-lobes.

13. **R. Loandæ**, *Schlechter & Rendle ex Hiern in Cat. Afr. Pl. Welw.* i. 679. A sparingly lactescent herb. Rootstock somewhat woody. Stem twining, about 18 in. long, somewhat branched in the specimen seen, minutely pubescent. Leaves  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long,  $1\frac{1}{2}$ -4 lin. broad, sessile or on petioles up to 2 lin. long, lanceolate ("narrowly ovate-elliptic or obovate," *Hiern*), obtuse, cuneate at the base, rather thick, undulate on the margin, shortly pubescent on both sides, but more densely so beneath. Cymes small, axillary, not exceeding the leaves, shortly pedunculate, pendulous, 3-6-flowered; peduncle 1-2 lin. long, recurved, pubescent; pedicels  $1\frac{1}{2}$ - $2\frac{1}{2}$  lin. long, pubescent. Sepals  $1\frac{1}{4}$

lin. long, ovate-lanceolate, acuminate, pubescent on the back. Corolla only seen in the bud; tube 2 lin. long, campanulate; lobes 2-2½ lin. long, ovate, subacute, pubescent outside, glabrous within. Coronal-lobes arising at the insertion of the stamens, purplish, filiform, with a short deltoid tooth on each side at the base.

**Lower Guinea.** Angola: Loanda; on dry hilly places near Boa Vista, not far from the sea, *Welwitsch*, 4274!

The specimen is in bud only, and the open flowers may exceed the dimensions given above.

### 11. SECAMONE, R. Br.; Benth. et Hook. f. Gen. Pl. ii. 746.

Calyx 5-partite. Corolla small, rotate or campanulate, 5-lobed to the middle or beyond; aestivation variable; lobes with fleshy submarginal ridges and often a central one on their basal half, which are decurrent on the tube within. Corona of 5 small or minute simple laterally flattened or subulate lobes, arising from the staminal column. Stamens arising from the bottom of the corolla; filaments adnate to the style but scarcely connate with each other, or only at the very base; anthers small, erect or connivent around the dilated part of the style, terminated by fimbriate membranous appendages which seem sometimes to be connate. Pollen masses 20 (10 in all other genera except *Toxocarpus* and the *Periploceæ*), very minute, globose, attached in fours to the rather soft pale-coloured pollen-carriers, without caudicles. Style usually produced beyond the dilated part and often exserted beyond the anthers; apical part (beyond the dilation) terete or clavate, obtuse, broadly truncate, bilobulate or bifid. Follicles acuminate, smooth. Seeds crowned with a tuft of hairs.—Climbing shrubs; leaves opposite, often pellucid-dotted; cymes axillary and terminal; flowers small.

Species many, widely spread through the tropical regions of the Old World, extending into South Africa.

The flowers of all the species here described, except *S. erythradenia* and *S. gracilis*, are very similar in structure, and the ridges on the corolla-lobes being common to them all are not mentioned in the descriptions. Mention of the dots in the leaves is also omitted, as they are not always visible in different specimens of the same species, or even in different leaves on the same specimen; they are formed of minute crystals of lime.

The figures of the pollinia of *Secamone* in Engl. & Prantl, Pflanzenfam. iv. ii. 262, fig. 76, E. & J., are not to be relied upon, the relative position of the pollen-carrier and pollen-masses being entirely erroneous, and of the other few figures that have been published, not one, so far as I have seen, is correct. They are exceedingly minute and therefore appear to have been badly observed.

Besides the species described below, reference should be made to *Cynanchum microstegium*, K. Schum., and *Gynnema crenatum*, Klotzsch, which, from the descriptions, may, I think, prove to belong to *Secamone*.

Corolla-tube  $\frac{3}{4}$ -1¼ lin. long, at least  $\frac{2}{3}$  as long as the lobes; peduncles or cymes 1-5-flowered.

- |   |                             |
|---|-----------------------------|
| Young shoots and pedicels glabrous . . . . .          | 1. <i>S. gracilis</i> .     |
| Young shoots and pedicels reddish-pubescent . . . . . | 2. <i>S. erythradenia</i> . |

Corolla-tube  $\frac{1}{4}$ - $\frac{1}{2}$  lin. long, never exceeding half the length of the lobes; flowers in simple or paniculate cymes.

Corolla pubescent within . . . . . 4. *S. Alpini*.

Corolla glabrous within and without.

Leaves linear.

Style scarcely exerted beyond the anthers, cushion-like at the top . . . . . 14. *S. frutescens*.

Style distinctly exerted beyond the anthers; apical part obconic-clavate or broadly dilated . . . . . 15. *S. punctulata*, var.

Leaves ovate, lanceolate, elliptic or oblong.

Leaves retuse at the apex, with an apiculus in the notch . . . . . 3. *S. retusa*.

Leaves acute or obtuse, but not notched at the apex.

Flowering-branchlets, as well as the cymes, distinctly pubescent or subtomentose with spreading hairs.

Young leaves glabrous on both sides or with only a few hairs on the midrib beneath . . . . . 11. *S. floribunda*.

Young leaves pubescent beneath or on both sides.

Leaves  $1\frac{1}{4}$ - $2\frac{1}{2}$  in. long; pedicels 2-4 lin. long . . . . . 12. *S. Whytei*.

Leaves  $\frac{1}{2}$ - $\frac{3}{4}$  in. long; pedicels  $\frac{1}{2}$ - $\frac{3}{4}$  lin. long . . . . . 13. *S. Stuhlmanni*.

Flowering-branchlets glabrous, but the cymes sometimes pubescent. (In *S. zambesiaca* the flowering-branchlets have two obscure thinly pubescent lines along them, but the minute hairs are adpressed, not spreading.)

Style not exceeding the anthers . . . . . 6. *S. myrtifolia*.

Style distinctly exerted beyond the anthers.

Cymes (in the dried state) usually about  $\frac{1}{4}$  (rarely  $\frac{1}{3}$ ) in. in diam., with subumbellate branches or flowers.

Style clavate-obconic or broadly dilated at the top; leaves lanceolate or oblong-lanceolate . . . . . 15. *S. punctulata*.

Style terete or nearly so in the apical part.

Leaves lanceolate, acuminate . . . . . 16. *S. mombasica*.

Leaves orbicular or elliptic, obtuse or acute, apiculate . . . . . 17. *S. Schweinfurthii*.

Cymes  $\frac{1}{2}$ - $1\frac{1}{2}$  in. in diam.

Branches of the cyme ascending or somewhat clustered; style cylindrical, not dilated at the top nor deeply bifid.

Leaves broadly ovate, thin, submembranous.

Leaves acute; pedicels 1-2 lin. long . . . . . 18. *S. zambesiaca*.

- Leaves long-pointed, pedicels 2-3½  
lin. long . . . . . 19. *S. Kirkii.*
- Leaves oblong or ovate-oblong, acute,  
subcoriaceous, . . . . . 9. *S. usambarica.*
- Branches of the cyme widely spreading.  
Style divided nearly to the middle of  
the apical part into 2 subulate  
acute lobes . . . . . 8. *S. leonense.*
- Style distinctly thickened or dilated  
at the top of the apical part.  
Branches of the cyme distinctly  
pubescent.  
Leaves 1½-2½ in. long; cymes  
1-1½ in. in diam. . . . . 5. *S. platystigma.*
- Leaves ½-1¼ in. long; cymes  
⅓-¾ in. in diam. . . . . 7. *S. micrandra.*
- Branches of the cyme glabrous . 10. *S. sansibariensis.*

1. ***S. gracilis***, *N. E. Br. in Kew Bulletin*, 1895, 248. A slender scrambling or climbing shrub, quite glabrous in all parts. Branchlets much divided, very slender. Leaves shortly petiolate, 4-8 lin. long, 2-4 lin. broad, oblong, obtuse, rounded or subcuneate at the base, membranous. Flowers few; peduncle 1 lin. long or less, 1- or rarely 2-flowered; pedicels 3 lin. long, very slender. Sepals less than ½ lin. long, ovate or oblong, obtuse or subacute. Corolla 2 lin. long, white or yellowish, campanulate, 5-lobed to rather more than half way down, thin and membranous, with a membranous flap forming a pocket at the base of each sinus between the oblong obtuse lobes and a slender ridge running from the base of the pocket to the bottom of the corolla-tube. Coronal-lobes nearly or quite as long as the staminal-column, falcate, erect. Style protruded much beyond the anthers; apical part broadly obovate, subtruncate bilobed.

**Nile Land.** British East Africa: Monbasa, *Wakefield!*

2. ***S. erythradenia***, *K. Schum. in Engl. Jahrb.* xvii. 141. A climbing shrub, clothed with a minute rust-coloured pubescence on the young shoots, petioles, midribs and inflorescence. Leaves shortly petiolate, ½-1 in. long, 2½-5 lin. broad, ovate or lanceolate, acute, rounded at the base, glabrous on both sides except the midrib, yellowish-green beneath. Cymes laxly 2-5-flowered; peduncles 1-1½ lin. long; pedicels 2-3 lin. long, bracteate at the base; bracts ½-1 lin. long, lanceolate, acute. Sepals 1 lin. long, oblong-lanceolate, obtuse. Corolla white; tube 1¼ lin. long, campanulate; lobes spreading, 1½ lin. long, oblong, obtuse. Coronal-lobes exceeding the stamens, falcately incurved over the anthers. Style protruded much beyond the anthers; apical part ovoid-clavate, shortly bifid. Follicles immature in the specimens seen, 2½ in. long, 2 lin. thick at the base, attenuate-terete, smooth, slightly reflexed.—*Engl. & Prantl, Pflanzenfam.* iv. ii: 262, fig. 76, F-J, and 263; *Hiern in Cat. Afr. Pl. Welw.* i. 681.

**Lower Guinea.** Angola: Huilla; in wooded parts of Morro de Lopollo, *Welwitsch*, 5941!

3. **S. retusa**, *N. E. Br. in Kew Bulletin*, 1895, 248. A scrambling or climbing shrub, glabrous in all parts. Leaves coriaceous, pale beneath, 1-2 in. long, 7-10 lin. broad, oblong or obovate-oblong, retuse or emarginate, with a short apiculus; base subcuneate; margins revolute; petioles 1-1½ lin. long. Cymes few, axillary, pedunculate, laxly 2-3 times dichotomously branched; branches ¼-½ in. long, slender, distantly 2-3-flowered; bracts ½ lin. long, ovate, acute; pedicels 1½-2 lin. long, slender. Sepals ½ lin. long, elliptic, obtuse. Corolla 2 lin. in diam., rotate-campanulate, lobed to ¾ of the way down; lobes oblong, obtuse. Coronal-lobes minute, deltoid-subulate, spreading, shorter than the stamens. Style protruded much beyond the anthers; apical part broadly obconic, truncately 2-lobed.

**Mozamb. Dist.** Zanzibar, *Kirk!*

4. **S. Alpini**, *Schult. in Roem. & Schult. Syst. Veg.* vi. 125 (*excl. syn. Secamone, Alpin. Egypt.* (ed. 1640) 133, and 134 *fig.*). A scrambling shrub. Stem woody, glabrous or with a rust-coloured deciduous pubescence on the very young parts. Leaves subcoriaceous; petiole 1-4 lin. long; blade ½-2½ in. long, ¼-1 in. broad, oblong, elliptic or lanceolate, obtuse, acute, or shortly acuminate, acute or cuneately rounded at the base, glabrous on both sides in the adult state, rusty-puberulous when very young. Cymes in terminal or axillary, pyramidal or corymbose panicles, ½-1½ in. long and broad, and excluding the corolla rusty-puberulous or subglabrous in all parts; peduncles ¼-¾ in. long; bracts ½ lin. long, ovate, acute; pedicels 1½-2½ lin. long. Sepals ½ lin. long, ovate, obtuse or subacute. Corolla 1¾-2 lin. in diam., glabrous outside, pubescent with white hairs inside; tube scarcely ½ lin. long; lobes spreading, ⅔-¾ lin. long, ½ lin. broad, oblong-ovate, subacute or minutely and obliquely emarginate at the apex. Coronal-lobes about ⅓ lin. long, subulate, incurved over the tips of the anthers. Style about equalling or slightly exceeding the anthers, apical part stout, truncate. Follicles widely divergent or slightly reflexed, 3-4 in. long, about 1½ lin. thick, subterete, tapering to a rather long point. Seeds ½ in. long, ¾ lin. broad, linear-lanceolate, channelled down the face, very convex on the back, blackish-brown, glabrous, crowned with a tuft of long white hairs. —*S. Thunbergii*, *E. Mey. Comm.* 224; *Decne. in DC. Prod.* viii. 501; *K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 263. *Periploca Secamone*, *Linn. Mant. Alt.* 216, *excl. both synonyms*; *Thunb. Prodr.* 47, and *Fl. Cap. ed. Schult.* 233.

**Mozamb. Dist.** British Central Africa: Nyasaland; Mount Malosa, 4000-6000 ft., *Whyte!* Mount Zomba, 4000-5000 ft., *Whyte!*

Also in South Africa.

As the above quoted specimens are without fruit, the follicles and seeds are described from South African examples. The species is easily recognised by the flowers being pubescent inside.

The Egyptian plant described and figured by Alpino has been misunderstood by all authors. Linnæus & Schultes wrongly refer it to this plant, which is not known to occur north of the Equator and was unknown to Alpino. Decaisne refers it to *Oxystelma Alpini*, *Decne.*, a somewhat remarkable error, as Alpino's figure bears no

resemblance to that plant. The figure in question is a fairly good one for that period and is undoubtedly a representation of *Leptadenia heterophylla*, Decne. The plant described by Schultes as *Secamone Alpini* is characterised in such an unmistakable manner that it is quite evident the description was made entirely from the South African, without reference to the Egyptian plant of Alpino.

5. **S. platystigma**, *K. Schum. in Engl. Jahrb.* xvii. 143. A glabrous climber. Leaves  $1\frac{1}{2}$ – $2\frac{1}{2}$  in. long,  $\frac{1}{3}$ – $1\frac{1}{4}$  in. broad, shortly petiole, varying from lanceolate to elliptic-oblong, acuminate, rounded or broadly cuneate at the base. Cymes usually numerous, axillary and terminal on lateral shoots, many-flowered,  $\frac{3}{4}$ – $1\frac{1}{2}$  in. in diam., more or less clothed with minute incurved rust-coloured hairs; branches widely spreading; peduncles  $\frac{1}{2}$ – $1\frac{1}{2}$  in. long; bracts  $\frac{1}{2}$  lin. long, ovate, obtuse, minutely ciliate; pedicels 1– $1\frac{1}{2}$  lin. long, glabrous. Sepals  $\frac{3}{4}$ –1 lin. long, broadly ovate, obtuse, minutely ciliate. Corolla rotate-campanulate; lobes  $1\frac{1}{2}$  lin. long, twice as long as the tube, oblong, obtuse, glabrous or with a somewhat velvety surface within, but not pubescent. Coronal-lobes reaching nearly to the tips of the anthers, falcate, incurved. Anthers more or less bearded or lacinate at the apex. Style protruded much beyond the anthers; apical part stout, ovoid-clavate, two-lobed or rarely entire.—*K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 262, fig. 76, K–L, inaccurate; *Hiern in Cat. Afr. Pl. Welw.* i. 681. *Toxocarpus africanus*, *Oliver in Trans. Linn. Soc.* xxix. 109, t. 118, fig. A.

**Nile Land.** British East Africa: Unyoro; in thickets, *Speke & Grant!*

**Lower Guinea.** Angola: Golungo Alto; in dense forests near Cambondo, *Welwitsch*, 5935! 5944! forests of Sobato Cabanga Cacalunga, *Welwitsch*, 5936! at Ndelle, *Welwitsch*, 5943! forests of Quilombo Quiacatubia, *Welwitsch*, 5945! Sobato de Mussengue, *Welwitsch*, 5946! Pungo Andongo, *Welwitsch*, 5947! *Mechow*, 92 (ex *Schumann*).

The plate of *Toxocarpus africanus*, *Oliv.*, is inaccurate as to the open flowers on the plant, and also as to the analyses, for the type specimen is only in very young bud, with the corolla not even exerted from the calyx. So far as the specimen goes, it agrees with *Secamone platystigma*, *K. Schum.*, but further material is required to make the identification certain.

6. **S. myrtifolia**, *Benth. in Hook. Niger Fl.* 453. Stem glabrous climbing. Leaves spreading, coriaceous, glabrous; petiole 2–3 lin. long; blade  $1\frac{1}{4}$ – $2\frac{1}{2}$  in. long,  $\frac{1}{2}$ – $1\frac{1}{4}$  in. broad, oblong-lanceolate to elliptic-oblong, acute or acuminate, obtusely or cuneately rounded at the base. Cymes numerous, many-flowered,  $\frac{1}{2}$  in. in diam., arranged in small axillary and terminal pedunculate panicles  $1\frac{1}{4}$ – $2\frac{1}{2}$  in. long,  $\frac{3}{4}$ – $1\frac{1}{4}$  in. in diam., pubescent with minute rust-coloured hairs on the peduncle and branches; bracts  $\frac{1}{2}$  lin. long, ovate, acute or obtuse; pedicels  $\frac{1}{2}$ –1 lin. long, usually with 1–3 bracteoles. Sepals elliptic-ovate, obtuse. Corolla 1– $1\frac{1}{2}$  lin. in diam., rotate-campanulate, 5-lobed to  $\frac{2}{3}$  of the way down, glabrous, greenish. Coronal-lobes minute, compressed, deltoid-subulate, incurved or subfalcate,  $\frac{1}{8}$  lin. long, arising near the base of the staminal-column, which is  $\frac{1}{3}$  lin. long and slightly enlarged above. Style not produced beyond the anthers.—*K. Schum. in Engl. Jahrb.* xxiii. 234, and in *Engl. & Prantl, Pflanzenfam.* iv. ii. 262. *S. Afzelii*, *K. Schum. in Engl.*

Jahrb. xxiii. 234. *Apocynum frutescens*, Afzel. Remed. Guin. 28. *Ichnocarpus Afzelii*, Roem. & Schult. Syst. Veg. iv. 399.

**Upper Guinea.** Senegambia: Mbidjem, *Thierry*, 58! Gold Coast: Aburi Hills, *Johnson*, 442! Cape Coast Castle, *Vogel*, 29! Lagos: Abeokuta, *Irring*, 12! Ikiri, *Millen*, 51! and without precise locality, *Millen*, 121! Cameroons: Bipinde, *Zenker*, 1052! Yaunde, *Zenker*, 1495!

**Lower Guinea.** Gaboon River, *Mann*, 937!

7. **S. micrandra**, *K. Schum. in Engl. Jahrb.* xvii. 142. Stem climbing, slender, glabrous. Leaves shortly petiolate,  $\frac{1}{2}$ – $1\frac{1}{4}$  in. long,  $1\frac{1}{2}$ –6 lin. broad, lanceolate to linear-lanceolate or rarely ovate, acute, obtuse or rounded at the base. Cymes numerous, small,  $\frac{1}{3}$ – $\frac{3}{4}$  in. in diam., pedunculate, axillary and terminal on short lateral glabrous shoots, several-flowered, rusty-pubescent on the 3–5 lin. long peduncle and its widely-spreading branches; bracts  $\frac{1}{4}$ – $\frac{1}{2}$  lin. long, ovate, acute; pedicels  $\frac{3}{4}$ –1 lin. long, glabrous. Sepals  $\frac{1}{2}$  lin. long, ovate, obtuse, glabrous. Corolla 2– $2\frac{1}{2}$  lin. in diam., rotate-campanulate, 5-lobed to  $\frac{2}{3}$  of the way down, "bright yellow, sweet-scented" (*Monteiro*). Coronal-lobes arising towards the base of the staminal-column and about half as long, compressed. Anthers not bearded at the apex. Style distinctly protruded beyond the anthers; apical part slightly clavate.—Hiern in Cat. Afr. Pl. Welw. i. 681.

**Lower Guinea.** Angola: Ambriz, *Monteiro*! Golungo Alto; in dense forests in Sobato Quilombo, *Welwitsch*, 5942!

8. **S. leonense**, *N. E. Br.* Stem climbing, glabrous, with the exception of some minute red hairs in the axils of the leaves. Leaves spreading, shortly petiolate, 1– $1\frac{1}{2}$  in. long, 5–9 lin. broad, ovate, acute or acuminate, cuneately rounded at the base. Cymes axillary, or terminal on short lateral glabrous shoots, or in small panicles 1– $1\frac{1}{2}$  in. long, usually about  $\frac{3}{4}$  in. in diam., trichotomous, with widely spreading branches, which are minutely reddish-pubescent; peduncles 3–6 lin. long; bracts  $\frac{1}{2}$ – $\frac{3}{4}$  lin. long, ovate, obtuse; pedicels  $1\frac{1}{2}$  lin. long. Sepals  $\frac{1}{2}$  lin. long, ovate, obtuse. Corolla  $2\frac{1}{2}$ –3 lin. in diam., glabrous, apparently yellow; tube not longer than the sepals; lobes  $1\frac{1}{2}$  lin. long, oblong; obtuse, spreading. Coronal-lobes minute,  $\frac{1}{3}$  as long as the staminal-column. Anthers slightly hairy at the apex. Style protruded  $\frac{1}{2}$  lin. beyond the anthers; apical part very slightly thickened upwards, divided nearly to the middle into 2 subulate acute lobes.—*Toxocarpus leonensis*, *Scott-Elliot* in Journ. Linn. Soc. xxx. 92.

**Upper Guinea.** Sierra Leone: Sugar Loaf, *Scott-Elliot*, 5773!

9. **S. usambarica**, *N. E. Br.* Stem twining, glabrous. Leaves spreading, thinly coriaceous; petiole  $1\frac{1}{2}$ –2 lin. long; blade  $\frac{3}{4}$ – $1\frac{3}{4}$  in. long, 5–10 lin. broad, oblong or oblong-ovate, acute, rounded at the base, glabrous on both sides; secondary lateral veins scarcely or not at all visible on either side. Cymes axillary, about  $\frac{1}{2}$  in. in diam., lax, few-flowered, with ascending branches; peduncles 2– $3\frac{1}{2}$  lin. long, glabrous;

bracts about  $\frac{3}{4}$  lin. long, ovate, subobtusely ciliolate; pedicels  $1\frac{1}{2}$  lin. long, glabrous. Sepals  $\frac{1}{2}$  lin. long, elliptic, obtuse, minutely ciliate. Corolla about 2 lin. in diam., glabrous; tube about  $\frac{1}{4}$  lin. long; lobes  $\frac{7}{8}$  lin. long, elliptic-oblong, obtuse. Coronal-lobes minute, compressed, falcate-oblong, obtuse, reaching to about  $\frac{2}{3}$  the height of the staminal-column. Style shortly exerted beyond the anthers; apical part cylindrical, obtuse, not at all dilated at the top.—*S. emetica*, var. *glabra*, K. Schum. in Engl. Pfl. Ost.-Afr. C. 324.

**Mozamb. Dist.** German East Africa: Usambara; Masheua, *Holst*, 3555!

Probably *Stuhlmann*, 7356, collected in German East Africa, should be referred to this species; it closely resembles *Holst*'s specimen in leaves and flowers, but the young shoots and peduncles are thinly covered with minute adpressed hairs, which are not present in *S. usambarica*.

10. **S. sansibariensis**, *K. Schum. in Engl. Pfl. Ost.-Afr. C. 325*. Branches slender, glabrous. Leaves very shortly petiolate,  $\frac{2}{3}$ –2 in. long,  $3\frac{1}{2}$ –7 lin. broad, lanceolate or oblong-lanceolate, acute at both ends, papyraceous. Cymes axillary and terminal on short lateral shoots, lax,  $\frac{1}{3}$ – $\frac{1}{2}$  in. in diam., with spreading branches, several-flowered, glabrous. Sepals  $\frac{1}{2}$  lin. long, and nearly as broad, oblong-ovate, obtuse, glabrous, minutely ciliate. Corolla about  $2\frac{1}{4}$  lin. in diam., rotate-campanulate; lobes  $\frac{3}{4}$ –1 lin. long, twice as long as the tube, oblong, obtuse, glabrous. Coronal-lobes minute, linear, subobtusely, reaching to about the middle of the anthers, which are glabrous and not bearded or lacinate at the apex. Style protuded for  $\frac{1}{3}$  lin. beyond the anthers, apical part abruptly dilated into a large, fleshy, subbilobed head, nearly  $\frac{1}{3}$  lin. in diam.

**Mozamb. Dist.** Zanzibar, *Stuhlmann*, Coll. i. 533! 490! 573! 572 and 772 (ex *Schumann*).

11. **S. floribunda**, *N. E. Br.* Stem more or less twining, pubescent on the young branches with short spreading rust-coloured hairs. Leaves shortly petiolate,  $1$ – $1\frac{1}{4}$  in. long, 4–6 lin. broad, lanceolate, shortly acuminate at the apex, acute at the base, glabrous on both sides or with a few hairs on the underside of the midrib; somewhat glaucous beneath. Cymes shortly pedunculate, corymbose,  $\frac{1}{2}$ –1 in. in diam., many-flowered, not dense, clothed in all parts (except the corolla), with a short rust-coloured villous pubescence; bracts  $\frac{1}{2}$  lin. long, ovate, acute; pedicels  $1\frac{1}{2}$ –2 lin. long. Sepals  $\frac{1}{2}$  lin. long, ovate, obtuse, ciliate. Corolla rotate or rotate-campanulate, 2 lin. in diam., 5-lobed to  $\frac{3}{4}$  of the way down, glabrous. Coronal-lobes minute, compressed, falcate-subulate, arising from the basal half of the staminal-column. Style not produced beyond the anthers.

**Mozamb. Dist.** German East Africa: Usmawo; Kageyi on the south of Lake Victoria, *Fischer*, 396!

This is similar to *S. Whytei*, *N. E. Br.*, but the leaves are smaller, different in texture and glaucous beneath whilst the style is not produced beyond the anthers as it is in *S. Whytei*.

12. **S. Whytei**, *N. E. Br. in Kew Bulletin*, 1898, 308. Stem twining, with a rust-coloured spreading pubescence in the young state, becoming glabrous; bark reddish-brown. Leaves shortly petiolate,  $1\frac{1}{4}$ – $2\frac{1}{2}$  in. long,  $4\frac{1}{2}$ –10 lin. broad, lanceolate, acute or acuminate at the apex, slightly rounded or acute at the base, at first pubescent on both sides with rust-coloured hairs, at length glabrous above or on both sides. Cymes about 1 in. in diam., corymbose, compound; divisions with peduncles 1–3 lin. long, 2–3-flowered, or again dichotomously or ternately branched; all parts except the corolla clothed with short spreading rust-coloured hairs; bracts  $\frac{1}{4}$ – $\frac{1}{3}$  lin. long and broad, ovate, acute; pedicels 2–4 lin. long, slender. Sepals  $\frac{2}{3}$  lin. long,  $\frac{1}{2}$  lin. broad, ovate-oblong or elliptic-oblong, obtuse. Corolla 2 lin. in diam., glabrous; tube  $\frac{1}{2}$  lin. long, campanulate; lobes spreading,  $\frac{3}{4}$  lin. long,  $\frac{1}{2}$  lin. broad, oblong, obtuse. Coronal-lobes minute, erect, falcate-subulate, as long as the anthers and incurved over their tips. Style exerted much beyond the anthers; apical part globose, puberulous.

**Mozamb. Dist.** British Central Africa: Nyasaland; Mount Malosa, 4000–6000 ft., *Whyte!*

13. **S. Stuhlmannii**, *K. Schum. in Engl. Pfl. Ost-Afr. C.* 325. Branches softly tomentose with minute brownish hairs on the young parts. Leaves small, rarely more than 7–8 lin. long,  $3\frac{1}{2}$ – $4\frac{1}{2}$  lin. broad, ovate, acute, somewhat rounded at the base, puberulous on both sides; at length nearly glabrous above. Cymes 2–3 lin. in diam., compact, about 5–6-flowered, very shortly pedunculate, all parts except the corolla subtomentose like the stem; bracts  $\frac{1}{4}$ – $\frac{1}{2}$  lin. long, lanceolate, acute; peduncles and pedicels  $\frac{1}{2}$ – $\frac{3}{4}$  lin. long. Sepals  $\frac{1}{2}$ – $\frac{2}{3}$  lin. long, oblong, obtuse. Corolla 5-lobed nearly to the base; lobes  $\frac{2}{3}$  lin. long, five times as long as the tube, elliptic-oblong, obtuse and slightly cochleate at the apex, dark brown in the dried state, with rather broad whitish semitransparent margins, glabrous. Coronal-lobes minute, erect, subulate, half as long as the staminal-column, or rather more. Anthers connate by their tips around the style, not fringed or bearded at their apex. Style slightly exceeding the anthers; apical part broad and cushion-like with a transverse groove.—*K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 262.*

**Mozamb. Dist.** German East Africa: Kuragwe; Kafuro, 4000 ft., *Stuhlmann*, 1894!

14. **S. frutescens**, *Decne. in DC. Prod.* viii. 501. A twining shrub with slender woody stems, glabrous in all parts. Leaves shortly petiolate,  $\frac{1}{2}$ – $1\frac{1}{2}$  in. long,  $\frac{1}{2}$ –2 lin. broad, linear or oblong-linear, acute or obtuse, minutely apiculate, acute or rounded at the base. Cymes compact, umbel-like, 3–4 lin. in diam., lateral or terminating short lateral shoots; peduncles  $\frac{1}{2}$ – $1\frac{1}{2}$  lin. long; bracts minute; pedicels 1–2 lin. long. Sepals scarcely  $\frac{1}{2}$  lin. long, ovate or ovate-oblong, obtuse, very minutely ciliate. Corolla 5-lobed to  $\frac{2}{3}$  of the way down; lobes  $\frac{2}{3}$  lin. long,  $\frac{1}{2}$  lin. broad, oblong, obtuse, glabrous. Coronal-lobes minute,

compressed-quadrate, adnate to and scarcely half as tall as the staminal-column. Style truncate, just exerted beyond the anthers, like a minute cushion. Follicles 3 in. long and about  $\frac{1}{4}$  in. thick, subterete, acuminate, smooth, glabrous.—Schlechter in Engl. Jahrb. xx., Beibl. 51, 12; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 262.

**Mozamb. Dist.** Tropical Transvaal; mountains near Tacomá (Jacoma?), 3600 ft., *Schlechter*, 4540.

Described from South African specimens, I have seen no Tropical example.

15. **S. punctulata**, *Decne. in DC. Prod.* viii. 502. Stem climbing, slender, glabrous. Leaves shortly petiolate, 1–2½ in. long, 4–10 lin. broad, lanceolate or oblong-lanceolate, acute or obtuse and apiculate, rounded or sub-cuneate at the base, glabrous on both sides. Cymes small, axillary and terminal on short lateral shoots, which often become leafless at the flowering nodes, shortly pedunculate,  $\frac{1}{4}$ – $\frac{1}{3}$  in. in diam., moderately compact, with very short subumbellate branches; peduncles 1–4 lin. long, nearly glabrous or with a few minute spreading reddish hairs; bracts  $\frac{1}{2}$  lin. long, ovate, obtuse, minutely ciliate; pedicels  $\frac{1}{2}$ –1 lin. long, glabrous. Sepals  $\frac{1}{2}$  lin. long, broadly ovate, obtuse. Corolla 1¼ lin. in diam., sub-campanulate, 5-lobed to  $\frac{2}{3}$  the way down, glabrous. Coronal-lobes erect, reaching to the base of the anthers. Style exerted much beyond the anthers; apical part clavate-obconic or broadly dilated at the top.—K. Schum. in Engl. Pfl. Ost-Afr. C. 324.

**Mozamb. Dist.** Pemba Island, *Bojer!* German East Africa: Zanzibar, *Kirk!*

Var.  $\beta$  *stenophylla*, N. E. Br. Leaves 1¼–2¼ in. long, 1¾–3 lin. broad, linear or linear-oblong, acute, rounded at the base.—*S. stenophylla*, K. Schum. in Engl. Pfl. Ost-Afr. C. 325.

**Mozamb. Dist.** German East Africa: Usambara; Masheua, *Holst*, 3510!

I find no distinction besides the form of the leaves between *S. stenophylla* and *S. punctulata*, and the Zanzibar specimen is intermediate between the two. The name *punctulata* refers to the dots often visible in the leaves; they are formed by crystals of lime.

16. **S. mombasica**, *N. E. Br.* Stem climbing, with slender straight flowering-branches, glabrous. Leaves spreading, thin; petiole 1½–2 lin. long; blade  $\frac{3}{4}$ –1½ in. long, 2½–6 lin. broad, lanceolate, more or less acuminate, glabrous on both sides. Cymes axillary, small, 3–4 lin. in diam., umbellately 3–6-flowered; peduncles 1–2 lin. long, glabrous; bracts minute, ovate, obtuse, ciliate; pedicels 1–1½ lin. long, glabrous. Sepals about  $\frac{1}{3}$  lin. long, elliptic-oblong, obtuse, ciliolate. Corolla 2 lin. in diam., glabrous, white; tube  $\frac{1}{4}$  lin. long; lobes spreading, 1 lin. long, oblong, obtuse. Coronal-lobes compressed, broadly falcate, obtuse, reaching to the middle or  $\frac{3}{4}$  of the height of the staminal-column. Style shortly exerted beyond the anthers; apical part cylindrical, obtuse.

**Nile Land.** British East Africa: near Mombasa, *Hildebrandt*, 1979!

17. **S. Schweinfurthii**, *K. Schum. in Engl. Jahrb.* xvii. 143. Stem twining, glabrous. Leaves thin; petiole  $\frac{3}{4}$ –1½ lin. long; blade

$\frac{1}{3}$ – $1\frac{1}{4}$  in. long,  $3\frac{1}{2}$ –10 lin. broad, varying from elliptic to orbicular, usually about equally acute or obtuse at both ends, apiculate or very shortly sub-cuspidate, glabrous on both sides; secondary lateral veins evident only on the underside, but not very conspicuous, reticulate. Cymes axillary and terminal on short lateral glabrous shoots, pedunculate, compactly 3–6-flowered,  $\frac{1}{4}$ – $\frac{1}{3}$  in. in diam.; peduncles  $1\frac{1}{2}$ –6 lin. long, more or less puberulous; bracts  $\frac{1}{3}$ – $\frac{1}{2}$  lin. long, ovate, obtuse, ciliate; pedicels  $1$ – $1\frac{1}{2}$  lin. long, glabrous. Sepals  $\frac{1}{2}$  lin. long, oblong-elliptic, obtuse, ciliate. Corolla 2 lin. in diam., glabrous; tube  $\frac{1}{3}$  lin. long, campanulate; lobes spreading  $1$ – $1\frac{1}{4}$  lin. long, oblong, obtuse. Coronal-lobes minute, subfalcate, erect, not reaching to the top of the staminal-column. Style shortly protruded beyond the anthers; apical part terete or very slightly clavate, minutely bilobulate. Follicles widely divergent, glabrous, only seen in a young state.—K. Schum. in Engl. Pfl. Ost-Afr. C. 325. *Gymnema parvifolium*, Oliver in Trans. Linn. Soc. ser. 2, Bot. ii. 342.

**Nile Land.** British East Africa: Bongo; Kulongo, Schweinfurth, 2232!

**Mozamb. Dist.** German East Africa: Kilimanjaro, 5000 ft., Johnston!

18. **S. zambesiaca**, Schlechter in Journ. Bot. 1895, 303. Stem twining, with two thinly and minutely adpressed-pubescent lines along the flowering shoots, becoming glabrous. Leaves thin; petiole 2–3 lin. long; blade  $1\frac{1}{4}$ – $1\frac{3}{4}$  in. long,  $\frac{2}{3}$ – $1\frac{1}{3}$  in. broad, broadly ovate, acute, broadly rounded at the base, glabrous on both sides; secondary lateral veins evident beneath, reticulate. Cymes axillary and terminal, about  $\frac{1}{2}$  in. in diam., 3–8-flowered, with ascending branches; peduncles usually 3–4 lin. long, those of the terminal cymes less, puberulous down one side; bracts  $\frac{1}{3}$ – $\frac{1}{2}$  lin. long, ovate, subobtuse, minutely ciliate; pedicels 1–2 lin. long, thinly puberulous on one side. Sepals  $\frac{1}{2}$  lin. long, elliptic-ovate, obtuse, minutely ciliate. Corolla about 2 lin. in diam., glabrous; tube  $\frac{1}{3}$  lin. long; lobes 1 lin. long, oblong, obtuse. Coronal-lobes falcate, acute, reaching nearly to the top of the staminal-column. Style shortly exerted beyond the anthers; apical part cylindric, not thickened at the top, subacute. Follicles  $3\frac{1}{4}$ – $3\frac{1}{2}$  in. long, 2– $2\frac{1}{2}$  lin. thick, terete, tapering to a long acute point, glabrous, very spreading or slightly reflexed.

**Mozamb. Dist.** British Central Africa: Nyasaland; by the River Shire at Chiromo, Scott-Elliot, 2803! and near Chikwawa, Kirk!

The pubescence on the flowering shoots is very obscure and easily overlooked unless examined with a powerful lens; it soon falls off and in fruit the shoots are glabrous.

19. **S. Kirkii**, N. E. Br. in Kew Bulletin, 1895, 248. Stem twining, glabrous. Leaves thin, scarcely coriaceous; petiole  $1\frac{1}{2}$ –2 lin. long; blade  $1\frac{1}{2}$ – $2\frac{1}{3}$  in. long,  $\frac{2}{3}$ – $1\frac{1}{3}$  in. broad, broadly ovate, long-acuminate, rounded or very broadly cuneate at the base, glabrous on both sides; secondary lateral veins very conspicuous on both sides, reticulate. Cymes axillary or terminal, lax, about  $\frac{1}{2}$  in. in diam., few-

flowered, with ascending branches; peduncles  $1\frac{1}{2}$ –6 lin. long, glabrous; bracts  $\frac{1}{2}$  lin. long, ovate, subobtusate, minutely ciliate; pedicels 2– $3\frac{1}{2}$  lin. long, glabrous. Sepals elliptic-ovate, obtuse or subacute, minutely ciliate. Corolla 2– $2\frac{1}{2}$  lin. in diam., glabrous; tube  $\frac{1}{3}$  lin. long; lobes  $1\frac{1}{4}$  lin. long, oblong, obtuse. Coronal-lobes compressed, falcate, reaching nearly to the top of the staminal-column. Style shortly exerted beyond the anthers; apical part cylindric, not at all dilated at the top.

**Mozamb. Dist.** German East Africa: Zanzibar, *Kirk!*

12. **TOXOCARPUS**, Wight and Arn.; Benth. et Hook. f. Gen. Pl. ii. 746.

Calyx 5-partite. Corolla deeply 5-fid; tube very short, campanulate or shortly turbinate-campanulate; lobes spreading, longer than the tube, overlapping to the right and straight or twisted to the left or to the right in bud, and having two thickened ridges or bosses at their base. Corona of 5 dorsally flattened lobes arising from the back of the staminal filaments, alternating with the corolla-lobes. Stamens arising from the bottom of the corolla; filaments adnate to the style, but not connate with each other or only at the very base; anthers small, erect or conniving around the style, with a minutely fimbriate submembranous border. Pollen-masses very minute, ascending, apparently 2 to each of the pale, rather soft, quadrate pollen-carriers, but each apparently single mass usually consists of 2 subconnate often separable (or occasionally perfectly consolidated) masses. Style produced beyond the anthers into a beak.—Twinders with opposite leaves and axillary cymes or racemes of small or moderate sized flowers.—*Rhynchosigma*, Benth. in Benth. et Hook. f. Gen. Pl. ii. 771.

Species several, mostly natives of Tropical Asia and the Malay Archipelago.

Dr. Schumann has united *Toxocarpus* with *Secamone*, whilst he maintains *Rhynchosigma* as distinct. But in this I cannot agree with him, for *Rhynchosigma* and *Toxocarpus* are certainly identical. On the other hand the dorsally flattened coronal-lobes, combined pollen-masses, usually larger flowers, and rather different habit of *Toxocarpus*, appear to me sufficient grounds for retaining it as distinct from *Secamone*. In its pollen-masses *Toxocarpus* forms a connecting link between *Secamone* with its 4 very distinct pollen-masses and those genera having but 2 pollen-masses. For in *Toxocarpus* the 2 pollen-masses contained in each lobe of the anther are (at least in the dried state) more or less united into one body, the double nature of which (when evident), is only indicated by a faint suture, although the two parts can sometimes be separated by the dissecting needle. This, being overlooked by Bentham, caused him to found a genus on the African species, which he placed in the tribe of *Marsdeniæ*, with which these plants have no affinity, their whole type of structure being in entire agreement with the Indian species of *Toxocarpus*. Dr. Schumann makes no mention of the dorsally flattened coronal-lobes or of the structure of the pollen-masses.

Flowers racemose, or 3 on the top of the peduncle . . . 1. *T. racemosus*.

Flowers in short cymes.

Corolla 5–6 lin. in diam.; lobes twisted in the bud . . . . . 2. *T. brevipes*.

Corolla  $3\frac{1}{2}$ –4 lin. in diam.; lobes not twisted in the bud . . . . . 3. *T. parviflorus*.

1. **T. racemosus**, *N. E. Br.* Glabrous in all parts. Stem twining. Leaves spreading; petiole 5-9 lin. long; blade  $2\frac{1}{2}$ -4 in. long,  $1-1\frac{1}{2}$  in. broad, coriaceous, oblong, rather abruptly contracted into a somewhat obtuse cusp about  $\frac{1}{2}$  in. long, rounded or cuneately rounded at the base. revolute along the margins; midrib acutely prominent in a channel above, prominent and rounded beneath; veins almost horizontally spreading, straight, parallel, indistinct. Racemes axillary,  $\frac{1}{2}$ -6 in. long, leafless, with 1-3 distant pairs and a terminal flower or occasionally with more flowers, and bearing leaves at the lowest nodes; bracts  $\frac{3}{4}$ -1 lin. long, ovate, acute or obtuse, disarticulating just above the base; bracteoles similar to the bracts, persistent; pedicels 4-7 lin. long, with 4-5 pairs of bracteoles. Sepals 1 lin. long, oblong or ovate-oblong, obtuse, minutely ciliate. Corolla  $\frac{1}{2}$  in. in diam.; tube  $1\frac{1}{2}$ -2 lin. long, turbinate-campanulate, with 2 small thickened bosses alternating with the lobes at the top; lobes 2 lin. long, recurved-spreading, oblong, obtuse, with revolute margins, minutely ciliate at the apex. Coronal-lobes  $1\frac{1}{4}$  lin. long, erect, much exceeding the anthers, linear, more or less channelled down the face, obtuse, truncate, incurved and slightly hooded or slightly dilated at the apex. Style exerted for  $1\frac{1}{2}$  lin. beyond the anthers; apical part slender, attenuate.—*Rhynchosigma racemosum*, Benth. in Hook. Ic. Pl. xii. 77, t. 1189; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 283, fig. 85, R—S, and 287.

**Upper Guinea.** Cameroons: Cameroon Mountain, 4500 ft., *Mann*, 1273!

2. **T. brevipes**, *N. E. Br.* Stem twining, covered with short retrorsely spreading rust-coloured hairs on the young parts. Leaves spreading; petiole 2-3 lin. long, at first rusty-pubescent, becoming glabrous; blade  $1\frac{1}{2}$ -3 in. long,  $\frac{1}{2}$ - $1\frac{1}{3}$  in. broad, lanceolate-oblong or elliptic-oblong, apiculate, broadly or acutely cuneate at the base, glabrous on both sides, drying blackish above and brown or tawny-brown beneath. Cymes subaxillary, subsessile or shortly pedunculate, dichotomous, with branches 3- $7\frac{1}{2}$  lin. long, all parts except the corolla covered with an adpressed rusty pubescence; peduncles 0-3 lin. long; pedicels 2-6 lin. long; bracts 1 lin. long, ovate or lanceolate, acute. Sepals 1- $1\frac{1}{4}$  lin. long, oblong-ovate or lanceolate, subacute. Corolla 5-6 lin. in diam., white, glabrous, with the exception of a few retrorse hairs within the very short tube; lobes very spreading, twisted in bud,  $2\frac{1}{2}$ - $3\frac{1}{2}$  lin. long, 5 times as long as the tube. Coronal-lobes  $\frac{1}{2}$ - $\frac{3}{4}$  lin. long, erect, scarcely or not at all exceeding the anthers, linear, obtuse or subacute, flat or slightly channelled down the face. Style exerted for  $\frac{3}{4}$ -1 lin. beyond the anthers; apical part conoid, cylindric, fusiform or subclavate, obtuse.—*Rhynchosigma brevipes*, Benth. in Hook. Ic. Pl. xii. 78, sub. t. 1189; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 287. *R. Lujari*, De Wild. & Durand in Comptes-rendus Soc. Bot. Belg. xxxviii. 208. *Secamone rubiginosa*, K. Schum. in Engl. Jahrb. xxiii. 233.

**Upper Guinea.** Lagos, *Millen*, 64! Niger Delta: Nun River, *Mann*, 484! *Barter*, 20120! Cameroons: Lolodorf, *Staudt*, 365! Batanga, *Bates*, 329! Bipinde, *Zenker*, 1955! and without precise locality, *Preuss*, 446!

**Lower Guinea.** Lower Congo : Sabuka, near Stanley Pool, *Luja* (ex *De Wildeman & Durand*).

I have not seen a specimen of *Rhynchosigma Lujæi*, De Wild. & Durand, but cannot find any character in the description to distinguish it from *T. brevipes*.

3. **T. parviflorus**, *N. E. Br.* Very similar to *T. brevipes* in all characters except that the pubescence on the stem is more spreading, the leaves more oblong and less acute, drying light brown or dull grey above; the corolla is only  $3\frac{1}{2}$ –4 lin. in diam., with a short campanulate tube, and lobes  $1\frac{1}{2}$ – $1\frac{3}{4}$  lin. long and about  $2\frac{1}{2}$  times as long as the tube, not twisted in the bud. The coronal-lobes are nearly as in *T. brevipes*, and the apical part of the style is conoid-fusiform, acute.—*Rhynchosigma parviflorum*, Benth. in Hook. Ic. Pl. xii. 78, and K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 287.

**Lower Guinea.** Gaboon River, *Mann*, 983 !

Possibly only a small-flowered variety of *T. brevipes*, differing in the above particulars.

### 13. MICROSTEPHANUS, *N. E. Br.* in *Kew Bulletin*, 1895, 249.

Calyx deeply 5-lobed. Corolla-tube short, campanulate; lobes lanceolate, overlapping and twisted to the left in the bud. Corona of 5 minute lobes or teeth alternating with the anthers at their base. Staminal-column arising a little above the bottom of the corolla-tube; filamental part very short; anthers oblong, erect, very convex on the back, their horny margins or wings, which form the fissures leading to the stigmatic cavities, being strongly incurved towards the centre of the flower, forming 5 grooves between the anthers; appendages suberect, membranous. Pollen-masses pendulous, solitary in each anther-cell, attached in pairs to the pollen-carriers by very short caudices. Style produced into a beak beyond the anther-appendages. Follicles lanceolate, acuminate, smooth. Seeds crowned with a tuft of hairs. Perennials with procumbent or twining stems, opposite leaves, and few-flowered umbel-like cymes of small flowers, sublateral between the bases of the petioles.

A monotypic genus, native of Tropical Africa and Madagascar. I have separated this genus *Astephanus* on account of the different structure of the anthers and the presence of coronal-lobes, which although minute are distinctly evident when searched for. In *Astephanus* I do not find the slightest trace of a corona, and the anther-wings, which form the fissures opening to the stigmatic cavities, are rather large and project outwards, but in *Microstephanus* the anther-wings are less developed and are turned inwards towards the centre of the flower and form five rather deep grooves between the anthers, which are much more convex on the back than are the anthers of *Astephanus*. The generic name is formed from *μικρος*, small, and *στεφανος*, a crown, in allusion to the small corona.

1. **M. cernuus**, *N. E. Br.* in *Kew Bulletin*, 1895, 249. A small twining or prostrate shrub, pubescent with short curved hairs on the young stems all over or only along one line, and on the under or both sides of the leaves, or entirely glabrous. Leaves spreading; petiole

2-3 lin. long; blade  $\frac{1}{3}$ - $1\frac{1}{4}$  in. long,  $1\frac{1}{2}$ -7 lin. broad, lanceolate, oblong, elliptic-oblong or ovate-oblong, obtuse, apiculate or subacute, rather thick and perhaps fleshy when alive, margins flat or revolute. Cymes lateral or subaxillary, 1-4-flowered; peduncles 1-2 lin. long; pedicels  $1\frac{1}{2}$ - $2\frac{1}{2}$  lin. long, slender, straight or recurved, glabrous; bracts  $\frac{1}{2}$  lin. long, ovate, acute. Calyx-lobes  $\frac{1}{2}$  lin. long, ovate, acute, glabrous. Corolla  $2\frac{1}{2}$  lin. in diam., glabrous outside; tube campanulate 1 lin. long, sparsely pubescent within; lobes  $1\frac{1}{2}$ -2 lin. long, suberect, linear, obliquely obtuse, slightly twisted, glabrous. Coronal-lobes minute, thin and flat, forming little pockets alternating with the anthers at their base; on the backs of the anthers are also 5 pairs of indistinct diverging ridges, which may perhaps form part of the corona, easily overlooked. Staminal column  $\frac{2}{3}$ - $\frac{3}{4}$  lin. long; anther-appendages ovate, acute, connivent-erect around the base of the apical part of the style, which is produced beyond them into a subulate entire or bifid beak 1- $1\frac{1}{4}$  lin. long.—*Astephanus cernuus*, Decne. and *A. oratus*, Decne. in Ann. Sc. Nat. sér. 2, ix. 342; and in DC. Prod. viii. 507; K. Schum. in Engl. Pfl. Ost-Afr. C. 321. *A. arenarius*, Decne. in DC. Prod. viii. 507. *A. recurvatus*, Klotzsch in Peters, Reise Mossamb. Bot. 274; K. Schum. in Engl. Pfl. Ost-Afr. C. 321, and in Engl. & Prantl. Pflanzenfam. iv. ii. 224. *Periploca ovata*, Poir. ex Decne. in DC. Prod. viii. 508.

**Nile Land.** British East Africa: Mombasa, *Hildebrandt*, 1166! 1978!

**Mozamb. Dist.** Pemba Island, *Bojer* (ex *Decaisne*). Zanzibar, *Kirk!* *Bojer* (ex *Decaisne*). German East Africa: Usambara, Muoa, *Holst*, 3037! Portuguese East Africa: Mozambique Island, on coral rocks, *Scott!* Cabaccira Grande, *Kirk!*

Also in Madagascar and Aldabra Island.

#### 14. **PODOSTELMA**, K. Schum. in Engl. Jahrb. xvii. 133.

Calyx 5-lobed to half-way down. Corolla-tube short, campanulate; lobes elongate, narrow, ascending or spreading, overlapping and twisted to the left in the bud. Corona of 5 minute tubercles or lobes radiating from about the middle or towards the base of the filament part of the staminal column, opposite the anthers. Staminal-column arising from near the bottom of the corolla-tube, contracted below the anthers and furrowed; anthers erect, their wings much projecting; appendages erect, membranous. Pollen-masses pendulous, solitary in each anther-cell, much shorter than the linear-oblong pollen-carriers, to which they are attached by very short caudices. Style produced into a long beak, exerted beyond the anthers. Follicles lanceolate, acuminate, smooth and glabrous. Seeds crowned by a tuft of hair.—A much branched shrub, with some of the branches twining. Leaves opposite. Flowers small, in sublateral or subaxillary few-flowered fascicles or sessile cymes.

Species 1, endemic.

Allied to *Astephanus*, but distinguished from that genus by its corolla and by the

presence of a corona, which, although very small, is quite evident, and arises on the staminal-column at about or a little below the middle.

1. **P. Schimperi**, *K. Schum. in Engl. Jahrb.* xvii. 134, t. 6, fig. K—M. A small woody shrub, much branched, the branches sometimes twining; young shoots, petioles, pedicels and calyx all densely and minutely tomentose. Leaves rather thick and somewhat fleshy; petiole 2-4 lin. long; blade  $\frac{1}{3}$ -1 in. long, 2-10 lin. broad, ovate or elliptic, obtuse, apiculate or acute. Cymes or fascicles sessile, 2-6-flowered; pedicels 1 lin. long or less. Calyx campanulate, 1 lin. long, 5-lobed to half-way down or more; lobes ovate, subobtuse. Corolla apparently white or yellowish; tube campanulate,  $\frac{3}{4}$  lin. long; lobes  $3\frac{1}{2}$ -4 lin. long, spreading, linear-oblong, obtuse. Coronal-lobes horizontally spreading from about the middle of the filamental part of the staminal-column, which is  $\frac{1}{2}$  lin. long, furrowed, and more slender than the antheriferous portion. Anther appendages broadly reniform, very obtuse, connivent around the base of the apical part of the style, which is produced beyond them into a subulate, entire or bifid beak  $\frac{3}{4}$ -1 lin. long. Follicles  $1\frac{1}{2}$ -2 in. long,  $\frac{1}{3}$ - $\frac{1}{2}$  in. thick, lanceolate, acuminate, smooth, more or less glaucous. Seeds  $2\frac{1}{2}$ -3 lin. long, ovate, plano-convex, scabrid-tuberculate, crowned with a tuft of hairs.—*K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 234, fig. 68, J, inaccurate, and see 225. *Astephanus Schimperi*, *Vatke in Oest. Bot. Zeit.* 1876, 145.

**Nile Land.** Nubia: between Suakin and Berber; at Singat, *Schweinfurth*, 213! and Wadi Sarrauib, *Schweinfurth*, 319! Eritrea: Keren, *Steudner*, 768! Habab, *Hillebrandt*, 484 (ex *Fatke*). Abyssinia: near Gursurfa, 3000-4000 ft., *Schimper*, 2331! and 8 (ex *K. Schumann*).

## 15. GLOSSONEMA, Decne.; Benth. et Hook. f. Gen. Pl. ii. 748.

Calyx 5-partite. Corolla-tube short; lobes 5, suberect or spreading, overlapping to the left, but scarcely twisted in the bud, often tuberculate or thickened below the apex. Corona of 5 lobes arising from the tube of the corolla a little above the origin of the staminal-column or at the mouth, alternating with the corolla-lobes, usually free and variable in form, rarely connate into a 5-lobed tube. Staminal-column arising at or below the middle of the corolla-tube; anthers terminated by erect or inflexed membranous appendages. Pollen-masses pendulous, solitary in each anther-cell, attached in pairs to the pollen-carriers by short or almost obsolete caudicles. Style sometimes exerted beyond the anthers. Follicles variable, echinate or smooth. Seeds flat, with entire or toothed margins, crowned with a tuft of hairs.—Dwarf perennial or rarely annual herbs, with opposite leaves. Cymes lateral or sublateral between the bases of the petioles, few- or many-flowered, or the flowers solitary, small.

Species few mostly natives of Tropical Africa but extending into North Africa and from Arabia to Sincde.

- Annual; leaves linear; flowers solitary . . . . . 1. *G. lineare*.  
 Perennial; flowers not solitary.  
 Style slightly exceeding the anthers; apical part  
 shortly conical.  
 Leaf-blade  $\frac{3}{4}$ -5 in. long, linear or linear-lanceolate . . . . . 2. *G. nubicum*.  
 Leaf-blade  $\frac{1}{4}$ -1 $\frac{1}{2}$  in. long, ovate or ovate-lanceolate,  
 rarely linear-lanceolate . . . . . 3. *G. boveanum*.  
 Style not exceeding the anthers, truncate at the top.  
 Leaves petiolate; coronal-lobes subulate, curved at  
 the apex like a fish-hook . . . . . 4. *G. Revoili*.  
 Leaves subsessile; coronal-lobes broad, obtuse or  
 emarginate . . . . . 5. *G. Thruppii*.

1. **G. lineare**, *Decne. in DC. Prod.* viii. 555. A slender annual. Stem erect, unbranched, 6-15 in. high, slightly rough with minute points, drying pale. Leaves spreading; petiole 1-2 lin. long; blade  $\frac{3}{4}$ -2 in. long, 1-2 lin. broad, linear or linear-lanceolate, acute at both ends, glabrous, but usually rough with minute points on the revolute margins and midrib beneath. Flowers solitary in one axil of a pair of leaves, decurved; pedicels  $\frac{1}{2}$ - $\frac{3}{4}$  lin. long. Sepals  $\frac{1}{2}$ - $\frac{3}{4}$  lin. long, lanceolate, acute, glabrous. Corolla 1 $\frac{1}{2}$  lin. long, glabrous; lobes twice as long as the tube or rather more, linear-lanceolate, acuminate. Coronal-lobes subulate, one quarter as long as the corolla-lobes and arising at the top of the corolla-tube. Anthers terminated by a short soft subulate mucro. Style exerted about  $\frac{1}{16}$  in. beyond the anther-appendages; apical part stout, conical, acute. Follicles 3-4 in. long, linear-terete, acute, erect, smooth and glabrous, drying whitish. Seeds linear-oblong, entire, both sides finely scrobiculate.—*Conomitra linearis*, Fenzl in Endlicher Nov. Stirp. Dec. 66; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 226.

**Nile Land.** Kordofan: Arashkol Mountain, *Kotschy*, 78! and without precise locality, *Kotschy*, 35!

2. **G. nubicum**, *Decne. in DC. Prod.* viii. 555. A dwarf herb 6-12 in. high, branching from the base, with a creeping rootstock (*Barter*); stems, petioles and the lower or both sides of the leaves pubescent with short white curved hairs. Leaves numerous, spreading or ascending; petiole 2-4 lin. long; blade  $\frac{3}{4}$ -5 in. (usually 1-2 in.) long, 1 $\frac{1}{2}$ -5 lin. broad, linear or linear-lanceolate, acute or subobtuse and apiculate, often more or less sinuate or undulate along the margins. Flowers 2-6 together in sessile subaxillary cymes; pedicels  $\frac{1}{2}$ -1 lin. long. Sepals 1-1 $\frac{1}{2}$  lin. long, nearly as long as the corolla, pubescent. Corolla about 2 lin. in diam., white (*Barter*); tube campanulate; lobes as long as the tube, spreading, ovate-oblong, obtuse, with a few hairs on the back, otherwise glabrous. Coronal-lobes about as long as the corolla-lobes, ovate in the basal part, with incurved margins, abruptly contracted at the middle into a subulate point, or sometimes lanceolate, acuminate, both forms occurring in the same flower. Anther-appendages membranous, broadly ovate or subquadrate.

obtuse or slightly emarginate. Style exerted beyond the anther-appendages; apical part cylindrical or conoid, obtuse or emarginate. Follicles  $1\frac{1}{2}$  in. long, 5 lin. thick, lanceolate, acute or acuminate, echinate, pubescent. Seeds ovate, slightly denticulate on the margin, both sides covered with radiating lines of minute points.—K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 226. *G. boveanum*, Kotschy ex Decne. in DC. Prod. viii. 555, not of Decne.

**Nile Land.** Kordofan: in savannahs at Kohn Mountain, towards Tekele, *Kotschy*, 405!

**Upper Guinea.** Lagos, *Barter!* Niger Territory: Borgu; Wawe, *Barter* 723! Nupe? Sare, *Barter*, 3434! Bornu, *Vogel*, 88!

3. **G. boveanum.** *Decne in Ann. Sc. Nat. sér. 2, ix. 335, t. 12, fig. D.* A dwarf herb 3–10 in. high, branching from the base. Stems ascending, more or less pubescent with white hairs. Leaves spreading; petiole 1–6 lin. long; blade  $\frac{1}{3}$ – $1\frac{1}{2}$  in. long,  $1\frac{1}{2}$ –7 lin. broad, ovate, or ovate-lanceolate, acute or obtuse, cuneately narrowed or broadly rounded into the petiole at the base, more or less undulate or crisped on the margins, thinly or densely white-pubescent on both sides or glabrous above. Flowers 1–3 together, sublateral; pedicels 1– $1\frac{1}{2}$  lin. long, white-pubescent. Sepals  $1\frac{1}{4}$ – $1\frac{1}{2}$  lin. long, lanceolate, acute, pubescent. Corolla-tube 1 lin. long, campanulate; lobes spreading,  $1\frac{1}{2}$ –2 lin. long,  $\frac{3}{4}$ –1 lin. broad, oblong or oblong-ovate, obtuse or subacute, slightly thickened above or subtuberculate near the apex, with the margins recurved, glabrous or with a few hairs on the back. Coronal-lobes arising a short distance below the sinuses of the corolla,  $1\frac{3}{4}$ –2 lin. long,  $\frac{3}{4}$  lin. broad in the broadly oblong basal half, 3-lobed, with the middle lobe long and filiform, or subtruncately or somewhat abruptly contracted into a filiform or subulate point, or occasionally filiform-acuminate. Staminal-column 1 lin. long; anther-appendages reniform, very obtuse. Style protruded for about  $\frac{1}{4}$  lin. beyond the anther-appendages; apical part stout, conical, obtuse or shortly bifid. Follicles  $1\frac{1}{2}$ –2 in. long, 7–11 lin. thick, ovoid, acute, strongly echinate, minutely pubescent or nearly glabrous. Seeds about 2 lin. long,  $1\frac{1}{2}$  lin. broad, ovate, flattened, very minutely scaberulous, dark brown.—*G. affine*, N. E. Br. in Kew Bulletin, 1895, 249. *Petalostemma Chenopodii*, R. Br. in Salt Voy. Abyss. Append. lxiv., name only.

**Nile Land.** Perim Island, in the Red Sea, *Farmer!* Nubia: sea-coast to between 3000 and 4000 ft., *Bent!* Hor Tamanib, *Lord!* Eritrea: around Saati, *Schweinfurth & Riva*, 584! Abyssinia: at the foot of mountains by the River Tacazze, near Gursarfa, 3000–3300 ft., *Schimper*, 2219! and without precise locality, *Salt!*

Also in Egypt and Arabia.

The specimens collected by Bent demonstrate that the Abyssinian plant I described as *G. affine* cannot be maintained as distinct from *G. boveanum*.

4. **G. Revoili**, *Franch. Sert. Somal. 40, t. 3.* A dwarf herb under a foot high, densely tomentose in all parts except the corolla. Leaves numerous, spreading; petiole 2–7 lin. long; blade  $\frac{1}{2}$ –2 in. long,

4-11 lin. broad, ovate, obovate, oblong, elliptic-oblong or oblong-lanceolate, obtuse, retuse or subacute at the apex, broadly rounded, subtruncate or cuneate at the base. Cymes lateral at the nodes, sessile, umbellately about 4-7-flowered (5-9-flowered, *Franchet*); bracts  $1\frac{1}{2}$ - $2\frac{1}{2}$  lin. long, subulate; pedicels 1-6 lin. long, unequal. Sepals 1-2 lin. long, linear or lanceolate, acute. Corolla 3-4 lin. in diam., yellowish; tube  $1\frac{1}{2}$  lin. long, funnel-shaped; lobes very spreading,  $1\frac{1}{2}$  lin. long, 1 lin. broad, ovate to elliptic-ovate, obtuse, thickened just below the apex, with a few short hairs on the back, glabrous within. Coronal-lobes arising from the corolla-tube a little above the origin of the staminal-column, subulate, acute; apex incurved or arched over the top of the staminal-column, something like a fish-hook. Staminal-column  $\frac{2}{3}$ -1 lin. long, arising a little above the middle of the corolla-tube; filamental part slender; antheriferous part and the top of the style abruptly dilated into a broad flat pentagonal disk; anthers erect or divergent-erect, their appendages broad, transverse, obtusely rounded, inflexed over the rim of the flat pentagonal apex of the style.—K. Schum. in *Ann. Istit. Bot. Roma*, vii. 36. *G. Elliotii*, Schlechter in *Journ. Bot.* 1895, 304.

**Nile Land.** Somaliland: without locality, *Mrs. Lort-Phillips!* Tigieb, Récoil; Dolo, above Bana, Riva, 1129 (ex *Schumann*). British East Africa: Kikumbulu, *Scott-Elliot*, 6184!

Also in Socotra.

*G. Elliotii* cannot be separated specifically from *G. Revoili*; the flowers are identical in the two, and the leaves of the Somaliland plant are so variable that the difference between those of the specimens figured by *Franchet* and those of *G. Elliotii* are completely connected by *Mrs. Lort-Phillips's* specimen. The anthers are not incumbent as stated in the original description of *G. Elliotii*.

5. **G. Thruppil**, *Oliver in James, Unknown Horn of Africa*, 320. A dwarf herb about 6 in. high, branching at the base. Stem somewhat bifariously hairy with short spreading hairs. Leaves sessile,  $1-2\frac{1}{4}$  in. long,  $\frac{1}{4}-\frac{3}{4}$  in. broad, oblong or oblong-lanceolate, subobtuse, apiculate, more or less conduplicate and arching-recurved, glabrous above except along the midrib and principal veins, ciliate and sparsely beset with short white hairs beneath, lowest leaves almost glabrous. Cymes axillary, 3-5-flowered; peduncles  $1-1\frac{1}{2}$  lin. long; pedicels 2 lin. long, and, as well as the calyx, clothed with short white spreading hairs. Sepals  $1\frac{1}{4}$  lin. long, lanceolate, acuminate. Corolla subrotate,  $4-4\frac{1}{2}$  lin. in diam., glabrous within, thinly pubescent outside; lobes very spreading,  $1\frac{1}{2}$  lin. long, triangular-ovate, thickened at the obtuse apex. Coronal-lobes inserted at the middle of the corolla-tube and reaching to about  $\frac{1}{3}$  the length of the corolla-lobes, ovate, ovate-oblong, or subquadrate, truncately obtuse or emarginate at the inrolled apex. Anther-appendages hyaline, broad, transverse, inflexed. Style not exceeding the anthers, flat and pentagonal at the apex.

**Nile Land.** Somaliland: at Ounauuff, *James & Thrupp!*

16. **CALOTROPIS**, R. Br.; Benth. et Hook. f. Gen. Pl. ii. 754.

Calyx 5-partite; sepals broadly ovate. Corolla 5-lobed to more than half-way down, rotate-campanulate or with reflexed lobes. Corona of 5 compressed lobes, shortly cleft into two lobules at their top, with an upcurved and involute spur at their base, adnate throughout their length to the staminal-column as far as the base of the anthers. Anthers short and broad, with short, broad, membranous appendages inflexed over the rim of the pentagonal apex of the style, which is depressed in the centre. Pollen-masses solitary in each anther-cell, pendulous, attached by short slender caudicles to the pollen-carrier. Follicles large, with a thick spongy-fibrous mesocarp, and parchment-like endocarp, not echinate. Seeds ovate, plano-convex, crowned with a tuft of hairs.—Large shrubs or small trees, with opposite subsessile broad leaves, and pedunculate umbelliform cymes arising from the side of the stem between the bases of the leaves. Flowers moderately large.

Species 4, 3 confined to India, S. China, and the Malay Archipelago, the other extending into Africa.

1. **C. procera**, *Ait. Hort. Kew. ed. 2, ii. 78*. A stout shrub, 10–18 ft. high, all the youngest parts clothed with a white tomentum, becoming glabrous. Leaves on very short petioles or subsessile,  $2\frac{1}{2}$ –12 in. long,  $1\frac{1}{2}$ –7 in. broad, ovate, oblong-ovate, elliptic, or obovate, obtuse with a short abrupt point, base cordate, glabrous. Peduncles lateral and terminal,  $\frac{1}{2}$ –3 in. long, stout, branched or somewhat elongating and producing successive subumbellate clusters of 3–10 flowers, the young parts white-tomentose, becoming more or less glabrous; bracts  $\frac{1}{3}$ – $\frac{1}{2}$  in. long, lanceolate or ovate-lanceolate, acute, deciduous; pedicels  $\frac{1}{2}$ –1 in. long. Sepals 2– $2\frac{3}{4}$  lin. long,  $1\frac{1}{3}$ – $2\frac{1}{4}$  lin. broad. Corolla campanulate,  $\frac{3}{4}$ –1 in. in diam., 5-lobed to  $\frac{2}{3}$  the way down; lobes  $4\frac{1}{2}$ –5 lin. long,  $3\frac{1}{2}$ – $4\frac{1}{2}$  lin. broad, ovate, acute, quite glabrous, white, with dark purple-brown tips. Coronal-lobes  $2\frac{1}{2}$ –3 lin. long, 2– $2\frac{1}{4}$  lin. broad at the base, compressed, oblong, obliquely truncate or rounded and cleft into two short lobes at the top, minutely scabrous or pubescent down the back, which has an upcurved and inrolled spur at the base. Follicles 3–4 in. long,  $2\frac{1}{2}$ –3 in. thick, subglobose, obliquely ellipsoid or ovoid, obtuse or depressed at the apex, with a thick spongy or somewhat inflated pericarp. Seeds 3– $3\frac{1}{2}$  lin. long, 2 lin. broad, plano-convex, narrowly margined, minutely tomentose.—*Bot. Reg. t. 1792*; Decne. in DC. Prod. viii. 535; A. Rich. Tent. Fl. Abyss. ii. 33; Bot. Mag. t. 6859; Vatke in Linnæa, xl. 213; Hook. f. Fl. Brit. Ind. iv. 18; Wight, Ic. iv. i. 17, t. 1278; Benth. & Trim. Med. Pl. iii. t. 176; Krause in Engl. Jahrb. xiv. 412; Penzig in Atti Congr. Bot. Internaz. 1892, 348; K. Schum. in Engl. Pfl. Ost-Afr. C. 323; in Engl. & Prantl, Pflanzenfam. iv. ii. 232, fig. 67, E–G, and 239; in Engl. Jahrb. xxx. 385; and in Ann. Istit. Bot. Roma, vii. 38; Henriques in Bolet. Soc. Brot. xiii. 144; Hiern in Cat. Afr. Pl. Welw. i. 687; Schweinfurth in Höhnel, Zum Rudolph-See u. Stephanie-See, Sonderabdr. 8. *C. heterophylla*, Decne. in Ann. Sc. Nat. sér. 2, ix. 329, not of

Wallich. *Asclepius procera*, Willd. Sp. Pl. i. 1263; Schumach. & Thonn. Beskr. Guin. Pl. 154. *A. gigantea*, Jacq. Obs. Bot. iii. 17, t. 69; Andrews, Bot. Rep. iv. t. 271; Brunner in Flora, 1840, i. Beibl. 18.

**Upper Guinea.** Cape Verd Islands: *Bolle! Welwitsch*, 4180 *Vogel*, *Krause*, and *Smith*, 187 (ex *Krause*). North bank of the River Gambia, *Ozanne*, 3! Senegambia and Cape Verd, *Brunner*, 54! Senegal, *Leprieur*, *Robert* (ex *Decaisne*). Fernando Po, *Mann*, 238!

**Nile Land.** Nubia: El Mesherif, *Schweinfurth*, 586! Eritrea: Monkullo, near Massowa, *Schweinfurth & Riva*, 216! 236! Otumbo, *Penzig*; hills of Saati, *Penzig*; Arkiko, *Penzig*; Ghinda, *Penzig*; Keren, *Penzig*; Kordofan, *Kotschy*, 24\*! Abyssinia: Hamedo Plain, *Schimper*, 920; near Jelujeranne, *Schimper*, 656! Somaliland, *Miss Edith Cole! Smith! Riva and Robecchi-Bricchetti*, 107 (ex *Schumann*). Uganda: Madi, *Speke & Grant*, 163! near Lake Baringo, 3400 ft., *Johnston!* by the River Tarawell (Turkwel), 1500 ft., *Höhnel*. British East Africa: Witu, *Thomas*, 191!

**Mozamb. Dist.** Zanzibar, *Hildebrandt*, 1004! German East Africa: Lake Rukwa Region; near Manda Village in Umanda district, 2600 ft., *Goetze*, 1105 (ex *Schumann*).

Also extends through Egypt and Arabia into India.

17: **KANAHIA**, R. Br.; Benth. et Hook. f. Gen. Pl. ii. 760.

Calyx 5 partite. Corolla 5-lobed to half-way down or nearly to the base; lobes ascending, spreading or reflexed, slightly overlapping to the left in the bud. Corona of 5 lobes arising from the staminal-column, either very thick and fleshy, solid and produced into a short horizontally inflexed subulate entire or bifid beak at the apex, or more or less complicate or cleft down the inner face. Staminal-column arising from the bottom of the corolla; anthers erect, with membranous appendages inflexed over the apex of the style. Pollen-masses pendulous, solitary in each anther-cell, attached in pairs to the pollen-carriers by short horizontal caudicles. Apex of the style with a convex central boss surrounded by a depressed ring and with 5 very minute tubercles close to the pollen-carriers. Follicles fusiform-lanceolate or somewhat ovoid, somewhat rugulose (always?), but not echinate. Seeds crowned with a tuft of hairs.—Shrubs with straight erect branches and milky juice. Leaves opposite, linear-lanceolate or linear, with minute bristles in their axils. Inflorescence lateral at the nodes, with the peduncles racemously scattered along the upper part of the branches; flowers spirally arranged around the slightly thickened apical part of the peduncle, which becomes more or less elongated into a flowering axis, pedicellate, bracteate, developing successively, never strictly umbellate.

Species 4, all very similar in general appearance and closely related, extending to Arabia.

By its floral structure *Kanahia* cannot be distinguished from *Xysmalobium* on the one hand and *Asclepias* on the other. Yet as it is easily distinguished from both those genera by its inflorescence and by the presence of minute bristles in the axils of the leaves, I deem it best to retain it on those grounds. In *Asclepias* and

*Nysmalobium* the flowers are always strictly umbellate, all radiating from one point; in *Kanahia* they are never strictly umbellate, but are spirally arranged around the gradually elongating top of the peduncle and progressively develop, a few at a time.

- Coronal-lobes fleshy, solid, with a short entire or bifid beak extended over the staminal-column . . . . . 1. *K. laniflora*.  
 Coronal-lobes complicate, with the fissure or cavity extending  $\frac{1}{4}$ – $\frac{2}{3}$  of the way down.  
 Coronal-lobes as long as or slightly exceeding the staminal-column; pollen-masses  $\frac{2}{5}$ – $\frac{1}{2}$  lin. long, turgid . . . . . 2. *K. glaberrima*.  
 Coronal-lobes usually shorter than the staminal-column; pollen-masses  $\frac{2}{3}$  lin. long, compressed . . . . . 3. *K. consimilis*.

1. ***K. laniflora***, *R. Br. in Mem. Wern. Soc.* i. 40. Stems 4–5 ft. high, branching, glabrous. Leaves ascending or somewhat spreading, with a cluster of short bristles or teeth in their axils and along the rudimentary stipular line connecting their bases; petiole  $1\frac{1}{2}$ –3 lin. long; blade  $2\frac{1}{2}$ –6 in. long, 2–6 lin. broad, lanceolate or linear-lanceolate, gradually tapering to an acute point, acutely narrowed into the petiole, quite glabrous, not revolute at the margin. Peduncles 1–2 in. long, rather stout, glabrous, lateral at the nodes, many-flowered at the apical part, which becomes raceme-like from the gradual development of the flowers; lowest bracts 2–9 lin. long, the rest  $1\frac{1}{2}$ –3 lin. long, linear or subulate, acute, glabrous, mostly with minute bristle-like teeth at their base, like those in the leaf-axils; pedicels  $\frac{1}{2}$ –1 in. long, glabrous. Sepals 2–3 lin. long, lanceolate, acuminate, glabrous. Corolla 7–9 lin. in diam., campanulate, 5-lobed to half-way down or beyond; lobes 4–5 lin. long, ascending, ovate, acute, glabrous outside, more or less densely woolly within along the borders. Coronal-lobes arising  $\frac{3}{4}$  lin. above the base of the staminal-column and reaching to its summit, 2 lin. long, erect, stout, turgid-oblong, fleshy, solid, not in the least complicate, abruptly contracted at the apex on the inner side into a simple or bifid subulate tooth or beak, inflexed over the tips of the anthers. All the lobes are connected to one another at their base by very obtuse minute flaps that form five pockets, enclosing the basal parts of the anther-wings. Staminal-column  $2\frac{3}{4}$ –3 lin. long; anther-appendages broadly subcordate-ovate, obtuse, inflexed over the apex of the style. Pollen-masses (excluding the caudicles),  $\frac{1}{4}$  lin. long,  $\frac{1}{8}$  lin. thick, turgid, not compressed. Follicles 2–2 $\frac{1}{2}$  in. long, lanceolate, acuminate into a beak, glabrous, scrobiculate, but not echinate. Seeds 2 lin. long, ovoid, tapering into a short beak, channelled on one side, very turgid on the other, smooth, crowned with a tuft of hairs.—*K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 233, not of Decne. *K. Delilii*, Decne. in *Ann. Sc. Nat. sér. 2*, ix. 330, in *DC. Prod.* viii. 537; *A. Rich. Tent. Fl. Abyss.* ii. 34; *Engl. Hochgebirgsfl. Trop. Afr.* 342; *Schweinfurth in Hühnel, Zum Rudolph-See u. Stephanie-See, Separatabdr.* 8; *Schweinfurth & Volkens, Liste Pl. Somalis*, 10; *Martelli, Flor. Bogos.* 54; *Penzig in Atti Congr. Bot. Internaz.* 1892, 349; *K. Schum. in Engl. Pf. Ost-Afr. C.* 323, in *Engl. & Prantl, Pflanzenfam.* iv. ii. 233, and in *Ann. Istit. Bot. Roma*,

vii. 37. *Asclepias laniflora*, Forsk. Fl. Ægypt-Arab. 51; Vahl, Symb. i. 23, t. 7; Delile, Cent. Pl. Voy. Méroë, 49, t. 3, fig. 3.

**Nile Land.** Eritrea: Ginda Valley, 3100 ft., *Schweinfurth & Riva*, 2148! Arrot Valley, 4400 ft., *Schweinfurth & Riva*, 677! bed of the River Lava, at Arbasciko, *Penzig*; near Keren, *Penzig*. Galabat: region of Matamma, *Schweinfurth*, 216! Sennar, *Kotschy*, 177! Blue Nile, *Muriel*, 8, 14! *Kotschy*, 472! 475! Fazokl; Mount Akaro, *Cailliand* (ex *Delile*); near Khartoom, *Schweinfurth*, 856! Upper Nile, *Freeman & Lucas*, 86! Abyssinia: near Adowa, *Steudner*, 743! *Schimper*, 120! 939! by streams near Jelajeranne, *Schimper*, 1909! Tacazze Valley, *Steudner*, 742 (ex *Engler*); Somak Efat, *Roth*, 122 (413)! West shore of Lake Zouai (Zwai), *Wellby*! Somaliland: by the Dagatto Torrent, *Ghika* (ex *Schweinfurth*); near Sagado, *Riva*, 962 (ex *Schumann*).

**Mozamb. Dist.** German East Africa: west of the Pare Range, 600-2300 ft *Hölnel* (ex *Schweinfurth*).

Also in Arabia.

According to Decaisne this is not the true *Asclepias laniflora* of Forskal, but on this point he is certainly mistaken, as there is a specimen, received from Forskal, in the British Museum Herbarium, which I have examined and found to be identical with the plant here described. It was upon this specimen that Robert Brown founded the genus *Kanhia*, although his description of the coronal structure is not very exact. I have not seen any example from Africa of the plant which Decaisne has described under the name of *Kanhia Forskalii*, which has shortly bifid coronal-lobes, something like those of *K. consimilis*, N. E. Br., but not so deeply bifid, and the pollen-masses are quite different.

The solid structure of the coronal-lobes of *K. laniflora* is evidently only a variation of that which usually obtains in *Asclepias*, and is formed by the soldering together of the inflexed sides of an ordinary complicate coronal-lobe; indeed, this is completely demonstrated in a specimen collected in Eritrea at Ginda (*Schweinfurth & Riva*, 2148), in which the top of the coronal-lobes is deeply furrowed all along, forming an intermediate stage between the entire coronal-lobes of typical *K. laniflora* and the deeply cleft lobes of *K. glaberrima*. The pollen-masses, however, are short as in *K. laniflora*.

2. ***K. glaberrima*, N. E. Br.** Stems 4-6 ft. or more high, simple or branched, glabrous, except some minute bristles in the axils of the leaves and along the rudimentary stipular line. Leaves ascending; petiole 1-4 lin. long; blade  $2\frac{1}{2}$ -6 in. long, 2-7 lin. broad, broadly linear or linear-lanceolate, tapering to an acute point, acutely narrowed into the petiole, slightly thickened along the margins, quite glabrous. Flowers in pedunculate several-flowered bracteate umbel-like racemes (the axis of the umbel shortly elongating), lateral between the bases of the leaves; peduncles  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. long, glabrous; outer bracts 4-6 lin. long, the succeeding ones gradually smaller, deciduous, glabrous; pedicels 6-12 lin. long, glabrous. Sepals  $1\frac{1}{2}$ -4 lin. long, varying from ovate-lanceolate to linear-lanceolate. Corolla deeply 5-lobed, somewhat reflexed (or, in the dried state, often more or less campanulate), whitish; lobes 4-5 lin. long, bordered inside with woolly hairs, glabrous on the back. Coronal-lobes arising  $\frac{3}{4}$ -1 lin. above the base of the staminal-column, with the tips reaching to its summit,  $1\frac{1}{4}$ - $1\frac{1}{2}$  lin. long and about 1 lin. broad, complicate, obliquely deltoid-ovate viewed sideways, with the dorsal side much the shorter, the inflexed sides produced into acute or linear-acuminate teeth sometimes in-

curved over the tips of the anthers and sometimes only level; 5 small teeth alternate with the lobes at their base are more or less incurved and hidden under the basal parts of the anther-wings. Staminal-column 2–2½ lin. long; anther-appendages roundish-ovate, obtuse, inflexed over the apex of the style. Pollen-masses (excluding the caudicles)  $\frac{2}{5}$ – $\frac{1}{2}$  lin. long,  $\frac{1}{6}$  lin. broad, turgid. Follicles solitary (always?), 2–2½ in. long, 4–5 lin. thick, lanceolate, acute or tapering into a beak, glabrous. Seeds (not seen mature), ovoid, narrowed into a beak, channelled on one side, very turgid on the other, smooth or nearly so, crowned with a tuft of hairs.—*Gomphocarpus glaberrimus*, Oliver in Trans. Linn. Soc. xxix. 110, t. 120; K. Schum. in Engl. Jahrb. xvii. 126, and xxviii. 456; in Engl. & Prantl, Pflanzenfam. iv. ii. 236, and in Engl. Pfl. Ost-Afr. C. 322. *Asclepias glaberrima*, Schlechter in Journ. Bot. 1895, 335.

**Nile Land.** Uganda: near Lake Baringo, *Johnston*! British East Africa: Ukamba; by the River Adi, *Hildebrandt*, 2609! Nyika country near Mombasa, *Wakefield*!

**Lower Guinea.** Angola: among rocks at the Rapids of Cambambe, on the River Kuanza, *Monteiro*!

**Mozamb. Dist.** German East Africa: Usambara; Umba Valley, *Smith*! Amboni, *Holst*, 2914! Darema, *Scheffler*, 130! Khutu; bed of the River Mgasi, 1000 ft., *Goetze*, 134; and Usukuma; near the River Simiu, *Fischer*, 386 (ex *Schumann*); Usagara; Marenga Mkali, *Speke & Grant*! Portuguese East Africa: Lower Zambesi, Tete, *Kirk*! Matabeleland: bed of the River Shasha, *Baines*!

3. **K. consimilis**, *N. E. Br.* Stems, leaves, inflorescence, and flowers exactly as in *K. glaberrima*, except the following characters.—Coronal-lobes shorter than the staminal-column, 1–1¼ lin. long, oblong, somewhat obliquely truncate at the top, complicate, with the apical angles of the inflexed sides more or less produced, acute. Pollen-masses long and narrow,  $\frac{2}{3}$  lin. long (excluding the caudicles),  $\frac{1}{10}$ – $\frac{1}{9}$  lin. broad, much compressed; caudicles rather longer and more slender than those of *K. glaberrima*. Follicles 1–1¼ in. long,  $\frac{1}{2}$ – $\frac{3}{4}$  in. thick, turgid or somewhat inflated, ovoid, obtuse or with a short recurved point. Seeds 1½–1½ lin. long.

**Upper Guinea.** Lagos: on an island in the Obo-Oba River, *Millen*! Idagun, on river-banks, *Rowland*! Cameroons: Lobe River, near Batanga, on rocks left bare by low water, *Bates*, 322! Bipinde, *Zenker*, 1294! Johann-Albrechts Höhe, *Staudt*, 603! and without precise locality, *Preuss*, 1364!

This has been distributed from Berlin as *Gomphocarpus fruticosus*, a widely different plant. It is very similar to *K. glaberrima* in general appearance, but the pollen-masses and short turgid follicles readily distinguish it. From the Arabian *K. Forskalii*, Decne. it differs in its much more deeply bifid coronal-lobes and long narrow compressed pollen-masses, which in *K. Forskalii* are only  $\frac{1}{4}$  lin. long and quite half as broad as long and are also less compressed than in *K. consimilis*.

## 18. **XYSMALOBIUM**, R. Br.; Benth. et Hook. f. Gen. Pl. ii. 752.

Calyx 5-partite. Corolla 5-lobed nearly to the base, campanulate, subrotate or reflexed; lobes overlapping to the left or rarely subvalvate

in the bud. Corona-lobes 5, arising from the staminal-column and opposite the anthers, variously shaped, very fleshy, sometimes as thick as broad or laterally compressed, with or without keels or teeth on their inner face, sometimes dorsally flattened, but then comparatively thick and entirely without keels or with only 1 rather stout longitudinal median keel on their inner face, solid, never cucullate or complicate, nor produced into a terminal horn, sometimes with 5 minute teeth or rudimentary lobes alternating with them at their base. Anthers terminated by a membranous appendage. Pollen masses pendulous, solitary in each anther-cell, attached to the pollen-carriers in pairs by elongated caudices. Style usually shorter than the anther-tips, rarely exerted beyond them. Follicles variable in shape, smooth or softly echinate. Seeds crowned with a tuft of hairs.—Perennial herbs with milky juice and tuberous rootstock or roots. Stems erect, rarely diffuse, usually simple and often solitary, but sometimes much branched at the base. Leaves opposite. Umbels sessile or pedunculate, solitary and terminal, or most of them lateral between the bases of the petioles, and one or two terminal.

Species many, extending into South Africa.

*Xysmalobium* as hitherto defined is very ambiguous in character, and by the definitions given cannot be distinguished from *Asclepias* and *Schizoglossum*. Originally it was separated from *Asclepias* by R. Brown to include those species which have 5 minute lobules or teeth alternating with the 5 coronal-lobes, without giving importance to other characters. R. Brown only refers two species to it, viz., *Asclepias undulata*, Linn., and *A. grandiflora*, Linn. f., two plants, which according to modern views, cannot well be placed in the same genus. The minute alternating lobules, although of specific value, are not of generic importance, since they are present in *Xysmalobium decipiens*, N. E. Br., and absent in the closely allied *X. Holubii*, Scott-Elliot. In *Asclepias* also there are some species with, others without them. Bentham & Hooker distinguish *Xysmalobium* by the following character, "coronal-scales flat, unappendaged," but this character neither applies to all the species of *Xysmalobium*, nor distinguishes it from *Schizoglossum*. This absence of a definite distinguishing character has led to much confusion during recent years; even the same species is referred to another genus by the same or a different author. Undoubtedly *Xysmalobium*, *Asclepias*, and *Schizoglossum* are but artificial divisions of one natural genus, since they cannot be separated by characters that do not break down at some point, yet as there are 3 types of coronal structure in the group, it seems undesirable to follow Baillon, who in his "Histoire des Plantes," x. 226, unites them, or Schlechter, who in the "Journal of Botany," 1896, 451 (without assigning reasons), unites *Xysmalobium* with *Asclepias*, retains *Schizoglossum* and refers some species, which I cannot separate from *Xysmalobium*, to other genera. Therefore in dealing with the Tropical African species of this group I have sorted them as follows:

All species in which the coronal-lobes are cucullate or more or less complicate or cleft on the inner face, are laterally compressed or at least measure as much from front to back as they do in breadth, with or without a horn or other process in the cavity, and are never dorsally flattened, I refer to ASCLEPIAS.

All species in which the coronal-lobes are dorsally flattened, or if concave or with incurved edges, then always broader than they measure from front to back, usually with 2 slight or wing-like parallel keels and with or without 1 or more horns or other appendages on the inner face, and are never laterally compressed, cucullate or complicate, or with a single median keel, I refer to SCHIZOGLOSSUM.

All species in which the coronal-lobes are very thick or laterally compressed, with or without teeth or keels on their inner face, or, if dorsally flattened, are still comparatively thick and entirely without keels or have only 1 rather stout longitudinal median keel, but no filiform horn or tongue-like process on the inner face, solid, never encullate complicate or cleft down the inner face, I refer to XYSMALOBIUM.

*Kanahia*, which is also allied, and in coronal structure contains species referable to both *Xysmalobium* and *Asclepias*, may be retained as distinct from both by its inflorescence.

Corolla reflexed from the base, (and see 7, *X. fratenum*).

Leaves narrowly linear,  $3\frac{1}{2}$ –6 in. long, not reticulately veined beneath; coronal-lobes very small, entirely adnate to the staminal-column.

Coronal-lobes ovate, a minute tooth alternating with them . . . . . 1. *X. decipiens*.

Coronal-lobes linear or linear-oblong, no tooth alternating with them . . . . . 2. *X. Holubii*.

Leaves varying from linear to elongate-oblong or oblong-lanceolate, not more than 3 in. long, reticulately veined beneath; coronal-lobes free, ascending or radiating from the staminal-column.

Midrib of leaves densely tomentose; corolla-lobes  $4\frac{1}{2}$  lin. long . . . . . 13. *X. sessile*.

Midrib of leaves not tomentose; corolla-lobes 2– $2\frac{1}{2}$  lin. long.

Leaves ascending; coronal-lobes arising at the base of the staminal-column close to the corolla . . . . . 4. *X. reticulatum*.

Leaves widely spreading; coronal-lobes arising  $\frac{1}{3}$  lin. above the base of the staminal-column . . . . . 5. *X. heudelotianum*.

Corolla not reflexed from the base; lobes spreading or ascending.

Leaves linear,  $\frac{2}{3}$ –2 lin. broad; coronal-lobes minute . . . . . 3. *X. gramineum*.

Leaves  $\frac{1}{3}$ –2 in. broad, never exactly linear but sometimes very long and narrow, and then gradually tapering from base to apex.

\*Leaves rounded, truncate or cordate at the base and as broad or broader there than above.

Leaves elongated, gradually tapering from the base to the apex.

Apex of the style produced beyond the anther-appendages . . . . . 12. *X. angolense*.

Apex of the style not produced beyond the anther-appendages.

Corolla bearded with woolly hairs on the margins and tips of the lobes inside.

Corolla-lobes 4–5 lin. long; coronal-lobes scarcely reaching to the base of the anthers . . . . . 10. *X. dispar*.

Corolla-lobes  $2\frac{1}{2}$ – $2\frac{3}{4}$  lin. long; coronal-lobes reaching much above the base of the anthers . . . . . 11. *X. barbigerum*.

- Corolla glabrous within . . . . . 9. *X. trilobatum*.  
 Leaves not gradually tapering from the base to the apex, oblong or ovate-oblong.  
 Coronal-lobes spathulate-obovoid, having a longitudinal keel with a short transverse keel on each side of it on the flat face (and see 13. *X. sessile*) . . . . . 14. *X. andongense*.  
 Coronal-lobes broadly rhomboid, with a rhomboid depression on the back . . . . . 8. *X. rhomboideum*.  
 \*\*Leaves cuneate or narrower at the base than above.  
 Corolla-lobes about  $3\frac{1}{2}$  lin. long.  
 Leaves oblong-lanceolate or narrowly cuneate-ob lanceolate; coronal-lobes much shorter than the staminal-column . . . . . 6. *X. membraniferum*.  
 Leaves elliptic-oblong or obovate-oblong; coronal-lobes about equalling the staminal-column . . . . . 7. *X. fraternum*.  
 Corolla-lobes  $\frac{1}{2}$ –1 in. long; leaves oblong, cuneate at the base.  
 Coronal-lobes exceeding the staminal-column by half their length . . . . . 15. *X. Cecilæ*.  
 Coronal-lobes about reaching to the top of the staminal-column.  
 Coronal-lobes dorsally flattened, oblong-lanceolate, not keeled . . . . . 16. *X. grande*.  
 Coronal-lobes as thick as broad, with 3 inflexed apical teeth and 2 keels on the inner face . . . . . 17. *X. bellum*.  
 Coronal-lobes not nearly reaching to the top of the staminal-column, sub-hemispherical, with a short erect horn and 2 small (marginal?) teeth on the inner face . . . . . 18. *X. spathulatum*.

1. **X. decipiens**, *N. E. Br. in Kew Bulletin*, 1895, 250. Roots fleshy, narrowly fusiform, fasciculate. Stems about 1 ft. long, with two pubescent lines. Leaves  $3\frac{1}{2}$ –6 in. long,  $\frac{1}{2}$ –1 lin. broad, linear, acute, narrowed into a short petiole, glabrous. Umbels lateral and terminal, pedunculate, bearing upwards of 20 small flowers; bracts 2 lin. long, linear, acute, glabrous; peduncles 5–7 lin. long, puberulous; pedicels 3–4 lin. long, tapering from the base, puberulous. Sepals  $\frac{3}{4}$  lin. long, lanceolate, acute, channelled, closely reflexed on the pedicel, glabrous. Corolla closely reflexed on the sepals, “whitish-lilac” (*Welwitsch*); lobes  $1\frac{3}{4}$  lin. long,  $\frac{1}{2}$  lin. broad, oblong, acute, concave, glabrous. Coronal-lobes minute, about  $\frac{1}{3}$  lin. long, and nearly as broad, roundish-ovate, very obtuse or subtruncate, slightly channelled, adnate, abruptly terminating in the hollows under the anthers, from which they have the appearance of protruding downwards, with their tips resting on the corolla; a small erect tooth between each pair of lobes and connecting them at their base. Staminal-column  $1\frac{1}{4}$  lin. long; anther appendages broadly ovate or suborbicular, inflexed over the apex of the style. Follicles 5–6 in. long,  $\frac{1}{4}$  in. thick, narrowly fusiform, equally tapering

into a long stipes and beak.—Hiern in *Cat. Afr. Pl. Welw.* i. 682. *Xysmalobium Holubii*, Scott-Elliot in *Journ. Bot.* 1890, 365 partly (as to Welwitsch's plant and description of corona); K. Schum. in *Engl. Jahrb.* xvii. 120 in a note.

**Lower Guinea.** Angola: Huilla; hilly places near Lopollo, *Welwitsch*, 4175! Mukenge, *Pogge*, 1108! and without precise locality, *Pogge*, 1109, 1140, *Buchner*, 607, and *Mechow*, 340 (ex *Schumann*).

Closely resembling *X. Holubii* and included under that species by Scott-Elliot. But the small coronal lobes are very much broader, of a different shape, and connected with each other by a small erect tooth, which is entirely wanting in *X. Holubii*; the cartilaginous wings of the anthers are also one-third shorter than in that species.

2. **X. Holubii**, *Scott-Elliot in Journ. Bot.* 1890, 365 (excluding the Angola plant and description of corona). Stem 12–18 in. high, with two pubescent lines in the upper part, glabrous below. Leaves sessile or nearly so,  $3\frac{1}{2}$ –5 in. long,  $1-1\frac{1}{2}$  lin. broad, linear, acute, glabrous. Umbels lateral and terminal, the lower pedunculate, the upper sessile or subsessile, hemispherical or subglobose, more than 20-flowered; flowers small; peduncles  $1\frac{1}{2}$ –5 lin. long, pubescent or with hairy lines like the stem; bracts 2 lin. long, attenuate, acute, subglabrous; pedicels 3–4 lin. long, tapering from the base, puberulous. Sepals reflexed, 1 lin. long, lanceolate acute, concave, glabrous. Corolla closely reflexed; lobes 2 lin. long,  $\frac{1}{2}$  lin. broad, oblong, acute, glabrous. Coronal-lobes minute,  $\frac{1}{2}$  lin. long, resembling a small tongue protruding from the hollow at the base of the anthers and directed downwards, narrowly oblong, obtuse, channelled down the face, adnate to the staminal-column, quite free from each other, with no alternating tooth between them. Staminal-column  $\frac{1}{10}$  in. long; anther-appendages ovate, subacute, inflexed over the apex of the style.—K. Schum. in *Engl. & Prantl, Pflanzenfam.* iv. ii. 232.

**Mozamb. Dist.** Rhodesia: Leshumo Valley, South of the River Zambesi, *Holub!*

The preceding species from Angola was confused with this in the original description, and the corona described from the Angolan plant instead of from Holub's specimen; however, it appears best to retain the name for the plant for which it was intended. This species and *X. decipiens* N. E. Br. are allied to the South African *X. involucreatum*, Decne.

3. **X. gramineum**, *S. Moore in Journ. Bot.* 1902, 254. Plant 5–6 in. high, branching. Branches about  $\frac{2}{3}$  lin. thick, with internodes 4–6 lin. long, more or less pubescent. Leaves ascending-spreading, glabrous on both sides,  $1\frac{1}{2}$ – $2\frac{3}{4}$  in. long,  $\frac{2}{3}$ – $1\frac{3}{4}$  lin. broad, linear, acute, cuneately narrowed at the base into a petiole 1–2 lin. long, revolute along the margins. Umbels few (3 on the specimen seen), lateral at the nodes, pedunculate, 8–12-flowered; peduncles 7–12 lin. long, slender, minutely pubescent with curved hairs along one side; bracts  $1\frac{1}{2}$  lin. long, subulate, minutely pubescent; pedicels 2– $2\frac{1}{2}$  lin. long, slender, minutely pubescent. Sepals 1 lin. long,  $\frac{1}{3}$  lin. broad, lanceolate, acute,

minutely pubescent with curved hairs on the back. Corolla lobed nearly to the base, campanulate, about  $1\frac{2}{3}$  lin. in diam.; lobes  $1\frac{1}{2}$  lin. long,  $\frac{2}{3}$  lin. broad, oblong-lanceolate, obtuse, erect and concave within in the basal half, recurved and slightly convex at the apical part, glabrous on both surfaces, not ciliate. Coronal-lobes minute, arising close to the base of the staminal-column and not nearly reaching to its middle, about  $\frac{1}{4}$  lin. long, ascending, oblong, obtuse, fleshy; alternating with them are  $\frac{5}{8}$  very minute teeth. Staminal-column  $\frac{2}{3}$  lin. long; anther-appendages broad, toothed, ascending, pressed against the sides of the broadly and shortly conical apical part of the style, which slightly exceeds them. Anther-wings broadly triangular, very projecting at the middle.

**Mozamb. Dist.** Rhodesia: Buluwayo, *Rand*, 193

This plant bears a great resemblance to *Schizoglossum angolense*, Schlechter & Rendle, and without careful examination might easily be mistaken for it; in floral structure however, it is entirely different, as the corolla-lobes of *S. angolense* are nearly flat and neither concave at the base nor recurved at the apex, the coronal-lobes much larger, 2-keeled on the inner face, without alternating teeth at their base, and the anther-wings are not in the least projecting.

4. **X. reticulatum**, *N. E. Br. in Kew Bulletin*, 1895, 251. Stems several from a tuberous root, 6-22 in. high, erect, herbaceous, with 2 lines of short curved hairs. Leaves ascending; petiole  $\frac{1}{2}$ -1 lin. long; blade  $\frac{3}{4}$ -3 in. long,  $1\frac{1}{2}$ -7 lin. broad, oblong, linear-oblong, linear-lanceolate or linear, obtuse or subacute, apiculate at the apex, subcordate, subtruncate or rounded at the base, glabrous, conspicuously reticulate with prominent ascending veins beneath. Umbels sessile, lateral, 4-6-flowered; bracts about  $1-1\frac{1}{4}$  lin. long, subulate or linear-subulate; pedicels 3-7 lin. long, puberulous along the inner side. Sepals  $1\frac{1}{2}$ - $2\frac{1}{2}$  lin. long,  $\frac{1}{2}$  lin. broad, lanceolate, acuminate, glabrous or pubescent on the back, reflexed. Corolla 5-lobed almost to the base, strongly reflexed, quite glabrous, green; lobes  $2\frac{1}{4}$ - $2\frac{1}{2}$  lin. long,  $1\frac{1}{4}$ - $1\frac{3}{4}$  lin. broad, ovate, acute or subobtuse. Coronal-lobes arising at the base of the staminal-column and much shorter than it,  $1-1\frac{1}{8}$  lin. long, fleshy, rather variable in form, sometimes ascending, obovate or diamond-shaped, obtuse or subacute, with a median keel down the inner face, which rises into an acute tooth at about the middle, flattened on the back, sometimes more spreading, with the terminal part very thick and fleshy, obovoid (or subglobose?) produced into an acute or obtuse cone or tooth on the upper side somewhat resembling a bird's head. Staminal-column  $1\frac{1}{2}$ - $1\frac{2}{3}$  lin. long, conical, truncate; anther-appendages broadly ovate, acute or subacute, incumbent on the truncate apex of the style; anther-wings 1 lin. long,  $\frac{1}{3}$  lin. broad at the base, where they are very projecting.—*X. schumannianum*, S. Moore in *Journ. Bot.* 1901, 259. *Schizoglossum truncatulum*, K. Schum. in *Engl. Pfl. Ost-Afr. C.* 322.

**Nile Land.** Uganda: Kavironda; between Nandi and Mumia, 4400-6000 ft. Whyte! Mpororo; Kanjana Berg, *Stuhlmann*, 2096! British East Africa Machakos, *Hinde*!

**Mozamb. Dist.** British Central Africa: Urungu; Fwambo, *Carson*, 56! Nyasaland; Shire Highlands, *Buchanan*! Zomba and vicinity, 2500-3500 ft.,

*Whyte!* Purves, 58! Rhodesia: between Umtali and Salisbury, *Hon. Mrs. Evelyn Cecil*, 51! between Enkeldoorn and Rocky Spruit, *Hon. Mrs. Evelyn Cecil*, 135!

This is closely allied to *X. heudelotianum*, and may be only an eastern variety of that species, but its leaves are not widely spreading, are more prominently veined beneath, there are fewer flowers in an umbel, and the coronal-lobes arise close to the corolla, instead of a little above the base of the staminal-column as in *X. heudelotianum*. The coronal-lobes seem to be variable; they were not correctly described in my original description, as the type specimen is a very poor one and the coronal-lobes of the only flower then examined had been pressed out of shape, but the ample and better material subsequently received, and an examination of another flower from the type, demonstrate that the real form of the coronal-lobes is as above described. According to Purves, the flowers are white, but this probably refers to the corona and staminal-column, as the corolla appears to be greenish in the dried state, and is noted as green by the Hon. Mrs. Evelyn Cecil.

5. **X. heudelotianum**, *Decne. in DC. Prod.* viii. 520. Stem 1–3 ft. high, pubescent, with two narrow glabrous lines alternating in position at the nodes. Leaves widely spreading; petiole  $\frac{3}{4}$ –1 lin. long; blade 2–3 in. long, 4–8 lin. broad, narrowly oblong, with nearly parallel thickened or very narrowly revolute margins, the narrower leaves acute, the broader ones abruptly subacute or obtuse, subapiculate, varying from cuneate to broadly and obtusely rounded at the base, glabrous on both sides; veins reticulate, rather conspicuous and prominent beneath. Umbels lateral between the bases of the leaves, all sessile or one or two of the lowest pedunculate, 10–12-flowered; peduncles 0–1 in. long, pubescent down the inner side; bracts 2–2 $\frac{1}{2}$  lin. long, subulate; pedicels 4 $\frac{1}{2}$ –6 lin. long, pubescent with minute curved hairs. Sepals reflexed, 1 $\frac{1}{2}$  lin. long, lanceolate, with the margins incurved towards the apex, glabrous. Corolla 5-lobed nearly to the base; lobes strongly reflexed, 2–2 $\frac{1}{4}$  lin. long,  $\frac{3}{4}$  lin. broad, lanceolate-oblong, subacute, with undulate margins, glabrous on both sides, apparently greenish in colour. Coronal-lobes 1 lin. long, with horizontally spreading stalks  $\frac{1}{4}$  lin. long, arising  $\frac{1}{3}$  lin. above the base of the staminal-column; apical part fleshy, ovoid-conical or subglobose, abruptly tapering into a very acuminate or fine subulate erect point, subtruncate at the base; in side view they somewhat resemble the head and beak of a bird, and reach to a little above the middle of the conical obtuse 1 $\frac{3}{4}$ –2 lin. long staminal-column. Anther-appendages ovate, acute, inflexed over the truncate apex of the style. Follicles solitary (always?), 5–5 $\frac{1}{2}$  in. long,  $\frac{1}{2}$  in. thick at the middle, thence gradually and equally tapering to the base and apex, glabrous and smooth. Seeds flat, ovate, with winged margins, both faces covered with small linear crests or tubercles.—K. Schum. in *Engl. & Prantl, Pflanzenfam.* iv. ii. 232.

**Upper Guinea.** Senegambia: Komba, *Heudelot!* Niger Territory: Borgu, *Barter*, 712! Nupe, *Barter*, 1323!

Owing to the kindness of Dr. J. Müller, I have been enabled to examine Decaisne's type specimen of this species, collected by Heudelot.

6. **X. membraniferum**, *N. E. Br. in Kew Bulletin*, 1895, 251. Stems 12–18 in. high, with two hairy lines, purplish. Leaves spreading;

petiole 2-4 lin. long; blade 3-3½ in. long, 4-7 lin. broad, oblong-lanceolate or narrowly cuneate-ob lanceolate, about equally acute at each end, glabrous, slightly thickened at the margin, whitish-green beneath. Umbels several, lateral at the nodes, sessile, 6-8-flowered; pedicels 4-7 lin. long, pubescent with minute curved hairs. Sepals 2 lin. long, ovate, acute, glabrous. Corolla 6 lin. in diam., 5-lobed almost to the base; lobes campanulately spreading, 3½ lin. long, 1½ lin. broad, oblong, sub-obtuse, concave, apparently tinted with purplish, with opaque whitish membranous margins. Coronal-lobes arising at the base of the staminal-column and much shorter than it, 1¾ lin. long, oblong, or rhomboid-oblong, fleshy, obtusely pointed, with a rather stout keel down the inner face, flattened or somewhat concave on the back, erect, but confluent and resting on the corolla at the base where each is united to the staminal-column by a rather large keel which ends very abruptly and is slightly dilated and sometimes furrowed at the truncate free end. Staminal-column about 3 lin. long; anther appendages membranous, erect, overtopping the style, very conspicuous, 1 lin. long, 1½ lin. broad, orbicular-reniform. Follicles (unripe), fusiform, with a long beak, tapering into a long stipes at the base, smooth, glabrous.—*X. heudelotianum*, Scott-Elliott in Journ. Linn. Soc. xxx. p. 92, not of Decaisne.

**Upper Guinea.** Sierra Leone: on dry rocky hills, 3600 ft., 3 miles south of Falaba, *Scott-Elliott*, 5184! Port Lokko, *Scott-Elliott*, 5183!

7. **X. fraternum**, *N. E. Br. in Kew Bulletin*, 1895, 252. Stem erect, herbaceous, pubescent with short curved hairs. Leaves moderately spreading; petiole 1½-2 lin. long, pubescent; blade 1½-2½ in. long, ¾-1½ in. broad, elliptic-oblong or obovate-oblong, obtuse or broadly rounded at the apex, apiculate, acute or cuneately rounded at the base, glabrous on both sides, narrowly revolute along the margins; veins reticulate, conspicuous. Umbels several, sessile, lateral between the bases of the leaves; bracts several, 2-3 lin. long, linear, acute; pedicels 5-6 lin. long, slender, pubescent like the stem. Sepals 2½-3 lin. long, lanceolate, acuminate, glabrous, sparsely ciliate. Corolla-lobes 3 lin. long, 1½ lin. broad, ovate, acute, reflexed or spreading, glabrous. Coronal-lobes arising at the base of the staminal column and as long as it, 1½ lin. long and nearly as broad, shortly stalked, subcordate-ovate, subacute, fleshy, acutely keeled down the inner face; keel enlarged or more prominent at the apex.

**Mozamb. Dist.** British Central Africa: Nyasaland; near Blantyre, *Last!*

This was confused with *X. orbiculare*, Deene. (*X. padifolium*, Scott-Elliott), in the Journal of Botany 1890, 363, from which it is very distinct.

8. **X. rhomboideum**, *N. E. Br. in Kew Bulletin*, 1895, 251. Stems simple, stout, tomentose. Leaves spreading; petiole 1½-2½ lin. long; blade 1¼-3 in. long, 9-13 lin. broad, ovate-oblong, subobtuse, apiculate, cordate or rounded at the base, with a very sparse pubescence on both sides and tomentose or pubescent midribs and petioles, narrowly cartilaginous (not scabrous) on the margins. Umbels lateral, sessile,

6-8-flowered; bracts 2-3½ lin. long, subulate, pubescent; pedicels 5-10 lin. long, subtomentose. Sepals 3½-4 lin. long, 1 lin. broad, erect, as long as or exceeding the corolla-lobes, narrowly lanceolate, acute, shortly hairy, campanulately spreading. Corolla 5 lin. in diam., campanulate, 5-lobed almost to the base; "dull whitish-violaceous" (*Welwitsch*); lobes 3 lin. long, 1¾-2 lin. broad, ovate, subacute and slightly complicate at the apex, minutely pubescent on the back. Coronal-lobes arising at the base of the staminal-column and about equalling it in length, 1½ lin. long, connivent-erect, thick and fleshy, with a short thick stalk and a rhomboid blade, obtuse or subacute, with a grooved rhomboid depression on the back, and a keel from each side on the inner face directed downwards and meeting at the centre, enclosing a diamond-shaped area that is obtusely keeled down the middle or convex, the sides of the stalks confluent at the base under the very broad horny wings of the anthers; anthers connivent, their appendages roundish-ovate, obtuse, inflexed over the apex of the style.—Hiern in *Cat. Afr. Pl. Welw.* i. 682.

**Lower Guinea.** Angola: Huilla; in sandy pastures among bushes near Ferrao da Sola, *Welwitsch*, 4193!

9. **X. trilobatum**, *N. E. Br.* Stem erect, simple, stout, softly hairy. Leaves spreading or ascending; petiole 2-3 lin. long; blade 4-6 in. long, 1-2 in. broad, elongate-ovate-lanceolate, sometimes very narrow and attenuate, acute, subcordate at the base, more or less undulate, somewhat scabrous above, at first pubescent beneath, becoming slightly scabrous. Umbels several, lateral and terminal, mostly clustered at the top of the stem, 10-15-flowered; peduncles erect, ¾-1¾ in. long, villous-tomentose; bracts 4-5 lin. long, subulate or filiform, shortly villous; pedicels 6-8 lin. long, villous-tomentose. Sepals 4 lin. long, 1 lin. broad, exceeding the corolla, lanceolate, acuminate, flat, villous-pubescent on the back, glabrous within. Corolla campanulate, 5-lobed nearly to the base; lobes erect, 3 lin. long, 1½ lin. broad, ovate, obtusely pointed, concave in the lower part, recurved-spreading at the tips, dull purple, sparsely pubescent outside on the apical half, glabrous within. Coronal-lobes ¾ lin. long, 1 lin. broad, sessile at the base of the staminal-column, erect, reaching only to the base of the anthers, fleshy, broadly subreniform-deltoid, obtuse, sometimes with a faint constriction just below the apex, flat, with their margins recurved at the base. Staminal-column 2 lin. long, its filament part about ¾ lin. long.—*Woodia trilobata*, Schlechter in *Journ. Bot.* 1895, 337.

**Nile Land.** Uganda: Kavirondo; Nandi Range, in wet places, 7000-8000 ft., *Scott-Elliott*, 6877!

Schlechter describes the coronal-lobes as "trilobulate, with suborbicular obtuse lobules, subequal in size, the intermediate one erect, the lateral divaricate." I do not find them so in the numerous flowers of his type that I have examined. The sides of the lobes at their base are abruptly bent back, so that upon a superficial examination they may appear as lateral lobules, and sometimes there is a faint constriction on each side just below the apex, which thus appears to be slightly produced, but I have seen none that I should describe as trilobulate.

10. **X. dispar**, *N. E. Br.* Stem moderately stout, tomentose, at least in the upper part, as well as the peduncles, pedicels and bracts. Leaves numerous, ascending; petiole 1-5 lin. long; blade 5-9 in. long,  $\frac{1}{3}$ - $1\frac{1}{2}$  in. broad, lanceolate, gradually tapering from a little above the more or less truncate base to an acute mucronate point, margins narrowly revolute, scabrous, both surfaces minutely scabrid-pubescent, or the lower surface minutely tomentose when young, the pubescence becoming more scattered and more or less deciduous on the older leaves. Umbels several, pedunculate, lateral at the nodes along the upper part of the stem which is sometimes leafless in the apical part; peduncles  $\frac{1}{2}$ - $1\frac{1}{2}$  in. long; bracts 2-5 lin. long, linear or subulate, acute; pedicels 6-11 lin. long. Sepals 4-6 lin. long,  $\frac{3}{4}$  lin. broad, equalling or shorter than the corolla, flat, lanceolate-attenuate, spreading, softly pubescent. Corolla lobed almost to the base, campanulate, or rotate-campanulate (?), apparently white; lobes 4-5 lin. long, 2 lin. broad, oblong, acute, concave, glabrous outside, tomentose with white hairs at the recurving apex and the margins within. Coronal-lobes arising from the widened base of the staminal column, spreading, very shortly adnate to the bottom of the corolla at the base, then erect and scarcely reaching to the base of the anthers,  $1\frac{1}{2}$  lin. long and as much in breadth, broadly ovate or rhomboid-ovate, apparently slightly reflexed at the sides, obtusely pointed, with a thick obtuse keel down the face, which forms an obtuse incurved point at the apex. Staminal-column 3 lin. long, with well marked furrows at the junction of the filaments, which do not appear to be quite free as in *X. barbigerum*; anther appendages broadly ovate, or orbicular, obtuse, inflexed over the truncate apex of the style which is not exerted beyond them. Follicles large "furrowed at the apex" (*Holub*),  $4\frac{1}{2}$ -5 in. long,  $1\frac{1}{2}$ - $1\frac{3}{4}$  in. thick, pubescent and beset with soft flexuose hairy bristles  $\frac{1}{2}$ - $\frac{3}{4}$  in. long.—*Xysmalobium lapathifolium*, K. Schum. in Engl. Pfl. Ost-Afr. C. 321, not of Decne.

**Mozamb. Dist.** German East Africa: Usseri, ex *K. Schumann*. British Central Africa: Rhodesia; Leshumo Valley, *Holub*, 669! 816! Nyasaland; near Sochi Hill, 3000 ft., *Kirk*! Namasi, *Cameron*, 4!

This species is closely allied to *X. ensifolium*, Burch., and *X. undulatum*, R. Br. From the former it differs in having the coronal-lobes at the base of the staminal-column and scarcely reaching to the base of the anther-wings; from the latter it differs in its narrower leaves, narrower and longer sepals, narrower, more acute and apparently thinner petals, which are less densely bearded at the tips with shorter hairs than in *X. undulatum*. It also resembles *X. angolense*, Scott-Elliot, but the apex of the style is not exerted beyond the anther-appendages and the filamental part of the staminal-column is quite half its entire length, whilst in *X. angolense* it is not more than  $\frac{1}{2}$  of the entire length of the column.

11. **X. barbigerum**, *N. E. Br.* Stem probably tall, rather robust, tomentose. Leaves opposite, ascending or incurved-ascending; petiole  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, tomentose or densely pubescent; blade 3-5 $\frac{1}{2}$  in. long, 6-10 lin. broad at the base or larger (?), long and narrow, gradually tapering from the base to the acute apex, subtruncate or obtuse at the base, longitudinally folded, pubescent on both sides. Umbels lateral at the nodes, racemously arranged along the upper part of the stem 10-16-

flowered; peduncles subequal,  $\frac{3}{4}$ –1 in. long, whitish-tomentose; bracts about 2 lin. long, subulate, deciduous, densely pubescent; pedicels  $\frac{1}{2}$ – $\frac{2}{3}$  in. long, whitish-tomentose. Sepals  $2\frac{1}{2}$  lin. long,  $\frac{3}{4}$  lin. broad, oblong-lanceolate, acute, pubescent on the back. Corolla lobed nearly to the base, campanulate, apparently white, glabrous outside, densely bearded within on the upper half with white hairs; lobes  $2\frac{1}{2}$ – $2\frac{3}{4}$  lin. long,  $1\frac{1}{2}$  lin. broad, oblong or ovate-oblong, sub-acute, recurved at the tips. Coronal-lobes arising at the base of the staminal-column and a little shorter than it, erect,  $1\frac{1}{4}$ – $1\frac{1}{3}$  lin. long, 1 lin. broad, ovate-rhomboid, obtuse, dorsally flattened, moderately thick and fleshy, with a slight obtuse keel down the inner face; alternating with them are 5 minute teeth. Staminal-column  $1\frac{3}{4}$  lin. long, with the filaments free above the attachment of the coronal-lobes; anther-appendages ovate, subobtuse, inflexed over the truncate apex of the style.

**Lower Guinea.** Angola: Amboella; at the mouth of the River Kuebe, 3700 ft., *Baum*, 332!

12. **X. angolense**, *Scott-Elliot in Journ. Bot.* 1890, 365. Stem 1–2 ft. high, stout, erect, thinly pubescent with curved hairs. Leaves ascending or incurved-ascending; petiole 1–3 lin. long; blade  $2\frac{1}{3}$ –9 in. long,  $\frac{1}{4}$ –1 in. broad at the base, gradually tapering from the truncate or subhastate base to an acuminate point, more or less scabrid on both sides; margins slightly thickened, not revolute, scabrid. Umbels pedunculate, several-flowered, lateral and terminal or somewhat clustered at the top of the stem; peduncles  $\frac{1}{6}$ – $\frac{3}{4}$  in. long, pubescent; pedicels 4–7 lin. long, pubescent; bracts 3–5 lin. long, linear-lanceolate, acuminate, pubescent. Sepals 3– $3\frac{1}{2}$  lin. long, 1– $1\frac{1}{2}$  lin. broad, erect, flat or with revolute margins at the base, lanceolate, acute, pubescent, “very pale yellow” (*Welwitsch*). Corolla-lobes 5 lin. long, 3 lin. broad, ovate-oblong, acute, concave, suberect, with recurved tips, densely bearded with white hairs on the apical part within, otherwise glabrous, “dull violet outside, whitish within” (*Welwitsch*). Coronal-lobes arising at the base of the staminal-column,  $1\frac{1}{2}$ –2 lin. long and the same in breadth, erect, fleshy, broadly ovate or subcordate-ovate, subobtuse, flattened, with recurved margins at the base, keeled on the face, “violet” (*Welwitsch*). Anthers erect, oblong, their appendages ovate, acute, erect, applied to the sides of the apical part of the style; this last is  $1\frac{1}{4}$ – $1\frac{1}{2}$  lin. long, stout, very obtuse or slightly dilated at the top, produced beyond the anther appendages, “violet” (*Welwitsch*). Follicles 2– $2\frac{1}{2}$  in. long, 6– $7\frac{1}{2}$  lin. thick, lanceolate, acute, setose and pubescent.—*K. Schum.* in *Engl. & Prantl, Pflanzenfam.* iv. ii. 232; *Hiern.* in *Cat. Afr. Pl. Welw.* i. 682. *X. prismatostigma*, *K. Schum.* in *Engl. Jahrb.* xvii. 120, and in *Engl. & Prantl, Pflanzenfam.* iv. ii. 232.

**Lower Guinea.** Angola: Huilla; in damp meadows near Humpata, and swampy places along streams near Huilla, *Welwitsch*, 4170! in the damp pastures of Catumba, towards Ohai, *Welwitsch*, 4171! Malange, *Mechow*, 329!

13. **X. sessile**, *Decne.* in *DC. Prod.* viii. 519. Stem herbaceous,

rather densely tomentose with rather long spreading soft hairs. Leaves almost sessile, ascending-spreading,  $1\frac{3}{4}$ – $2\frac{3}{4}$  in. long, 7–10 lin. broad, somewhat lanceolate or gradually tapering from the cordate or subcordate base to the acute apex, tomentose along the midrib above and beneath, otherwise glabrous, narrowly thickened at the margin, reticulately veined. Umbels lateral at the nodes and terminal, sessile, 3–4-flowered; pedicels  $\frac{1}{2}$ –1 in. long, tomentose. Sepals more or less reflexed,  $3\frac{3}{4}$ –4 lin. long,  $\frac{3}{4}$  lin. broad, linear-lanceolate, acute, with some scattered hairs on the back and sparsely ciliate. Corolla lobed nearly to the base, reflexed; lobes  $4\frac{1}{2}$  lin. long, 2 lin. broad, oblong, subacute, inner surface covered with exceedingly minute hair-like papillæ. Coronal-lobes arising at the base of the staminal-column and nearly or quite as long as it; erect or slightly spreading,  $2\frac{1}{2}$  lin. long,  $1\frac{1}{4}$ – $1\frac{1}{3}$  lin. broad above the middle, thick and fleshy, spathulate-obovoid, somewhat abruptly narrowed into the claw at about the middle, forming a slight angle on each side, obtuse, very convex on the back, flat on the inner face, with an obtusely triangular median keel at about the middle and a short transverse keel on each side of it. Staminal-column  $2\frac{1}{2}$  lin. long and as much in diam. at the base, broadly conical; anther-appendages broadly subcordate-ovate, subacute, inflexed over the depressed apex of the style; anther-wings  $\frac{1}{2}$  lin. broad and much projecting at their base.—*Gomphocarpus sessilis*, Decne. in Ann. Sc. Nat. sér. 2, ix. 325.

**Lower Guinea.** Angola, without indication of the collector in *Herb. Mus. d'Histoire Naturelle, Paris!*

Described from Decaisne's type specimen, which consists of a piece of the terminal part of the plant about 5 in. long, with 4 pairs of leaves. The indumentum on the stem, pedicels and midribs, although best described as tomentose is somewhat peculiar and slightly shaggy, the hairs are unequal in length,  $\frac{1}{4}$ – $\frac{1}{2}$  lin. long, soft and jointed, very spreading. The coronal-lobes are inaccurately described by Decaisne; I find them as described above.

14. **X. andongense**, *Hiern in Cat. Afr. Pl. Welw.* i. 682. Stem 1– $1\frac{1}{2}$  ft. high, pubescent with rather minute curved hairs. Leaves opposite, subsessile,  $1\frac{1}{2}$ – $3\frac{1}{4}$  in. long,  $\frac{1}{3}$ – $1\frac{1}{2}$  in. broad, thinly coriaceous, oblong to oblong-ovate, abruptly acute obtuse or retuse at the apex, apiculate, cordate at the base, narrowly thickened or revolute along the margins, glabrous on both sides, or with a few minute hairs scattered along the midrib above and beneath. Umbels lateral at the nodes and terminal, sessile, 5–8-flowered; pedicels 4–8 lin. long, pubescent along one side. Sepals 2–3 lin. long,  $\frac{2}{3}$ – $\frac{3}{4}$  lin. broad, lanceolate, acuminate, with a few scattered hairs on the back and sparsely ciliate. Corolla lobed nearly to the base; lobes apparently campanulately spreading,  $3$ – $3\frac{1}{2}$  lin. long,  $1\frac{3}{4}$ –2 lin. broad, oblong, subacute, ciliate, covered with exceedingly minute hair-like papillæ on the inner surface. Coronal-lobes arising at the base of the staminal-column and about as long as it, erect,  $1\frac{3}{4}$ –2 lin. long, about 1 lin. broad above the middle, thick and fleshy spathulate-obovoid or clavate, obtuse, very convex on the back,

flat on the inner face, with a nose-shaped median keel down the upper half, on each side of the abrupt lower end of which is a short transverse keel running to the margin, basal part also slightly keeled. Staminal-column  $1\frac{3}{4}$ -2 lin. long and as much in diam. at the base, broadly conical; anther-appendages broadly subcordate-ovate, subacute, inflexed over the depressed apex of the style; anther-wings  $\frac{1}{2}$  lin. broad and much projecting at the base.—*Schizoglossum tricorniculatum*, K. Schum. in Engl. Jahrb. xvii. 121, and in Engl. & Prantl, Pflanzenfam. iv. ii. 233; Durand & Schinz, Études Fl. Congo, i. 192.

**Lower Guinea.** Angola: Pungo Andongo, *Welwitsch*, 4189! Malange, *Mechow*, 355, 402! San Salvador; in the Steppe near Tunis, *Büttner*, 406 (ex *Schumann*).

**South Central.** Lunda: near Mussumba, *Pogge*, 379, 380 (ex *Schumann*).

I have much hesitation in retaining this as specifically distinct from *X. sessile*, Decne. I can discover no difference in the flowers, except that those of *X. andongense* are rather smaller in all their parts than those of *X. sessile*, and the corolla does not appear to be reflexed. In the form of the leaves and in indumentum however, the two specimens of *X. andongense* which I have examined distinctly differ from the type specimen of *X. sessile*. In *X. andongense* the hairs are minute, adpressed, mostly curved, and somewhat scattered, not at all dense, whilst in *X. sessile* they are rather long, very spreading and dense.

15. **X. Cecilæ**, *N. E. Br.* Stem erect, 1-1 $\frac{1}{2}$  ft. high, stout, about 2 lin. thick, simple, laxly leafy, puberulous along 2 lines in the upper part, red. Leaves spreading, 1-1 $\frac{3}{4}$  in. apart; petiole 1 $\frac{1}{2}$ -2 lin. long; blade 1 $\frac{3}{4}$ -2 $\frac{3}{4}$  in. long, 6-10 lin. broad and probably larger, oblong, with parallel sides, obtuse, apiculate, shortly cuneate at the base, coriaceous, glabrous on both sides, flat, smooth on the margins, bluish-green, with a red midrib. Umbels sessile at the upper nodes, 2-4-flowered; pedicels 7-9 lin. long, puberulous down one side. Sepals 3 lin. long, 1 lin. broad, lanceolate, acuminate, glabrous. Corolla large, campanulate, 5-lobed almost to the base, dull green, tinged with bronze outside, glabrous; lobes 1 in. long, 5-7 lin. broad, oblong or slightly elliptic-oblong, very obtuse, incurved-erect, recurved at the apex when alive, suberect or slightly spreading when dried. Coronal-lobes inserted 2 lin. above the base of the staminal-column and overtopping it by half their length, 3 $\frac{1}{2}$ -4 lin. long, erect, fleshy, laterally compressed, falcate-oblong in side view, perfectly truncate at the top, which is produced over the top of the staminal-column into a short beak, rounded at the base, slightly channelled down the inner face, which is destitute of keels or teeth, green, with a yellowish apex, according to a drawing of the flower. Staminal-column 3 $\frac{1}{2}$ -4 lin. long, the anthers and filamental-tube being about equal in length, stout, constricted under the anthers, dilated at the base; anthers subquadrate, with membranous orbicular appendages, inflexed over the rim of the depressed-truncate apex of the style. Fruit not seen.

**Mozamb. Dist.** Rhodesia: plentiful at Salisbury, *Hon. Mrs. Evelyn Cecil*, 60!

This species closely resembles *X. bellum*, N. E. Br., and *X. spathulatum*, N. E. Br., in general appearance, but is totally different from both in the structure of the coronal-lobes.

16. **X. grande**, *N. E. Br.* Rootstock tuberous. Stem 3 ft. high, erect, simple, very stout,  $\frac{1}{4}$ – $\frac{1}{3}$  in. thick, glabrous. Leaves rigidly coriaceous when alive (*Welwitsch*), parchment-like when dried, spreading, glabrous, glaucescent; petiole 6–7 lin. long; blade 4–4 $\frac{1}{2}$  in. long, 2–2 $\frac{1}{2}$  in. broad, cuneate-oblong, retuse or very obtusely rounded at the apex, minutely apiculate, shortly and broadly cuneate at the base. Umbels lateral at the nodes, shortly pedunculate or the upper perhaps subsessile, 4–5-flowered; bracts 2 $\frac{1}{2}$ –3 lin. long,  $\frac{1}{2}$  lin. broad, linear-oblong or slightly spatulate, obtuse, glabrous; pedicels  $\frac{3}{4}$  in. long, moderately stout, glabrous. Sepals 3–3 $\frac{1}{4}$  lin. long, 2 $\frac{1}{2}$  lin. broad, elliptic, very obtuse, glabrous. Corolla broadly campanulate, lobed almost to the base, glabrous, greenish-purple; lobes  $\frac{3}{4}$  in. long,  $\frac{1}{2}$  in. broad, elliptic-oblong, obtuse. Coronal-lobes arising  $\frac{2}{3}$  lin. above the base of the staminal-column and about or scarcely reaching to its top, 2 lin. long,  $\frac{1}{2}$ – $\frac{2}{3}$  lin. broad, erect and applied to the backs of the anthers, fleshy, linear-oblong, apparently flat on the inner face, very convex on the back at the basal part, obtuse, without keels on either face. Staminal-column  $\frac{1}{4}$  in. long, broadly conical in the antheriferous part; anthers broadly triangular, their wings much projecting, broadest at the base, with double or grooved margins; their appendages about 1 $\frac{1}{4}$  lin. in diam., roundish inflexed over the apex of the style.—*Glossostelma angolense*, Schlechter in Journ. Bot. 1895, 322, t. 352, fig. B; Engl. & Prantl, Pflanzenfam. Nachtr. zum ii.–iv. 287; Hiern in Cat. Afr. Pl. Welw. i. 688.

**Lower Guinea.** Angola: Pungo Andongo; in the woods of Pandas, near Mangué, very rare, *Welwitsch*, 4190!

There is no character whatever in the floral structure of this plant to separate it generically from *Xysmalobium*. It is very similar to *X. bellum*, N. E. Br., and *X. spathulatum*, N. E. Br., but is apparently a stouter plant and has different coronal-lobes. The figure illustrating the coronal structure in the Journal of Botany is scarcely correct. The specimen consists of a few nodes of the stem, with leaves and umbels of flowers attached. The specific name given by Schlechter having already been used under *Xysmalobium*, necessitates the above change.

17. **X. bellum**, *N. E. Br.* in *Kew Bulletin*, 1895, 69. Stem simple, stout, probably attaining 2 ft. or more in height, glabrous, with one pubescent line, which alternates at the nodes. Leaves spreading; petiole 2–3 lin. long; blade 2–3 $\frac{1}{2}$  in. long,  $\frac{3}{4}$ –1 $\frac{3}{4}$  in. broad, oblong or cuneate-oblong, varying from acute to broadly subtruncate at the apex, cuneate-acute at the base, flat or narrowly revolute along the margins, glabrous on both sides. Umbels 1 to several, lateral at the nodes, 3–6-flowered; lower umbels pedunculate; peduncles 0–1 in. long, pubescent along one side; bracts 2 $\frac{1}{2}$ –4 lin. long, subulate or linear-lanceolate, glabrous; pedicels  $\frac{3}{4}$ –1 $\frac{1}{4}$  in. long, stout, pubescent down one side. Sepals 3 $\frac{1}{2}$ –4 $\frac{1}{4}$  lin. long, 2 lin. broad, ovate or ovate-oblong, acute,

glabrous. Corolla  $1\frac{1}{4}$ – $1\frac{1}{2}$  in. in diam., campanulate, 5-lobed almost to the base, glabrous, dark purple-brown, speckled and streaked with white or occasionally entirely dark purple-brown within; lobes 10–13 lin. long, 6–7 lin. broad, oblong, obtuse. Coronal-lobes arising 2– $2\frac{1}{2}$  lin. above the base of the staminal-column and reaching to its top or slightly exceeding it,  $1\frac{3}{4}$ –2 lin. long, erect, white, very stout, fleshy, oblong or suborbicular, about as thick as broad, very convex on the back, flat with 2 narrow keels on the inner face, obtusely rounded at the apex, which is usually (always?) horizontally produced over the tips of the anthers into a short stout beak, on each side of which the margin is produced into a short deltoid tooth, also directed towards the anthers. Staminal-column  $3\frac{3}{4}$ – $4\frac{1}{2}$  lin. long; anther-appendages broadly ovate, obtuse or subacute, inflexed over the apex of the style.—K. Schum. in Engl. Pfl. Ost-Afr. C. 425.

**Mozamb. Dist.** British Central Africa: Urungu; Fwambo, *Carson*, 62! Nyasaland; Manganja Hills, near Sochi, 3000 ft., *Kirk*! Blantyre, *Buchanan*, 43! Namasi, *Cameron*, 12! and without precise locality, *Buchanan*, 603! Northern Rhodesia, *Berrington*!

This species, together with *X. spathulatum* N. E. Br., *X. grande*, N. E. Br., and *X. Cecilæ*, N. E. Br., form a little group very similar in appearance, having larger flowers than any other members of the genus. The keels and teeth on the inner face of the coronal-lobes in this species and in *X. spathulatum*, establish their connection with *Asclepias*, but on account of the very thick fleshy nature of the coronal-lobes and the close affinity of these species with *X. Cecilæ* (which has no teeth or keels on the lobes), they seem to me better placed under *Xysmalobium*.

The plant enumerated as *Schizoglossum spathulatum* by K. Schumann in Engler, Jahrbücher, xxviii. 454, which was collected by Goetze (718) in Uhehe, German East Africa, probably belongs here, rather than to *X. spathulatum*, N. E. Br., although Schumann regards these two as one species. See note under the latter.

18. **X. spathulatum**, *N. E. Br.* Stem stout, 14–18 in. high, simple, solitary, with one pubescent line alternating at the nodes. Leaves spreading; petiole 2–5 lin. long; blade  $1\frac{1}{4}$ – $3\frac{1}{4}$  in. long,  $\frac{3}{4}$ –2 in. broad, cuneate-oblong or oblong, truncate retuse or very broadly rounded at the apex, minutely apiculate, cuneate-acute at the base, both sides glabrous; veins horizontally spreading. Umbels solitary and terminal, or several lateral and terminal, the upper nearly or quite sessile, the lower more or less pedunculate, 3–4-flowered; peduncles up to 1 in. long, pubescent; bracts  $1\frac{1}{2}$ –4 lin. long, subulate, glabrous; pedicels  $\frac{5}{8}$ –1 in. long, pubescent along one side. Sepals 3– $4\frac{1}{2}$  lin. long, 2–3 lin. broad, ovate-oblong or elliptic-oblong, acute, glabrous. Corolla campanulate; lobes 6–11 lin. long, 4–6 lin. broad; oblong, obtuse, glabrous, whitish, densely spotted or speckled with purple. Coronal-lobes arising  $2\frac{1}{2}$ –3 lin. above the base of the staminal-column and reaching only to about the middle of the anthers, 1– $1\frac{1}{2}$  lin. long and the same in breadth, about 1 lin. thick, fleshy, orbicular, very convex on the back, just below the rounded apex is a short erect horn on the face, with a small tooth produced from the margin on each side of it at or below the middle. Anther-appendages elliptic-ovate, obtuse or subacute, inflexed over the apex of the style.—*Schizoglossum spathulatum*, K. Schum. in

Engl. Jahrb. xvii. 120, Engl. & Prantl, Pflanzenfam. iv. ii. 233 and 234, fig. 68, A-D, and in Bull. Soc. Bot. Belg. xxxvii. 122; Durand & Schinz, Études Fl. Congo, i. 192. *Gomphocarpus spathulatus*, Schlechter in Journ. Bot. 1895, 269.

**Lower Guinea.** Angola: near Malange, *Mechow*, 356; near Chamasango on the River Quango (Kuango), *Mechow*, 539A!

**South Central.** Congo Free State: Kongola Savanna, *Buchner*, 611; Marangu (Marungu) district, *De Beerst* (ex *Schumann*); Mpweto, on Lake Moero, *Descamps* (ex *Schumann*).

In general appearance this plant closely resembles *X. bellum*, N. E. Br., which Dr. Schumann considers to be identical with *X. spathulatum*; but after an examination of one of type specimens (*Mechow*, 539A), which was sent to Kew by Professor Engler and upon which the above description is chiefly based, I am unable to adopt this view, as the coronal-lobes are quite different in the two species. The figure of them in Engler & Prantl, Pflanzenfamilien is not quite accurate for *Mechow*. 539A, as regards the form of the lobes, or their length and position relative to that of the anthers, but it is sufficiently correct to demonstrate how different they are from those of *X. bellum*.

## 19. ASCLEPIAS, Linn.; Benth. et Hook. f. Gen. Pl. ii. 754.

Calyx 5-partite. Corolla 5-lobed to below the middle or nearly to the base, campanulate, subrotate, or reflexed; lobes overlapping to the left in bud. Corona of 5 lobes arising from the staminal-column, opposite the anthers, variable in form, usually free to the base, but sometimes with the inflexed sides shortly adnate to the staminal-column, complicate-cucullate or channelled down the face, or at least with the margins at the apex middle or base of the lobes inflexed and usually forming a tooth on each side, never flat, with or without a tooth horn or crest on the face of the lobe within the cavity or between the inflexed sides; sometimes 5 minute or rudimentary simple or bifid teeth or pouch-like lobules alternate with the coronal-lobes at their base. Staminal-column arising from the bottom of the corolla. Anthers erect, with their membranous appendages inflexed over the apex of the style or erect. Pollen-masses pendulous, solitary in each anther-cell, attached to the pollen-carriers in pairs by short or long variously-shaped caudicles. Style truncate or depressed and often umbonate at the apex, not exceeding the anther-appendages, which partly cover it. Follicles variable in shape, smooth or softly echinate. Seeds crowned with a tuft of hairs.—Perennial herbs or shrubs, often with a tuberous rootstock or tuberous roots; juice milky. Stems simple or branched, usually erect, rarely diffuse. Leaves opposite or whorled. Flowers in pedunculate or sessile umbels, lateral at the nodes or terminal.—*Gomphocarpus*, R. Br.; Benth. et Hook. f. Gen. Pl. ii. 753. *Stathmestelma*, K. Schum. in Engl. Jahrb. xvii. 129.

A large genus, distributed throughout Africa and the warmer parts of North and South America, with 2 species in Arabia and the Orient, and 2 naturalised in most warm regions.

I am quite unable to retain *Gomphocarpus* as generically distinct from *Asclepias*; they have been united by Baillon (*Histoire des Plantes*, x. 225), and likewise by Schlechter (*Journal of Botany*, 1895, 334). The only distinctive character assigned to these two genera is the presence of a horn or other appendage within the cucullate or folded part of the coronal-lobes in *Asclepias*, and its absence in *Gomphocarpus*, but this proves to be an untenable character, and if used as a generic distinction would place species that are evidently most closely related to each other into different genera, as, for example, *A. tenuifolia*, N. E. Br. and *A. filiformis*, Benth. & Hook. f., *A. angustata*, N. E. Br. and *A. macrantha*, Hochst.; whilst in *A. coccinea*, N. E. Br., the horn is well developed in some specimens and entirely absent in others, thus requiring to be placed in both genera. The same variation occurs in the genera *Margaretta*, *Schizoglossum* and *Cynanchum*, some species having the tooth or process (which corresponds to the horn of *Asclepias*) present, whilst in others it is entirely absent, thus fully demonstrating that this character is of no generic value. The genus *Stathmostelma* proposed by K. Schumann for those species having broad caudicles, also appears to me to be quite untenable, as I find a gradual series of variations from the short and slender up to the long and broad caudicles, the two extremes being very different, but I consider them to be only of specific value. I have refrained from describing the pollen apparatus in the following pages, for, being complicated, details concerning them, however concise, would lengthen the descriptions considerably and serve no useful purpose.

\*Leaves never more than 5 times as long as broad, usually much less,  $\frac{1}{4}$ -4 in. broad, oblong, ovate, ovate-lanceolate or lanceolate, never linear.

†Leaves cordate, subhastate or obtuse at the base.

Umbel solitary, terminal, dense, 25-30-flowered . . . . . 1. *A. densiflora*.

Umbels 2-many to a stem, racemously arranged along its upper part or corymbosely clustered at its top, very rarely (in weak specimens) solitary and then not strictly terminal.

Peduncles and pedicels glabrous; leaves sessile or subsessile, cordate at the base, glabrous.

Leaves elliptic-ovate, obtuse or broadly subacute . . . . . 2. *A. semiamplexans*.

Leaves elongate-ovate or ovate-lanceolate, tapering to an acute point . . . . . 3. *A. glaucophylla*.

Peduncles and pedicels pubescent or subtomentose; leaves distinctly but sometimes shortly petiolate.

Pubescence rust-coloured or deep tawny; coronal-lobes subquadrate, solid, with a split beak . . . . . 4. *A. fulva*.

Pubescence not rust-coloured nor tawny.

Coronal-lobes with a papillate line decurrent from each side tooth and a crested appendage within; corolla-lobes  $\frac{1}{2}$  in. long . . . . . 9. *A. odorata*.

Coronal-lobes with a simple horn or appendage within the cavity, no decurrent papillate lines; corolla-lobes  $\frac{2}{3}$ - $\frac{3}{4}$  in. long, red.

Sepals 2-2 $\frac{1}{2}$  lin. long; staminal-column 2 lin. long . . . . . 10. *A. pachyclada*.

- Sepals 4-6 lin. long; staminal-column  
3 lin. long . . . . . 11. *A. spectabilis*.
- Coronal-lobes without a horn or appendage  
within.
- Coronal-lobes distinctly shorter than the  
staminal-column . . . . . 5. *A. lineolata*.
- Coronal-lobes reaching to the level of the  
top of the staminal-column or be-  
yond.
- Coronal-lobes complicate, glabrous  
within.
- Inflexed sides of the coronal-lobes  
broad, somewhat hatchet-  
shaped, truncate, rising above  
the level of the apex of the  
lobe . . . . . 6. *A. Schweinfurthii*.
- Inflexed sides of the coronal-lobes  
produced at the middle into  
deltoid acute teeth.
- Leaves elongate-ovate, tapering to  
an acute apex; peduncles  
 $2\frac{1}{2}$ -4 in. long . . . . . 7. *A. conspicua*.
- Leaves oblong, scarcely or not  
at all narrowing towards the  
apex; peduncles  $\frac{1}{2}$ -1 in. long . . . . . 8. *A. robusta*.
- Coronal-lobes cucullate, at least in the  
basal part, papillose or with a  
transverse papillate-pubescent line  
within. (See also 44. *A. schu-*  
*manniana* in which the leaves  
are sometimes rounded at the  
base.)
- Coronal-lobes 1-2 lin. long; sta-  
minal-column  $1\frac{1}{2}$  lin. long . . . . . 48. *A. modesta*.
- Coronal-lobes  $2\frac{1}{2}$  lin. long; staminal-  
column 4 lin. long . . . . . 47. *A. rubella*.
- ††Leaves acute or cuneate at the base. (See also  
1. *A. densiflora*, in which the leaves are some-  
times cuneate at the base.)
- Leaves 1- $2\frac{1}{4}$  in. long; corolla-lobes not reflexed.  
Corolla violaceous or veined with violet-purple,  
often drying dark brown . . . . . 44. *A. schumanniana*.
- Corolla pink or white. (See 48. *A. modesta* and  
47. *A. rubella*.)
- Leaves  $2\frac{1}{2}$ -5 in. long; corolla-lobes reflexed.  
Corolla red . . . . . 15. *A. curassavica*.
- Corolla white or greenish-white . . . . . 16. *A. Physocarpa*.
- \*\*Leaves narrow, at least 5 (usually 10-20) times as long as  
broad, linear, linear-lanceolate or lanceolate, never  
broader at the base than at its middle.
- †Umbels racemously arranged along the stem one above  
another (not subcorymbose), several or numerous,  
rarely only 3-4 to a stem; peduncles all sub-  
equal.
- ‡Leaves much exceeding the peduncle and usually

- as long or longer than the umbel arising from the same node.
- Coronal-lobes overtopping the staminal-column by about half their length.
- Corolla glabrous outside; coronal-lobes with a tooth at the middle or apex of their inflexed sides.
- Coronal-lobes  $4\frac{1}{2}$ – $7\frac{1}{2}$  lin. long, with the teeth extending over the staminal-column . . . . . 12. *A. giganteiflora*.
- Coronal-lobes 3 lin. long, with the teeth partly within the lobe, reflexed towards its dorsal apex . . . . . 23. *A. albida*.
- Corolla white-tomentose outside; coronal-lobes 2–3 lin. long, entire, without teeth . . . . . 24. *A. integra*.
- Coronal-lobes or the median-horn with which they are furnished within, overtopping the staminal-column by much less than half their length,  $1\frac{1}{2}$ –3 lin. long.
- Leaves lanceolate or linear-lanceolate; corolla-lobes red,  $2\frac{1}{2}$ –3 lin. long . . . . . 15. *A. curassavica*.
- Leaves linear-filiform; corolla-lobes 2– $2\frac{1}{2}$  lin. long, whitish . . . . . 27. *A. filiformis*.
- Leaves linear; corolla-lobes 8–9 lin. long . . . . . 13. *A. lisanthoides*.
- Coronal-lobes not overtopping the staminal-column, sometimes shorter than it, with or without a median tooth or horn inside, sometimes varying in this character in different flowers on the same specimen.
- §Coronal-lobes with a distinct tooth arising within or at the apical angles or middle of the entire or denticulate top margin of each of their inflexed sides. (In *A. leuocarpa* the teeth are very minute.)
- Teeth arising from or within the top margin of the coronal-lobes directed backwards, straight or curved.
- Coronal-lobes very distinctly shorter than the staminal-column, denticulate along the top margin; fruit inflated, obtuse . . . . . 13. *A. semilunata*.
- Coronal-lobes reaching to the top of the staminal-column, entire along the top margin, but the teeth are sometimes denticulate; fruit not inflated, long-pointed.
- Fruit beset with bristle-like processes.
- Bristles of the fruit distinctly pubescent with spreading hairs . . . . . 17. *A. pubiseta*.
- Bristles of the fruit glabrous or with very minute adpressed pubescence.
- Top margin of the coronal-lobes without a cut or notch at the base of the teeth.

- Coronal-lobes oblong, much longer than broad viewed sideways, the lower margin of the tooth rising clear above the top margin of the lobe . . . ; . 18. *A. fruticosa*.
- Coronal-lobes subquadrate, as broad as long viewed sideways, the lower margin of the tooth about level with the top margin of the lobe . . . . . 20. *A. flavida*.
- Top margin of the coronal-lobes with a cut or notch at the base of the teeth, which are partly within the lobe.
- Stems unbranched, stout; corolla  $\frac{2}{3}$ - $\frac{3}{4}$  in. in diam. . . . . 22. *A. abyssinica*.
- Stems branched; branches slender; corolla  $\frac{1}{2}$  in. in diam. . . . . 21. *A. Phillipsiæ*.
- Fruit smooth, without any processes, long-beaked . . . . . 19. *A. rostrata*.
- Teeth arising from the top margin of the coronal-lobes erect.
- Stems unbranched; leaf-pairs 5-8 to a stem, 2-3 in. distant . . . . . 30. *A. amabilis*.
- Stems branched; leaf-pairs very numerous,  $\frac{2}{3}$ - $1\frac{1}{4}$  in. distant.
- Leaves lanceolate or linear-lanceolate,  $\frac{1}{4}$ - $\frac{3}{4}$  in. broad; teeth of coronal-lobes forming a short broad lobule which is often produced into an erect point on the dorsal side . . . . . 16. *A. physocarpa*.
- Leaves narrowly linear,  $\frac{1}{2}$ -1 lin. broad; teeth of coronal-lobes minute, usually with a small notch in front of them . . . . . 29. *A. leucocarpa*.
- Teeth of the coronal-lobes produced from the apex of the inner margin, horizontally directed over the tips of the anthers, acute; branches very slender; leaves linear-filiform . . . . . 28. *A. tenuifolia*.
- §§ Coronal-lobes with the top and inner margins meeting at a somewhat rectangularly acute angle, but not produced into distinct teeth.
- Follicles inflated, subglobose, very obtuse, bristly . . . . . 25. *A. Frederici*.
- Follicles ovoid-lanceolate, acuminate, bristly . . . . . 26. *A. Burchellii*.
- ‡‡ Leaves on the flowering part of the stem shorter than or not exceeding the peduncle arising from the same node; coronal-lobes thickened and papillate along the top margin . . . . . 31. *A. longissima*.
- †† Umbels solitary and terminal or 2-6 to a stem, sub-corymbose or somewhat clustered at its top, all

reaching to nearly the same general level; lower peduncles usually much longer than the upper. (See also 14. *A. curassavica*, in which the umbels are subcorymbose whilst in flower, afterwards becoming racemose.)

Peduncles usually all much more than 2 in. long, the lower 3-11 in. long; coronal-lobes with erect or horizontal teeth (lateral teeth) arising from their inflexed sides and with or without a median horn or tooth on their inner face. (See also 35 *A. Welwitschii*, which may, perhaps, sometimes have longer peduncles than in the specimens I have seen.)

Apex of the coronal-lobes not or scarcely produced beyond the level of the lateral teeth.

Umbel solitary; corolla-lobes 3-3½ lin. long . 34. *A. coccinea*.

Umbels 2-4 to a stem; corolla-lobes 4-6 lin. long . . . . . 35. *A. macrantha*.

Apex of the coronal-lobes produced much beyond the lateral teeth.

Corolla-lobes 3-4 lin. long, reflexed almost to the pedicel . . . . . 42. *A. reflexa*.

Corolla-lobes 6 lin. long, spreading . . . . . 37. *A. laurentiana*.

Corolla-lobes 1½-2 lin. long, spreading . . . . . 43. *A. aurea*.

Uppermost (and often all of the) peduncles less than 2 in. long; in a few species the lowest peduncles are 3-6 in. long.

‡Coronal-lobes overtopping the staminal-column by  $\frac{3}{4}$ -2½ lin.

Coronal-lobes furnished with a median tooth or horn on their inner face at or below the apex, and their inflexed sides produced into falcate or deltoid teeth.

Leaves glabrous, 1-4 lin. broad.

Corolla yellow or orange within; coronal-lobes 2¼-2½ lin. long . 36. *A. Welwitschii*.

Corolla red within; coronal-lobes 3½-4 lin. long . . . . . 38. *A. rhacodes*.

Leaves pubescent or subtomentose, ½-1 lin. broad; corolla greenish within . 39. *A. propinqua*.

Coronal-lobes without a median tooth or horn on their inner face.

Terminal part of the coronal-lobes produced much beyond the cucullate part into a long linear point . 52. *A. Randii*.

Terminal part of the coronal-lobes not produced into a long linear point.

Coronal-lobes widening upwards to 1½ lin. broad across the side at the teeth; pollen-caudicles with a very broad upper part. . . . . 40. *A. angustata*.

Coronal-lobes of about equal width throughout,  $\frac{3}{4}$  lin. broad across the side; pollen-caudicles filiform . . . . . 53. *A. eminens*.

‡‡Coronal-lobes never overtopping the staminal-column by more than  $\frac{1}{2}$  a lin., usually only reaching to the same level or shorter than it.

§Coronal-lobes much shorter than the staminal-column, nearly filled with a tuft of pubescent or papillate filaments, which are erect from the base . . . . . 50. *A. palustris.*

§§Coronal-lobes pubescent or papillate-pubescent in the basal part or along a transverse band or line at or below the middle within, but without a tuft of filaments.

Coronal-lobes with a small external pouch on each side at the middle . . . . . 41. *A. muhiudensis.*

Coronal lobes without external pouches.

Coronal-lobes arising  $\frac{1}{2}$ - $1\frac{1}{2}$  lin. above the base of the staminal-column.

Corolla pink, hairy on the outside . . . . . 47. *A. rubella.*

Corolla not pink, glabrous on both sides . . . . . 46. *A. dissoluta.*

Coronal-lobes arising at the base of the staminal-column.

Tips of the coronal-lobes strictly erect; leaves  $1\frac{1}{2}$ -6 lin. broad.

Corolla veined with violet or rosy-purple, sometimes dark-coloured in the dried state.

Hairs within the coronal-lobes flat, scale-like, in a transverse band at the very base of the cucullate part . . . . . 44. *A. schumanniana.*

Hairs within the coronal-lobes terete, in a transverse band at the very top of the cucullate part . . . . . 45. *A. pulchella.*

Corolla white or pale rosy in the dried state, not veined within.

Coronal-lobes abruptly cucullate in the basal part, with a small erect oblong obtuse tooth on each side . . . . . 48. *A. modesta.*

Coronal-lobes gradually narrowed from the base to the obtuse apex, with a small subacute tooth inflexed within on each side . . . . . 49. *A. foliosa.*

- Tips of the coronal-lobes stellately spreading; leaves  $\frac{1}{2}$ - $\frac{3}{4}$  lin. broad . . . . . 51. *A. pygmaea*.
- §§§Coronal-lobes glabrous and without a tooth or horn within, truncate at the top.
- Leaves glabrous; corolla-lobes glabrous, whitish within, dull purple-brown with white margins on the back . . . . . 32. *A. Nuttii*.
- Leaves puberulous beneath; corolla-lobes puberulous on the back, spotted with brown, whitish at the tips . . . . . 33. *A. sphacelata*.

1. **A. densiflora**, *N. E. Br.* Stems somewhat decumbent and branching at the base,  $1\frac{1}{3}$ - $1\frac{1}{2}$  lin. thick, with internodes  $\frac{3}{4}$ - $2\frac{1}{4}$  in. long, somewhat roughly hairy or subhispid. Leaves shortly petiolate, spreading; petiole 1-2 lin. long, stout, subhispid; blade  $1\frac{1}{4}$ - $2\frac{1}{2}$  in. long, 4-6 lin. broad, gradually tapering from the rounded cuneate subtruncate subhastate or subcordate base to an acute apex, often crisped or wavy on the margins, coarsely pubescent on both sides. Umbel solitary, terminal, 25-50-flowered, dense, 1- $1\frac{3}{4}$  in. in diam.; peduncle 2- $5\frac{1}{2}$  in. long, stout, coarsely pubescent; pedicels 4-8 lin. long, hispidulous. Sepals  $1\frac{1}{2}$  lin. long,  $\frac{3}{4}$  lin. broad, ovate-lanceolate, acute, thinly pubescent with spreading hairs. Corolla reflexed, glabrous on both sides; lobes  $2\frac{1}{2}$  lin. long,  $1\frac{3}{4}$ -2 lin. broad, ovate, subobtusely, dull purple on the apical part. Coronal-lobes arising  $\frac{1}{4}$ - $\frac{1}{3}$  lin. above the base of the staminal-column, and overtopping it by about  $\frac{1}{2}$  a lin.,  $1\frac{1}{4}$ - $1\frac{1}{2}$  lin. long, about 1 lin. broad across the side at the top, somewhat obovate-oblong, obtusely rounded or subtruncate at the top, rather thick and fleshy, somewhat clawed in the basal part, complicate above, with the inflexed sides shortly produced into an obtuse deltoid tooth over the staminal-column, no tooth within, apparently yellow. Staminal-column 1- $1\frac{1}{3}$  lin. long; anther-wings exceedingly prominent, broadly triangular in outline,  $\frac{3}{4}$  lin. long,  $\frac{1}{3}$ - $\frac{1}{2}$  lin. broad at the middle; anther-appendages orbicular, about  $\frac{1}{3}$  lin. in diam., inflexed on the depressed-truncate apex of the style.

**Mozamb. Dist.** Rhodesia; between Salisbury and Buliwayo, common, *Hon. Mrs. Evelyn Cecil*, 78!

Also in South Africa.

2. **A. semiamplectens**, *Hiern in Cat. Afr. Pl. Welw.* i. 685. Stems  $1\frac{1}{2}$ -2 ft. high, simple, moderately stout, glabrous or with two puberulous lines, very leafy. Leaves suberect, sessile or subsessile,  $1\frac{1}{4}$ -3 in. long,  $\frac{3}{4}$ - $2\frac{1}{4}$  in. broad, cordate or cordate oblong; obtuse or subacute, subamplexicaul at the base, both sides glabrous. Umbels lateral, 6-8-flowered; "flowers nodding" (*Welwitsch*); peduncles rather slender, glabrous,  $1\frac{1}{4}$ -2 in. long; bracts  $1\frac{1}{2}$ -2 lin. long, subulate, glabrous; pedicels  $1\frac{1}{8}$ - $1\frac{3}{8}$  in. long, glabrous. Sepals  $2\frac{1}{2}$ -3 lin. long, oblong, obtuse-

glabrous. Corolla 7-9 lin. in diam., rotate-campanulate; lobes 4 lin. long, 3 lin. broad, elliptic-ovate, subacute, glabrous, with one margin very minutely ciliate. Coronal-lobes arising about  $\frac{1}{4}$  lin. above, or decurrent to, the base of the staminal column, and attaining the same level,  $2\frac{1}{2}$  lin. long, ascending-spreading, complicate, truncate, the inner angles of the inflexed sides scarcely produced; no tooth within. Anther-appendages ovate, obtuse. Follicles (unripe only seen) 2 in. long,  $\frac{3}{4}$ -1 in. thick, inflated-ovate, acute, smooth and glabrous.—*Gomphocarpus semiamplexens*, K. Schum. in Engl. Jahrb. xvii. 128, and in Engl. & Prantl, Pflanzenfam. iv. ii. 236; Durand & Schinz, Études Fl. Congo, i. 193.

**Lower Guinea.** Angola: Pungo Andongo; in a thicket near Cazella, *Welwitsch*, 4188! near Malange, *Mechow*, 328.

**South Central.** Congo Free State: near Mukenge, *Pogge*, 1006, 1077, 1141. and between the Lubilash and Lomani Rivers, *Pogge*, 1037 (ex *Schumann*).

3. **A. glaucophylla**, *Schlechter* in *Journ. Bot.* 1896, 455. A stout herb with milky juice, about 3 ft. high, glabrous in all parts. Stems  $\frac{1}{4}$  in. or more in diam. Leaves opposite, sessile,  $3\frac{1}{2}$ -6 in. long, 1- $2\frac{1}{2}$  in. broad, elongate-ovate, acute or somewhat acuminate, cordate, with rounded stem-clasping lobes at the base, glaucous, blueish-green; margins flat, smooth. Umbels several, lateral at the nodes, pedunculate, 7-15-flowered; peduncles 1- $1\frac{3}{4}$  in. long; bracts  $2\frac{1}{2}$ -4 lin. long,  $\frac{1}{2}$  lin. long, linear, acute; pedicels 8-15 lin. long. Sepals 3 lin. long, 1- $1\frac{1}{2}$  lin. broad, oblong, subacute, ciliate, reflexed. Corolla reflexed, 5-lobed nearly to the base, light green; lobes  $4\frac{1}{2}$ -6 lin. long,  $2\frac{3}{4}$ -4 lin. broad, subobtuse, very minutely ciliate along one margin. Coronal-lobes arising  $\frac{1}{2}$  lin. above the base of the staminal-column and reaching to the same level, erect, 2- $2\frac{1}{2}$  lin. long,  $1\frac{1}{2}$ - $2\frac{1}{2}$  lin. broad across the side, compressed-cucullate, broadly oblong or subquadrate in outline, truncate at the top with the apical angle of the sides produced into a short acute point, no tooth or horn within, yellowish-brown. Staminal-column  $2\frac{1}{2}$  lin. long; anthers somewhat deltoid-oblong, their horny margins slightly dilated at the base, their appendages 1 lin. long,  $\frac{1}{2}$  lin. broad, oblong, obtuse, inflexed over and concealing the truncate apex of the style, which is about 1 lin. in diam. Follicles  $3\frac{1}{2}$  in. or more long, about  $\frac{3}{4}$  in. thick, fusiform, obtuse, with a few stout compressed linear obtuse processes 2-4 lin. long in the upper part.—S. Moore in *Journ. Bot.* 1902, 255. *Gomphocarpus glaucophyllus*, *Schlechter* in Engl. Jahrb. xviii. Beibl. 45, 19.

**Mozamb. Dist.** British Central Africa: Rhodesia; plentiful near Salisbury, *Hon. Mrs. Evelyn Cecil*, 57! *Rand*, 185 (ex *S. Moore*).

Also in South Africa.

4. **A. fulva**, *N. E. Br.* in *Kew Bulletin*, 1895, 254. Plant 1-2 ft. high. Stems simple with a close pubescence of minute, jointed, rust-coloured hairs. Leaves ascending or suberect, the lower with petioles 1-2 lin. long, the uppermost sessile; blade  $1\frac{1}{2}$ -3 in. long,  $\frac{1}{2}$ -1 in. broad, oblong, subacute, emarginate or subcordate at the base, both sides

covered with minute rust-coloured jointed hairs when young, glabrescent with age, scabrid on the margins. Umbels lateral and terminal, 6–8-flowered; peduncles 1–2 in. long, pubescent like the stem, as are also the 6–9 lin. long pedicels. Sepals 3 lin. long, linear-lanceolate, acute, spreading or reflexed, rusty-puberulous. Corolla reflexed-rotate, about 1 in. in diam.; lobes 5 lin. long, 3 lin. broad, ovate, subacute or sub-obtuse, with the apex minutely bifid, rusty-puberulous and purple-brown on the outside, dull orange within. Coronal-lobes arising 1 lin. above the base of the staminal-column and reaching to its top, 2 lin. long, compressed, subquadrate viewed sideways, with the inner side longest, truncate at the base, obliquely truncate at the top, produced over the tips of the anthers into an acuminate beak, which is split to its base like a pen-nib, otherwise the lobe is solid, yellowish with a narrow dark purple projecting rim around the top and base; a narrow wing runs down from the beak near the inner margin on each side. Staminal-column 3 lin. long. Anther-appendages rounded, obtuse, inflexed over the apex of the style.—*A. rubicunda*, Schlechter in Journ. Bot. 1895, 336. *Gomphocarpus rubicundus*, K. Schum. in Engl. Jahrb. xxx. 382.

**Nile Land.** Uganda: Buddu, on a dry plateau, *Scott-Elliot*, 7443! on dry grassy hills on the east side of Lake Albert Edward, *Scott Elliot*, 8088! and without precise locality, *Wilson*, 112!

**Mozamb. Dist.** German East Africa: Unyika; Uwurungu Mountain, 7200 ft., *Goetze*, 1456 (ex *Schumann*).

Remarkable for its close rusty pubescence.

5. **A. lineolata**, *Schlechter in Journ. Bot.* 1895, 336 partly. Roots fleshy, fusiform, fascicled. Stems stout, 2–4 ft. high, more or less hairy in the upper part. Leaves ascending or spreading; petiole  $\frac{1}{8}$ – $\frac{3}{4}$  in. long; blade 2–4 $\frac{1}{2}$  in. long,  $\frac{3}{4}$ –2 in. broad, or the uppermost sometimes only  $\frac{1}{4}$ – $\frac{1}{2}$  in. broad, oblong, ovate-oblong, or occasionally the upper ones linear-oblong, obtuse or subacute, apiculate, cordate, emarginate or rounded at the base, both sides scaberulous, narrowly revolute and scabrous along the margins. Umbels several; lateral and terminal, pedunculate, 4–10-flowered; peduncles  $\frac{3}{4}$ –5 $\frac{1}{2}$  in. (usually 2–3 in.) long, more or less pilose; bracts 1 $\frac{1}{2}$ –4 lin. long, pilose; pedicels  $\frac{1}{2}$ –1 $\frac{1}{4}$  in. long, pilose. Sepals 3–3 $\frac{1}{2}$  lin. long, lanceolate, acute, or attenuate, pilose. Corolla about 1 in. or rather more in diam., rotate or the lobes slightly reflexed; lobes 5–6 lin. long, 3–3 $\frac{1}{2}$  lin. broad, oblong-ovate, acute, pilose or puberulous on the back, more or less ciliolate, veined with rosy-purple on a whitish green ground, varying from white to purple (*Welwitsch*). Coronal-lobes arising from the base of the staminal-column and  $\frac{1}{4}$  shorter or almost equalling it in length, 2 $\frac{1}{2}$ –3 lin. long, purple, spreading, closely complicate, adnate to the column up to the anthers, produced at the apex into a stout, conical, complicate, erect or incurved tooth or point, between which and the base the margins rise into broad deltoid obtuse erect teeth, with their inner edges pressed against the back of the anthers, with a wing-like flap or ridge forming a small pocket on each side of the lobe at the base of the apical tooth. Anther-appendages very broad, rounded, inflexed over the apex of the style.

Follicles 3-4 in. long, 2 in. in diam., inflated, ellipsoid, obtuse, smooth, glabrous.—Schlechter, Westafr. Kautschuk-Exped. 308; Henriques in Bolet. Soc. Brot. xvi. 68; Hiern in Cat. Afr. Pl. Welw. i. 685. *A. lineolatus*, S. Moore in Journ. Bot. 1902. 256. *Gomphocarpus lineolatus*, Decne. in Ann. Sc. Nat. 2 sér. ix. (1838) 326, and in DC. Prod. viii. 558; K. Schum. in Engl. Jahrb. xvii. 126; in Engl. Pfl. Ost-Afr. C. 322, and in Engl. & Prantl, Pflanzenfam. iv. ii. 237; Durand & Schinz, Études Fl. Congo, i. 193; De Wild. & Durand, Contrib. Fl. Congo, i. ii. 41. *G. bisacculatus*, Oliver in Trans. Linn. Soc. ser. 2, ii. 341.

**Upper Guinea.** Niger Protectorate: Nupe, *Barter*, 1323 A!

**Nile Land.** Jur: Jur Ghattas, *Schweinfurth*, 2000! Bongo: by the River Moroko, *Schweinfurth*, 3982! by the River Lehssi, *Schweinfurth*, 4000! Uganda: by the River Wimi, 6000 ft., *Scott-Elliott*, 7881! British East Africa: near Mombasa, *Wakefield*! *Hildebrandt*, 1943!

**Lower Guinea.** Lower Congo: near Do'lo, *Schlechter*, 12807 (ex *Schlechter*), and without precise locality, *Laurent*, 104 (ex *Durand & Schinz*). Angola: Cazen20; by the River Luze, *Welwitsch*, 4182! Pungo Andongo; near rivers and in thickets, *Welwitsch*, 4183! 4184! 4185! 4186! 4187! Huilla; bushy places between Eme and Quipungo, *Welwitsch*, 4192! in the territory of Cahungulu, *Marques*, 203 (ex *Henriques*); Amboella; by the Kubango River, above Kimmarna, 3600 ft., *Baum*, 460!

**South Central.** Congo Free State: Luazi, *Luja*, (ex *De Wild. & Durand*).

**Mozamb. Dist.** German East Africa: Kilimanjaro, 3600-5000 ft., *Johnston*! *Folkens*, 2129! Portuguese East Africa: Shupanga, *Kirk*! banks of the River Shire near Morambala, *Kirk*, 74! British Central Africa: Urungu; Fwambo, *Carson*, 41! 61! Nyasaland; Kondowe to Karonga, 2000-6000 ft., *Whyte*! Mount Mlanji, *Scott-Elliott*, 8668! *Purves*, 92! Chikala, 2000 ft., *Purves*, 9! Shire Valley, *Waller*! Rhodesia: Buluwayo, *Rand*! near Salisbury, *Rand*! *Hon. Mrs. Evelyn Cecil*, 66! Leshumo Valley, *Holub*, 550!

6. **A. Schweinfurthii**, *N. E. Br.* in *Kew Bulletin*, 1895, 253. Stems 2 ft. or more high, simple, pubescent. Leaves spreading; petiole 1-2 lin. long; blade 2-3½ in. long, 1-2½ in. broad, cordate, obtuse, or lanceolate-ovate with a cordate base and subobtuse apex, apiculate, glabrous, slightly rough beneath, narrowly revolute and scabrid at the margins. Umbels 4-6-flowered, lateral; peduncles 1¼-5½ in. long, pubescent; bracts 3-5 lin. long, linear-subulate, pubescent; pedicels 8-12 lin. long, pubescent. Sepals 4 lin. long, lanceolate-attenuate, acute, pubescent. Corolla rotate-campanulate, 1 in. or rather more in diam.; lobes ½ in. long, 3-3½ lin. broad, elliptic-ovate, acute, puberulous on the back, ciliolate on one margin. Coronal-lobes radiately ascending from the base of the staminal-column and attaining to the same level as it, 3-3½ lin. long, 1¾-2 lin. high, complicate, produced at the apex beyond the broad hatchet-shaped wings or sides of the complicate part into a short oblong obtuse lobe. Staminal-column 2½ lin. long; anther-appendages subreniform or suborbicular, obtuse, inflexed over the truncate apex of the style.—*A. lineolata*, *Schlechter* in *Journ. Bot.* 1895, 336, partly.

**Nile Land.** Jur: Jur Ghattas, *Schweinfurth*, 1960! Uganda: Buddu, *Scott-Elliott*, 7533!

7. **A. conspicua**, *N. E. Br. in Kew Bulletin*, 1895, 253. Plant 15 in. or more high; stems branching and apparently decumbent at the base, subhispid. Leaves distant, ascending; petiole 1-3 lin. long; blade  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. long,  $\frac{1}{2}$ -1 in. or rather more broad, elongate, ovate, acute, cordate at the base, scabrid on both sides. Umbels 2-3 to a stem, terminal and lateral, 3-4-flowered; peduncles subhispid,  $2\frac{1}{2}$ -4 in. long; bracts 2-3 lin. long, subulate, hispidulous; pedicels 5-7 lin. long, hispidulous. Sepals 3-4 lin. long, lanceolate, acuminate, hispidulous. Corolla 1- $1\frac{1}{4}$  in. in diam., rotate-campanulate; lobes 6-7 lin. long, 4- $4\frac{1}{2}$  lin. broad, elliptic-oblong, subacute, ciliate, puberulous on the back. Coronal-lobes arising from the base of the staminal-column and twice as long as it, but radiately ascending, so as to reach to about the same level,  $\frac{1}{2}$  lin. long, oblong, complicate, bicarinate on the face between the inflexed sides which are produced below the middle into broad deltoid subacute erect teeth. Anther-appendages orbicular-ovate, emarginate, inflexed over the apex of the style.

**Mozamb. Dist.** British Central Africa: Urungu; Fwambo, *Carson*, 12!

8. **A. robusta**, *N. E. Br.* Stems 2-4 ft. high, simple, stout, pubescent below, more or less tomentose in the upper part. Leaves spreading; petiole 1-4 lin. long; blade 2- $4\frac{1}{2}$  in. long,  $1-2\frac{1}{4}$  in. broad, oblong or ovate-oblong, obtuse, apiculate, cordate or rounded at the base, pubescent-scabrid on both sides, scabrous on the margins. Umbels lateral and terminal, 6-12-flowered; peduncles  $\frac{1}{2}$ -1 in. long, tomentose; bracts 3-4 lin. long, linear, acute; pedicels  $\frac{3}{4}$ -1 in. long, tomentose. Sepals 4-5 lin. long, 2 lin. broad, ovate-lanceolate, acute, with a short spreading pubescence. Corolla rotate,  $1\frac{1}{4}$ - $1\frac{1}{2}$  in. in diam.; lobes 7-8 lin. long, 4- $4\frac{1}{2}$  lin. broad, elliptic-oblong, acute, pubescent on the back. Coronal-lobes 8-9 lin. long, stellately ascending, spreading from the base of the staminal-column and three times as long as it, narrowly complicate, linear-acuminate and channelled in the apical part, with the inflexed sides produced just below the middle into subfalcate teeth projecting over the apex of the style; no tooth within. Staminal-column  $2\frac{1}{2}$ -3 lin. long; anther-appendages rounded, inflexed over the apex of the style.—*Gomphocarpus robustus*, A. Rich. Tent. Fl. Abyss. ii. 40, t. 70; Oliver in Trans. Linn. Soc. xxix. 110; K. Schum. in Engl. Pfl. Ost-Afr. C. 322, and in Engl. & Prantl, Pflanzenfam. iv. ii. 237. *G. drepanostephanus*, Hochst. ex Oliver in Trans. Linn. Soc. xxix. 110.

**Nile Land.** Abyssinia: near Jelajeranne towards the Tacazze River, *Schimper*, 1673! Shireh Province, *Quartin-Dillon*! Uganda: Unyoro, *Speke & Grant*, 555!

9. **A. odorata**, *N. E. Br.* Stems erect, simple, about 20 in. high,  $2\frac{1}{2}$  lin. thick, minutely tomentose above. Leaves petiolate; petiole  $1\frac{1}{2}$ -7 lin. long, channelled above, puberulous; blade  $3\frac{1}{4}$ - $7\frac{1}{2}$  in. long,  $\frac{3}{4}$ - $2\frac{1}{4}$  in. broad, oblong or oblong-lanceolate, acute, broadly cuneate

or rounded at the base, very minutely scabrid-puberulous on both sides. Umbels lateral at the nodes, few or many-flowered; peduncles  $4\frac{1}{2}$ – $16\frac{1}{2}$  lin. long, minutely tomentose; pedicels 14– $16\frac{1}{2}$  lin. long, minutely tomentose. Sepals  $\frac{1}{4}$  in. long, subulate-lanceolate, tomentose on the back. Corolla lobed nearly to the base, orange-red; lobes about  $\frac{1}{2}$  in. long, oblong, acute, minutely papillate. Coronal-lobes arising  $\frac{3}{4}$  lin. above the base of the staminal-column and very much longer,  $4\frac{1}{2}$  lin. long, 3-lobed, furnished within below the terminal-lobe with a crested appendage, and with two papillate lines decurrent from the acute side lobes. Staminal-column  $1\frac{1}{2}$  lin. long, reaching only to the middle appendage of the coronal-lobes; anther-appendages large. Follicles  $3\frac{1}{2}$ – $4\frac{1}{3}$  in. long, fusiform, beaked, minutely papillate.—*Stathmostelma odoratum*, K. Schum. in Engl. Jahrb. xxviii. 457.

**Mozamb. Dist.** German East Africa; Uehe: near Sula, 4200 ft., *Goetze*, 498.

I have not seen this species. If the measurements given are correct, the coronal-lobes are about 3 times as long as the staminal-column.

10. **A. pachyclada**, *N. E. Br.* A stout bush about 3 ft. high, with flowering-stems 8–12 in. long and  $3\frac{1}{2}$ – $4\frac{1}{2}$  lin. thick at the base, subtomentose above with dusky olive-green hairs. Leaves membranous; petiole up to  $\frac{1}{2}$  in. long, somewhat sulcate, papillate; blade  $3\frac{1}{4}$ – $8\frac{1}{2}$  in. long,  $1\frac{1}{6}$ – $4\frac{1}{3}$  in. broad, oblong or ovate-oblong, obtuse, mucronate, rounded or subcordate at the base, subtomentose when young, afterwards with minute scattered hairs on both sides. Umbels lateral at the nodes, few-flowered, pedunculate; pedicels 1– $1\frac{1}{2}$  in. long, minutely subtomentose. Sepals 2– $2\frac{1}{2}$  lin. long, subulate, puberulous on both sides. Corolla large, 5-lobed almost to the base, red-brown; lobes about  $8\frac{1}{2}$  lin. long, oblong, acute, minutely papillate within. Coronal-lobes 3-lobed, lateral lobes acuminate, middle lobe obtuse, furnished within with a triangular appendage. Staminal-column 2 lin. long.—*Stathmostelma pachycladum*, K. Schum. in Engl. Jahrb. xxviii. 458.

**Mozamb. Dist.** German East Africa: Uehe; in Iringa near Kigonsire, 4200 ft., *Goetze*, 531.

I have not seen this plant, which may prove to be identical with *A. spectabilis*, *N. E. Br.*

11. **A. spectabilis**, *N. E. Br.* in *Kew Bulletin*, 1895, 254. Stems 3–4 ft. high, stout, pubescent, with milky juice. Leaves somewhat ascending, herbaceous; petiole 1–6 lin. long; blade  $3\frac{1}{2}$ –7 in. long, 1–2 in. broad, lanceolate, tapering to an acute point, cuneately or subtruncately rounded at the base, pubescent on both sides. Umbels lateral and terminal, probably 5–6-flowered; peduncles  $\frac{3}{4}$ – $1\frac{3}{4}$  in. long, pubescent; bracts 2– $2\frac{1}{2}$  lin. long, subulate; pedicels  $\frac{3}{4}$ – $1\frac{1}{4}$  in. long, pubescent, at least down one side. Sepals 4–6 lin. long, lanceolate, acuminate, pubescent. Corolla rotate-campanulate,  $1\frac{1}{4}$  in. in diam.; lobes  $\frac{3}{4}$  in. long,  $3\frac{1}{2}$  lin. broad, oblong, obtuse, more or less replicate, sparsely pubescent on the back towards the apex and puberulous within along one margin. Coronal-lobes arising  $\frac{3}{4}$ –1 lin. above the base of the

staminal-column and  $\frac{1}{3}$  longer than it, 4 lin. long, erect, gibbous on each side at about  $\frac{1}{4}$  the way up from the base, apical half concave-complicate, oblong-ovate, obtuse, margins just above the middle produced over the apex of the style into falcate and acute, or linear-oblong, truncate or obtuse teeth, within the middle of the face of the lobe an erect, subulate and acute, or compressed linear-oblong, obtuse or truncate horn,  $1\frac{1}{2}$  lin. long. Staminal-column 3 lin. long; anther-appendages orbicular-oblong, obtuse, inflexed over the apex of the style.

**Mozamb. Dist.** British Central Africa: Nyasaland: Magomera, 3000 ft., *Waller!* near Blantyre, *Last!* Chikala, 2000 ft., *Purves, 74!* and without precise locality, *Buchanan, 441!* 553!

“Root tuberos, eatable, beans eatable,” *Waller*. A very handsome species, the flowers appear to be carmine or scarlet-red, with a yellow corona.

12. **A. gigantiflora**, *N. E. Br.* Stems probably attaining a height of 2–3 ft., branched at the base. Leaves sessile or subsessile,  $3\frac{1}{2}$ – $6\frac{1}{2}$  in. long,  $1$ – $3\frac{1}{2}$  lin. broad, elongate-lanceolate or linear, acuminate, glabrous, pubescent on the revolute margins and midrib. Umbels several, lateral and terminal, about 3-flowered; peduncles  $1\frac{1}{4}$ –4 in. long, pubescent along one side. Bracts 2–8 lin. long, linear, acuminate, ciliate; pedicels  $1\frac{1}{4}$ –2 in. long, pubescent along the inner side. Sepals  $4\frac{1}{2}$ – $7\frac{1}{2}$  lin. long,  $1\frac{1}{2}$ – $3\frac{1}{2}$  lin. broad, lanceolate or ovate, acute, more or less pubescent on the back. Corolla rotate,  $1\frac{1}{2}$ – $2\frac{1}{4}$  in. in diam. or rather more; lobes  $\frac{3}{4}$ –1 in. long,  $4$ – $4\frac{1}{2}$  lin. broad, oblong, acute, glabrous on both sides. Coronal-lobes arising  $1\frac{1}{2}$  lin. above the base of the staminal-column and much overtopping it,  $4\frac{1}{2}$ – $7\frac{1}{2}$  lin. long, complicate in the apical part, solid below, obliquely truncate, with the inflexed margins produced into falcate teeth, curved upwards over the tips of the anthers, no horn within.—*Stathmostelma gigantiflorum*, K. Schum. in Engl. Jahrb. xvii. 129, t. 6, fig. A–C; in Engl. Pfl. Ost-Afr. C. 322; and in Engl. & Prantl, Pflanzenfam. iv. ii. 240 and 241, fig. 70, A–C; Schlechter in Journ. Bot. 1895, 333.

**Nile Land.** British East Africa: Makindu Mountains, *Scott-Elliot, 6283!*

**Mozamb. Dist.** German East Africa: near Rekoma, *Böhm, 24.*

I have not seen the type of this plant; the petioles are stated to be up to  $4\frac{1}{2}$  lines long, but the leaves are represented as subsessile or with very short petioles in the figure. The smaller dimensions in the above description are taken from *Scott-Elliot's* specimen, which appears to be identical with *Böhm's* plant except in the size of the flowers.

13. **A. lisianthoides**, *N. E. Br.* Stem erect, simple, 10 in. or more high, with one puberulous line alternating at the nodes. Leaves more or less recurving, subsessile,  $2\frac{1}{4}$ –4 in. long,  $1\frac{1}{2}$ –2 lin. broad, linear, acute, glabrous. Umbels lateral at the nodes and terminal, racemose along the upper part of the stem, pedunculate, 3–4-flowered; peduncles  $\frac{1}{2}$ – $\frac{3}{4}$  in. long; bracts  $1\frac{1}{2}$  lin. long, subulate; pedicels 6–7 lin. long, glabrous. Sepals  $1\frac{1}{2}$ – $1\frac{3}{4}$  lin. long,  $\frac{2}{3}$ – $\frac{3}{4}$  lin. broad, lanceolate, acute or acuminate, glabrous. Corolla large, lobed nearly to the base, quite glabrous; lobes apparently campanulately spreading,  $\frac{2}{3}$  in. long,  $\frac{1}{3}$  in.

broad, somewhat elliptic-oblong, very obtuse, narrowly reflexed along the margins, recurved at the apex. Coronal-lobes arising  $1\frac{1}{2}$  lin. above the base of the staminal-column and overtopping it by about  $\frac{1}{3}$  of their length,  $3-3\frac{1}{4}$  lin. long about 1 lin. broad measured either way, erect, fleshy, narrowly complicate or channelled down the inner face, very convex on the back and slightly gibbous at the base, tapering upwards into a linear channelled obtuse or bifid point. Staminal-column  $3-3\frac{1}{4}$  lin. long; anther-appendages orbicular, erect and applied to the sides of the terminal part of the style, which is truncate and depressed or crater-like at the apex, and exceeds or is slightly shorter than the anther-appendages. Pollen-carriers seated much below the apex of the style.—*Gomphocarpus lisianthoides*, Decne. in Ann. Sc. Nat. 2 sér. ix. 325; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 237. *G. chironioides*, Decne. in DC. Prod. viii. 562. *Xysmalobium fritillarioides*, Rendle in Journ. Bot. 1894, 162; Hiern in Cat. Afr. Pl. Welw. i. 682. *Chlorostelma fritillarioides*, Welw. ex Rendle in Journ. Bot. 1894, 162.

**Lower Guinea.** Angola: Huilla; in thickets between Mompulla and Hum-pata, rare, *Welwitsch*, 4179! and without precise locality or indication of the collector in *Herb. Paris*!

On comparing the type specimen of *Gomphocarpus lisianthoides* with that of *Xysmalobium fritillarioides*, Rendle, at the British Museum which consists of a sketch of Welwitsch's unique specimen, 1 flower and 1 bud, I find that the two are identical. According to Welwitsch the flowers are greenish-yellow. The species has the habit and general appearance of *Schizoglossum Carsoni*, N. E. Br., but the coronal-lobes are quite different, being distinctly (although narrowly) complicate, somewhat as in *A. dissoluta*, Schlechter, in which the flowers are similar in structure.

In Engl. Jahrb. xxx. 382, *Gomphocarpus lisianthoides* is also recorded by Dr. Schumann from the foot-hills of Kivira Valley, in the Untali district of Upper Kondeland, German East Africa (*Goetze*, 1476), but I have not seen a specimen.

14. **A. semilunata**, N. E. Br. Stems 2-5 ft. high, tomentose in the upper part. Lower leaves usually 3-4 in a whorl, upper opposite; petiole  $1\frac{1}{2}-4$  lin. long; blade 4-7 in. long,  $\frac{1}{4}-\frac{3}{4}$  in. broad, linear or linear-lanceolate, acute or acuminate, more or less rounded or somewhat tapering at the base, narrowly revolute along the margins, glabrous. Umbels pedunculate, lateral at the nodes; peduncles  $1-1\frac{1}{2}$  in. long, tomentose; bracts 5-7 lin. long, linear, acuminate, tomentose, deciduous; pedicels 5-11 lin. long. Sepals 2-3 lin. long, lanceolate, acuminate, tomentose. Corolla 5-lobed nearly to the base; lobes reflexed, 4-5 lin. long,  $2\frac{1}{4}-2\frac{1}{2}$  lin. broad, ovate-oblong, subacute, glabrous on both sides, ciliate along one margin. Coronal-lobes arising  $\frac{1}{2}$  lin. above the base of the staminal-column and shorter,  $1-1\frac{1}{4}$  lin. long and the same in breadth, complicate-cucullate, truncate, with the apical margin denticulate and having a short straight tooth directed backwards at about one third the way along it on either side within, often from the bottom within arises a small, compressed, erect tooth  $\frac{1}{4}-\frac{2}{3}$  the length of the sides of the lobe, sometimes rudimentary or absent. Follicles large and very inflated  $2\frac{1}{2}-3$  in. long,

1½–1¾ in. thick, half-moon shaped, straight on the inner face, very much curved on the outer, very obtuse, setose-echinate. Seeds ovoid, turgid, grooved down one face, tuberculate.—*A. denticulata*, Schlechter in Journ. Bot. 1895, 334; Hiern in Cat. Afr. Pl. Welw. i. 685. *Gomphocarpus semilunatus*, A. Rich. Tent. Fl. Abyss. ii. 39; Engl. Hochgebirgsfl. Trop. Afr. 341. *G. physocarpus*, K. Schum. in Engl. Pf. Ost-Afr. C. 322, not of E. Meyer.

**Nile Land.** Abyssinia: Plain of Dembea, between Ifak and Gondar, Schimper, 1343! Jenda, Steudner, 750! Reb Valley, Steudner, 754 (ex Engler); Shireh Province, Dillon & Petit, 31! Uganda: Unyoro, Speke & Grant, 606! Madi, Speke & Grant, 728! Berkeley Bay, Scott-Elliott, 7089! Kampala, Scott-Elliott, 7310! Ruwenzori; Wimi, 6000–9000 ft., Scott-Elliott, 7904! Semliki Valley, Scott-Elliott, 8101! Usoga villages, Whyte! Fifth day from Lubwas, Whyte! Mau Plateau, 8500–9500 ft., Whyte! Cultivated ground, Wilson, 51!

**Lower Guinea.** Angola: Golungo Alto; in palm-swamps on the banks of the River Quiazoze, Welwitsch, 4158! Libongo: in swamps around the lakes by the banks of the River Lifune, Welwitsch, 4159!

**South Central.** Congo Free State: Nianniam; Wando, on the River Dyagbe, Schweinfurth, 3098!

15. **A. curassavica**, Linn. *Sp. Pl.* i. 215. Stems 2–3 ft. high, glabrous. Leaves spreading; petiole ⅓–½ in. long; blade 2½–5½ in. long, ⅓–1¼ in. broad, lanceolate, acuminate, cuneate-acute at the base, glabrous. Umbels lateral and terminal, pedunculate, 6–12-flowered; peduncles 1–3 in. long, puberulous; pedicels ½–¾ in. long, more or less puberulous. Sepals 2 lin. long, lanceolate, acute, reflexed, puberulous. Corolla reflexed, scarlet-red; lobes 2½–3 lin. long, 1½ lin. broad, oblong, acute, glabrous. Coronal-lobes arising 1 lin. above the base of the staminal-column and overtopping it by about ⅓ of their length, 1½–2 lin. long, complicate, obliquely truncate, with a horn arising from the base within, protruding for half its length, and curved forwards over the top of the staminal-column, yellow. Anther-appendages orbicular inflexed over the apex of the style. Follicles mostly solitary, 3–3½ in. long, about 5 lin. thick, lanceolate, acuminate into a beak, and tapering into a stipe at the base, smooth, glabrous. Seeds 3 lin. long, 2 lin. broad, elliptic, plano-convex, with a broad thin margin, minutely tuberculate-lineate, dark brown.—Bot. Reg. i. t. 81; Loddiges, Bot. Cab. t. 349; Decne. in DC. Prod. viii. 566; Henriques in Bolet. Soc. Brot. x. 141; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 239.

**Upper Guinea.** Liberia, Christy! Gold Coast: Aburi, Johnson! Southern Nigeria: Old Calabar, Holland, 124! Fernando Po, Mann, 48!

**Lower Guinea.** Island of St. Thomas, 1000–2000 ft., Moller & Quintas (ex Henriques).

**Mozamb. Dist.** German East Africa: Usambara; Tanga, Heinsen, 129! Portuguese East Africa: Zumbo, on the Zambesi, Baum, 1004!

A native of Tropical America, now widely spread in the tropics.

16. **A. physocarpa**, Schlechter in Journ. Bot. 1896, 453. Stem 2–3 ft. (or more?) high, branched, whitish-pubescent or subtomentulose

in the upper part. Leaves opposite, ascending or spreading; petiole 2-3 lin. long; blade 2-4 in. long,  $3\frac{1}{2}$ -10 lin. broad, lanceolate, very acute, mucronulate, cuneately acute at the base, glabrous on both sides, but with the petiole and sometimes the midrib more or less puberulous. Umbels 6-10-flowered; peduncles sublateral or subaxillary, 1-1 $\frac{1}{2}$  in. long, whitish-pubescent at the top; pedicels 7-12 lin. long, whitish-pubescent. Sepals 2 lin. long, lanceolate, acuminate, pubescent. Corolla 5-lobed nearly to the base; lobes reflexed, about 3 lin. long, 2-2 $\frac{1}{2}$  lin. broad, ovate, subobtusely, glabrous on both sides, but ciliate along one margin within, white. Coronal-lobes arising  $\frac{1}{2}$ - $\frac{3}{4}$  lin. above the base of the staminal-column and nearly or quite reaching to its top, about 1 $\frac{3}{4}$  lin. long, complicate, subquadrate in side view, apical angles of the inflexed sides shortly produced above the other part of the lobe into a broad subtruncate lobule, usually produced into an erect tooth on the dorsal side, narrowly winged down the inner margins, no tooth within. Staminal-column about 2 $\frac{1}{2}$  lin. long; anther-appendages transverse, somewhat semicircular, inflexed over the margin of the depressed apex of the style. Follicles 1 $\frac{1}{2}$ -2 $\frac{1}{2}$  in. long, 1 $\frac{1}{2}$ -2 in. in diam., solitary, inflated, subglobose or obliquely ovoid, obtuse, puberulous and covered with long soft bristles.—*Gomphocarpus physocarpus*, E. Meyer, Comm. 202; Decne. in DC. Prod. viii. 558; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 236; in Engl. Pf. Ost-Afr. C. 322.

**Nile Land.** British East Africa: Leikipia, 6800 ft., Thomson! Uganda Protectorate: between Eldoma Ravine and Upper Mau Plateau, 7000-8000 ft., Whyte!

**Mozamb. Dist.** German East Africa: Kilimanjaro, Marungu, 4900 ft., Volkens!

Also in South Africa and the Cape Verd Islands. The tropical specimens I have seen being without fruit, I have described the follicles from South African specimens.

The plant enumerated as *Gomphocarpus physocarpus* by K. Schumann in Ann. Istit. Bot. Roma, vii. 37, collected in Somaliland by Riva (108, 109, 1557, 1601), is probably a different species.

**17. A. pubiseta, N. E. Br.** A branching shrub; branches purplish, minutely tomentose. Leaves ascending or spreading; petiole  $\frac{1}{2}$ -2 lin. long; blade 2 $\frac{1}{2}$ -6 in. long, 1-2 $\frac{1}{2}$  lin. broad, linear, acute, mucronate, glabrous on both sides or with the midrib puberulous beneath, and sometimes sparsely and minutely puberulous above. Umbels pedunculate, 5-7-flowered, lateral at the nodes; peduncles  $\frac{1}{2}$ -1 $\frac{1}{4}$  in. long, puberulous; pedicels  $\frac{1}{2}$ -1 in. long, puberulous. Sepals 2-3 lin. long,  $\frac{3}{4}$ -1 lin. broad, lanceolate, acuminate. Corolla about 1 in. in diam., rotate, 5-lobed nearly to the base; lobes elliptic-lanceolate, acute, purplish outside, pale greenish within. Coronal-lobes arising much above the base of the staminal-column and reaching to its top, complicate, oblong in side view, truncate at the base and apex, with horizontally reflexed teeth from the apices of the inflexed sides, half as long as the upper margin of the lobe, no tooth within. Follicles 2 $\frac{1}{2}$ -3 in. long,  $\frac{3}{4}$  in. thick, ovoid-

lanceolate, attenuate into a beak, setose, pubescent or subtomentose all over, including the setæ, with spreading white hairs, at least when young.—*Gomphocarpus purpurascens*, A. Rich. Tent. Fl. Abyss. ii. 38, t. 69; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 236. *G. fruticosus*, var. *purpureus*, Schweinf. Beitr. Fl. Aethiop. 129; Engl. Hochgebirgsfl. Trop. Afr. 341; Penzig in Atti Congr. Bot. Internaz. 1892, 349.

**Nile Land.** Eritrea: among Olive bushes from Geleb to Babbit Valley and on Lalamba Mountain, near Keren, ex *Penzig*. Abyssinia: Chelicut, *Petit* (ex *Richard*); Tigre; between Mai Gouagoua and Debradina, *Dillon & Petit*, 24! Shireh Province, *Dillon & Petit*! Samen; near Jaja, *Schimper*, 1854 (ex *Engler*), Wadela district, *Steudner*, 758, 759 (ex *Engler*), and without precise locality, *Schimper*, 79!

This is a somewhat imperfectly known species, of which I have not seen flowers and have compiled my account of them from *Richard*'s description and figure. German authors have placed it under *A. fruticosa*, Linn., from which it is certainly very distinct and more nearly resembles *A. flavida*, N. E. Br., from which the very hairy bristles on the fruit will at once distinguish it. There is already an *A. purpurascens*, Linn.

18. **A. fruticosa**, Linn. *Sp. Pl. ed. i.* 216. A shrub 3–10 ft. high; branches erect, pubescent or puberulous. Leaves more or less ascending; petiole 2–4 lin. long; blade 2–6 in. long, 2–9 lin. broad, linear to linear-lanceolate, acute or acuminate, mucronate, or rarely aristate, cuneate-acute at the base, narrowly revolute along the margins, glabrous or puberulous, especially on the midrib beneath. Umbels pedunculate, lateral at the nodes and terminal, 6–10-flowered; peduncles  $\frac{3}{4}$ – $1\frac{1}{2}$  in. long, pubescent; bracts 3–4 lin. long, linear, acuminate, deciduous; pedicels  $\frac{1}{2}$ – $\frac{3}{4}$  in. long, pubescent. Sepals 3 lin. long, lanceolate, acuminate, pubescent. Corolla 5-lobed nearly to the base, white; lobes reflexed, 4 lin. long, 2 lin. broad, ovate-oblong, obtuse, glabrous on both sides, usually ciliate along one margin, but sometimes without cilia. Coronal-lobes arising about  $\frac{1}{2}$  lin. above the base of the 2 lin. long staminal-column, and reaching to its summit, erect, complicate-cucullate, with the apical angles of the inflexed sides produced into recurving teeth, that rise considerably above the general level of the rest of the lobe and have their tips incurved towards each other; margins of the inflexed sides narrowly winged outside; no tooth or horn within. Follicles 2–3 in. long, ovate, attenuate into a beak, setose and minutely tomentose, but the setæ nearly or quite glabrous.—Hiern in Cat. Afr. Pl. Welw. i. 685; S. Moore in Journ. Bot. 1902, 255. *Gomphocarpus fruticosus*, R. Br. in Mem. Wern. Soc. i. 38; Decne. in DC. Prod. viii. 557; Bot. Mag. t. 1628?; Reichb. f. Fl. Germ. xvii. 18, t. 1071 (very bad); K. Schum. in Bull. Soc. Bot. Belg. xxxvii. 122, in Engl. Pf. Ost-Afr. C. 322; in Engl. & Prantl, Pflanzenfam. iv. ii. 236; in Engl. Jahrb. xxviii. 456, and xxx. 382; Schweinfurth in Höhnel, Rudolf-See und Stephanie-See, Sonderabdr. 8; Engl. in Engl. Jahrb. xix. 148. *G. cornutus*, Decne. in Ann. Sc. Nat. 2 sér. ix. 324, and in DC. Prod. viii. 557. *Asclepias crassifolia*, Linn. ex Decne. in DC. Prod. viii. 572.

**Lower Guinea.** Angola: Mossamedes; banks of the Rivers Bero and Giraul, *Welwitsch*, 4164! 4165! waste places of Bon Vista, *Gossweiler*, 87!

**Mozamb. Dist.** Portuguese East Africa: Zambesi Delta: Kongoni River, *Kirk!* Luabo River, *Kirk!* Lower Shire Valley, *Meller!* Rhodesia; by the Shangani River, *Rand*, 191 (ex *S. Moore*); on the sandy bed of the Shasha River, *Baines!* Bechuanaland: Kalahari Desert, *Farini!*

Also in North and South Africa, the Mascarene Isles, Madeira, Canaries, Arabia and South Europe, perhaps introduced in some of the localities.

19. **A. rostrata**, *N. E. Br.* A bush about 3-5 ft. high; young parts of the stem and branches white-tomentose, at length becoming glabrous. Leaves ascending or somewhat spreading; petiole 2-4 lin. long; blade  $1\frac{3}{4}$ -4 in. long, 2- $4\frac{1}{2}$  lin. broad, linear or linear-lanceolate, acute or very acute at both ends, minutely puberulous on both sides, becoming nearly or quite glabrous, flat, or the margins very narrowly recurved. Umbels lateral at the nodes, pedunculate, 5-8-flowered; peduncle  $\frac{1}{2}$ -1 in. long, more or less white-tomentose; bracts very caducous, 2 lin. long, subulate or linear-lanceolate, acute, tomentose; pedicels  $4\frac{1}{2}$ -7 lin. long, tomentose. Sepals  $1\frac{1}{2}$  lin. long,  $\frac{1}{2}$ - $\frac{3}{4}$  lin. broad, ovate or ovate-lanceolate, acute or acuminate, tomentose. Corolla 5-lobed almost to the base, greenish-white; lobes  $2\frac{3}{4}$  lin. long,  $1\frac{3}{4}$ -2 lin. broad, elliptic-ovate, minutely notched at the obtuse apex, ciliate along one margin, elsewhere glabrous. Coronal-lobes arising  $\frac{1}{2}$  lin. above the base of the staminal-column and reaching to the top of it,  $1\frac{1}{2}$ - $1\frac{2}{3}$  lin. long, erect, complicate, laterally compressed, subrectangular in side view, apical margin slightly rounded; inflexed sides with a reflexed falcate tooth at their apex, nearly as long as the breadth of the lobe, and slightly rising above its apical margin; no tooth or crest within the lobe. Staminal-column 2 lin. long; anther-appendages ovate, obtuse, thin, tips just inflexed over the margin of the flattish, crenately-pentagonal apex of the style. Pollen-carriers seated under the rim of the truncate apex of the style. Follicles obliquely ovoid-inflated at the base, produced into a stout subulate beak 1- $1\frac{1}{2}$  in. long, white-tomentose when quite young, soon becoming nearly glabrous, quite smooth, without any bristles.

**Lower Guinea.** Angola: Amboella; between the River Kubango and the River Kuito, *Baum*, 500!

**Mozamb. Dist.** Ngamiland; Lake Ngami, only growing on the dry shore of the lake or river, *Lugard*, 22! Okavango Valley, 3000 ft., *Lugard*, 231!

This species has been distributed from Berlin as *A. fruticosus*, *Linn.*, from which the smooth long-beaked fruit at once distinguishes it. It is remarkable for the manner in which the rim of the flat or slightly concave apex of the style projects over and partly conceals the pollen-carriers.

20. **A. flavida**, *N. E. Br. in Kew Bulletin*, 1895, 255. A woody much-branched shrub, 3- $4\frac{1}{2}$  ft. high; branches divergent, white-tomentose. Leaves opposite, spreading,  $1\frac{1}{2}$ -3 in. long, 1-3 lin. broad, subsessile or with petioles  $\frac{1}{2}$ -1 lin. long, linear, acute, tapering at the base, revolute along the margins, glabrous, with the midrib adpressed pubescent beneath. Umbels several, lateral at the nodes along the upper part of the branches, pedunculate, 4-5-flowered; peduncles and

pedicels 7–11 lin. long, white-tomentose. Sepals  $1\frac{1}{2}$ –2 lin. long, narrowly lanceolate, acuminate, white-tomentose. Corolla 5-lobed nearly to the base, reflexed, yellow in the dried state; lobes about 4 lin. long and  $2\frac{1}{2}$  lin. broad, elliptic-ovate, acute, glabrous on both sides, ciliate along one margin. Coronal-lobes arising about  $\frac{2}{3}$  lin. above the base of the staminal-column and reaching to its summit, apparently dull purple, 2 lin. long,  $1\frac{1}{2}$  lin. broad, complicate-cucullate, subquadrate, with the dorsal margin shorter than the inner margins in side view, so that the real apex of the lobe does not rise so high as its inflexed sides, the apical angles of the inflexed sides produced into abruptly reflexed falcate teeth rising a little above the apical margin of the lobe, no tooth or horn within the lobe. Staminal-column  $2\frac{1}{2}$  lin. long; anther-appendages roundish-ovate, very obtuse, inflexed over the truncate apex of the style. Follicles (immature) ellipsoidal with a short beak, somewhat sparsely bristly, glabrous or nearly so.—K. Schum. in Ann. Istit. Bot. Roma, vii. 37.

**Nile Land.** Nubia: coast region, *Bent!* Somaliland: Golis Range: Darra, Surry, *Mrs. Lort-Phillips!* *Miss Edith Cole!*

The plant collected in Somaliland, on the Ogaden Steppe, *Keller*, 100, may also belong to this species, but I have seen only a fruiting specimen. Probably some of the specimens referred to *Gomphocarpus fruticosus*, R. Br., var. *tomentosa*, by K. Schumann in Engl. Pfl. Ost-Afr. C. 322, and in Ann. Istit. Bot. Roma, vii. 37 belong here.

21. **A. Phillipsiæ**, *N. E. Br. in Kew Bulletin*, 1895, 219. A woody, branching shrub. Branches ascending, rather densely pubescent or subtomentose with minute white curved hairs. Leaves ascending, subsessile or with very short petioles,  $1\frac{1}{2}$ – $3\frac{1}{2}$  in. long,  $\frac{1}{2}$ –1 lin. broad, linear, acute, mucronate, with very revolute margins, which are often rolled back at the midrib, sparsely and minutely pubescent when young, soon becoming glabrous. Umbels several, lateral at the nodes along the upper part of the branches, pedunculate, 3–6-flowered; peduncles  $\frac{1}{2}$ – $\frac{3}{4}$  in. long, puberulous; bracts caducous,  $2\frac{1}{2}$ – $3\frac{1}{2}$  lin. long, linear or subulate, acute, minutely pubescent or nearly glabrous; pedicels  $4\frac{1}{2}$ –8 lin. long, puberulous. Sepals about  $1\frac{1}{2}$  lin. long, linear, acute, puberulous. Corolla 5-lobed nearly to the base; lobes  $2\frac{1}{2}$ – $2\frac{3}{4}$  lin. long,  $1\frac{3}{4}$  lin. broad, elliptic-ovate, subacute, reflexed, glabrous on both sides or puberulous towards the base within, ciliate along one margin. Coronal-lobes arising  $\frac{1}{2}$ –1 lin. above the base of the staminal-column and reaching to its top,  $1$ – $1\frac{1}{4}$  lin. long,  $\frac{3}{4}$ – $1\frac{1}{4}$  lin. broad, complicate-cucullate, subquadrate in side view, with a rather broad falcate tooth, denticulate along its upper margin, reflexed from the apical angles of the inflexed sides and contained within the cavity, no median tooth within. Staminal-column  $1\frac{1}{2}$ –2 lin. long; anther-appendages short, transversely oblong or subreniform, obtuse, denticulate, inflexed over the truncate apex of the style. Follicles about 2 in. long,  $\frac{1}{2}$ – $\frac{3}{4}$  in. thick in the basal part, lanceolate, tapering into a beak, setose, very minutely and rather sparsely pubescent all over or the bristles glabrous. Seeds 2 lin. long,  $1$ – $1\frac{1}{4}$  lin. broad, ovate, concave on one side,

very convex on the other, reticulate-rugulose, blackish.—K. Schum. in Ann. Istit. Bot. Roma, vii. 37. *A. fruticosus*, var. *angustissima*, Schlechter in Journ. Bot. 1895, 335. *Gomphocarpus fruticosus*, R. Br., var. *angustissimus*, Engl. Hochgebirgsfl. Trop. Afr. 341, partly; K. Schum. in Ann. Istit. Bot. Roma, vii. 37? *G. fruticosus*, R. Br., var. *purpureus*, Martelli, Fl. Bogos. 53, not of Schweinfurth.

**Nile Land.** Eritrea: Keren, 4500 ft., *Beccari*, 186! *Stuedner*, 747! Somaliland: near Coromme, *Riva*, 669 (ex *Schumann*), and without precise locality, *Mrs. Lort-Phillips*! Uganda: Mau; on dry rocks by a river, 6000–8000 ft., *Scott-Elliott*, 6794! Ruwenzori; in dry sunny places, 6000–7000 ft., *Scott-Elliott*, 7667!

**Mozamb. Dist.** German East Africa: Usambara, *Buchwald*, 177! and 548! These probably belong here, but are without flowers.

This species is nearly allied to *A. setosa*, Forsk., a native of Arabia, from which it differs in its more slender habit and subquadrate (not oblong) coronal-lobes. Probably *Gomphocarpus setosus*, A. Rich. Tent. Fl. Abyss. ii. 37 (not of other authors), may belong here.

22. **A. abyssinica**, *N. E. Br.* Stems 3–4 ft. high, apparently annual from a perennial woody rootstock, quite simple, rather stout, minutely puberulous. Leaves in whorls of three, or opposite in the upper part; petiole 1–4 lin. long; blade  $3\frac{1}{2}$ – $5\frac{1}{2}$  in. long, 2– $4\frac{1}{2}$  lin. broad, linear-lanceolate, acuminate, cuneately narrowed into the petiole at the base, margins revolute, glabrous on both sides or with the midrib puberulous beneath. Umbels pedunculate, lateral at the nodes along the upper part of the stem, 6–9-flowered; peduncles  $\frac{1}{2}$ –1 in. long, pedicels 9–10 lin. long, all puberulous or minutely tomentose. Sepals 2– $2\frac{1}{2}$  lin. long, ovate-lanceolate, acuminate, puberulous. Corolla somewhat reflexed; lobes about  $3\frac{1}{2}$  lin. long,  $2\frac{1}{3}$  lin. broad, elliptic-ovate, acute, glabrous on both sides, ciliate along one margin. Coronal-lobes arising about  $\frac{3}{4}$  lin. above the base of the staminal-column and reaching its top,  $1\frac{1}{3}$  lin. long, complicate-cucullate, ovate-oblong in side view, rounded on the back, subtruncate or truncate at the top, which is notched in front of the teeth reflexed from the apical angles of the inflexed sides; teeth very minutely erose-denticulate along the upper margin and sometimes entirely included within the cavity, or rising slightly above the top of the lobe, no median tooth or crest within. Staminal-column 2– $2\frac{1}{4}$  lin. long; anther-appendages semicircular, inflexed over the truncate apex of the style. Follicles  $2\frac{1}{4}$ – $2\frac{3}{4}$  in. long, 7–9 lin. thick, ovoid-lanceolate, acuminate into a beak, setose, minutely tomentose, with puberulous setæ when young, puberulent or nearly glabrous when ripe. Ripe seeds not seen but apparently scrobiculate or minutely tuberculate.—*Gomphocarpus abyssinicus*, Hochst. in Flora, 1844, 101; Decne. in DC. Prod. viii. 557; A. Rich. Tent. Fl. Abyss. ii. 38; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 236. *G. verticillatus*, Turcz. in Bull. Soc. Nat. Mosc. 1848, xxi. i. 258. *G. fruticosus*, var., Vatke in Oest. Bot. Zeitschr. 1876, 146.

**Nile Land.** Abyssinia: Tigre; Mount Selluda (Sholoda), near Adowa, *Quartin Dillon* (ex *Richard*); near Jelajeranne, *Schimper*, 1674! and without precise locality, *Schimper*, 503! *Dillon & Petit*, 26 (427)!

Engler in his *Hochgebingsflora Trop. Afr.* 341 has united this plant with *A. fruticosa*, L., from which it differs in its unbranched habit, whorled leaves and very different coronal-lobes. From *A. Phillipsia* it is distinguished by its broader leaves, stouter, unbranched stems and different coronal-lobes.

23. **A. albida**, *N. E. Br. in Kew Bulletin*, 1895, 254. Stems erect, pubescent, 2-3 ft. or more high. Leaves opposite, ascending-spreading; petiole  $\frac{1}{2}$ -1 lin. long; blade 4-6 in. long, 1-2 $\frac{1}{2}$  lin. broad, linear, acuminate, cuneate at the base, revolute at the margins, nearly glabrous, with a few hairs on the midrib beneath. Umbels lateral between the bases of the leaves, pedunculate, 4-10-flowered; peduncles  $\frac{3}{4}$ -1 $\frac{1}{4}$  in. long, pubescent; bracts 3-4 lin. long, linear-subulate, deciduous; pedicels  $\frac{3}{4}$ -1 in. long, pubescent. Calyx-lobes 3-3 $\frac{1}{2}$  lin. long, lanceolate, acuminate, pubescent. Corolla rotate; lobes reflexed,  $\frac{1}{2}$  in. long, 3 $\frac{1}{2}$ -4 lin. broad, elliptic, obtuse, ciliate along one margin, glabrous outside, very minutely puberulous within, apparently white. Coronal-lobes arising about  $\frac{1}{2}$  lin. above the base of the staminal-column, and overtopping it by half their length, erect, 3 lin. long, complicate-cucullate, with the apical angles of the inflexed sides produced into a reflexed falcate tooth or lobe, that rises above and is partly embraced by the sides of the truncate apex, no tooth within the lobe, which is narrowly winged outside near the margins and gibbous on each side at the base. Follicles 2 $\frac{1}{2}$  in. long, 7-8 lin. thick, lanceolate, acuminate, setose and pubescent.

**Nile Land.** Eritrea: Saganeiti, north side towards Selet, 6500-7200 ft., *Schweinfurth & Riva*, 993! Abyssinia, *Schimper*, 27!

24. **A. integra**, *N. E. Br. in Kew Bulletin*, 1895, 219. A bush 4-5 ft. high, with erect branches, in the young state covered with a white felted tomentum, branches at length white-pruinose, and finally nearly or quite glabrous. Leaves erect or ascending, subsessile, 2 $\frac{1}{2}$ -6 in. long,  $\frac{1}{2}$ -1 lin. broad, linear, margins revolute to the midrib, mucronate-acute, at first white-woolly, then glabrous. Umbels several, lateral at the nodes along the upper part of the branches 5-8-flowered; peduncles  $\frac{3}{4}$ -1 in. long; pedicels 6-10 lin. long. Sepals 1-1 $\frac{1}{2}$  lin. long,  $\frac{1}{2}$ - $\frac{3}{4}$  lin. broad, ovate or ovate-lanceolate, acute. Corolla 5-lobed nearly to the base, probably yellowish-white or greenish-white, white-tomentose outside, glabrous within; lobes reflexed, 3-5 lin. long, 2-3 lin. broad, elliptic-ovate, subacute. Coronal-lobes arising close to (or up to  $\frac{1}{2}$  lin. above) the base of the staminal-column, and overtopping it by half their length, erect, 2-3 lin. long, 1 $\frac{1}{2}$ -2 lin. broad, complicate-cucullate, obliquely ovate or obliquely ovate-oblong in side view, inner margins entire, obliquely rounded or slightly angular at about the middle, but with no distinct tooth, and no median tooth within, apparently ochreous. Follicles about 1 $\frac{3}{4}$  lin. long, inflated-ovoid at the base, contracted or narrowed into a beak, white-tomentose when young, pruinose or almost glabrous when mature. Seeds ovate, concave on one face, very convex on the other, rugose.—*K. Schum. in Ann. Istit. Bot. Roma*, vii. 37. *Gomphocarpus*

*stenophylla*, Oliver in Trans. Linn. Soc. ser. 2, Bot. ii. 342, not of ser. i. xxix. 110.

**Nile Land.** Somaliland: Adda Gallah, *James & Thrupp!* Golis Range, *Mrs. Lort-Phillips!* Hammar, *Miss Cole!*

**Mozamb. Dist.** Kilimanjaro, *Smith!* *Volkens*, 567! Lanjora, 2000 ft., *Johnston!*

25. **A. Frederici**, *Hiern in Cat. Afr. Pl. Welw.* i. 684 A shrub 3-5 ft. high, branched; branchlets white-tomentose. Leaves very numerous ascending or somewhat spreading, 2-4½ in. long, 1-2½ lin. broad, linear, acute or subobtuse, narrowed at the base into a petiole, 1-2 lin. long at the base, revolute along the margins, puberulous or nearly glabrous above, more or less white-pubescent beneath. Umbels numerous, lateral at the nodes, pedunculate, 5-6-flowered; peduncles subequal, ½-1 in. long, white-tomentose; bracts very deciduous, 2-2½ lin. long, linear, acute; pedicels ½-¾ in. long, tomentose. Sepals 2 lin. long, lanceolate, acuminate, pubescent. Corolla lobed nearly to the base, minutely white-pubescent outside, glabrous within, probably reflexed when fully expanded; lobes 3½-4 lin. long, 2-2½ lin. broad, elliptic-ovate, obtusely pointed. Coronal-lobes arising ½ lin. above the base of the staminal-column and reaching its top, 1⅔-1¾ lin. long, 1½ lin. broad across the side, D-shaped viewed sideways, with the inflexed sides rectangularly acute or subacute at their apices, but never produced into distinct teeth. Follicles 1½-2 in. long, 1¼ in. in diam., oblong-globose, inflated, very obtuse, beset with bristle-like processes, pubescent all over, "sulphur-yellow spotted with purple," bristles "violet-purple" (*Welwitsch*).

**Lower Guinea.** Angola: Pungo Andongo; on the rocks of the Præsidium and higher rocky parts of Pungo Andongo, *Welwitsch*, 4160! 4161! 4162! on the rocks of Pedra de Cabondo, 3500 ft., *Welwitsch*, 4163! Huilla; in the rocky thickets of Lopollo, *Welwitsch*, 4166!

According to *Welwitsch* the flowers are sulphur-yellow, greenish-yellow, or whitish-yellow. The coronal-lobes are described by *Hiern* as "usually with an erect short lobule or tooth at the apex of each or one inner side." I can find no structure of this kind in the specimens above quoted; where the straight inner margin and curved top margin of the lobe meet, they form a somewhat acute angle, nearly a right-angle, but there is no tooth such as is found in the allied species. This species is not easy to discriminate from *A. Burchellii*, *Schlechter*, except when in fruit.

26. **A. Burchellii**, *Schlechter in Journ. Bot.* 1895, 336. Stems 3-4 ft. high, branched; branches white-tomentose. Leaves very numerous, erect or ascending, 1½-4 in. long, ¾-2 lin. broad, linear, acute, narrowed at the base into a petiole 1-2½ lin. long, revolute along the margins, softly puberulous, becoming glabrous above, pubescence whiter beneath. Umbels numerous, lateral at the nodes, pedunculate, 3-7-flowered; peduncles subequal, ½-1 in. long, white-tomentose; bracts 2-5 lin. long, deciduous, linear, acute; pedicels ½-1 in. long, white-tomentose. Sepals 1⅔-2 lin. long, ¾ lin. broad, lanceolate, acute, reflexed, white-tomentose on the back. Corolla lobed nearly to the base, minutely white-tomentose outside, reflexed, white; lobes 3½ lin.

long,  $2-2\frac{1}{4}$  lin. broad, elliptic-ovate, obtusely pointed. Coronal-lobes arising  $\frac{1}{2}$  lin. above the base of the staminal-column and reaching to its top  $1\frac{1}{2}-1\frac{2}{3}$  lin. long,  $1\frac{1}{4}-1\frac{1}{2}$  lin. broad across the side, D-shaped, viewed sideways, with the inflexed sides rectangularly acute at their tips, but never produced into distinct teeth. Follicles  $2\frac{1}{4}-2\frac{1}{2}$  in. long,  $\frac{3}{4}$  in. in diam., ovoid-lanceolate, gradually tapering into a beak beset with very numerous bristle-like processes, white-pubescent or subtomentose all over. Seeds about  $2\frac{1}{2}$  lin. long, 1 lin. broad, oblong-ovate, very convex on one side, flat with a raised margin on the other, minutely tuberculate or scrobiculate.—Schlechter in Journ. Bot. 1896, 452. *Gomphocarpus tomentosus*, Burch. Trav. i. 543. *G. lanatus*, E. Meyer, Comm. 202; DC. Prod. viii. 558.

**Lower Guinea.** German South-west Africa: Amboland; Olukonda, Schinz, 17! 27! *Rautanen*, 84!

Also in South Africa.

The plant referred to *Gomphocarpus tomentosus*, Burch., by K. Schumann in Bull. Soc. Bot. Belg. xxxvii. 123, may belong here or to some other species. It was collected by De Beerst from a plant cultivated at Mpala, originally brought from Kibanga in the Congo Free State. The specimens alluded to by K. Schumann in Engl. Pfl. Ost-Afr. C. 322 under *G. fruticosus*, var. *tomentosus*, judging from the synonymy quoted, appear to belong partly to *A. leuocarpa*, Schlechter, partly to *A. Phillipsiz*, N. E. Br. and probably partly to *A. flavida*, N. E. Br., or *A. pubiseta*, N. E. Br.

27. **A. filiformis**, *Benth. et Hook. f. Gen. Pl.* ii. 753, in a note under *Schizoglossum*. Stems 3-6 ft. high, slender, about  $\frac{1}{2}$  lin. thick in the flowering part, simple, very rarely branched in the upper part, glabrous, covered with a thin white waxy secretion. Leaves 2-4 in. long, linear or almost filiform, with strongly revolute margins, glabrous. Umbels lateral and terminal, 6-10-flowered; peduncles  $\frac{1}{3}-1$  in. long; pedicels 4-6 lin. long, minutely white-tomentose at first, becoming more or less glabrescent. Sepals  $1-1\frac{1}{4}$  lin. long, ovate or lanceolate, acute, white-tomentose. Corolla reflexed, sulphur-yellow; lobes  $2-2\frac{1}{3}$  lin. long,  $1\frac{1}{3}$  lin. broad, ovate, acute, puberulous on the back. Coronal-lobes arising  $\frac{1}{4}-\frac{1}{3}$  lin. above base of staminal-column and slightly exceeding it,  $1\frac{1}{2}$  lin. long, erect, complicate, subtruncate or obliquely truncate, with the ovate obtuse apex and marginal angles slightly produced, with a slightly exserted horn within. Follicles solitary,  $1-1\frac{1}{2}$  in. long,  $2\frac{1}{2}-3$  lin. thick, lanceolate, acuminate from the middle into a long beak, pulverulent, at length glabrate. Seeds  $2\frac{1}{2}-3$  lin. long, ovate, plano-convex, smooth, brown, with a narrow darker brown margin.—Schinz in Verhandl. Bot. Ver. Brandenburg, xxx. 262 under *A. buchenaviana*; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 238. *Lagarinthus filiformis*, E. Meyer, Comm. 203. *Gomphocarpus filiformis*, D. Dietr. Synop. Pl. ii. 900; Decne. in DC. Prod. viii. 558.

**Lower Guinea.** Hereroland, ex Schinz.

Not uncommon in Extratropical South Africa.

Var. *buchenaviana*, N. E. Br. Stems stouter, about  $\frac{3}{4}$  lin. thick in the flowering part, much branched, usually rather densely covered with a white waxy secre-

tion, but sometimes without. Coronal-lobes oblique at the top with the internal horn adnate to the face of the lobe to nearly twice the extent it is in the type. Follicles and seeds as in the type.—*Asclepias buchenaviana*, Schinz in Verhandl. Bot. Ver. Brandenburg, xxx. 261; Engl. in Engl. Jahrb. xix. 148; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 238.

**Lower Guinea.** German South-west Africa: Hereroland; Namib, Schinz, 18! 20! Stafff, Lüderitz (ex Schinz); Wit Port, between Gariëb and Ussab Ausspänn, Gürich, 14 (ex Engler).

Of the typical *A. filiformis* I have seen no tropical specimens, but it is mentioned by Schinz as occurring in Hereroland. It would seem likely to be useful as a fibre-plant, as Mrs. Barber states on a note sent with some South African specimens "This species ought to be useful as a fibre-plant, it is exceedingly tough, grows 4-6 ft. high, and has upwards of two hundred almost leafless slender stems on a single plant."

The variety *buchenaviana* seems only to differ in its stouter, branched stems, as I doubt if the coronal characters are constant, since there are specimens at Kew collected in Great Namaqualand by Schinz (19), that have the stout branched stems of this variety, but with coronal-lobes as in the type.

28. **A. tenuifolia**, *N. E. Br. in Kew Bulletin*, 1895, 255. Stems 2 ft. or more high, slender, branched, woody below, pubescent. Leaves 1-2½ in. long, erect, filiform, acute, with strongly revolute margins, pubescent. Umbels lateral and terminal, 3-5-flowered; peduncles 4-6 lin. long, pubescent; pedicels 4-5 lin. long, slender, pubescent. Sepals 1-1¼ lin. long, lanceolate, acuminate, pubescent. Corolla rotate or rotate-campanulate (? reflexed); lobes 2-2¼ lin. long, 1½ lin. broad, elliptic, subobtuse, narrowed towards the base, pubescent on the back. Coronal-lobes arising ½-⅔ of a lin. above the base of the staminal-column and equalling it in length, erect, 1 lin. long, complicate, nearly semicircular in side view, truncate, margins at the apex produced over the tips of the anthers into short acute teeth, no tooth or horn within. Follicles solitary, nodding or horizontally spreading, 1-1¼ in. long, 3-4 lin. thick at the ovoid base, tapering into a long slender beak, softly pubescent with fine spreading hairs. Seeds 2 lin. long, turgid-convex on the back, grooved down the face, scrobiculate, finely pulverulent pale brown.

**Mozamb. Dist.** Rhodesia: Lee's Farm, Mangwe River, *Baines!*

Much like *A. filiformis*, Benth. and Hook. f., in appearance, but more branched pubescent, and with a different corona. The flowers appear to be pale yellowish or whitish with a yellow corona.

29. **A. leucocarpa**, *Schlechter in Journ. Bot.* 1895, 335. Stems 4-5 ft. high, sparingly branched, white-tomentose in the upper part. Leaves opposite, ascending, subsessile, 4-6 in. long, ½-1 lin. broad, linear, acute, revolute along the margins, glabrous or the youngest puberulous. Umbels lateral between the bases of the leaves, pedunculate, simple or the same peduncle bearing two umbels with an interval of about ½ an in. between them, several-flowered; peduncle ¾-2 in. long, minutely puberulous; pedicels ¾-1 in. long, minutely puberulous. Sepals 1-1¼ lin. long, ¾ lin. broad, ovate, acute or acuminate. Corolla reflexed, 5-lobed nearly to the base, white or yellowish; lobes 3 lin. long,

2 lin. broad, elliptic, ovate, obtusely pointed, glabrous, sparingly ciliate along one margin, reflexed. Coronal-lobes arising  $\frac{1}{2}$  lin. above the base of the staminal-column, and equalling or very slightly overtopping it,  $1\frac{1}{3}$ – $1\frac{1}{2}$  lin. long, complicate, truncate or rounded at the top, with a minute tooth at the apical angle of the inflexed sides, no median tooth within. Follicles immature, about 2 in. long, and  $\frac{1}{4}$  in. thick near the base, narrowly lanceolate, attenuate into a long beak, white-tomentose, and having a few short stiff points or processes on the lower half.—*Gomphocarpus stenophyllus*, Oliver in Trans. Linn. Soc. xxix. 110, t. 119; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 236.

**Nile Land.** Uganda: Mau; by waterside, 6000–8000 ft., *Scott-Elliot*, 6882! British East Africa: Kapte Plains, Lanjoro, *Gregory*, 30!

**Mozamb. Dist.** German East Africa: Kazeh (Tabora) district, *Speke & Grant*!

30. **A. amabilis**, *N. E. Br.* in *Kew Bulletin* 1895, 70. Stems 16–18 in. high, rather slender, slightly pubescent or nearly glabrous. Leaves erect, sessile,  $1\frac{1}{2}$ –3 in. long,  $\frac{1}{2}$ – $1\frac{1}{4}$  lin. broad, linear, acute, revolute (sometimes to the midrib) and minutely scabrous along the margins. Umbels 2–3, lateral and terminal, pedunculate, 5–6-flowered; peduncles  $\frac{1}{2}$ – $2\frac{1}{4}$  in. long, puberulous down the inner side; bracts subulate, 2–3 lin. long; pedicels 8–12 lin. long, puberulous down the inner side. Sepals 2– $2\frac{1}{3}$  lin. long, lanceolate or ovate-lanceolate, acute, puberulous, ciliolate. Corolla 9–10 lin. in diam., rotate, 5-lobed nearly to the base, white and glabrous within, light purple and sparsely puberulous on the back; lobes 4– $4\frac{1}{2}$  lin. long,  $2\frac{1}{2}$  lin. broad, ovate, acute. Coronal-lobes arising about  $\frac{1}{3}$  lin. above the base of the staminal-column and reaching to its top, erect,  $1\frac{1}{4}$  lin. long, complicate-cucullate, subquadrate in side view, truncate at the base and apex, with the apical angles of the inflexed sides produced into small erect obtuse teeth, no tooth within; alternating with them are 5 minute pocket-like lobules under the anther-wings. Staminal-column  $1\frac{1}{2}$  lin. long; anther-appendages broadly-ovate, inflexed over the apex of the style.—K. Schum. in Engl. Pf. Ost-Afr. C. 425.

**Mozamb. Dist.** British Central Africa: Urungu; Fwambo, South of Lake Tanganyika, *Carson*, 35! 55!

31. **A. longissima**, *N. E. Br.* Stem solitary,  $2\frac{1}{4}$ –3 ft. high, erect, simple, 1– $2\frac{1}{2}$  lin. thick at the base, slightly puberulous along one side. Lower leaves 6–10 in. long, 2–5 lin. broad, linear, tapering into a very acuminate point, narrowed at the base into a petiole 1–2 lin. long, glabrous on both sides, slightly scaberulous along the narrowly revolute margins; uppermost leaves very much reduced and not longer than the peduncle of the same node. Umbels 6–7, pedunculate, 3–4-flowered, lateral at the upper nodes, where the leaves are reduced to filiform rudiments  $\frac{1}{4}$ – $\frac{3}{4}$  in. long, so that the inflorescence becomes a nearly leafless panicle; peduncles  $\frac{1}{2}$ – $\frac{3}{4}$  in. long, puberulous along one side; bracteoles  $1\frac{1}{2}$ –2 lin. long, linear-filiform; pedicels  $\frac{1}{2}$ – $\frac{3}{4}$  in. long, puberulous on one side. Sepals reflexed,  $1\frac{3}{4}$ –2 ( $2\frac{1}{2}$  ex *K. Schumann*)

lin. long,  $\frac{3}{4}$  lin. broad, ovate-lanceolate, acute, slightly channelled at the apex, glabrous, very minutely ciliate. Corolla lobed nearly to the base, entirely reflexed, very minutely downy outside, apparently dirty greenish-white, tinged with purple outside; lobes 5 lin. long, 3 lin. broad, elliptic, minutely notched at the obtuse point. Coronal-lobes arising  $\frac{1}{2}$ – $\frac{3}{4}$  lin. above the base of the staminal-column and slightly overtopping it,  $2\frac{3}{4}$  ( $2\frac{1}{2}$  ex *K. Schumann*) lin. long, 2 lin. broad across the side, compressed-cucullate, subrectangular in side view, obliquely rounded or subtruncate at the top, where the margins are thickened and strongly papillate and the dorsal apex is produced into a minute incurved papillate tooth; no tooth or crest within the lobe; 5 minute pouch-like lobules under the anther-wings alternating with the coronal-lobes. Staminal-column about 3 lin. long, not broadened at the base of the oblong anthers; anther-appendages broadly ovate, acute, contracted into a short stalk at the base, obscurely lacerate on the margin, inflexed over the rim of the crater-like apex of the style, under which the pollen-carriers are seated.—*Gomphocarpus longissimus*, K. Schum. in Engl. Jahrb. xxx. 382.

**Mozamb. Dist.** German East Africa: region of Lake Nyasa, *Goetze!* Portuguese or British East Africa: Tumbi, near Lake Nyasa, rare, *Johnston*, 357!

32. **A. Nuttii**, *N. E. Br. in Kew Bulletin*, 1898, 308. Stem apparently solitary, 1–1½ ft. high, slender, simple, erect, glabrous. Leaves erect,  $1\frac{1}{2}$ – $2\frac{3}{4}$  in. long,  $\frac{1}{2}$ –1 lin. broad, flat, linear, acute, tapering to the base, glabrous on both sides with the margins minutely scabrous-ciliate. Umbel terminal, pedunculate, 8–10-flowered; peduncle  $1\frac{3}{4}$  in. long; bracts 5–15 lin. long, linear or filiform, ciliolate; pedicels 4–5 lin. long, minutely pubescent or subscaberulous. Sepals erect or ascending, 2 lin. long,  $\frac{1}{2}$  lin. broad, lanceolate, acuminate, minutely pubescent on the back. Corolla campanulate, 5-lobed almost to the base; lobes about 4 lin. long,  $1\frac{1}{2}$  lin. broad, lanceolate or oblong-lanceolate, subacute, glabrous and not ciliate, brownish or dull purplish outside, with whitish margins, whitish within in the dried state. Coronal-lobes arising at the base of the staminal-column and nearly reaching to the top of it,  $1\frac{1}{2}$  lin. long, erect, complicate-cucullate, truncate at the apex, no tooth within or at the apex of the inflexed sides, apparently dark yellow, all united together just below their middle by a connecting membrane which forms 5 small pockets immediately under the anther-wings. Staminal-column 2 lin. long; anther-appendages rounded or transversely elliptic, inflexed upon the depressed apex of the style.

**Mozamb. Dist.** German East Africa: between Lake Tanganyika and Lake Rukwa, about 6000 ft., *Nutt!*

33. **A. sphacelata**, *N. E. Br.* Stem solitary, 4–8 in. high, simple, puberulous. Leaves sessile, 4 in. long,  $\frac{1}{2}$ –1 lin. broad, linear, attenuate-acuminate, acute at the base, scabrid above, puberulous beneath. Umbels lateral and terminal, congested near the apex, pedunculate, 3–5-flowered; peduncle 4–7 lin. long, puberulous; pedicels 3–5 lin. long, puberulous. Sepals  $1\frac{3}{4}$ –2 lin. long, subulate, puberu-

lous. Corolla rotate, about  $\frac{1}{2}$  in. in diam.; lobes oblong, acute, puberulous on the back near the apex, spotted with brown, whitish at the tips. Coronal-lobes 1 lin. long, cucullate, truncate, glabrous and without a process within. Staminal-column  $1\frac{1}{4}$  lin. long.—*Gomphocarpus sphacelatus*, K. Schum. in Engl. Jahrb. xxiii, 233.

**Mozamb. Dist.** Portuguese East Africa : near Beira, *Braga*, 38.

I have not seen this plant.

34. **A. coccinea**, *N. E. Br.* Plant  $\frac{3}{4}$ –2 ft. high, stems simple or slightly branched at the base, sparsely puberulous or with puberulous lines. Leaves not numerous, ascending or incurved-spreading, subsessile or with a petiole about 1 lin. long; blade 2–4 in. long,  $\frac{1}{2}$ –2 lin. broad, linear, acute, narrowed into the petiole at the base, glabrous, slightly scaberulous on the margins. Umbels terminal, solitary, 5–10-flowered: peduncles 3–4 $\frac{1}{2}$  in. long, sparsely puberulous, or puberulous on one side; pedicels  $\frac{2}{3}$ –1 in. long, puberulous. Sepals  $1\frac{1}{4}$ –2 lin. long, ovate-lanceolate, acute or acuminate, puberulous, reflexed. Corolla blood-red, reflexed; lobes 3–3 $\frac{1}{2}$  lin. long,  $1\frac{1}{2}$ –2 $\frac{1}{4}$  lin. broad, ovate, acute, minutely puberulous on the back. Coronal-lobes arising about  $\frac{1}{4}$  lin. above the base of the staminal-column and one-third longer than it, erect, 2–2 $\frac{1}{2}$  lin. long, complicate, shortly clawed and subcordate at the base, truncate or slightly oblique at the top in side view, with the apical angles of the inflexed sides produced over the staminal-column into horizontal linear or linear-subulate teeth 1 lin. long, and with or without a horn or tooth between them on the face of the lobe, sometimes included, sometimes exerted. Anther-appendages elliptic, obtuse, inflexed over the apex of the style.—*Stathmostelma incarnatum*, K. Schum. in Engl. Jahrb. xvii. 130; and in Engl. & Prantl, Pflanzenfam. iv. ii. 240; Hiern in Cat. Afr. Pl. Welw. i. 686; Durand & Schinz, Études Fl. Congo, i. 193.

**Lower Guinea.** Angola; Huilla; at Mompulla Lake, *Welwitsch*, 4176! Swamps along the Kuango River near Kitamba, *Pogge*, 381! 382, 608.

In some of Welwitsch's specimens of this plant, the horn within the cucullate part of the coronal-lobes is well developed, in others entirely absent, proving that this character is of no generic importance.

35. **A. macrantha**, *Hochst. in Flora*, 1844, 101. Stem 9–18 in. high, simple, with two puberulous lines, or puberulous all round. Leaves: petiole 1–3 lin. long; blade 3–10 in. long,  $1\frac{1}{2}$ –5 lin. broad, linear-lanceolate, acuminate, more or less puberulous on both sides, narrowly revolute along the margins. Umbels lateral and terminal, corymbose at the top of the stem, 3–6-flowered; peduncles 3 $\frac{1}{2}$ –11 in. long, puberulous or subglabrous; bracts 2–3 lin. long, subulate; pedicels  $\frac{3}{4}$ –2 $\frac{1}{4}$  in. long, puberulous, at least down one side. Sepals 2 $\frac{1}{2}$ –3 lin. long, lanceolate, acute, puberulous. Corolla  $\frac{3}{4}$ –1 $\frac{1}{8}$  in. in diam., rotate or somewhat reflexed, scarlet-red or yellow; lobes 4–6 lin. long, 2–3 lin. broad, oblong or ovate-oblong, acute, minutely puberulous on the back. Coronal-lobes arising 1–1 $\frac{1}{2}$  lin. above the base of the staminal-column and overtopping it by from  $\frac{1}{4}$ – $\frac{1}{2}$  of their length, yellow, 3–4 lin. long, erect, shortly stalked and gibbous on each side at the base. complicate above, obtuse or sub-

truncate at the apex, which is slightly infolded at the middle in the dried state; sides inflexed and produced over the staminal-column into broad, ascending, falcate or falcate-oblong, obtuse, truncate, or acute points rising much above the level of the apex of the lobe and decurrent on the basal part as 2 narrow wings, between them arises a horn exerted and acute, or short, included and obtuse or truncate. Anther-appendages broad, suborbicular, inflexed over the apex of the style. Follicles solitary (always ?), 3-4 in. long,  $\frac{1}{2}$  in. thick, lanceolate, acuminate, tapering to the base. Seeds  $2\frac{1}{2}$  lin. long,  $1\frac{1}{2}$  lin. broad, ovate, with thick margins, minutely tuberculate on both sides, dark brown.—Oliver in Trans. Linn. Soc. xxix. 111. *Gomphocarpus pedunculatus*, Decne. in DC. Prod. viii. 558; A. Rich. Tent. Fl. Abyss. ii. 40; *G. longipes*, Oliver in Trans. Linn. Soc. xxix. 111, t. 75; Engl. Hochgebirgsfl. Trop. Afr. 342. *Pachycarpus corniculatus*, Hochst. in Flora, 1844, 101. *Stathmostelma pedunculatum*, K. Schum. in Engl. Jahrb. xvii. 132, and xxviii. 456; in Engl. Pfl. Ost-Afr. C. 322; and in Engl. & Prantl, Pflanzenfam. iv. ii. 240. *S. globuliflorum*, K. Schum. in Engl. Pfl. Ost-Afr. C. 322.

**Nile Land.** Abyssinia: Sana district, near Gadding Gale, *Schimper!* banks of the River Feurfeura (Ferfera), *Quartin Dillon* (ex *Richard*), Niamniam; by the River Ibba, *Schweinfurth*, 3956! Uganda: Toro, *Doggett!* British East Africa: Taita: Mwatate, 2000 ft., *Johnston!* Nyika country, near Mombasa, *Wakefield!* Ribe, *Wakefield!* near Lamu and Mombasa, *Hildebrandt*, 1901! Rabai Hills, *Taylor!*

**Mozamb. Dist.** German East Africa: Usambara; near Kiyombe (Kigombe ?), *Volkens*, 87! Tanga, *Heinsen*, 124! Duga, *Holst*, 3176! Kilimanjaro; below Marangu, 3200 ft., *Volkens*, 2158! at 5000 ft., *Johnston!* between Taveta and Himo River, *Meyer*, 193 (ex *Engler*); Usagara: Mbuni, *Speke & Grant!* Ukami; south Uluguru, 2900 ft., *Goetze*, 491 (ex *Engler*); Uchehe; Muhiinde Steppe, 4200 ft., *Goetze* (ex *Engler*); Unyamwezi; Walaj (Wala ?) River, *Boehm*, 90 (ex *Engler*).

36. **A. Welwitschii**, *Britten & Rendle* in Trans. Linn. Soc. ser. 2, iv. 28 in note. Stems  $2\frac{1}{2}$ -4 ft. high, simple or branched, with two pubescent lines, or pubescent all round in the upper part, or glabrous. Leaves 2-5 in. distant, incurved-erect or ascending, sessile or with petiole  $\frac{1}{2}$ -2 lin. long; blade 3-7 in. long, 1-4 lin. broad, linear, attenuate to an acute point, cuneate or rather abruptly narrowed into the petiole at the base, glabrous or scaberulous-pubescent above and on the margins and midrib beneath. Umbels 2-5-flowered, pedunculate; peduncles  $\frac{1}{2}$ -3 in. long, mostly in pairs at the apex of the stem, one of the pair (strictly the terminal part of the stem) often divided and bearing two umbels; peduncles sometimes below the terminal part of the stem, laterally or at the forkings when branched; bracts  $1\frac{1}{2}$ -2 lin. long, subulate, or minute; pedicels  $\frac{3}{4}$ -1 in. long, pubescent down one side. Sepals 2 lin. long,  $\frac{1}{2}$ - $\frac{3}{4}$  lin. broad, oblong, acute, puberulous. Corolla rotate (or somewhat reflexed?); lobes 5-6 lin. long,  $2\frac{1}{2}$  lin. broad, oblong-elliptic, acute, glabrous, "intense orange" (*Welwitsch*). Coronal-lobes arising  $\frac{1}{2}$ - $\frac{3}{4}$  lin. above the base of the staminal-column and exceeding it by about  $\frac{1}{3}$  of their length,  $2\frac{1}{4}$ - $2\frac{1}{2}$  lin. long, complicate-ecucullate in the apical part, having the inflexed sides produced over the tips of the

anthers into falcate acute upcurved teeth, and a short horn or tooth on the face of the lobe between them, usually slightly exserted, the face of the lobe in the lower part narrowly 2-winged, subcordate and shortly clawed at the base.—*Stathmostelma Welwitschii*, Britten & Rendle in Trans. Linn. Soc. ser. 2, iv. 28; Hiern in Cat. Afr. Pl. Welw. i. 687.

**Lower Guinea.** Angola: Punzo Audongo: in elevated sandy thickets near Petras de Guinga, very rare, *Welwitsch*, 4168! 4168b; 70 miles from Aubriz, *Monteiro!*

Similar to *A. macrantha* in coronal structure, but the habit, and the colour of the flowers are quite distinct.

37. **A. laurentiana**, *N. E. Br.* Stem herbaceous, erect, sparsely pubescent. Leaves sessile, up to  $8\frac{1}{2}$  in. long and  $10\frac{1}{2}$  lin. broad, lanceolate, attenuate at the base, with hairs on both sides, revolute and scabrous along the margins. Umbels solitary or in pairs, terminal or lateral, 6-flowered; peduncles as much as  $6\frac{1}{2}$  in. long, but always shorter than the leaves from whose axils they arise; bracts  $2\frac{1}{2}$  lin. long, lanceolate; pedicels 15–16 lin. long, slightly hairy. Sepals 3 lin. long, ovate, acuminate, slightly hairy on the back. Corolla rotate; lobes  $\frac{1}{2}$  in. long,  $\frac{1}{4}$  in. broad, elliptic, glabrous, yellow. Coronal-lobes arising a little above the base of the staminal-column, erect,  $2-2\frac{1}{2}$  lin. long, complicate-cucullate, with the inflexed sides produced into small erect teeth, not reaching to the same level as the rounded apex of the lobe, and with a horn on the face within, arising a little below the middle of the lobe. Staminal-column 2 lin. long.—*Stathmostelma laurentiana*, Dewèvre in Comptes-rendus Soc. Bot. Belg. xxxiv. 87.

**Lower Guinea.** Lower Congo, *Laurent*.

I have not seen this species.

38. **A. rhacodes**, *N. E. Br.* Stem 1–2 ft. high, erect, simple, rather slender, with a puberulous line down one side alternating at the nodes. Leaves somewhat ascending; petiole 1–2 lin. long; blade 3–4 in. long,  $1\frac{1}{2}-2$  lin. broad, linear, gradually tapering to an acute apex, cuneately acute at the base, glabrous, with scaberulous margins and midrib. Umbels few (1–3), lateral and terminal, pedunculate, 2–4-flowered; peduncles  $\frac{3}{4}-1\frac{1}{2}$  in. long, puberulous along one side; bracts  $1\frac{1}{2}-2$  lin. long, linear or subulate, acute, very deciduous; pedicels  $\frac{3}{4}-1$  in. long, puberulous. Sepals 2–3 lin. long, 1 lin. broad, lanceolate, acute or acuminate, puberulous or glabrous on the back. Corolla about 1 in. in diam., rotate (or somewhat reflexed?), very deeply 5-lobed; lobes  $5\frac{1}{2}-6\frac{1}{2}$  lin. long,  $2\frac{1}{4}-2\frac{1}{2}$  lin. broad, oblong-lanceolate, subacute, glabrous on both sides, scarlet on the inner face, greenish, tinted with red and becoming yellow at the edges on the back. Coronal-lobes bright orange, arising  $1-1\frac{1}{2}$  lin. above the base of the staminal-column and exceeding it by half their length,  $3\frac{1}{2}-4\frac{1}{2}$  lin. long, incurved-erect, narrowly complicate with ascending or suberect, falcate-ovate, acute, inflexed sides which much overtop the very obtuse apex, an upcurved subulate horn between them at the apex of the lobe. Staminal-column  $2\frac{1}{2}-3\frac{1}{4}$  lin. long; anther-appendages

orbicular, very obtuse, their tips inflexed over the top of the style.—*Stathmostelma rhacodes*, K. Schum. in Engl. Jahrb. xvii. 131, t. 6, fig. D-F, in Engl. Pf. Ost-Afr. C. 322, and in Engl. & Prantl. Pflanzenfam. iv. ii. 240. *S. pedunculatum*, Schlechter in Journ. Bot. 1895, 334, not of K. Schum.

**Nile Land.** Uganda: Buddu; Buganga, *Scott-Elliott*, 7463! Kavironda; between Nandi and Mumias, 4400–6000 ft., *Whyte!* between Mumias and Lubwa, 4000–4500 ft., *Whyte!* descending the Mau Plateau towards Nandi, *Whyte!* and without precise locality, *Wilson*, 73! British East Africa: Ath Plains, 5000–6000 ft., *Scott-Elliott*, 6499!

**Mozamb. Dist.** German East Africa: Ukiri; on the east shore of Lake Victoria, *Fischer*, 395 (ex *Schumann*).

39. **A. propinqua**, *N. E. Br. in Kew Bulletin*, 1895, 254. Stem pubescent with minute curved hairs. Leaves sessile,  $\frac{3}{4}$ – $1\frac{1}{4}$  in. long,  $\frac{1}{2}$ –1 in. broad, linear or linear-filiform, with revolute margins, pubescent or subtomentose. Umbels terminal, 3–4-flowered; peduncles 1– $1\frac{3}{4}$  in. long; bracts more or less minute; pedicels  $\frac{3}{8}$ –1 in. long, minutely pubescent. Sepals  $2\frac{1}{2}$ –3 in. long, lanceolate, acute, pubescent. Corolla about 1 in. in diam., rotate, 5-lobed almost to the base, glabrous, apparently yellowish-green; lobes 5 in. long, 3 in. broad, ovate-oblong, subobtuse. Coronal-lobes arising  $\frac{1}{2}$  lin. above the base of the staminal-column and nearly twice as long, erect, 3– $3\frac{1}{2}$  lin. long, complicate, very obtusely rounded at the apex, with the inflexed sides above their middle produced into falcate upcurved teeth, with a third oblong obtuse tooth between them on the face of the lobe. Staminal-column 2– $2\frac{1}{2}$  lin. long; anther-appendages ovate.

**Mozamb. Dist.** German East Africa: Kilimanjaro, *Smith!*

Only one specimen seen, which is about 7 in. high. In the structure of the corona it is very like *A. macrantha*, Hochst., but in the appearance of the plant and in the much narrower pubescent leaves it seems quite distinct, also the filament part of the staminal-column is only about half as long as it is in *A. macrantha*.

40. **A. angustata**, *N. E. Br.* Plant 4–8 in. high stems sparingly branched at the base, glabrous with two pubescent lines. Leaves 4–5 pairs to a stem, ascending, 2–4 in. long,  $1\frac{1}{2}$ –3 in. broad, linear or linear-lanceolate, tapering to an acute point, narrowed at the base into a 1–2 in. long petiole, flat or revolute along the margins, glabrous or very slightly scaberulous on the midrib. Umbel solitary or rarely 2 to a stem, terminal; peduncle  $\frac{3}{4}$ –1 in. long,  $2\frac{1}{2}$ –2 in. long in fruit, puberulous on one side; bracts deciduous or none?; pedicels 8–16 in. long,  $1\frac{1}{2}$ – $1\frac{3}{4}$  in. long in fruit, puberulous. Sepals 4 in. long, 2 in. broad, ovate, acuminate, glabrous. Corolla 5-lobed nearly to the base; lobes  $\frac{1}{2}$  in. long,  $\frac{1}{4}$  in. broad, ovate-oblong, acute. Coronal-lobes arising from the very base of the staminal-column, suberect, 4 in. long, twice as long as the staminal-column, complicate, oblong, acute, with a broad deltoid acute tooth on the inflexed sides  $\frac{1}{3}$  below the apex, papillate but scarcely puberulous within and on the edges below the teeth, no median tooth within and no pouches outside. Follicles  $4\frac{1}{2}$ – $5\frac{1}{2}$  in. long, about

5 lin. thick, lanceolate, tapering to a beak at the apex and to a  $1\frac{1}{4}$ - $1\frac{1}{2}$  in. long stipe at the base. Seeds flat, 2 lin. long,  $1\frac{1}{2}$  lin. broad, ovate, wrinkled on both sides, margins thickened, brown.—*Stathmostelma angustatum*, K. Schum. in Engl. Jahrb. xvii. 132.

**Nile Land.** Abyssinia: Sana; in swampy places on Walcha mountain plain, Schimper, 1589!

41. **A. muhindensis**, N. E. Br. Stems erect or ascending, 7-10 in. high, slender,  $1\frac{1}{2}$ -2 lin. in diam. at the thickest part, puberulous down one side in the upper part. Leaves sessile,  $\frac{1}{2}$ - $3\frac{1}{2}$  in. long,  $\frac{1}{2}$ -2 lin. broad, narrowly linear, acuminate, narrowed at the base, glabrous on both sides. Umbels from one axil (? sublateral), 2-4-flowered; peduncles unequal,  $\frac{3}{4}$ - $2\frac{1}{2}$  in. long, puberulous down one side; pedicels  $\frac{1}{3}$ - $\frac{2}{4}$  in. long, puberulous down one side. Sepals 3 lin. long,  $\frac{1}{2}$  lin. broad, lanceolate-subulate, pubescent, green, tipped with violet. Corolla 5-lobed to  $2\frac{1}{2}$ - $3\frac{1}{2}$  lin. above the base, white outside, speckled with violet within; lobes 3-4 lin. long, oblong, acute, glabrous. Coronal-lobes arising about  $\frac{1}{2}$  lin. above the base of the staminal-column,  $2\frac{1}{2}$  lin. long, linear-elliptic in outline, shortly 3-lobed at the apex, margin incurved (i.e. complicate), puberulous at the middle within, and externally with a small pouch on each side at the middle. Staminal-column  $2\frac{1}{2}$  lin. long; anthers described as follows: "Staminibus lateralibus curvatis et valde induratis, connectivo maximo inflexo et crispato in sinus stigmatis capitis valde dissectis immersis." which I take to mean that the anthers have very horny curved sides (anther-wings) and very large inflexed and crisped appendages, sunk in the sinuses of the much divided apex of the style.—*Stathmostelma bicolor*, K. Schum. in Engl. Jahrb. xxviii. 457.

**Mozamb. Dist.** German East Africa: Uhehe; on the Muhinde Steppe, 4000 ft., Goetze, 523.

Said to re-semble *A. angustata*, N. E. Br., but differing in its much narrower sepals. The arrangement of the umbels is not stated, but I assume they are arranged in a subcorymbose manner.

42. **A. reflexa**, Britten & Rendle in Trans. Linn. Soc. ser. 2, iv. 28, in note. Plant 1-2 ft. high. Stems glabrous, with two usually sparsely pubescent lines. Leaves in 3-6 moderately distant pairs, somewhat spreading; petiole  $\frac{1}{2}$ -3 lin. long; blade 2-6 in. long,  $\frac{3}{4}$ -4 lin. broad, linear or lanceolate-linear, acuminate or acute, acute or rounded into the petiole at the base, with narrowly revolute scaberulous margins, glabrous or occasionally with a sparse minute pubescence on both sides. Umbels usually two, on long peduncles at the apex of the stem, which is usually destitute of leaves in the upper part umbel solitary in weak plants or in strong plants dichotomously divided, producing a third umbel, 4-6-flowered; peduncles 3- $10\frac{1}{2}$  in. long, pubescent down one side; bracts none or minute; pedicels  $\frac{3}{4}$ - $1\frac{1}{2}$  in. long, pubescent. Sepals 2 lin. long, lanceolate, acute, pubescent, reflexed. Corolla 5-lobed nearly to the base; lobes 3-4 lin. long,  $1\frac{1}{2}$ - $1\frac{3}{4}$  lin. broad, ovate-oblong, obtuse, reflexed, with revolute margins, glabrous, red or purplish.

Coronal-lobes arising  $\frac{1}{4}$  lin. above the base of the staminal-column and twice as long, bright or dark orange, erect,  $4-4\frac{1}{2}$  lin. long, linear-oblong or linear-lanceolate, acute or obtuse, channelled down the face, with a deltoid-subulate tooth 1 lin. long at the middle of each margin, horizontally extended over the top of the staminal-column, and with or without a median tooth on the inner face of the lobe; anther-appendages large, ovate or orbicular, acute or obtuse, inflexed over the top of the style. Follicles  $3-3\frac{1}{2}$  in. long,  $4-5$  lin. thick, lanceolate, tapering into a beak.—*Gomphocarpus pauciflorus*, Klotzsch in Peters, Reise Mossamb. Bot. 276. *Stathmostelma pauciflorum*, K. Schum. in Engl. Jahrb. xvii. 132; in Engl. Pfl. Ost-Afr. C. 322; and in Engl. & Prantl, Pflanzenfam. iv. ii. 240; Schlechter in Journ. Bot. 1895, 333. *S. reflexum*, Britten & Rendle in Trans. Linn. Soc. ser. 2, iv. 27, t. 6, figs. 4-6.

**Mozamb. Dist.** Portuguese East Africa: Rios de Sena, *Peters!* Zambesi Delta, *Kirk*, 16! Lower Zambesi, above Expedition Island, *Kirk*, 147! British Central Africa: Nyasaland; Kondowe to Karonga, 2000-6000 ft., *Whyte!* Chikula and Zomba, *Purves*, 34! Mount Zomba, 2500-5000 ft., *Meller!* *Whyte!* Magomero, *Meller!* Elephant Marsh, *Scott!* Shire Highlands, *Scott-Elliott*, 8509! 8567! *Buchanan*, 319! Manganja Hills, *Waller!* Namasi, *Cameron*, 2! Rhodesia; north of Umali, *Hon. Mrs. Evelyn Cecil*, 160!

43. **A. aurea**, *Schlechter* in *Journ. Bot.* 1896, 455. Plant 9-15 in. high. Stem erect, simple or occasionally branched at the base, with internodes  $\frac{3}{4}-1\frac{1}{2}$  in. long, slender, puberulous along two lines alternating at the nodes. Leaves  $1\frac{1}{2}-3\frac{1}{4}$  in. long,  $\frac{1}{2}$  lin. broad, linear-filiform, glabrous. Umbels on large peduncles, lateral at the nodes, 3-7-flowered; peduncles  $2\frac{3}{4}-5\frac{1}{4}$  in. long, with a puberulous line down one side, slender; bracts  $1-1\frac{1}{2}$  lin. long, subulate; pedicels 3-6 lin. long, slightly puberulous. Sepals  $1-1\frac{1}{4}$  lin. long, about  $\frac{1}{3}$  lin. broad, lanceolate, acuminate, pubescent on the back. Corolla 5-lobed nearly to the base, reddish- or purplish-brown, thinly pubescent on the outside; lobes spreading,  $1\frac{1}{2}-2$  lin. long,  $1\frac{1}{4}$  lin. broad, ovate, notched at the obtusely pointed apex, very minutely ciliate along one margin. Coronal-lobes arising at the base of the staminal-column and twice as long as it, bright orange-yellow, compressed-cucullate at the base, produced at the apex into a long channelled spreading or somewhat recurved point, the cucullate part  $\frac{1}{2}-\frac{3}{4}$  lin. long, subtruncate with recurved margins at the top, produced at the inner apical angles into short erect obtuse teeth and reaching to about the same level as the staminal-column; channelled point about 1 lin. long. Staminal-column  $\frac{3}{4}-1$  lin. long, of equal diameter at base and apex; anthers subquadrate, with short broadly-rounded membranous appendages inflexed over the margin of the truncate apex of the style.—*A. aurea*, *Schlechter*, and var. *brevicuspis*, *S. Moore* in *Journ. Bot.* 1902, 255. *Gomphocarpus aureus*, *Schlechter* in *Engl. Jahrb.* xviii. Beibl. 45, 17.

**Mozamb. Dist.** Rhodesia: Salisbury, *Rand*, 638! at six-mile Spruit, near Salisbury, *Hon. Mrs. Evelyn Cecil*, 144! Gwelo district, *Rand*, 188!

Also in South Africa.

The var. *brevicauspis*, S. Moore, only differs from the type in having a rather shorter point to the coronal-lobes, but this is a common variation among *Asclepiads*, and apparently not constant.

44. **A. schumanniana**, *Hieru in Cat. Afr. Pl. Welw.* i. 686. Tuber ellipsoidal. Stem 9–14 in. high, simple or branched, pubescent with short curved hairs. Leaves numerous, glaucous-green (*Welwitsch*), ascending or spreading; petiole  $\frac{1}{2}$ – $1\frac{1}{2}$  lin. long; blade  $\frac{3}{4}$ –2 in. long, 2–6 lin. broad, lanceolate, acute, cuneate or acute at the base or in the lower leaves more or less rounded, narrowly revolute and scabrid along the margins, glabrous or with a few scattered hairs on both sides. Umbels solitary and terminal or 2–4 racemose along the upper part of the stem, pedunculate, 3–5-flowered; peduncles  $\frac{2}{3}$ – $1\frac{1}{2}$  in. long, usually subequal when more than 2 to a stem, thinly pubescent; bracts 2– $4\frac{1}{2}$  lin. long, subulate, sparsely ciliate; pedicels 4–6 lin. long, sparsely pubescent. Sepals  $3\frac{1}{2}$  lin. long, lanceolate, acuminate, sparsely pubescent. Corolla subrotate or rotate-campanulate, 8–9 lin. in diam., densely veined with violet-purple on a pale ground, “intense violet-rosy” (*Welwitsch*), sometimes drying dark brown; lobes 4– $4\frac{1}{2}$  lin. long,  $2\frac{1}{2}$ –3 lin. broad, oblong-ovate, subacute, ciliolate and with a few short hairs on the back. Coronal-lobes arising from the base of the staminal-column and equalling or slightly exceeding it, erect,  $2\frac{1}{2}$ –3 lin. long, cucullate in the basal part only, the margins of which are adnate to the staminal-column and confluent with the margins of the adjacent lobes, forming sinuate-crenulate lobules reaching to the base of the anther-wings; within the cucullate part at the very base and up the adnate sides is a transverse line of short erect flat scale-like hairs, but no median tooth; apical part produced, lanceolate, concave, subacute or bidentate, yellowish, with a dark brown or purple-brown stripe down the middle.—*Gomphocarpus amœnus*, K. Schum. in Engl. Jahrb. xvii. 124; in Engl. & Prantl, Pflanzenfam. iv. ii. 236; and in Bull. Soc. Bot. Belg. xxxvii. 122.

**Lower Guinea.** Angola: Pungo Andongo; in thickets on the higher parts of the Præsidium, on Pedra de Cazella, *Welwitsch*, 4169! near Malange, *Mechow*, 400!

**South Central.** Congo Free State: Upper Marangū (Marungu), *De Beers* (ex *Schumann*).

This may possibly be the same as *A. pulchella*, N. E. Br.

45. **A. pulchella**, *N. E. Br.* Stem 10–12 in. high, simple, pubescent with very short and long scattered spreading hairs intermingled; internodes  $\frac{1}{2}$ –1 in. long. Leaves opposite or occasionally 3 at a node, ascending-spreading, sessile or subsessile,  $1\frac{1}{4}$ – $1\frac{3}{4}$  in. long,  $2\frac{3}{4}$ – $3\frac{1}{2}$  lin. broad, linear-lanceolate, acute, very thinly sprinkled with rather long jointed hairs on both surfaces, appearing glabrous to the eye. Umbels about 4 to a stem, axillary or sublateral, pedunculate, subcorymbosely arranged, 5–6-flowered; lower peduncles  $2\frac{1}{2}$ –3 in. long, uppermost one  $1\frac{1}{2}$  in. long, minutely pubescent and with a sprinkling of long jointed spreading hairs; bracts 2 lin. long, filiform-subulate, thinly pubescent;

pedicels 4-6 lin. long, pubescent like the peduncles. Sepals  $2\frac{1}{2}$  lin. long,  $\frac{3}{4}$  lin. broad, spreading, lanceolate, very acute, thinly pubescent with long hairs on the back. Corolla lobed almost to the base, densely veined with rosy-purple outside, whitish, slightly veined with rosy-purple within; lobes spreading, 4 lin. long,  $2\frac{1}{2}$  lin. broad, oblong or ovate-oblong, subacute, with a few long jointed hairs on the back of the apical half, glabrous within, shortly ciliate. Coronal-lobes arising at the base of the staminal-column and equalling it in length, 2 lin. long, erect, rather thick and fleshy, cucullate in the basal half only, which is adnate to the staminal-column up to the base of the anthers, where each side is produced into a short erect tooth close to the anther-wings, apical part tapering to an obtuse point, channelled down the inner face, within the cucullate part (at its top or at about the middle of the lobe) is a very dense transverse band of short obtuse hairs, none at the base. Staminal-column  $2-2\frac{1}{4}$  lin. long; anther-appendages broadly ovate, obtuse, inflexed over the depressed truncate apex of the style.—*Gomphocarpus pulchellus*, Decne. in Ann. Sc. Nat. 2 sér. ix. 325, and in DC. Prod. viii. 558.

**Lower Guinea.** Angola, collector's name not recorded on the label!

This species is very closely allied to *A. schumanniana*, Hiern, *A. foliosa*, N. E. Br., and *A. modesta*, N. E. Br., from all of which it differs in having much more rigidly fleshy coronal-lobes, with the transverse band of hairs within them placed higher up, at the very margin of the cucullate part, broader, more dense and of rather stouter and more rigid hairs. The less membranous purple-veined corolla also distinguishes it from *A. foliosa* and *A. modesta*, whilst the longer peduncles, rosy-purple (not violet-purple) venation of the flowers, and terete (not flattened, scale-like) hairs within the coronal-lobes equally distinguish it from *A. schumanniana*.

The above description was made from the type specimen of *Gomphocarpus pulchellus*, Decne., kindly lent for the purpose by the Director of the Paris Herbarium.

46. **A. dissoluta**, Schlechter, Westaf. Kautschuk-Exp. 309. Stem 16-18 in. (or more?) high, simple, glabrous, with one puberulous line. Leaves  $1\frac{1}{2}-4$  in. long, 1-2 lin. broad, linear, acuminate, narrowed or acute at the base, slightly revolute along the margins, glabrous. Umbels solitary (always?), terminal, 2-4-flowered; peduncle  $5-7\frac{1}{2}$  lin. long; bracts subulate,  $\frac{3}{4}-2$  lin. long, glabrous; pedicels 5-6 lin. long, glabrous. Sepals 2 lin. long, lanceolate, acuminate, glabrous. Corolla probably nearly rotate, 5-lobed nearly to the base; lobes 4 lin. long,  $1\frac{3}{4}$  lin. broad, oblong, subobtuse, recurved at the very apex, glabrous on both sides. Coronal-lobes arising  $\frac{1}{2}-\frac{3}{4}$  lin. above the base of the  $1\frac{1}{2}-2$  lin. long staminal-column, and slightly exceeding it,  $1\frac{1}{4}-1\frac{1}{2}$  lin. long, erect, linear-oblong, slightly complicate or concave-channelled down the face, convex on the back, rounded or very obtuse at the apex, which is sometimes a little recurved, broadest at the base; margins somewhat abruptly narrowed about one-third the way up, forming a slight projecting angle, as seen sideways (scarcely a tooth); no tooth on the face of the lobe. Anther-appendages elliptic or orbicular, subacute or obtuse, inflexed over the apex of the style.—*Xysmalobium*

*dissolutum*, K. Schum. in Engl. Jahrb. xvii. 119; and in Engl. & Prantl, Pflanzenfam. iv. ii. 232; Durand & Schinz, Études Fl. Congo, i. 192. *Schizoglossum violaceum*, K. Schum. in Engl. Jahrb. xvii. 122; and in Engl. & Prantl, Pflanzenfam. iv. ii. 233.

**Lower Guinea.** Lower Congo: near Dolo in the vicinity of Stanley Pool, *Schlechter*, 12808 (ex *Schlechter*). Angola: San Salvador; in the Steppe near Tunis, *Büttner*, 504!

**South Central.** Lunda: Mukenge, *Pogge*, 1227!

*X. dissolutum* is described as having 2-flowered peduncles, but the specimen I have seen has three pedicels and the scar of a fourth.

47. **A. rubella**, *N. E. Br.* Stems simple, 12–16 in. high, slender, hispid-scabrous. Leaves sessile, 1–2¼ in. long, 3–3½ lin. broad, lanceolate or linear-lanceolate, acute, sparsely pubescent, revolute margins scabrid. Umbels terminal, several-flowered; peduncles 7–9 lin. long; bracts 4–5½ lin. long, linear, hispidulous; pedicels hispidulous. Sepals 4 lin. long, subulate, pubescent and ciliate. Corolla rotate, pink; lobes 4½ lin. long, oblong, obtuse, densely hairy on the back, ciliate. Coronal-lobes 2½ lin. long, arising 1½ lin. above the base of the staminal-column and reaching to its top, complicate-cucullate, oblong with a produced apex, papillose within. Staminal-column 4 lin. long.—*Gomphocarpus roseus*, K. Schum. in Engl. Jahrb. xvii. 127, and in Engl. & Prantl, Pflanzenfam. iv. ii. 237; Durand & Schinz, Études Fl. Congo, i. 193.

**Lower Guinea.** Angola: Bangala; by the River Kuango, near Kitamba, *Pogge*, 614.

Only known to me from the description, but would appear to be allied to *A. schumanniana*, Hieron.

48. **A. modesta**, *N. E. Br.* Rootstock tuberous. Stem solitary, simple or sparingly branched towards the base, pubescent. Leaves often very spreading, in larger plants 1½–3 in. long, 1½–4 lin. broad, linear or linear-lanceolate, in smaller plants ¾–1½ in. long, 2–6 lin. broad, oblong or elliptic-oblong, acute or subacute, narrowed or acute at the base and sometimes tapering into a short petiole, glabrous, with the exception of a few hairs along the revolute margins and the midrib beneath. Umbels 2–4 to a stem, lateral and terminal, pedunculate, 3–6-flowered; peduncles ½–2 in. long, pubescent; bracts 1–1½ lin. long, subulate. Sepals 2 lin. long, ⅔ lin. broad, lanceolate, acute, pubescent, ciliate. Corolla 5-lobed nearly to the base, quite glabrous, or pubescent outside, white or whitish, more or less tinted with rose or rosy-purple outside; lobes 3–4 lin. long, 1½–2 lin. broad, oblong, obtuse, minutely ciliate. Coronal-lobes arising at the base of the staminal-column, and about equalling it, 1⅔–2 lin. long, erect or slightly spreading, cucullate to about the middle with the apical part produced, obtuse or subacute, complicate-channelled; margins of the cucullate part adnate to the staminal-column below, shortly free above and produced into small oblong obtuse erect teeth; inside of the hood with a trans-

verse papillate-pubescent line towards the base, but no median tooth. Staminal-column  $1\frac{1}{2}$  lin. long; anther-appendages ovate, acute, inflexed over the rim of the flat or slightly concave apex of the style.

**Mozamb. Dist.** German East Africa: on the higher plateau north of Lake Nyassa, *Thomson!* British Central Africa: Nyasaland; North Nyasaland and Upper Loangwa River, *Nicholson!* near Blantyre, *Last!* Manganja Hills, *Waller!* Namasi, *Cameron, 6!*

Var. *foliosa*, N. E. Br. Corolla-lobes  $2\frac{1}{2}$ –3 lin. long, indistinctly veined with rosy-purple within. Coronal-lobes shorter than the staminal-column  $1-1\frac{1}{4}$  lin. long.—*A. foliosa*, Hiern in Cat. Afr. Pl. Welw. i. 686, excl. syn.

**Lower Guinea.** Angola: Huilla; near Lopollo, in pastures sparsely covered with bushes, *Welwitsch, 4174!*

This plant seems somewhat variable in stature and in the size and form of the leaves, but I find no essential difference in the structure of the flowers of the various specimens seen. It appears to be closely allied to *A. foliosa*, N. E. Br., but differs in the basal part of the coronal-lobes being somewhat abruptly cucullate and in the constant presence of a short erect oblong obtuse tooth on each side of the cucullate part arising from the top margins close to the staminal-column.

The Angolan plant only appears to differ from the type in its rather smaller flowers and shorter coronal-lobes.

49. **A. foliosa**, N. E. Br. Stem solitary, simple or branched below, 10–14 in. high. Leaves subsessile or sessile,  $2-2\frac{1}{2}$  in. long,  $1\frac{1}{2}$ –3 lin. broad, linear or linear-lanceolate, acuminate, narrowed or acute at the base, recurved along the margins, glabrous, with the exception of a few rather long hairs on the margins and midrib beneath. Umbels few, lateral and terminal, pedunculate, about 4-flowered; pedicels 3–4 lin. long, pubescent. Sepals about  $1\frac{1}{2}$  lin. long,  $\frac{2}{3}$  lin. broad, lanceolate, acute, pubescent. Corolla 5-lobed nearly to the base, glabrous on both sides, white (?); lobes  $3\frac{1}{2}$  lin. long, 2 lin. broad, oblong, obtuse, very minutely ciliate. Coronal-lobes arising at the base of the staminal-column and nearly equalling it in length,  $1\frac{1}{2}$  lin. long, cucullate, erect, obliquely oblong, obtuse, their inflexed margins very obliquely rounded, each with a small acute tooth at the base inflexed within the hood, which has a transverse papillate-pubescent line within, a little below the middle. Between and connecting the coronal-lobes are 5 small pouch-like flaps under the projecting horny anther wings. Staminal-column  $1\frac{3}{4}$  lin. long; anther-appendages ovate, acute, inflexed over the rim of the slightly concave apex of the style.—*Gomphocarpus foliosus*, K. Schum. in Engl. Jahrb. xvii. 126, and in Engl. & Prantl, Pflanzenfam. iv. ii. 237; Durand & Schinz, Études Fl. Congo. i. 193.

**South Central.** Congo Free State: Bashilange; near Mukenge, *Pogge, 1130!* 1191 and 1223 (ex *Schumann*).

According to Schumann a plant collected between Kingenge and the Kasai River, *Pogge, 975*, probably belongs here also.

50. **A. palustris**, *Schlechter in Journ. Bot.* 1895, 336. Roots tuberous. Stem 18 in. or more high, rather slender, simple or branched, pubescent. Leaves slightly spreading,  $1\frac{1}{4}-2\frac{1}{2}$  in. long,  $2\frac{1}{2}$ –5 lin. broad, subsessile or on very short petioles, linear-lanceolate to

narrowly oblong-lanceolate, acute, rounded or emarginate at the base, revolute along the margins, minutely scaberulous or with a short spreading pubescence. Umbels terminal and lateral, pedunculate, 6-10-flowered, subcorymbose at the top of the stem; peduncles  $\frac{1}{2}$ -6 in. long, pubescent; bracts  $1\frac{1}{2}$ -2 lin. long, subulate; pedicels 5-8 lin. long, pubescent. Sepals 2-2 $\frac{1}{2}$  lin. long, attenuate, acute, more or less pubescent. Corolla  $\frac{1}{2}$  in. in diam., with very spreading or reflexed lobes 3-3 $\frac{1}{2}$  lin. long, 2-2 $\frac{1}{4}$  lin. broad, ovate, acute, pubescent on the back, puberulous towards the base within, apparently whitish, with or without dark purple dots and lines within but pale rosy according to Welwitsch. Coronal-lobes horizontally radiating from the base of the staminal-column and only reaching to half its height, 1 $\frac{1}{2}$  lin. long, 1 $\frac{1}{3}$  lin. high, purple-brown with whitish margins, hood- or bonnet-shaped, subtruncate, minutely denticulate along the top margins, which have an erect tooth on each side at the base; the cavity is nearly filled up by a large tuft of pubescent or papillate filaments arising from a large keel that runs along the bottom of the hood and papillate along the margin within.—Hiern in Cat. Afr. Pl. Welw. i. 686. *Gomphocarpus cristatus*, Decne. in Ann. Sc. Nat. 2 sér. ix. 325, t. 11, D. fig. 3; and in DC. Prod. viii. 562; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 236. *G. palustris*, K. Schum. in Engl. Jahrb. xvii. 127, and in Engl. & Prantl, Pflanzenfam. iv. ii. 236. *G. paluster*, K. Schum. in Engl. Jahrb. xxx. 382.

**Lower Guinea.** Ango'a: Pungo Andongo; on the more elevated rocks of the Præsidium, *Welwitsch*, 4167! Malange, *Mechow*, 317, 401!

**Mozamb. Dist.** German East Africa: Unyika, on a hilly plateau near Kananda Village, 4900 ft., *Goetze*, 1440 (ex *Schumann*). British Central Africa: Nyasaland; Mount Malosa, 4000-6000 ft., *Whyte!* Kondowe to Karongz, *Whyte!* Mount Zomba, *Whyte!* Mount Mlanje, *Scott-Elliot*, 8670! *McClunie*, 49!

The Zomba plant has rather longer teeth at the base of the coronal-lobes and the filaments within are rather shorter than in the Angolan plant, but I do not think it is specifically distinct.

51. **A. pygmæa**, *N. E. Br.* in *Kew Bulletin*, 1895, 255. Plant 3-4 in. high. Stems several from a root, simple or once or twice branched, pubescent. Leaves somewhat spreading, lower opposite, upper, or at least some of those arising from a flowering node, 3 in a whorl, subsessile, 1-2 in. long,  $\frac{1}{2}$ - $\frac{3}{4}$  lin. broad, linear, acute, scaberulous, revolute to midrib along the margins. Umbels 1-3 to a stem, pedunculate, corymbose, 4-6-flowered; peduncles  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, pubescent; bracts 2 $\frac{1}{2}$ -3 lin. long, subulate, pubescent; pedicels 4-6 lin. long, pubescent. Sepals 2 lin. long, lanceolate, acute, pubescent. Corolla 5-lobed nearly to the base; lobes 2 $\frac{1}{2}$ -3 lin. long, 1 $\frac{1}{2}$  lin. broad, oblong, subobtuse, more or less pubescent on the back. Coronal-lobes stately radiating from the base of the staminal-column and rising to the same general level 2 lin. long, complicate, inflexed sides or the basal half produced into broad deltoid obtuse erect teeth reaching to the top of the staminal-column, minutely papillate-pubescent within. Anther-appendages broad, transverse, rounded.

**Mozamb. Dist.** German East Africa: Lower plateau, north of Lake Nyasa, Thomson!

The leaves and stems in the dried state are tinted with purple.

52. **A. Randii**, *S. Moore in Journ. Bot.* 1902, 255. Plant about 5 in. high, branching near the base. Branches about  $\frac{2}{3}$  lin. thick, shortly pilose; internodes 3-6 lin. long. Leaves ascending-spreading, sessile or subsessile,  $\frac{3}{4}$ - $2\frac{1}{2}$  in. long,  $\frac{3}{4}$ -1 lin. broad, linear, acute, pilose on both sides. Umbels about 2 to a branch, subcorymbose, 3-4-flowered; peduncles 6-10 lin. long, densely pilose; bracts 2- $2\frac{1}{2}$  lin. long, pilose-pubescent, persistent; pedicels 5-6 lin. long, densely pilose. Sepals 2 lin. long,  $\frac{2}{3}$  lin. broad, lanceolate, acute, pilose-pubescent, somewhat reflexed. Corolla apparently green, lobed nearly to the base; lobes slightly reflexed, 3 lin. long,  $1\frac{1}{2}$  lin. broad, ovate-oblong, subobtusely, thinly pilose on the back, glabrous within. Coronal-lobes arising at the base of the staminal-column and overtopping it by nearly or quite half their length, about  $3\frac{1}{4}$  lin. long, erect, complicate-cucullate in the basal part, which does not reach to the top of the staminal-column and is produced into short obtuse teeth at the apical angles of the sides, terminal part produced into an erect linear obtuse process 2 lin. long; inner surface minutely papillate-puberulous. Staminal-column  $1\frac{1}{2}$  lin. long.

**Mozamb. Dist.** Rhodesia: Salisbury, Rand, 194!

53. **A. eminens**, *Schlechter in Journ. Bot.* 1896, 453. Plant 5-10 in. high, branching close to the ground. Branches usually more or less decumbent, pubescent along 2 lines alternating at the nodes, leafy; internodes  $\frac{1}{4}$ -1 in. long. Leaves ascending, usually unilateral; petiole 1-3 lin. long; blade 1- $4\frac{1}{4}$  in. long,  $\frac{3}{4}$ - $2\frac{1}{2}$  lin. broad, linear, acute, shortly hastate or rounded at the base, subcoriaceous, thickened along the flat or slightly recurved margins, quite glabrous on both sides or thinly setulose-scabrid along the midrib beneath. Umbels solitary on each branch, terminal, pedunculate, 3-6-flowered, erect; peduncle  $\frac{1}{2}$ - $2\frac{3}{4}$  in. long, pubescent along one side; bracts 3-5 lin. long,  $\frac{1}{4}$ - $\frac{1}{3}$  lin. broad, linear, acute, glabrous or sparsely setulose-scabrid, usually very deciduous; pedicels  $\frac{1}{3}$ - $\frac{2}{3}$  in. long, puberulous along one side. Sepals  $2\frac{1}{2}$ -4 lin. long,  $\frac{3}{4}$  lin. broad, lanceolate or linear-lanceolate, very acute, glabrous or with here and there a hair. Corolla lobed nearly to the base, greenish, glabrous on both sides; lobes  $4\frac{1}{2}$ - $6\frac{1}{2}$  lin. long,  $1\frac{2}{3}$ - $2\frac{1}{4}$  lin. broad, lanceolate, tapering to an obtuse point, very spreading or somewhat reflexed. Coronal-lobes arising  $\frac{3}{4}$  lin. above the base of the staminal-column and overtopping it by  $\frac{1}{3}$ - $\frac{1}{2}$  of their length, 3- $4\frac{1}{2}$  lin. long,  $\frac{2}{3}$ - $\frac{3}{4}$  lin. broad across the side, complicate and of nearly equal breadth throughout, erect, recurved-spreading at the apical part, inflexed sides truncate or rounded at the top and spread out forming an open mouth to the complicate part, apex of the lobe produced dorsally into a short deltoid point. Staminal-column  $2\frac{3}{4}$ - $3\frac{1}{4}$  lin. long; anther-appendages elliptic, obtuse, inflexed over the apex of

the style; anther-wings about  $\frac{1}{2}$  lin. broad and obtusely rounded in the lower half.

**Mozamb. Dist.** Rhodesia: between Enkeldoorn and Rocky Spruit, *Hon. Mrs. Evelyn Cecil*, 134! Buluwayo, *Rand*, 183, 189 (ex *S. Moore*).

Also in the Transvaal and Natal.

The coronal-lobes of the Tropical specimens are shorter than is usual in those from South Africa, being only  $\frac{1}{3}$  longer than the staminal-column, but I have seen specimens from Natal in which they are equally short.

*Imperfectly known species.*

54. **A. dependens**, *N. E. Br.* Stems curved-erect, 8-10 in. high, slender, rusty-pubescent. Leaves sessile, 1-2 in. long,  $1\frac{1}{2}$ - $2\frac{1}{3}$  lin. broad, linear, acuminate, acute at the base, sparsely pubescent on both sides, scabrid on the recurved margins. Umbels 1-3 (or more?), terminal and lateral, 2-4-flowered; bracts  $1\frac{1}{2}$ -2 lin. long; flowers pendulous on pubescent pedicels  $1\frac{1}{2}$ -3 lin. long. Sepals  $\frac{1}{4}$  in. long, subulate, pubescent. Corolla rotate-campanulate; lobes  $3\frac{1}{2}$ - $3\frac{3}{4}$  lin. long, apparently pink, sparsely puberulous on the back, ciliolate. Coronal-lobes arising  $\frac{1}{2}$  lin. above the base of the staminal-column and equalling it in length, 1 lin. long, subulate, with several interposed teeth.—*Gomphocarpus dependens*, K. Schum. in *Engl. Jahrb.* xvii. 125, and in *Engl. & Prantl, Pflanzenfam.* iv. ii. 236; Durand & Schinz, *Études Fl. Congo*, i. 193.

**South Central.** Lunda, Mussumba of Muata Jamvo, *Pogge*, 371!

55. **A. nutans**, *N. E. Br.* Suffruticose, pubescent. Stem angular, pilose-pubescent. Leaves subsessile, 4-7 in. long, 2-3 lin. broad, linear, acuminate, pilose-pubescent. Umbels several, lateral at the nodes, pedunculate, nodding, many-flowered; peduncles 1 in. long, pubescent-villous. Bracts linear, acute, pubescent, half as long as the pubescent pedicels. Sepals subequalling the corolla, linear-subulate, pubescent. Corolla rotate, pubescent outside. Buds globose, about the size of a pea.—*Gomphocarpus nutans*, Klotzsch in Peters, *Reise Mosamb. Bot.* 275; K. Schum. in *Engl. & Prantl, Pflanzenfam.* iv. ii. 236, and in *Engl. Pfl. Ost-Afr. C.* 322.

**Mozamb. Dist.** Portuguese East Africa: Lower Zambesi; Sena, *Peters*.

I have not seen this plant; the corona is undescribed.

56. **A. crinita**, *N. E. Br.* Stem erect, very much branched, glabrous below, puberulous above, at length becoming hollow. Leaves opposite or 3-4 in a whorl, long, scarcely petiolate, the lower lanceolate, the upper linear, all acuminate, with revolute margins, glabrous, the uppermost alone being puberulous. Umbels lateral at the nodes, pedunculate, shorter than the leaves, 4-6-flowered; peduncles rather stout; pedicels erect, becoming bent downwards when in fruit. Sepals lanceolate, acuminate, puberulous. Corolla scarcely longer than the calyx, rotate, spreading, white; lobes ovate-oblong, obtuse. Coronal-lobes erect, crenate at the apex, at least in the dried state. Follicle

(solitary?) ascending, ventricose, acuminate, covered with green bristles. Seeds with a tuft of long white hairs.—*Gomphocarpus crinitus*, Bertoloni in Mem. Accad. Scienze Istit. Bologna, 1851, iii. 253, t. 20, fig. 1; K. Schum. in Engl. Pfl. Ost-Afr. C. 322.

**Mozamb. Dist.** Portuguese East Africa: Inhambane, *Fornasini* (ex *Bertoloni*).

I have not seen this species, but it appears to be allied to *A. Phillipsia*, N. E. Br. Although the town of Inhambane is just south of the Tropic of Capricorn, the plant in all probability will be found to occur within the limits of the Tropical Flora.

20. **SCHIZOGLOSSUM**, E. Meyer; Benth. et Hook. f. Gen.  
Pl. ii. 753.

Calyx 5-partite. Corolla 5-lobed nearly to the base, rotate, or the lobes campanulately spreading, reflexed, or rarely connate at their tips, overlapping to the left in bud. Corona of 5 lobes arising from the staminal-column opposite the anthers, dorsally flattened, never complicate, but occasionally with slightly infolded margins, often produced at the apex into a subulate or horn-like point, and furnished on the inner face with 2 keels and usually with one or two teeth, horns or tongue-shaped processes, or rarely without keel, tooth or horn on the face. Staminal-column arising from the base of the corolla. Anthers erect, terminated by membranous appendages, which are inflexed over the apex of the style or erect. Follicles smooth or echinate. Seeds crowned with a tuft of hairs.—Perennial herbs with milky juice. Rootstock usually tuberous. Stem solitary or two or more from a tuber, simple, or variously branched. Leaves opposite or whorled, often linear. Flowers in sessile or pedunculate umbels, most of which are lateral between the bases of the leaves, and one or two terminal.

Species numerous, found also in Madagascar and in South Africa. It is not possible to draw any rigid line between the genera *Schizoglossum* and *Xysmalobium* in the case of those species of *Schizoglossum* that are without the axillary tooth, horn, keels or process on the inner face of the coronal-lobes; the only difference appears to be that the coronal-lobes are more flattened and much less fleshy than they are in *Xysmalobium*, but in most cases the 2 keels are present on the inner face of the coronal-lobes, which, taken together with the usually much thinner texture of the lobes, at once distinguishes this genus from *Xysmalobium*.

\*Leaves (except sometimes in 14. *S. viridulum*) less than  $\frac{1}{4}$  in. broad, filiform, linear or linear-lanceolate.

Corolla-lobes connate at the apex . . . . . 1. *S. connatum*.

Corolla-lobes free.

Coronal-lobes much shorter than the staminal-column . . . . . 20. *S. Welwitschii*.

Coronal-lobes as long as or longer than the staminal-column

Corolla-lobes with long woolly hairs on their margins and apical part, and a short pubescence on their middle part within.

Pedicels 4-6 lin. long . . . . . 2. *S. abyssinicum*.

Pedicels  $1\frac{1}{3}$ - $1\frac{3}{4}$  lin. long.

- Corolla-lobes  $1\frac{1}{4}$ - $1\frac{3}{4}$  lin. long, with the shorter pubescence inside scarcely visible to the eye, consisting of minute papilla-like very obtuse hairs . . . . . 3. *S. angustissimum*.
- Corolla-lobes 2- $2\frac{1}{4}$  lin. long, with the shorter pubescence inside of distinctly visible acute hairs . . . . . 4. *S. Whytei*.
- Corolla-lobes without long woolly hairs, but pubescent or thinly and minutely downy all over within.
- Coronal-lobes with 1 long erect horn or point. (See also 8. *S. erubescens* in which the dorsal horn is sometimes undeveloped.)
- Horn arising just below the apex of the coronal-lobe on its inner face; corolla-lobes  $1-1\frac{1}{4}$  lin. long, not purple-brown. . . . . 5. *S. masaicum*.
- Horn strictly terminal; corolla-lobes  $1\frac{3}{4}$ -2 lin. long, purple-brown . . . . . 15. *S. barbatum*.
- Coronal-lobes with an acuminate point sub-horizontally inflexed over the tips of the anthers . . . . . 6. *S. strictissimum*.
- Coronal-lobes with 2 long horns or points. Horns horizontal, 1 directed over the staminal-column, the other backwards. . . . . 8. *S. erubescens*.
- Horns erect or ascending.
- Coronal-lobes subquadrate, with a short tooth on each side of the central horn, dark purple . . . . . 11. *S. shirense*.
- Coronal-lobes diamond-shaped, not toothed on each side of the terminal horn, yellowish . . . . . 10. *S. gwelense*.
- Coronal-lobes lanceolate, with a process that is dilated and lacerate at the apex on the inner face . . . . . 9. *S. filipes*.
- Coronal-lobes truncate at the top, whence a small oblong or ovate bifid or acute appendage is abruptly inflexed over the staminal-column : . . . . . 7. *S. Elliotii*.
- Corolla-lobes papillate-puberulous on the apical half only, no long hairs . . . . . 17. *S. aciculare*.
- Corolla-lobes with a tuft of rather long stiff hairs at the very apex, otherwise glabrous within . . . . . 12. *S. Baumii*.
- Corolla-lobes quite glabrous within.
- Umbels sessile.
- Leaves less than 1 lin. broad; coronal-lobes subquadrate, 3-toothed at the apex . . . . . 13. *S. fuscopurpureum*.
- Leaves 2- $3\frac{1}{2}$  lin. broad; coronal-lobes linear, triangularly enlarged at the apex . . . . . 14. *S. viridulum*.
- Umbels pedunculate.
- Coronal-lobes with a distinct tooth on their inner face; plant 2-4 in. high. . . . . 18. *S. alpestre*.

Coronal-lobes without a tooth on their inner face.

Corolla-lobes 1 lin. long; coronal-lobes ovate, obtuse . . . . . 19. *S. angolense*.

Corolla-lobes 5-7 lin. long; coronal-lobes oblong or narrowly oblong, incurved along the margins, denticulate at the inflexed tips.

Corolla speckled and stained with purple-brown on an ochreous ground . . . . . 21. *S. Carsoni*.

Corolla yellowish-green tipped with purple-brown . . . . . 22. *S. chlorojodinum*.

Corolla-lobes 8-9 lin. long; coronal-lobes oblong, 3-toothed at the apex. . . . . 23. *S. lividiflorum*.

\*\*Leaves  $\frac{1}{4}$ - $1\frac{1}{2}$  in. broad not linear or linear-lanceolate, cordate or broadly rounded at the base, except in 16. *S. Nyasæ*.

Umbels sessile.

Leaves 3-4 in a whorl; coronal-lobes with 1 terminal horn and 2 others in front of it . . . . . 16. *S. Nyasæ*.

Leaves opposite; coronal-lobes truncate and obtusely denticulate at the apex, with 2 wing-like inflexed keels on the inner face . . . . . 27. *S. petherickianum*.

Umbels pedunculate.

Coronal-lobes equalling or but slightly exceeding the staminal-column; corolla white . . . . . 28. *S. simulans*.

Coronal-lobes overtopping the staminal-column by about half their length.

Coronal-lobes terminating in a long subulate horn; corolla-lobes  $2\frac{1}{2}$  lin. long, pale violaceous . . . . . 26. *S. firmum*.

Coronal-lobes not terminating in a long horn; corolla-lobes 4-8 lin. long.

Coronal-lobes with teeth, keels or other appendages on the inner face.

Coronal-lobes oblong, obtuse or irregularly denticulate at the apex, with 2 wing-like keels infolded so that their edges meet . . . . . 29. *S. Grantii*.

Coronal-lobes pandurate-oblong with a tongue-like process at the middle, which is decurrent to the base as 2 keels . . . . . 30. *S. eximium*.

Coronal-lobes 2 lin. long, ovate, truncate, with a triangular appendage on the face . . . . . 31. *S. Gatztei*.

Coronal-lobes  $3-4\frac{1}{2}$  lin. long, dilated into rounded auricles at the base, with a contiguous pair of deltoid or quadrate teeth below the middle . . . . .

Apex of the style conical divided into 5-6 contiguous connivent-erect lobules . . . . . 32. *S. distinctum*.

Apex of the style dilated, pentagonal,

crater-like channelled at each angle. 33. *S. scyphostigma*.

Coronal-lobes without keels or other appendages on the inner face.

Coronal-lobes spatulate, acute . . . . . 25. *S. dolichoglossum*.

Coronal-lobes cuneate-oblong, irregularly

3-4-toothed or subtruncate at the

apex. . . . . 24. *S. spurium*.

1. **S. connatum**, *N. E. Br. in Kew Bulletin*, 1895, 69. Stem solitary (?) simple,  $1\frac{1}{2}$ -2 ft. high, slender, softly pubescent. Leaves erect, subsessile,  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. long,  $\frac{1}{2}$ -1 lin. broad, linear, acute, with revolute margins, pubescent. Umbels 6-8, lateral at the nodes along the upper part of the stem, sessile, 6-8-flowered; pedicels  $1\frac{1}{2}$ - $2\frac{1}{2}$  lin. long, slender pubescent. Sepals  $1-1\frac{1}{4}$  lin. long, lanceolate, acuminate, pubescent. Corolla 5-lobed almost to the base; lobes 3 lin. long,  $\frac{3}{4}$ -1 lin. broad at the base, linear-lanceolate-attenuate, incurved-erect, connate at their tips, with revolute-replicate margins, pubescent outside, minutely puberulous within, apparently greenish-yellow. Coronal-lobes  $\frac{3}{4}$  lin. long and about the same in breadth, equalling the staminal-column in length, subquadrate, truncate and somewhat indistinctly subdenticulate at the top, with the apical angles produced on each side into a short spreading tooth, also having two keels and a minute tooth below the apex on the inner face, a transverse fleshy ridge at their base on the back, glabrous. Staminal-column  $\frac{3}{4}$  lin. long; anther-appendages nearly circular, inflexed over the truncate and minutely papillose apex of the style.—*K. Schum. in Engl. Pfl. Ost-Afr. C.* 425, and in *Engl. Jahrb.* xxviii. 455.

**Mozamb. Dist.** German East Africa: Uelhe; Uchungwe Mountain, at the Ruaha River near Succa, 5500 ft., *Goetze*, 644. British Central Africa: Urungu; Fwambo, *Carson*, 17!

2. **S. abyssinicum**, *K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 233. Stem 4-5 ft. high, rather slender, sparingly branched, pubescent. Leaves  $1\frac{1}{2}$ -3 lin. long,  $\frac{1}{2}$ - $\frac{3}{4}$  lin. broad, linear-filiform, acute, erect, very sparsely and minutely pubescent, margins strongly revolute. Umbels numerous, lateral, sessile, 15-20-flowered; bracts  $1\frac{1}{2}$ -2 lin. long, subulate, pubescent; pedicels 4-6 lin. long, slender, pubescent. Sepals  $\frac{3}{4}$  lin. long, lanceolate, acuminate, pubescent. Corolla 3 lin. diam.; lobes  $1-1\frac{1}{3}$  lin. long, campanulately spreading, narrowly oblong, acute, replicate, subtomentose on both sides, with acute hairs and with a tuft of long white hairs at the apex. Coronal-lobes arising  $\frac{1}{5}$  lin. above the base of the staminal-column,  $\frac{2}{3}$  lin. long, subquadrate, abruptly contracted into an acuminate point curved over the tips of the anthers with two keels on the face decurrent from the point, each having a minute auricle or pocket on the outer side.—*Lagarinthus abyssinicus*, *Hochst. ex Benth. in Benth. et Hook. f. Gen. Pl.* ii. 753.

**Nile Land.** Abyssinia: Sana: mountains near Doehli, *Schimper*, 1633!

Readily distinguished from *S. angustissimum*, *K. Schum.*, and *S. Whytei* by its longer pedicels, and by the body of the coronal-lobe being produced into an acute

point at the apex, whilst in *S. angustissimum* and *S. Whytei* the keels are produced into the point or points, the body itself being obtuse behind the base of the point.

3. **S. angustissimum**, *K. Schum. in Engl. Jahrb.* xvii. 123. Stems 3-4 ft. high, branched above, puberulous. Leaves sessile,  $\frac{3}{4}$ - $2\frac{1}{2}$  in. long,  $\frac{1}{2}$ -1 lin. broad, linear, with strongly revolute margins, puberulous. Umbels numerous, sessile, lateral at the nodes, 6-10-flowered; pedicels  $1\frac{1}{2}$  lin. long, slender, puberulous. Sepals 1 lin. long, lanceolate, acuminate, puberulous. Corolla rotate, lobed nearly to the base; lobes  $1\frac{1}{4}$ - $1\frac{3}{4}$  lin. long,  $\frac{1}{2}$  to scarcely  $\frac{2}{3}$  lin. broad, oblong-lanceolate or linear-oblong, acute, pubescent on the back, villous within on the apical part and margins with long white woolly hairs and thinly covered on the central part with minute very often obtuse papilla-like hairs, hardly distinguishable by the eye. Coronal-lobes arising  $\frac{1}{2}$  lin. above the base of the staminal-column and twice as long as it,  $\frac{3}{4}$ -1 lin. long (including the horn) subquadrate, very obtuse and variously crenulate at the apex, with a linear-subulate horn arising just below the apex on the inner face and 2 keels decurrent from it, sometimes the horn is more or less deeply bifid or trifid. Staminal-column  $\frac{1}{2}$  lin. long, not dilated at the base of the anthers; anther-appendages ovate, obtuse, inflexed over the truncate apex of the style.—*K. Schum. in Engl. Pfl. Ost-Afr. C.* 321; and in *Engl. & Prantl, Pflanzenfam.* iv. ii. 233; *Durand & Schinz, Études Fl. Congo*, i. 192. *S. elatum*, *K. Schum. in Engl. Jahrb.* xvii. 123; in *Engl. & Prantl, Pflanzenfam.* iv. ii. 233; and in *Engl. Pfl. Ost-Afr. C.* 321.

**Nile Land.** Nianniam: Gumango Hill, *Schweinfurth*, 3879!

**South Central.** Congo Free State: Monbuttu; Kibali, *Schweinfurth*, 3539! near Bongua, *Schweinfurth*, 3720!

**Mozamb. Dist.** German East Africa: without precise locality, *Fischer*, 398 (ex *Schumann*). British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 417!

I can find no character whereby to separate *S. elatum* from *S. angustissimum*; the horn on the coronal-lobes is usually subulate, but occasionally it is bifid or even trifid at the apex, a variation which also occurs in other species.

4. **S. Whytei**, *N. E. Br.* Stems apparently 3-4 ft. high, puberulous, branching. Leaves  $1\frac{1}{2}$ -3 in. long,  $\frac{1}{2}$ -1 lin. broad, linear, abruptly acute, ascending, or erect, very revolute along the margins, nearly glabrous or with a thin and very minute pubescence above, puberulous along the midrib beneath. Umbels numerous, sessile, lateral at the nodes, many-flowered; pedicels  $1\frac{1}{3}$ - $1\frac{3}{4}$  lin. long, pubescent. Sepals 1- $1\frac{1}{4}$  lin. long,  $\frac{1}{4}$ - $\frac{1}{2}$  lin. broad, lanceolate, acute, pubescent. Corolla 4- $4\frac{1}{4}$  lin. in diam., purple-brown, pubescent on the back and inner face with fine short white acute hairs and bearded at the tips and along the margins of the lobes with long woolly hairs; lobes 2- $2\frac{1}{4}$  lin. long, nearly 1 lin. broad when flattened out, oblong or oblong-lanceolate, acute, ascending-spreading, replicate throughout their length, incurved at the tips. Coronal-lobes arising  $\frac{1}{4}$  lin. above the base of the staminal-column and

twice as long as it, 1 lin. long, including the horn, erect, somewhat elliptic-subquadrate, very obtuse and minutely crenulate at the apex, with 2 keels and a subapical horn on the inner face; horn subulate, sometimes divided into 2 or 3, incurved over the staminal-column at the base, then ascending. Staminal-column  $\frac{3}{4}$  lin. long, not dilated at the base of the anthers; anther-appendages very broadly ovate or suborbicular, obtuse, inflexed over the truncate apex of the style.

**Mozamb. Dist.** British Central Africa: Nyasaland: Kondowe to Karonga, 2000-6000 ft., *Whyte*, 353! Masuku Plateau, *Whyte*!

Very similar to *S. angustissimum*, K. Schum., but appears to be of a more branching habit and has larger flowers, which are of a darker colour when dried, and essentially differ from those of *S. angustissimum* in the character of the hairs on the middle of the inner face of the corolla-lobes, these forming a visible pubescence of fine acute hairs in *S. Whytei*, whilst in *S. angustissimum* they are scarcely visible to the eye and when highly magnified are almost papilla-like and very obtuse.

5. ***S. masaicum***, *N. E. Br. in Kew Bulletin*, 1895, 252. Stems  $1\frac{1}{2}$ - $2\frac{1}{2}$  ft. high, slender, scarcely 1 lin. thick at the base, usually sparingly branched, pubescent. Leaves  $\frac{3}{4}$ - $2\frac{1}{2}$  in. long,  $\frac{1}{4}$ - $\frac{3}{4}$  lin. broad, erect, linear-filiform, acute, with very revolute margins, very thinly and minutely pubescent or nearly or quite glabrous. Umbels several, lateral at the nodes, sessile, several-flowered; bracts  $\frac{3}{4}$ - $1\frac{1}{2}$  lin. long, subulate, pubescent; pedicels  $1\frac{1}{2}$ -2 lin. long, slender, pubescent. Sepals  $\frac{1}{2}$ - $\frac{3}{4}$  lin. long, ovate-lanceolate, acute or acuminate, pubescent on the back. Corolla rotate, 2- $2\frac{1}{2}$  lin. in diam.; lobes 1- $1\frac{1}{4}$  lin. long,  $\frac{1}{2}$  lin. broad, oblong, subacute, more or less reflexed along the margins, pubescent on the back, thinly and minutely downy within, pale brown in the dried state, but probably greenish when fresh. Coronal-lobes arising at the base of the staminal-column, erect,  $\frac{1}{2}$ - $\frac{2}{3}$  lin. long, subquadrate, flat, subtruncate, broadly rounded, and slightly recurved or dorsally projecting at the apex, with two divergent keels and a short horn (sometimes bifid) on the inner face, the horn arising just below the apex, ascending and incurved over the tips of the anthers.

**Nile Land.** British East Africa: Taita district; Maungu, 2000 ft. *Johnston*!

**Mozamb. Dist.** German East Africa: Kilimanjaro; below Marangu, 3200 ft., *Volkens*, 2155!

The Kilimanjaro plant was distributed from Berlin as *Chlorophytum viridescens*, Engl. The keels on the coronal-lobes are rather more divergent than in the type, but I can find no other structural difference. The flowers have dried green, but this is probably due to the use of the alcohol method.

6. ***S. strictissimum***, *S. Moore in Journ. Bot.* 1902, 254. Stem erect, 3- $3\frac{1}{3}$  ft. high, simple or with one branch,  $1\frac{1}{2}$ - $1\frac{3}{4}$  lin. thick at the base, softly downy. Leaves opposite, numerous, erect, standing close to the stem, sessile or subsessile, linear, with revolute margins, abruptly acute, minutely pubescent, varying from  $2\frac{1}{2}$ - $2\frac{3}{4}$  in. long on the lower part to  $\frac{3}{4}$ - $1\frac{1}{4}$  in. long on the upper part of the stem,  $\frac{1}{2}$ - $1\frac{1}{2}$  lin. broad. Umbels sessile at the nodes, few-flowered; pedicels about  $\frac{1}{2}$  lin. long, pubes-

cent. Sepals 1 lin. long, ovate-lanceolate, acute, pubescent. Corolla lobed nearly to the base, rotate, about  $2\frac{1}{2}$  lin. in diam., thinly pubescent outside, densely pilose-pubescent or almost woolly with white hairs all over within; lobes about  $1\frac{1}{4}$  lin. long,  $\frac{3}{4}$  lin. broad, ovate or oblong-ovate, subacute. Coronal-lobes arising at the base of the staminal-column and slightly exceeding it, about  $\frac{1}{2}$  lin. high and  $\frac{2}{3}$  lin. broad, dorsally flattened, transversely subrectangular, truncate and depressed at the top, with an acuminate point subhorizontally inflexed over the tips of the anthers, shortly 2-keeled on the inner face. Staminal-column scarcely  $\frac{1}{2}$  lin. high. Follicles  $3-3\frac{1}{4}$  in. long, tapering into a beak, minutely pubescent. Seeds about  $2\frac{1}{3}$  lin. long, oblong-ovoid, rugose.

**Mozamb Dist.** Rhodesia: Buluwayo, *Rand*, 195!

In the original description the coronal-lobes are stated to be "minutely 2-toothed within," these teeth I recognise as the 2 keels which are present in most species of this genus and have so described them above.

7. **S. Elliotii**, *Schlechter in Journ. Bot.* 1895, 305. Stem  $1\frac{1}{2}-2$  ft. high, slender, slightly branched, minutely downy along two broad lines. Leaves ascending,  $\frac{3}{4}-1\frac{1}{2}$  in. long,  $\frac{1}{4}-\frac{1}{2}$  lin. broad, linear-filiform, acute, strongly revolute along the margins, thinly pubescent. Umbels several, lateral at the nodes, sessile, several-flowered; pedicels  $1\frac{1}{2}-2$  lin. long, puberulous. Sepals  $\frac{3}{4}-1$  lin. long, lanceolate, acute, thinly pubescent. Corolla  $2-2\frac{1}{2}$  lin. in diam.; lobes  $1\frac{1}{4}-1\frac{1}{3}$  lin. long,  $\frac{2}{3}$  lin. broad, campanulately spreading (?), oblong, obtuse and minutely notched at the apex, thinly pubescent on the back, minutely downy on the inner face, more especially at the margins and tips. Coronal-lobes  $\frac{2}{3}$  lin. long, arising slightly above the base of the staminal-column, erect, fleshy, dilated into a rounded lobule on each side at the base, and there about  $\frac{2}{3}$  lin. broad, linear-oblong and scarcely  $\frac{1}{4}$  lin. broad in the upper half, convex on the back, flat, with 2 parallel keels on the inner face, truncate at the apex, from the inner margin of which a small thin, subquadrate or ovate, bifid or acute appendage is horizontally produced over the backs of the anther-appendages. Staminal-column  $\frac{1}{2}$  lin. long; anthers erect, subquadrate, their appendages broad transversely, very short, obtusely rounded, inflexed over the rim of the truncate apex of the style, which is marked with a depressed ring.—*S. debile*, *Schlechter in Journ. Bot.* 1895, 305.

**Nile Land.** Uganda: Buddu, *Scott-Elliot*, 7471! and without locality or number, *Scott-Elliot*!

I have examined the type specimens of *S. Elliotii* and *S. debile* and find the coronal-lobes alike in both, except that in one the appendage is more distinctly bifid, but the Kew material demonstrates that this is a variable character.

8. **S. erubescens**, *Schlechter in Journ. Bot.* 1895, 306. Stem erect,  $1\frac{1}{2}-2\frac{1}{2}$  ft. high,  $\frac{3}{4}-1$  lin. thick, puberulous. Leaves erect or ascending,  $1-2\frac{1}{2}$  in. long,  $\frac{1}{3}-1$  lin. broad, linear, with strongly revolute margins, acute, puberulous or minutely scaberulous. Umbels several, lateral, sessile,  $3-5$ -flowered; pedicels  $\frac{1}{2}-1$  lin. long, puberulous. Sepals

$\frac{3}{4}$ – $1\frac{1}{4}$  lin. long,  $\frac{1}{2}$  lin. broad, ovate-lanceolate, acute or acuminate, puberulous. Corolla rotate, 3 lin. in diam., glabrous outside, pubescent inside, apparently purple-brown; lobes  $1\frac{1}{4}$ – $1\frac{1}{2}$  lin. long,  $\frac{2}{3}$ – $\frac{3}{4}$  lin. broad, oblong-ovate, acute. Coronal-lobes arising from the base of the staminal-column and equalling it in length,  $\frac{1}{2}$  lin. long, excluding the teeth, and about the same in breadth, subquadrate, 2-keeled down the face, truncate and excavated at the apex, with two opposite divergent subulate teeth  $\frac{1}{4}$ – $\frac{1}{3}$  lin. long, one inflexed over the anther-tips, the other horizontally directed outwards, or in some specimens the dorsal tooth wanting and the inner tooth more or less bifid, so that the lobe is then subquadrate with an acute or bifid inflexed apical tooth and a sort of pocket on the back. Staminal-column  $\frac{1}{2}$  lin. long; anther-appendages reniform or suborbicular, very obtuse, incumbent on the truncate apex of the style. Follicles about  $2\frac{1}{2}$  in. long,  $\frac{1}{4}$  in. thick, erect, fusiform, acute, puberulous, solitary in the only example seen. Seeds  $2\frac{1}{3}$  lin. long,  $1\frac{1}{2}$  lin. broad, ovate, flattened, somewhat concave on one side, margined, rugose with radiating ridges, which are much reduced on the disk, dull brown, crowned with a tuft of long white hairs.

**Mozamb. Dist.** British Central Africa: Nyasaland; Mount Mlanje, *Scott-Elliot*, 8671! Mount Zomba and vicinity, 2500–3800 ft., *Whyte*!

9. **S. filipes**, *Schlechter in Engl. Jahrb. xx. Beibl.* 51, 16. Stem 10–14 in. high, simple or slightly branched at the base, puberulous. Leaves erect, linear or linear-filiform, acute, revolute along the margins, thinly pilose. Umbels lateral, many-flowered; pedicels filiform, unequal in length, longer than the flowers, shortly pilose. Sepals  $1\frac{1}{2}$  lin. long, lanceolate, acute, pilose. Corolla subrotate, greenish; lobes  $3\frac{1}{2}$  lin. long, narrowly ovate-oblong, obtuse, with revolute margins, outside thinly pilose, puberulous within. Coronal-lobes longer than the staminal-column, lanceolate, with the margins unequally toothed on each side, furnished on the inner face with an appendage that is dilated and lacerate-toothed at the apex.

**Mozamb. Dist.** Transvaal: Klipdam, 4600 ft., Feb., *Schlechter*, 4491!

I have included this plant, as the locality is so near to the Tropic of Capricorn that it will almost certainly be found to occur within the tropic.

10. **S. gwelense**, *N. E. Br.* Stem erect, 9–12 in. high, slender, simple, puberulous, with internodes about  $\frac{3}{4}$  in. long. Leaves opposite, erect or ascending, subsessile,  $1\frac{1}{4}$ – $2\frac{1}{4}$  in. long,  $\frac{2}{3}$ – $1\frac{1}{2}$  lin. broad, linear, acute, glabrous above, minutely scaberulous along the revolute margins, puberulous on the midrib beneath. Umbels several, sessile at the nodes, 2–5-flowered; bracts minute, subulate; pedicels  $1$ – $1\frac{1}{4}$  lin. long, puberulous. Sepals 1 lin. long,  $\frac{2}{3}$  lin. broad, oblong, acute, spreading, puberulous on the back. Corolla  $3\frac{1}{2}$ –4 lin. in diam., subrotate, green; lobes  $1\frac{3}{4}$  lin. long, 1 lin. broad, oblong, subacute, spreading, thinly puberulous on the back, more densely puberulous within. Coronal-lobes arising at the base of the staminal-column and very much longer than it,  $2\frac{1}{4}$ – $2\frac{1}{2}$  lin. long, erect, broadly diamond-shaped, flat and  $\frac{3}{4}$  lin. broad at the base, tapering into a long filiform point, incurved at the apex, faintly

keeled down the back, with 2 slight keels on the face, which are excurrent into an erect subulate process  $\frac{3}{4}$ –1 lin. long, glabrous. Staminal-column  $\frac{3}{4}$  lin. long; anthers subrectangular, erect, their appendages about  $\frac{1}{4}$  lin. long, broadly ovate, subacute, inflexed over the margin of the truncate style-apex.

**Mozamb. Dist.** Rhodesia: near Gwelo, *Hon. Mrs. Evelyn Cecil*, 131! Salisbury, *Rand*, 190!

11. **S. shirenses**, *N. E. Br. in Kew Bulletin*, 1895, 253. Stems 2–3 ft. high, slender, simple or rarely branched, bifariously pubescent. Leaves subsessile or on petioles  $\frac{1}{2}$ –1 lin. long, erect,  $1\frac{1}{2}$ –3 in. long,  $\frac{1}{2}$ –2 lin. broad, linear, acute, minutely pubescent, becoming glabrate with age, revolute along the margins. Umbels lateral, sessile, 3–8-flowered; pedicels 1–2 lin. long, pubescent. Sepals 1 lin. long, lanceolate, acute, pubescent. Corolla rotate; lobes  $2\frac{1}{2}$  lin. long,  $\frac{3}{4}$  lin. broad, oblong-lanceolate, acute, more or less reflexed, glabrous on the back, pubescent all over on the face, purple-brown. Coronal-lobes arising at the base of the staminal-column, purple-brown; basal part subquadrate,  $\frac{3}{4}$  lin. long, 1 lin. broad, with two keels on the face, 3-toothed at the apex; lateral teeth very short; middle tooth prolonged into an erect recurving horn  $1\frac{1}{2}$  lin. long, with a similar horn of about the same length arising at its base in front of it.

**Mozamb. Dist.** Portuguese East Africa: Lower Zambesi; Shupanga, *Kirk!* British Central Africa: Nyasaland: Shire Valley, *Kirk! Waller!*

Root bitter, used medicinally by the natives, as a stomachic and aphrodisiac (*Kirk*).

12. **S. Baumii**, *Schlechter MSS.* Stem about 2 ft. high, solitary, simple, slender,  $\frac{1}{2}$ – $\frac{3}{8}$  lin. thick at the base, puberulous down one side on the flowering part, glabrous below. Leaves in several pairs, ascending or erect,  $\frac{2}{3}$ – $1\frac{2}{3}$  in. long,  $\frac{1}{4}$ – $1\frac{1}{3}$  lin. broad, filiform, acute, revolute along the margins, glabrous. Umbels 5–8 to a stem, sessile, lateral at the nodes, 5–8-flowered; pedicels  $1\frac{1}{2}$  lin. long, lengthening in fruit, puberulous. Sepals 1 lin. long,  $\frac{1}{2}$  lin. broad, ovate-lanceolate, acute, thinly adpressed, pubescent on the back. Corolla rotate, lobed almost to the base, apparently whitish or yellowish; lobes  $1\frac{2}{3}$ –2 lin. long,  $\frac{3}{4}$ –1 lin. broad, lanceolate, acute, thin, slightly undulated along the margins, bearded at the tips on the inner face with a few stiff erect hairs and with a few adpressed hairs on the back, otherwise glabrous. Coronal-lobes arising at the base of the staminal-column and much overtopping it,  $1$ – $1\frac{1}{4}$  lin. long including the horn,  $\frac{2}{3}$  lin. broad, subquadrate, truncate, with a curved subulate simple or irregularly trifid horn arising near the top on the inner face, from the base of which are decurrent the usual pair of keels, but they are very faint in the dried state. Staminal-column  $\frac{1}{2}$  lin. long.

**Lower Guinea.** Angola: Amboella; near Kavinga on the River Kubango, 3600 ft., *Baum*, 413!

13. **S. fuscopurpureum**, *Schlechter & Rendle in Journ. Bot.* 1896, 98. Rootstock of 1 or more fleshy fusiform or small carrot-like

tubers. Stem about 1 ft. high, solitary, simple or with a branch in the upper part, slender, puberulous down one side at least in the upper part. Leaves in several pairs, ascending  $\frac{1}{2}$ – $1\frac{1}{2}$  in. long, linear-filiform, thinly puberulous. Umbels 6–8 to a stem, sessile, 6–10-flowered; pedicels  $1-1\frac{1}{2}$  lin. long, filiform, puberulous. Sepals  $\frac{3}{4}$  lin. long,  $\frac{1}{5}$ – $\frac{1}{4}$  lin. broad, spreading, ovate-lanceolate, acuminate, puberulous. Corolla about  $1\frac{3}{4}$  lin. in diam., lobed nearly to the base, rotate or rotate-campanulate, dark purple-brown, thinly pubescent outside, glabrous within; lobes  $\frac{3}{4}$ –1 lin. long,  $\frac{1}{2}$  lin. broad, oblong, acute. Coronal-lobes arising at the base of the staminal-column and about as long as it,  $\frac{1}{2}$  lin. long and nearly as broad, subquadrate, 3-toothed at the apex; lateral teeth (at the angles) minute; middle tooth  $\frac{1}{6}$ – $\frac{1}{5}$  lin. long, subacute, inflexed over the backs of the anthers.—Hiern in Cat. Afr. Pl. Welw. i. 683.

**Lower Guinea.** Angola: Huilla; scattered in rather dry, sandy, bushy places near Huilla, *Welwitsch*, 4177!

This has the habit of *S. masaicum*, N. E. Br., but is dwarfer and more slender.

14. **S. viridulum**, *K. Schum. in Engl. Jahrb.* xxviii. 455. Stems 12–15 in. high, erect, straight, at first simple then branching from one axil of the leaf-pairs, subtomentose. Leaves shortly petiolate,  $\frac{3}{4}$ –2 in. long,  $2-3\frac{1}{2}$  lin. broad, linear-lanceolate, obtuse, retuse or very shortly apiculate, somewhat narrowed towards the base, somewhat crisped on the margin, subcoriaceous, glabrous on both sides; petiole  $1-1\frac{1}{2}$  lin. long, slightly pilose on the margins. Umbels sessile, with the flowers somewhat congested; pedicels 4–5 lin. long, puberulous. Sepals 2 lin. long, linear-subulate, glabrous. Corolla 5-lobed nearly to the base, green, glabrous; lobes about 2 lin. long, somewhat obliquely oblong. Coronal-lobes 1 lin. long, about as long as the staminal-column, fleshy, linear, triangularly enlarged at the apex, scarcely appendiculate below. Anther-appendages cordate, obtuse.

**Mozamb. Dist.** German East Africa: Ukami; South Uluguru, on the watershed between the Mgeta and Mbakana Rivers, *Goetze*, 336.

Said to be near *S. tridentatum*, K. Schum., a name I am unable to find published, probably *S. tridentatum*, Schlechter, was intended.

15. **S. barbatum**, *Britten & Rendle in Trans. Linn. Soc. ser. 2, Bot. iv.* 27. Stems several from a root, 6–12 in. high, minutely pubescent. Leaves in about 4–5 pairs to a stem,  $1-2\frac{1}{2}$  in. long,  $\frac{2}{3}$ –2 lin. broad, erect, sessile, linear, acute or subacute, more or less narrowed at the base, glabrous, with the revolute margins and the midrib puberulous or minutely scaberulous beneath. Umbels 2–6 to a stem, terminal and lateral at the upper nodes, occasionally in pairs, sessile or pedunculate, 4–10-flowered; peduncles  $0-3\frac{1}{2}$  lin. long, slender, minutely pubescent; bracts  $\frac{1}{2}$ –1 lin. long, filiform; pedicels 2–3 lin. long, minutely pubescent. Sepals  $1\frac{1}{2}$  lin. long, lanceolate, acuminate, minutely pubescent. Corolla 5-lobed nearly to the base, rotate or more or less reflexed; lobes  $1\frac{3}{4}$ –2 lin. long, 1 lin. broad, ovate-oblong, subobtuse, almost glabrous on the back, puberulous on the face, purple-brown. Coronal-lobes very variable, each consisting of a flattened subquadrate body

$\frac{1}{2}$  lin. long and  $\frac{3}{8}$  lin. broad, convexly keeled down the back, with two keels on the face, abruptly contracted into a very short point, which is incumbent on the backs of the anthers, or into a subulate point  $\frac{1}{2}$  lin. long which is erect and then strongly recurved at the apex, or into a subulate horn  $1-1\frac{1}{4}$  lin. long, which is incurved at the base over the backs of the anthers, then abruptly recurved and horizontally spreading. Staminal-column  $\frac{3}{4}$  lin. long; anther-appendages orbicular, inflexed over the truncate apex of the style.

**Mozamb. Dist.** British Central Africa: Nyasaland; Mount Mlanji, *Whyte*, 33! 82! 103! 116! *McClounie*! Mount Zomba, 4000-6000 ft., *Whyte*! Mount Malosa, 4000-6000 ft., *Whyte*!

16. **S. Nyasæ**, *Britten & Rendle in Trans. Linn. Soc. ser. 2, Bot. iv. 26.* Stems 4-5 ft. high, simple, stout,  $\frac{1}{4}$  in. thick at the base, pubescent, leafy. Leaves erect or ascending, 3-4 in a whorl, subsessile or with very short petioles,  $1\frac{1}{4}-2\frac{1}{4}$  in. long, 3-8 lin. broad, oblong or oblanceolate, acute or subacute, rounded or gradually tapering at the base, glabrous on both sides, glaucous beneath, revolute at the margins. Umbels numerous, lateral, sessile or occasionally the lower pedunculate, 5-10- or more-flowered; pedicels 4-6 lin. long, puberulous. Sepals  $2\frac{1}{2}-3$  lin. long, attenuate-acuminate from a  $\frac{3}{4}$  lin. broad base, glabrous or nearly so, with ciliate margins. Corolla rotate, 6-8 lin. in diam.; lobes 3-4 lin. long, subreflexed, lanceolate, acute, replicate, glabrous on the back, minutely downy on the face, dull brown in the dried state, with pale membranous or subcartilaginous margins. Coronal-lobes arising from the base of the staminal-column and much longer than it; basal part  $1\frac{1}{4}-1\frac{1}{2}$  lin. long,  $1\frac{1}{4}$  lin. broad, flattish, subquadrate, 3-toothed at the apex; lateral teeth short, curved; middle tooth or horn  $\frac{3}{4}-3$  lin. long, deltoid, acute, subulate or filiform, inner face of the lobe with two keels, produced at their apex into subulate or filiform erect horns  $\frac{1}{2}-2\frac{1}{2}$  lin. long. Staminal-column  $\frac{3}{4}-1\frac{1}{4}$  lin. long. Anther-appendages suborbicular, incumbent on the truncate apex of the style.—*K. Schum. in Engl. Pfl. Ost-Afr. C. 322*; *Schlechter in Journ. Bot. 1895, 307.* *S. multifolium*, *N. E. Br. in Kew Bulletin, 1895, 253.*

**Mozamb. Dist.** British Central Africa: Nyasaland; Shire Highlands, in stony places, *Buchanan*, 390! Mount Mlanji, *Whyte*! *Scott-Elliot*, 8606! (not 8666 as quoted in *Journ. Bot.*), *Namasi, Cameron*, 12! and without precise locality, *Buchanan*, 965!

The central tooth and the processes on the face of the coronal-lobes vary exceedingly in length in different specimens, but I find no other distinction. The shortest measurements given belong to the type (*Whyte's* specimen), the longest are from *Buchanan's* specimen, whilst that collected by *Scott-Elliot* is intermediate between the two in the length of these organs. The flowers have a pleasant odour, according to *Buchanan*.

17. **S. aciculare**, *N. E. Br.* Plant probably dwarf, branching. Stems (in the specimens seen) 2-3 in. long, pubescent with minute white curved hairs, as is also all the rest of the plant except the corolla. Leaves  $\frac{1}{4}-\frac{1}{2}$  in. apart, subsessile or very shortly petiolate,

$1\frac{3}{4}$ – $2\frac{1}{2}$  in. long, 1–2 lin. broad, linear, acute, more thinly pubescent than the rest of the plant, nearly glabrous beneath. Umbels several, lateral at the nodes, pedunculate, 7–10-flowered; peduncles 5–6 lin. long; pedicels  $1-1\frac{1}{2}$  lin. long. Sepals  $1\frac{1}{2}$  lin. long,  $\frac{1}{2}$ – $\frac{2}{3}$  lin. broad, ovate-lanceolate, acute. Corolla 5-lobed almost to the base; lobes erect with recurving tips,  $2\frac{1}{2}$  lin. long, scarcely 1 lin. broad, lanceolate, acute, concave in the lower part, somewhat thickened and very minutely papillate-puberulous on the inner face of the recurved apical half, elsewhere quite glabrous. Coronal-lobes arising from the base of the staminal-column, erect,  $2\frac{1}{4}$  lin. long; basal third  $\frac{1}{2}$  lin. broad, spatulate-subcordate, with the auricles inflexed and forming a minute tooth on each side of the inner face, above them the lobe is transversely thickened into a ridge; upper  $\frac{2}{3}$  subulate. Staminal-column  $1\frac{1}{4}$ – $1\frac{1}{3}$  lin. long; anther-appendages half as long as the entire column, much exceeding the style,  $\frac{1}{3}$  lin. broad, ovate, acuminate, connivent-erect, white. Apex of style  $\frac{1}{3}$  lin. long, conical, minutely bilobed.

**Mozamb. Dist.** British Central Africa: Ngamiland; near Kwebe, *Lugard*, 82!

This has also been collected in the Orange River Colony.

The produced, conical apex of the style, surrounded by the long anther-appendages, are well marked peculiarities of this species.

18. **S. alpestre**, *K. Schum. in Engl. Jahrb.* xxx. 384. Stems several from a thickened rootstock, 2–4 in. long, with two puberulous lines. Leaves 1–2 in. long,  $\frac{1}{2}$ – $1\frac{1}{3}$  lin. broad, linear, acute, narrowed into a very short petiole at the base, glabrous. Umbels 2–4 to a stem, 3–12-flowered; peduncles  $\frac{3}{4}$ – $1\frac{1}{2}$  in. long, puberulous down one side; bracts small, linear, or filiform; pedicels 4–5 lin. long, puberulous. Sepals 2 lin. long, lanceolate, acuminate, puberulous. Corolla very deeply divided, apparently pale greenish or greenish-white with purplish tips to the lobes on both sides, quite glabrous; lobes 2– $2\frac{1}{2}$  lin. long,  $1\frac{1}{3}$ – $1\frac{1}{2}$  lin. broad, elliptic-ovate, subacute. Coronal-lobes arising at the base of the staminal-column and twice as long as it, 2 lin. long, radiately ascending, apparently yellowish in the lower part, purple-brown above, very stoutly subulate, gradually tapering from the thick fleshy base (which is  $\frac{3}{4}$  lin. broad and  $\frac{1}{2}$  lin. thick) to a very acute point, furnished on the inner face  $\frac{1}{2}$  lin. above the base with a fleshy acute tooth, nearly horizontally projecting over the top of the staminal-column and style. Staminal-column  $\frac{3}{4}$  lin. long, not dilated at the base; anther-appendages broadly ovate, acute, inflexed over the truncate apex of the style.

**Mozamb. Dist.** German East Africa: on Yawuaege Mountain, in the Kinga Range, 8200 ft., *Goetze*, 1234!

The very stout, almost conical-subulate coronal lobes, readily distinguish this from all the other species.

19. **S. angolense**, *Schlechter & Rendle in Journ. Bot.* 1896, 98. Rootstock a small carrot-like tuber. Plant about 3 in. high, branched, very leafy; branches  $1-1\frac{1}{2}$  in. long,  $\frac{2}{3}$ – $\frac{3}{4}$  lin. thick, with 1 or more

puberulous lines; internodes  $1\frac{1}{2}$ –3 lin. long. Leaves opposite or 3 in a whorl, sessile, spreading,  $\frac{3}{4}$ – $1\frac{3}{4}$  in. long,  $\frac{1}{2}$ – $\frac{1}{3}$  lin. broad, linear, acute, narrowly revolute along the margins, glabrous. Umbels 4–6 to a branch, 5–7-flowered, pedunculate, lateral and terminal; peduncles 4–9 lin. long, minutely puberulous down one side; bracts minute, subulate; pedicels  $1$ – $1\frac{1}{2}$  lin. long, becoming  $3$ – $3\frac{1}{2}$  lin. long in fruit, minutely puberulous down one side. Sepals  $\frac{1}{2}$  lin. long,  $\frac{1}{4}$  lin. broad, oblong-ovate, acute, glabrous. Corolla about  $2\frac{1}{4}$  lin. in diam., quite glabrous, greenish; lobes somewhat spreading, 1 lin. long,  $\frac{1}{2}$  lin. broad, oblong, obtuse and minutely notched at the apex. Coronal-lobes arising close to the base of the staminal-column and as long as it,  $\frac{1}{2}$  lin. long,  $\frac{2}{5}$  lin. broad, fleshy, erect or ascending, ovate, obtuse, convex on the back, flat, with 2 parallel keels on the face, but without a tooth or other process. Staminal-column  $\frac{1}{2}$  lin. long; anthers erect, subquadrate-oblong; their appendages ovate, acute, inflexed over the truncate apex of the style; anther-wings with straight margins, not at all projecting.—Hiern in Cat. Afr. Pl. Welw. i. 683.

**Lower Guinea.** Angola: Huilla; in pastures thinly covered with bushes, near Lopollo, *Welwitsch*, 4173!

This is much like *Xysmalobium gramineum*, S. Moore, in general appearance, but differs entirely in floral structure, see note under that species on p. 303.

20. **S. Welwitschii**, *N. E. Br.* Tuber about  $\frac{5}{8}$  in. in diam., tapering downwards. Stems 6–10 in. high, slender, solitary, glabrous, leafy above, and with 3–4 distant pairs of rudimentary leaves below. Leaves spreading, 2–3 in. long,  $\frac{1}{2}$  lin. broad, linear, mucronate-acute, with revolute margins, glabrous. Umbels lateral, 4–6-flowered, on glabrous peduncles 5–9 lin. long; pedicels  $2$ – $2\frac{1}{2}$  lin. long, glabrous; bracts none or minute. Sepals  $1$ – $1\frac{1}{4}$  lin. long, lanceolate, acute, glabrous. Corolla broadly campanulate, 5-lobed nearly to the base; lobes  $\frac{1}{4}$  in. long,  $1\frac{1}{2}$  lin. broad, oblong, obtuse, apiculate, concave, glabrous on both sides. Corona arising at the base of the  $1\frac{1}{2}$  lin. long staminal-column and not reaching to the base of the anthers,  $\frac{2}{3}$  lin. long, shortly annular at its base, divided into 5 transversely oblong truncate lobes, with the sides incurved at the apex, and with an oblong or tongue-shaped process on the inner face at the middle, slightly longer than the rest of the lobe. Anther-appendages small, ovate, acute, inflexed over the apex of the style.—*Odontostelma Welwitschii*, Rendle in Journ. Bot. 1894, 161, t. 344; Hiern in Cat. Afr. Pl. Welw. i. 683.

**Lower Guinea.** Angola: Huilla; in pastures thinly covered with bushes near Lopollo, *Welwitsch*, 4172!

I cannot retain this plant as a distinct genus; the characters claimed for it by Dr. Rendle are, an imbricate aestivation, and coronal-lobes connate at their base and shorter than the staminal-column. It is contrasted with *Xysmalobium*, but that genus has also an imbricate (rarely valvate) aestivation, and in some species (*X. rhomboideum*, *X. membraniferum*, &c.) the coronal-lobes are more or less connate at the base, and are shorter than the staminal-column in several species. In habit and aestivation it agrees with species of *Asclepias*, *Xysmalobium*, and *Schizoglossum*. The

coronal-lobes are those of a typical *Schizoglossum* reduced, their union at the base and shortness are of no generic importance. On account of the dorsal flattening of the coronal-lobes I place the plant under *Schizoglossum*.

21. **S. Carsoni**, *N. E. Br.* Stems simple, 1–2 ft. high, glabrous, with one puberulous line. Leaves in 4–8 distant pairs, widely spreading, the upper incurved through the arc of a semicircle, sessile or subsessile, 3–6 in. long, 1–1½ lin. broad, linear, acute, narrowed at the base, with flat margins, glabrous. Umbels lateral and terminal, pedunculate, 3–6-flowered; peduncles and pedicels of equal length, 4–6 lin. long, both pubescent down the inner side; bracts 1 lin. long, subulate, deciduous. Sepals 2 lin. long, lanceolate, acute, glabrous. Corolla 10–11 lin. in diam., campanulate, 5-lobed nearly to the base; lobes 5–6 lin. long, 3–4 lin. broad, elliptic-oblong, obtuse, glabrous, densely speckled and stained down the central area, with dark purple-brown on an ochreous ground. Coronal-lobes arising  $\frac{1}{3}$ –1 lin. above the base of the staminal-column and overtopping it by  $\frac{1}{3}$  of their length, 2½–2¾ lin. long, 1–1¼ lin. broad, erect, oblong, rather thin and flat, with incurved margins and a bluntly pointed denticulate or bidentate apex incurved over the anthers, neither keeled nor toothed on the face, apparently yellowish or whitish. Staminal-column 2–2½ lin. long; anther-appendages rather large, broadly ovate, obtuse, inflexed over the top of the staminal-column. Follicles (immature) 3 in. or more long,  $\frac{1}{2}$  in. thick at the middle, fusiform, tapering into an acute beak.—*Asclepias mashonensis*, Schlechter in *Journ. Bot.* 1895, 356. *Xysmalobium Carsoni*, *N. E. Br.* in *Kew Bulletin*, 1895, 250.

**Mozamb. Dist.** British Central Africa: Nyasaland; Fife Station on the Tanganyika Plateau, *Carson!* Mount Malosa, 4000–6000 ft, *Whyte!* Mount Mlanje, 4500 ft., *Purves*, 87! Rhodesia: between Umтали and Salisbury, *Hon. Mrs. Evelyn Cecil*, 48! Selukwe, *Hon. Mrs. Evelyn Cecil*, 48A! Fort Salisbury, *Folliott-Darling*.

22. **S. chlorojodinum**, *N. E. Br.* Stem solitary, 6–10 in. high, simple, puberulous along one side. Leaves 2–4 in. long, 1–1¾ lin. broad, linear, acute, tapering into a short petiole at the base, slightly margined, glabrous on both sides. Umbels pedunculate, 2–4 to a stem; peduncles  $\frac{1}{3}$ –¾ in. long, puberulous; bracts small; pedicels 3½ lin. long in the specimen seen (6–7 lin. ex *Schumann*), puberulous down one side. Sepals spreading, 2¼ lin. long in the specimen seen ( $\frac{1}{4}$  in. long ex *Schumann*),  $\frac{3}{4}$  lin. broad, ovate-lanceolate, acuminate, glabrous. Corolla campanulate, very deeply lobed, yellowish-green, tipped with purplish-brown, glabrous; lobes ascending, recurved at the tips, 6–7 lin. long in the specimen seen ( $\frac{3}{4}$  in. ex *Schumann*), 4–4½ lin. broad, elliptic-oblong, minutely notched at the obtuse apex. Coronal-lobes arising 1 lin. above the base of the staminal-column and much overtopping it, 3 lin. long, 1 lin. broad, erect, with the tips very much incurved and concealing the staminal-column and style from view from above, dorsally flattened, thin, linear-oblong, obtuse, minutely denticulate or subentire at the apex,

narrowly incurved along the margins, yellowish-white. Staminal-column  $2\frac{3}{4}$  lin. long, contracted below the anthers; anther-appendages broadly ovate, acute, inflexed over the truncate apex of the style.—*Gomphocarpus chlorojodina*, K. Schum. in Engl. Jahrb. xxx. 383.

**Mozamb. Dist.** German East Africa: Unyika; Mpesu Mountain, in Umalila district, 6500 ft., *Goetze*, 1360!

This is so much like *S. Carsoni*, N. E. Br., except in the colour of its flowers, that I am very doubtful if it be anything more than a colour variety of that species, it appears, however, to be a dwarfer plant according to description, for I have only seen a leaf and 3 flowers of it.

23. **S. lividiflorum**, *K. Schum. in Engl. Jahrb.* xxviii. 454. Stem slender, terete, glabrous, 6–8 in. high. Leaves sessile,  $1\frac{3}{4}$ –5 in. long,  $\frac{3}{4}$ –2 lin. broad, linear, attenuate-acuminate, narrowed towards the base, where, at least, they are complicate or convex, subcoriaceous. Umbels terminal, pedunculate, 3-flowered, shorter than the leaves; peduncle  $1$ – $1\frac{1}{4}$  in. long, puberulous; pedicels 4–6 lin. long, puberulous. Sepals  $2$ – $2\frac{1}{4}$  lin. long, lanceolate, acuminate. Corolla large, rotate, 5-lobed nearly to the base, yellowish-green, suffused with violet; lobes 8–9 lin. long, oblong, obtuse, glabrous. Coronal-lobes overtopping the staminal-column, oblong, 3-toothed at the apex, and with a marginal incurved tooth near the base. Anther-appendages  $\frac{3}{4}$ –1 lin. long. Style apex depressed at the centre.

**Mozamb. Dist.** German East Africa: Uhehe; on the Matanana Plateau, 5900 ft., *Goetze*, 741.

I have not seen this plant. Is it distinct from *S. Carsoni*, N. E. Br.?

24. **S. spurium**, *N. E. Br.* Stems 2–4 ft. high, stout, simple, pubescent with short spreading hairs, as are also both sides of the leaves, the peduncles, bracts, pedicels and calyx. Leaves somewhat spreading; petiole 2–4 lin. long; blade  $2$ – $3\frac{1}{2}$  in. long,  $1$ – $1\frac{1}{2}$  in. broad, elongate-ovate, subobtuse, rounded to subcordate at the base. Umbels few, lateral and terminal, pedunculate, 5–6-flowered; peduncles  $1\frac{1}{4}$ – $1\frac{1}{2}$  in. long; bracts  $3$ – $3\frac{1}{2}$  lin. long, subulate; pedicels 9–10 lin. long. Sepals  $3$ – $3\frac{1}{2}$  lin. long,  $1\frac{1}{2}$ –2 lin. broad, ovate, acute, pubescent, ciliate. Corolla about 1 in. in diam., campanulate; lobes 8–9 lin. long,  $3\frac{1}{2}$ –4 lin. broad, ovate-oblong, subacute, pubescent on the back. Coronal-lobes arising from the base of the staminal-column and twice as long, erect,  $\frac{1}{2}$  in. long,  $2\frac{1}{2}$ –3 lin. broad at the apex, flat, cuneately oblong, slightly keeled down the back, irregularly 3–4-toothed or subtruncate at the dilated apex, the middle tooth usually mucroniform. Anther-appendages ovate, subobtuse, membranous, inflexed over the apex of the style.—*Xysmalobium spurium*, N. E. Br. in Kew Bulletin, 1895, 251.

**Mozamb. Dist.** British Central Africa: Nyasaland; Shire Highlands, rare, *Buchanan*, 451!

25. **S. dolichoglossum**, *N. E. Br.* Stems up to 3 ft. high, erect, simple, softly tomentose. Leaves shortly petiolate; petiole  $2\frac{1}{2}$ –4 lin.

long, channelled above, puberulous; blade  $2\frac{1}{3}$ – $3\frac{1}{2}$  in. long,  $\frac{3}{4}$ – $1\frac{1}{3}$  in. broad, oblong or ovate-oblong, acute or apiculate, cordate at the base, puberulous-scabrid on both sides. Umbels lateral at the nodes, pedunculate, few-flowered; peduncles 12–14 lin. long, flattened, puberulous; pedicels 7– $8\frac{1}{2}$  lin. long, rather stout, puberulous. Sepals  $\frac{1}{2}$  in. long, ovate, acute, minutely puberulous. Corolla large, very deeply 5-lobed, white, outside clear violet; lobes incurved, about  $\frac{3}{4}$  in. long, oblong, obtuse, pubescent on the back. Coronal-lobes  $\frac{3}{4}$  in. long, arising  $1\frac{1}{2}$ –2 lin. above the base of the staminal-column, spatulate, acute. Staminal-column 4– $4\frac{1}{2}$  lin. long; anthers much hardened, concave, with obtuse appendages. Style-apex depressed.—*Xysmalobium dolichoglossum*, K. Schum. in Engl. Jahrb. xxviii. 456.

**Mozamb. Dist.** German East Africa: Uhehe; Uchungwe Mountain, 5000 ft., Goetze, 638.

26. **S. firmum**, *N. E. Br. in Kew Bulletin*, 1895, 252. All parts tomentose, except the corolla. Stems stout, probably 3–4 ft. high. Leaves spreading; petiole 1– $2\frac{1}{2}$  lin. long; blade  $2\frac{1}{2}$ –3 in. (or more?) long,  $\frac{1}{2}$ –1 in. broad, elongate ovate-oblong, subobtuse, apiculate, cordate at the base. Umbels numerous, lateral, pedunculate, 10–20-flowered; peduncles stout,  $\frac{3}{4}$ – $1\frac{1}{2}$  in. long; bracts 3–4 lin. long, linear or subulate; pedicels 4–6 lin. long, moderately stout. Sepals  $2\frac{1}{2}$ –3 lin. long, lanceolate, acuminate. Corolla 5 lin. in expanse, very pale violaceous; lobes campanulately spreading,  $2\frac{1}{2}$  lin. long,  $1\frac{3}{4}$  lin. broad, ovate, subobtuse and minutely bifid at the apex, pubescent on the back. Coronal-lobes arising close to the base of the staminal-column and twice as long, 3 lin. long, broadly oblong or elliptic-oblong and concave (or flat?) in the erect basal half, then abruptly contracted into a subulate terminal horn, which is incurved over the staminal-column; at the middle of the inner face of the basal part are two broadly triangular flap-like keels, infolded so that their edges meet and form a sort of pocket. Anther-appendages reniform, obtuse, inflexed over the apex of the style.—*Asclepias firma*, Schlechter ex Hiern in Cat. Afr. Pl. Welw. i. 684.

**Lower Guinea.** Angola: Huilla; in damp thickets near Lopollo, *Welwitsch*, 4191!

27. **S. petherickianum**, *Oliver in Trans. Linn. Soc.* xxix. 109, t. 118, fig. B. Stem moderately stout, shortly villous. Leaves spreading or ascending; petiole  $1\frac{1}{2}$ –2 lin. long; blade  $1\frac{1}{2}$ – $2\frac{1}{2}$  in. long, 5–9 lin. broad, oblong or elongate ovate-lanceolate, acute or subacute, broadly rounded at the base, or perhaps sometimes emarginate, scaberulous-pubescent on both sides. Umbels several, lateral at the nodes, sessile, 10–15-flowered; pedicels 4–7 lin. long, shortly hairy. Sepals  $2\frac{1}{2}$  lin. long, lanceolate, acute, shortly hairy. Corolla about  $\frac{1}{3}$  in. in diam.; lobes campanulately spreading, 2– $2\frac{1}{3}$  lin. long, 1 lin. broad, oblong, subobtuse, shortly hairy on the back. Coronal-lobes arising at the base of the staminal-column and about  $\frac{1}{3}$  longer,  $1\frac{3}{4}$ –2 lin. long, 1 lin.

broad, dorsally flattened, oblong, entire or obtusely toothed at the subtruncate apex, furnished on the inner face with 2 wing-like keels or flaps infolded so that their edges meet, reaching to  $\frac{2}{3}$  of the way up or beyond, broadest at the apex, which ends in a short obtuse tooth. Staminal-column  $1\frac{1}{6}$ – $1\frac{1}{2}$  lin. long; anther-appendages ovate, acute, their tips inflexed over the edge of the crater-like apex of the style, much below which the pollen-carriers are seated.—K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 233. *Asclepias petherickiana*, Schlechter in Journ. Bot. 1895, 336.

**Nile Land.** White Nile: Nyangara (Neangara), *Petherick!* Uganda: Kavirondo; Samia, 4000 ft., *Scott-Elliot*, 7130! Buddu; on a dry plateau, *Scott-Elliot*, 7447!

28. **S. simulans**, *N. E. Br.* Stem probably tall, moderately stout, somewhat harshly villous, but not densely so. Leaves spreading; petiole 0–3 lin. long, stout, hairy; blade  $2\frac{1}{4}$ –4 in. long, 7–16 lin. broad, oblong, slightly tapering upwards, acute, base cordate or emarginate, both sides clothed with short spreading hairs, more densely so below, slightly harsh to the touch. Umbels 2–7, lateral and terminal, pedunculate, 5–12-flowered; peduncles  $\frac{1}{2}$ –1 in. long, moderately stout, villous; bracts 5–8 lin. long,  $\frac{2}{3}$ – $1\frac{1}{4}$  lin. broad, linear or linear-lanceolate, acute, villous, ciliate, persistent; pedicels 5–6 lin. long, moderately stout, villous. Sepals 5– $5\frac{1}{2}$  lin. long,  $1\frac{1}{3}$ –2 lin. broad, linear-oblong or lanceolate, acute, villous on the back and at the apex within. Corolla 5-lobed almost to the base; lobes campanulately spreading, 5– $5\frac{1}{2}$  lin. long,  $2\frac{1}{2}$ – $2\frac{3}{4}$  lin. broad, oblong, subacute and minutely emarginate at the apex, thinly villous on the back, glabrous within, apparently white. Coronal-lobes arising at the base of the staminal-column and equalling or very slightly exceeding it, erect,  $2\frac{1}{4}$ – $2\frac{3}{4}$  lin. long, 2– $2\frac{1}{2}$  lin. broad at the base,  $1\frac{1}{2}$ – $1\frac{3}{4}$  lin. broad at the apex, fleshy, pandurate; basal part with broadly rounded subauriculate sides; apical part cuneately subquadrate or transversely widened, subtruncate or obscurely trilobulate; inner face with a stout fleshy erect tooth, arising at the middle and not nearly reaching to the apex, decurrent in two keels to its base. Staminal-column  $2\frac{1}{2}$ – $2\frac{3}{4}$  lin. long; anther-appendages ovate, acute, inflexed over the rim of the crater-like apex of the style; anther-wings barely 1 lin. long, flattish or the margins slightly incurved, not at all projecting, narrowly oblong; pollen-carriers erect, seated below the level of the rim of the style. Follicles solitary, erect, but at right angles to the pedicels, 3– $3\frac{3}{4}$  in. long, about 1 in. in diam., lanceolate, obtuse, 4-winged, rather coriaceous, glabrous.

**Mozamb. Dist.** British Central Africa: Nyasaland; on the Nyika Plateau, 6000–7000 ft., *Whyte*, 108! 129!

This plant, *S. eximium*, *N. E. Br.*, *S. distinctum*, *N. E. Br.*, are all very similar in general appearance, and may easily be confused. They have the general appearance of an *Asclepias*, and the dorsally flattened coronal-lobes of a *Schizoglossum*, whilst in having the pollen-carriers placed below the level of the apex of the style they agree with the genus *Margaretta*, under which genus I originally placed *S. distinctum*.

29. **S. Grantii**, *Oliver in Trans. Linn. Soc.* xxix. 109, t. 74. Stem 2 ft. or more high, simple, moderately stout, shortly hairy. Leaves spreading; petiole  $1\frac{1}{2}$ –2 lin. long; blade  $1\frac{3}{4}$ – $2\frac{1}{2}$  in. long,  $\frac{3}{4}$ – $1\frac{1}{4}$  in. broad, elongate-ovate, acute or subacute, cordate or subcordate at the base, shortly and rather harshly hairy on both sides. Umbels several, lateral at the nodes, pedunculate, 7–10-flowered; peduncles  $\frac{1}{2}$ –1 in. long, shortly hairy; pedicels 4–6 lin. long, shortly hairy. Sepals  $3\frac{1}{2}$  lin. long,  $1\frac{1}{3}$ – $1\frac{1}{2}$  lin. broad, shortly hairy and ciliate. Corolla about  $\frac{1}{2}$  in. in diam., white; lobes campanulately spreading, 4 lin. long,  $2\frac{1}{4}$  lin. broad, ovate-oblong, pubescent on the back. Coronal-lobes arising from the base of the staminal-column and overtopping it by half their length,  $3\frac{1}{2}$  lin. long,  $1\frac{1}{4}$  lin. broad, dorsally flattened, oblong or cuneate-oblong, obtuse or slightly and irregularly crenately toothed at the apex, with 2 wing-like keels or flaps on the inner face, infolded so that their edges meet, reaching to rather more than half-way up, broadest at their obtuse apices. Staminal-column  $1\frac{1}{2}$ – $1\frac{2}{3}$  lin. long; anther-appendages ovate, acute, their tips inflexed over the margin of the crater-like apex of the style, much below which the pollen-carriers are seated.—K. Schum. in *Engl. Jahrb.* xvii. 124; in *Engl. Pfl. Ost-Afr. C.* 321; and in *Engl. & Prantl, Pflanzenfam.* iv. ii. 233. *Gomphocarpus Grantii*, Schlechter in *Journ. Bot.* 1895, 269. *Asclepias Grantii*, Schlechter in *Journ. Bot.* 1895, 335.

**Mozamb. Dist.** German East Africa: Karagwe; on hills, *Speke & Grant*, 216! *Stuhlmann*, 1652, 1659A, and Karatschonjo, *Fischer*, 390 (ex *Schumann*).

30. **S. eximium**, *N. E. Br.* Stem probably tall, moderately stout, villous. Leaves spreading; petiole 1–2 lin. long; blade  $1\frac{3}{4}$ – $2\frac{3}{4}$  in. long,  $\frac{3}{4}$ – $1\frac{1}{2}$  in. broad, oblong-ovate, acute, cordate at the base, both sides somewhat harshly villous, the hairs being usually shorter and denser along the margins. Umbels several, lateral and terminal, pedunculate, 6–10-flowered; peduncles  $1$ – $2\frac{1}{4}$  in. long, villous; bracts none, or very caducous; pedicels 6–8 lin. long, villous. Sepals 4–5 lin. long,  $2\frac{1}{2}$ –3 lin. broad, ovate-lanceolate or elliptic-ovate, acute or subcuspidate-acuminate, villous on the back. Corolla 5-lobed nearly to the base, white; lobes campanulately spreading, 7–8 lin. long,  $3$ – $3\frac{1}{4}$  lin. broad, oblong, obtuse and minutely emarginate at the apex; glabrous on both sides, not ciliate. Coronal-lobes arising at the apex of the staminal-column and twice as long, violet-purple or dark purple-brown, ascending or erect, 5 lin. long,  $1\frac{1}{2}$ – $1\frac{3}{4}$  lin. broad, pandurate-lanceolate or pandurate-oblong, slightly constricted below the middle and again at the base, obtuse, subacute or abruptly and obtusely cuspidate at the apex, bearing on the face slightly below the middle a fleshy erect acute or slightly bilobulate tongue-shaped process 1 lin. long, channelled in the lower part from its margins being infolded and decurrent as two diverging keels to near the base of the lobe. Staminal-column  $2\frac{1}{2}$  lin. long; anther-appendages ovate, acute, with their tips abruptly inflexed over the rim of the crater-like apex of the style; anther-wings  $1\frac{1}{2}$  lin. long, narrowly triangular, projecting;

pollen-carriers erect, seated below the level of the rim of the style.—*Asclepias eximia*, Schlechter in Journ. Bot. 1895, 335.

**Nile Land.** Uganda : Ruwenzori ; Toru district at Virungo, *Scott-Elliot*, 7627!

Closely allied to *S. simulans* and *S. distinctum*, N. E. Br., which see.

31. **S. Goetzei**, *K. Schum. in Engl. Jahrb.* xxviii. 455. Stems erect, up to 3 ft. high, pubescent or tomentose. Leaves shortly petio- late ; petiole  $1\frac{1}{2}$ – $3\frac{1}{2}$  lin. long, channelled above, puberulous ; blade  $2\frac{1}{4}$ –4 in. long,  $\frac{1}{3}$ – $1\frac{3}{4}$  in. broad, linear-oblong or ovate-oblong, acute, cordate at the base, puberulous on both sides, scaberulous near the margin, with 18–20 parallel lateral veins. Umbels lateral at the nodes, pedunculate, many-flowered ; peduncle  $1$ – $1\frac{1}{3}$  in. long, pubescent or tomentose ; pedicels  $4\frac{1}{2}$ –7 lin. long, tomentose. Sepals  $4\frac{1}{2}$  lin. long, ovate-oblong, acuminate, puberulous. Corolla rotate, 5-lobed nearly to the base ; lobes  $5\frac{1}{2}$  lin. long, elliptic, acute, 6 lin. long, white, suffused with reddish at the tips. Coronal-lobes arising about  $\frac{3}{4}$  lin. above the base of the staminal-column and overtopping it, 2 lin. long, ovate, truncate at the apex, with a triangular appendage on the inner face. Staminal-column  $1\frac{3}{4}$  lin. long, stipitate. Apex of the style depressed. Follicles  $3\frac{1}{2}$ – $4\frac{1}{3}$  in. long,  $2$ – $2\frac{1}{3}$  in. in diameter.

**Mozamb. Dist.** German East Africa : Uhehe ; Kipundi Mountains, 6200 ft., 674 ; Iringa, near Gumbira, 5200 ft., *Goetze*, 706.

32. **S. distinctum**, *N. E. Br.* All parts except the inside of the flowers clothed with short spreading hairs. Leaves spreading ; petiole very short ; blade 2–4 (or more) in. long, 5–9 (or more) lin. broad, narrowly oblong or lanceolate-oblong, subobtuse, cordate at the base, subvillous on both sides. Umbels lateral and terminal, pedunculate, 6–10-flowered ; peduncles 1–2 in. long ; bracts 4–6 lin. long,  $\frac{1}{3}$ – $\frac{1}{2}$  lin. broad, linear, obtuse ; pedicels 6–8 lin. long. Sepals  $3\frac{1}{2}$ –4 lin. long,  $1$ – $1\frac{1}{4}$  lin. broad, lanceolate, acute or acuminate. Corolla about 1 in. in diam., 5-lobed nearly to the base, apparently white ; lobes campanu- lately spreading, 5 lin. long,  $2\frac{1}{2}$ –3 lin. broad, ovate-oblong, subobtuse. Coronal-lobes arising close to the base of the staminal-column, and twice as long, erect, 3 lin. long, flattened, dilated at the base into an obtuse triangular auricle on each side, more or less constricted at the middle, then more or less widening out into a cuneate-oblong blade, subtridentate or irregularly and obtusely toothed at the apex, with a pair of contiguous collateral deltoid obtuse teeth on the face at the base of the constriction. Staminal-column  $1\frac{3}{4}$ –2 lin. long ; anther-appendages erect, ovate-lanceolate, acute, undulated on the margins, about reaching to the top of the style, which is rather stout, conical, with 5–6 obtuse contiguous obtuse lobules connivent over a cavity at the apex.—*Margaretta distincta*, N. E. Br. in Kew Bulletin, 1895, 255.

**Mozamb. Dist.** German East Africa : Mountains east of Lake Nyanza, *Johnson*!

The material of this species consists of a few inches of the apical part of the plant, which probably attains a height of 1-2 or more ft., with larger leaves than those described. I originally placed it in the genus *Margaretta* on account of the position of the pollen-carriers and very similar structure of the corona, but its relationship to *S. eximium*, N. E. Br., and *S. simulans*, N. E. Br., is so undoubted that I place it in *Schizoglossum*. The flowers are not very good and when I first described them, I thought the basal auricles were inflexed as in *Margaretta*, but on re-examination I believe them to be spreading, and the supposed single tooth on the face certainly consists of two clinging together.

33. **S. scyphostigma**, *K. Schum. in Engl. Jahrb.* xxx. 384. Stem erect,  $1\frac{1}{4}$ -3 ft. high,  $1-1\frac{1}{2}$  lin. thick at the base, simple, puberulous, especially below the nodes, at length glabrous. Leaves petiolate; petiole about 2 lin. long, channelled above, pubescent; blade  $1-3\frac{1}{2}$  in. long,  $3\frac{1}{2}-9\frac{1}{2}$  lin. broad, oblong-lanceolate, acute, rounded at the base, subadpressed pubescent on both sides, scabrous on the margins, concolorous. Umbel terminal, "increased by a solitary lateral umbel," pedunculate, 8-12-flowered; peduncle 7-9 lin. long, pubescent; pedicels  $4\frac{1}{2}-7$  lin. long, pubescent. Sepals  $3-3\frac{1}{2}$  lin. long,  $1\frac{1}{4}$  lin. broad, lanceolate, acute. Corolla white, pubescent outside; lobes  $5-5\frac{1}{2}$  lin. long, 3 lin. broad, campanulately-spreading, elliptic-oblong, obtuse and minutely notched at the apex. Coronal-lobes arising at the base of the staminal-column and about twice as long, somewhat spreading,  $4-4\frac{1}{2}$  lin. long, dilated into an obtuse triangular auricle on each side at the base and there 2 lin. broad, with a pair of contiguous deltoid or subquadrate teeth on the face, linear and about 1 lin. broad above, obtuse and entire or slightly 2-3-denticulate at the apex, apparently white. Staminal-column 2 lin. long, not widened at their base; anthers oblong, their appendages 1 lin. long, lanceolate, acute, erect, applied to the sides of the apical part of the style, which is dilated into a pentagonal crater-like apex, with a channel at each angle; pollen-carriers seated about  $\frac{3}{4}$  lin. below the apex of the style.

**Mozamb. Dist.** German East Africa: on Yawulanda Mountain in the Livingstone Range, 5900 ft., *Goetze*, 850!

This is very similar to *S. distinctum*, N. E. Br., and may prove to be identical when more material is obtained, but it differs in having the coronal-lobes much less dilated at the apex and much less deeply toothed, and especially in the apex of the style.

21. **MARGARETTA**, Oliver; *Benth. et Hook. f. Gen. Pl.* ii. 759.

Calyx 5-partite. Corolla very deeply 5-lobed, campanulate; lobes revolute or spreading at the apex, overlapping to the left in bud. Corona of 5 lobes arising from the staminal-column; basal part claw-like, more or less complicate, with the sides produced into teeth and with or without a tooth in the channel between them; upper part expanded into a flat petaloid blade usually larger than the petals, variable in shape. Anthers terminated by an erect membranous appendage, adpressed to the sides of the terminal part of the style. Pollen-masses waxy, pendulous, solitary in each anther-cell, attached to

the rather narrow pollen-carriers in pairs by short caudicles. Style with the terminal part always produced beyond the pollen-carriers, capitate, hemispherical, subconical, obtuse or truncate, usually furrowed below. Follicles (only seen in one species) fusiform, beaked and tapering at the base into a stipe, smooth. Seeds crowned by a tuft of hairs.—Perennial herbs with a tuberous rootstock and milky juice. Stems usually simple and probably solitary, rarely branched. Leaves opposite. Umbels pedunculate, terminal and lateral between the bases of the upper leaves, mostly arranged in a terminal corymb.

Species 5 or 6, endemic.

Closely allied to *Asclepias*, differing chiefly in the petaloid coronal-lobes, which are larger and more conspicuous than the often revolute petals; the anther-appendages, too, are erect and the apical part of the style more elongated, rising above the pollen-carriers.

In the dried state, owing to pressure, the coronal-lobes sometimes have their claw part so much flattened that its complicate nature disappears, and it then appears to be flat with two or three teeth standing upon it.

Coronal-lobes with 3 teeth on the claw.

Corolla-lobes revolute; blade of the coronal-lobes elliptic, elliptic-oblong, toothed on the margin . . . . . 1. *M. rosea*.

Corolla-lobes not revolute; blade of the coronal-lobes narrowly oblong, entire or irregularly lobed or toothed at the apex . . . . . 2. *M. Whytei*.

Coronal-lobes with 2 teeth on the claw; corolla-lobes revolute.

Blade of the coronal-lobes oblong or elliptic-oblong,  $1\frac{1}{2}$ – $2\frac{1}{2}$  lin. broad . . . . . 3. *M. Holstii*.

Blade of the coronal-lobes orbicular, 3–4 lin. broad . . . . . 4. *M. orbicularis*.

1. ***M. rosea***, *Oliver in Trans. Linn. Soc.* xxix. 111, t. 76. Tuber carrot-shaped, milky. Stems 12–20 in. high, simple or slightly branched, pubescent, principally along two lines. Leaves spreading; petiole 1– $1\frac{1}{2}$  lin. long; blade  $1\frac{1}{2}$ –4 in. long, 4–8 lin. broad, narrowly oblong, acute, cordate, subcordate or rounded at the base, both sides with a minute sparse pubescence. Umbels about 3, corymbose at the apex of the stem, few-flowered; peduncles 3–4 lin. long, subtomentose; bracts 1– $1\frac{1}{2}$  lin. long, subulate, subtomentose; pedicels  $1\frac{1}{2}$ –3 lin. long, subtomentose. Sepals  $1\frac{1}{2}$ – $1\frac{3}{4}$  lin. long, lanceolate, acute, subtomentose. Corolla-lobes ascending, with revolute tips,  $2\frac{1}{2}$ – $2\frac{3}{4}$  lin. long,  $\frac{3}{4}$  lin. broad, linear-oblong, obtuse, pubescent on the back. Coronal-lobes arising at the base of the staminal-column, petaloid, 3– $3\frac{1}{2}$  lin. long, 2– $2\frac{1}{4}$  lin. broad, complicate in the basal half, with the inflexed margins produced into erect linear acute teeth, with a similar tooth between them on the face of the claw; upper half expanded into a broad flat spreading obovate-oblong or subelliptic blade, toothed all round. Anther-appendages ovate, acute, erect, connivent, twice as long as the apical part of the style which is rather short, subcapitate and furrowed.—K. Schum. in *Engl. Pf. Ost-Afr. C.* 323 †; Schlechter in *Journ. Bot.* 1895, 305.

**Nile Land.** Uganda, Nyoro, *Speke & Grant*, 531! Nandi Range, *Scott-Elliott*, 7048! in open jungle, *Wilson*, 48!

**Mozamb. Dist.** German East Africa: Urundi, *Scott-Elliot*, 8370!

The flowers are stated on Wilson's label to be "dull yellow with a brown spot at the base of each petal." This doubtless refers to the petal-like coronal-lobes, the true petals apparently being rosy-purple. According to Colonel Grant both the petals and coronal-lobes are pink.

2. **M. Whytei**, *K. Schum. in Engl. Pfl. Ost-Afr. C.* 323. Stems 12-18 in. high, mostly simple, pubescent. Leaves very spreading or somewhat reflexed; petiole  $\frac{1}{2}$ -2 lin. long; blade 2-5 in. long, 2-11 lin. broad, linear to lanceolate, acuminate, more or less pubescent on both sides. Umbels about 3-4 in a corymb at the top of the stem, and occasionally one from the node below, 7-16-flowered; the upper peduncle  $\frac{1}{2}$ -1 in. long, the lower  $1\frac{1}{2}$ -3 in. or more long, tomentose-pubescent, as are likewise the 3-8 lin. long pedicels, and the 1- $1\frac{1}{2}$  lin. long lanceolate acuminate sepals. Corolla-lobes 2-2 $\frac{1}{4}$  lin. long,  $\frac{3}{4}$  lin. broad, lanceolate and acute or oblong and obtuse in different flowers in the same umbel, sparsely pubescent on the back, erect, with spreading or recurved tips, but not revolute. Coronal-lobes arising from the base of the staminal-column, suberect, petaloid, 2-2 $\frac{1}{2}$  lin. long,  $\frac{1}{2}$  lin. broad; basal part narrowly complicate, with the inflexed margins produced into narrow acuminate teeth  $\frac{1}{2}$  lin. long, with a similar tooth on the face of the lobe between them; upper part expanded into a flat narrowly oblong blade, entire, bifid or irregularly toothed or lobed at the apex. Anther-appendages ovate, lanceolate or oblong, acute, erect. Style capitate, subhemispherical or shortly subconical at the apex, obtuse. Follicles often solitary, 2 $\frac{1}{2}$ -3 in. long, 3-3 $\frac{1}{2}$  lin. thick, lanceolate, acuminate into a beak, tapering into a stipe at the base, finely and sparsely pubescent. Seeds 2 lin. long,  $1\frac{1}{3}$  lin. broad, ovate, flattened, with thickened margins, scrobiculate, brown.—*K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 234*; *Schlechter in Journ. Bot. 1895, 305*; *S. Moore in Journ. Bot. 1902, 256*. *M. rosea*, *Britten in Trans. Linn. Soc. ser. 2, Bot. iv. 29*, not of Oliver.

**Mozamb. Dist.** German East Africa: Lower plateau north of Lake Nyasa, *Thomson!* Portuguese East Africa: between Beira and Massi Kessi, *Hon. Mrs. Evelyn Cecil, 17!* Lower Shire: Morambala Mountain, 1700-2500 ft., *Kirk!* British Central Africa: Nyasaland; Chiradzulu Mountain, *Meller!* Mount Zomba and vicinity, 2500-3500 ft., *Whyte! Purves, 32! Meller!* Mount Mlanji, 7000-9000 ft., *Purves, 90! Whyte, 106! 117! Scott-Elliot, 8666!* Mandala to Matope, *Scott-Elliot, 8442!* Mount Malosa, 4000-6000 ft., *Whyte!* Blantyre, *Scott!* Shire Highlands, *Buchanan!* Angoniland, *Sharpe, 1901!* and without precise locality, *Buchanan. 354! 907!* Rhodesia: Salisbury, *Rand, 124! 547! 632!*

This species varies considerably in the size of its flowers and in the amount of toothling at the apex of the coronal-lobes. In the dried state the latter often appear to be flat to the base, with 3 teeth on their inner face, but I believe that when alive the claw part is complicate as described.

3. **M. Holstii**, *K. Schum. in Engl. Jahrb. xvii. 133, t. 6, figs. G-J.* Stems 8-22 in. high, simple. Leaves very spreading or somewhat reflexed,  $\frac{3}{4}$ -6 in. long,  $\frac{1}{4}$ -1 in. broad, on petioles  $\frac{1}{2}$ -1 $\frac{1}{2}$  lin. long,

oblong, narrowly lanceolate-oblong or linear-lanceolate, acute or acuminate, the base subcordate, subtruncate or rounded, both sides with a scattered pubescence. Umbels 2-3 clustered at the apex of the stem, 3-10-flowered; peduncles 2-14 lin. long, densely pubescent, as are also the 1-2 lin. long subulate bracts, the 1-2 lin. long pedicels, and the  $1\frac{1}{2}$ - $2\frac{1}{2}$  lin. long lanceolate acuminate sepals. Corolla 5-lobed almost to the base; lobes erect with revolute tips, 4-5 lin. long,  $1-1\frac{1}{4}$  lin. broad, linear-oblong or linear-lanceolate, obtuse or subacute, with a few minute hairs on the back, purple. Coronal-lobes petaloid, more or less spreading,  $4\frac{1}{2}$ -7 lin. long,  $1\frac{1}{2}$ - $2\frac{1}{2}$  lin. broad; claw complicate with the narrow inflexed margins produced into two deltoid teeth  $\frac{1}{2}$  lin. long, without a tooth between them on the face of the lobe; blade oblong or elliptic-oblong, obtuse, entire or irregularly denticulate at the apex. Anther-appendages erect, oblong-lanceolate, acute, twice as long as and connivent over the furrowed subcapitate apical part of the style.—K. Schum. in Engl. Pfl. Ost-Afr. C. 323, and in Engl. & Prantl, Pflanzenfam. iv. ii. 234, fig. 68, G-H. *M. rosea*, Oliver in Trans. Linn. Soc. ser. 2, Bot. ii. 342, not elsewhere.

**Mozamb. Dist.** German East Africa: Usambara; Mlalo, *Holst*, 159! Kilimanjaro, 4700-5000 ft., *Johnston*! *Folkens*, 220!

This species is described by Dr. Schumann as remarkable in having "capitate hairs" on the calyx. Having examined one of the type specimens however, I find no such hairs, but that the fructification of some kind of mildew is present.

4. **M. orbicularis**, *N. E. Br.* in *Kew Bulletin*, 1895, 256. Stems 6 in. to 2 ft. high, simple, pubescent. Leaves very spreading or sub-reflexed; petiole  $\frac{1}{2}$ -1 lin. long; blade 2-6 in. long, 2-7 lin. broad, linear or linear-lanceolate, acute or acuminate, pubescent on both sides. Umbels 1-3, corymbose at the top of the stem; peduncles  $\frac{1}{4}$ - $3\frac{1}{2}$  in. long, subtomentose; bracts 2-4 lin. long, subtomentose, as well as the 2-4 lin. long pedicels, and the  $2-2\frac{1}{4}$  lin. long lanceolate acuminate sepals. Corolla-lobes ascending, with revolute tips,  $3\frac{1}{2}$ -4 lin. long,  $1\frac{1}{4}$ - $1\frac{3}{4}$  lin. broad, oblong or lanceolate-oblong, obtuse, sparsely puberulous or subglabrous on the back. Coronal-lobes arising at the base of the staminal-column, petaloid,  $4\frac{1}{2}$ -6 lin. long, 3-4 lin. broad, and forming a false corolla  $\frac{3}{4}$ -1 in. in diam.; claw complicate, with the margins produced into two erect linear-falcate teeth 1 lin. long, overtopping the staminal-column, without a tooth between them; blade large, flat, spreading, elliptic or orbicular, subentire or crenulate. Anther-appendages oblong, acute, erect, twice as long as and connivent over the furrowed subcapitate apical part of the style. Young follicies fusiform, tapering to a rather long beak, pubescent, solitary (always?).

**Mozamb. Dist.** British Central Africa: Nyasaland; Maravi Country, west of Lake Nyasa, *Kirk*! Elephant Marsh, north Nyasa, *Scott*! Songue River and Karonga, *Whyte*!

The flowers are stated to vary from "whitish-lilac to deep purple." This probably alludes to the coronal-lobes, but the more inconspicuous corolla-lobes also appear to be purplish.

*Imperfectly known species.*

5. **M. Cornetii**, *Dewèvre in Comptes-rendus Soc. Bot. Belg.* xxxiv. 90. Resembles *M. rosea*, Oliv., and *M. Holstii*, K. Schum., in general appearance but has a larger inflorescence and larger flowers. Sepals  $3\frac{1}{2}$  lin. long, lanceolate, acute, pubescent. Corolla-lobes oblong, obtuse, mucronate, glabrous, greenish-yellow. Coronal-lobes  $7\frac{1}{2}$  lin. long, obovate, obtuse, narrowed into a claw at the base, mauve with a yellowish midrib.

**South Central.** Congo Free State: Katanga, *Cornet*.

I have not seen this species, but from the imperfect description judge it to be closely allied to *M. orbicularis*, its flowers seem to be larger than those of the species known to me.

22. **PACHYCARPUS**, E. Meyer, Comm. 209.

Calyx 5-partite. Corolla deeply 5-lobed, campanulate, rotate or reflexed; lobes overlapping to the left in bud. Corona of 5 lobes arising from the base of the staminal-column, usually long, tongue-shaped, linear or dilated at the apex and frequently at the base also, spreading at the base then more or less incurved over the staminal-column, and with or without a pair of contiguous erect flat lobes, teeth or keels at the base on the upper side; sometimes short and consisting of the basal part bearing the erect pair of contiguous lobes only, the terminal portion being undeveloped. Staminal-column arising from the bottom of the corolla, sessile or subsessile, the filament part being undeveloped, forming a very broad 5-angled truncate cone, from the very rigid and horny anther-wings, being exceedingly broad and projecting at the base. Anthers with terminal membranous appendages inflexed over the apex of the style. Pollen-masses pendulous, solitary in each anther-cell, attached in pairs to the pollen-carriers by broad flat caudicles, which are abruptly bent at the middle. Style truncate or depressed at the apex, not exceeding the anther-appendages. Follicles solitary (always?), coriaceous, usually winged, at least on the apical part, sometimes toothed or echinate along the wings. Seeds crowned with a tuft of hairs.—Erect herbs. Leaves opposite, broad. Flowers in umbels, lateral at the nodes of the upper part of the stem, moderately large.

Species several, chiefly South African.

This genus has not been recognised by any author since it was established by E. Meyer in 1837. Decaisne, Bentham & Hooker and K. Schumann include it in *Gomphocarpus*, D. Dietrich includes it in *Xysmalobium* and Schlechter in *Asclepias*. But the broad sessile truncate core formed by the anthers with their exceedingly broad and very rigid wings, the very different coronal structure and different character of the fruit, appear to me to be sufficient grounds for retaining it as a distinct genus, to which, besides most of those referred to it by E. Meyer, I would refer the following species:—

*P. transvaalensis*, N. E. Br. (*Asclepias transvaalensis*, Schlechter); *P. macrochilus*, N. E. Br. (*A. macrochila*, Schlechter); *P. schinzianus*, N. E. Br.

(*A. schinziana*, Schlechter); *P. Galpinii*, N. E. Br. (*A. Galpinii*, Schlechter); *P. scaber*, N. E. Br. (*Gomphocarpus scaber*, Harv.); *P. McKenii*, N. E. Br. (*G. McKenii*, Harv.); and *P. validus*, N. E. Br. (*A. valida*, Schlechter); all of which I have examined. The habit and general appearance of all the species I have seen is very uniform, and in most cases is quite sufficient to distinguish this genus from its allies.

- Leaves linear-lanceolate,  $\frac{1}{3}$ – $\frac{1}{2}$  in. broad . . . . . 1. *P. rhizophyllus*.  
 Leaves oblong, ovate-oblong or oblong-lanceolate,  
 $\frac{1}{2}$ – $1\frac{1}{4}$  in. broad . . . . . 2. *P. concolor*.

1. **P. rhizophyllus**, *N. E. Br.* Stem more or less flexuose, pubescent-scabrid. Leaves spreading-incurved, subsessile or with petioles  $\frac{1}{2}$ –1 lin. long; blade 4–6 lin. long, 4–6 lin. broad, linear-lanceolate, gradually tapering to an acute point, acute at the base, scabrid on both sides. Umbels terminal and probably also lateral; pedicels 7 lin. long, with a spreading pubescence; bracts subulate, pubescent. Sepals 7 lin. long, ovate-lanceolate, acuminate, pubescent, scaberulous near the apex. Corolla rotate-campanulate; lobes 6–7 $\frac{1}{2}$  lin. long, 4–5 lin. broad, elliptic-ovate, shortly and rather abruptly pointed, pubescent on the back. Coronal-lobes arising from the base of the staminal-column and incurved over it,  $\frac{1}{2}$  in. long, horizontally spreading at the dilated rhomboidal base, then abruptly contracted into a long linear obtuse incurving apical part; upon the middle of the dilated base stand two erect, broadly deltoid, obtuse teeth 1 $\frac{1}{2}$  lin. long and nearly as broad, placed close together and nearly or quite reaching to the top of the staminal-column. Anther-appendages elliptic-ovate, inflexed over the apex of the style.—*Gomphocarpus scaber*, K. Schum. in Engl. Jahrb. xvii. 124, not of Harvey. *G. rhizophyllus*, K. Schum. in Engl. Pf. Ost.-Afr. C. 322. *G. trachyphyllus*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 237.

**Mozamb. Dist.** German East Africa: East bank of Lake Victoria, *Fischer*, 399!

Through the kindness of Prof. Engler, I have seen a flower and leaf from the type, but do not find any black hairs on the outside of the corolla as mentioned in the original description. *Gomphocarpus scaber*, Harvey, has the same type of coronal-structure, but is otherwise a totally different species.

2. **P. concolor**, *E. Meyer, Comm.* 210. Stems 10–16 in. high, simple, 1 $\frac{1}{2}$ –3 lin. thick, somewhat scabrid-pubescent. Leaves numerous,  $\frac{3}{4}$ –1 $\frac{1}{2}$  in. apart, spreading; petiole 2–4 lin. long; blade 1 $\frac{3}{4}$ –3 $\frac{3}{4}$  in. long,  $\frac{1}{2}$ –1 $\frac{1}{4}$  in. broad, oblong or ovate-oblong, acute or obtuse and apiculate, rounded or rarely cuneate at the base, usually undulate, rigid in the dried state, with scattered hairs on both sides or nearly glabrous on one or both surfaces, scabrous on the margins. Umbels lateral at the nodes, sessile or shortly pedunculate, 2- (very rarely 3-) flowered, or some of the flowers solitary; peduncles 0–3 lin. long; pedicels 4–7 lin. long, somewhat roughly pubescent. Sepals 5–9 lin. long, 2–3 lin. broad, ovate-lanceolate, acuminate, spreading, rather coarsely pubescent. Corolla 1–1 $\frac{1}{4}$  in. in diam., glabrous or very slightly pubescent outside,

varying from greenish slightly tinted with purple to dark purple; lobes 6–8 lin. long, 4–5½ lin. broad, ovate or oblong-ovate, subacute, apparently concave, spreading. Coronal-lobes arising at the base of the staminal-column, 5–6 lin. long, radiately spreading at the base, with the apical part incurved, gradually tapering from a 2½–3 lin. broad subcordate-ovate base to a linear obtuse point, and bearing on the dilated basal part 2 erect parallel contiguous deltoid obtuse teeth 1½–2 lin. long. Staminal column 2½–3 lin. long, broadly and shortly conical; anthers deltoid, about 2½ lin. broad at the base, with very horny obliquely triangular much projecting wings. Pollen-carriers with very broad caudicles, which are ½ lin. long and about half as long as the oblong pollen-masses. Follicles not seen.—*Asclepias concolor*, Schlechter in Engl. Jahrb. xxi. Beibl. 54, 6, and in Journ. Bot. 1896, 452; S. Moore in Journ. Bot. 1902, 256. *Xysmalobium concolor*, D. Dietr. Synop. Pl. ii. 902. *Gomphocarpus concolor*, Decne. in DC. Prod. viii. 563.

**Mozamb. Dist.** Bechuanaland: near Palapye, 3000 ft., *Lugard*, 261! Buluwayo, *Rand*, 187!

Also in South Africa.

23. **PENTARRHINUM**, E. Meyer; Benth. et Hook. f. Gen. Pl. ii. 758.

Calyx 5-partite. Corolla very deeply 5-lobed, rotate or reflexed; lobes overlapping to the left in bud. Corona of 5 lobes arising from the base of the staminal-column and alternating with the corolla-lobes, obconic or trumpet- or slipper-shaped, with infolded margins, forming a channel or a narrow funnel-shaped cavity within, truncate or rounded at the apex, with a horn directed forwards over or towards the anthers. Stamens arising from the base of the corolla, united into a tube around the ovary and style. Anthers with a terminal membranous appendage inflexed over the apex of the style; pollen-masses pendulous, solitary in each cell of the anther, attached in pairs to the pollen-carriers by slender caudicles. Follicles lanceolate, more or less beaked and more or less echinate. Seeds crowned by a tuft of hairs.—Perennial twining herbs with shorter stems. Leaves opposite, petiolate, cordate. Flowers small, arranged in pedunculate umbel-like corymbs, lateral at the nodes.

Species 3, two occurring also in South Africa.

Coronal-lobes thick and fleshy, obconic, truncate, with a short straight horn . . . . . 1. *P. insipidum*.

Coronal-lobes thin in the dried state, slipper-shaped, rounded at the apex, horn usually curved . . . . . 2. *P. abyssinicum*.

1. ***P. insipidum***, E. Meyer, *Comm.* 200. Stem twining, glabrous or puberulous, or with a puberulous line down one side. Leaves spreading; petiole ½–2 in. long; blade 1–3 in. long, ⅝–2 in. broad, cordate-ovate, acute or acuminate, with broadly rounded basal lobes, both sides glabrous. Peduncles lateral at the nodes, 1–3 in. long, gla-

brous or puberulous; corymbs 1-1 $\frac{1}{4}$  in. in diam., elongating into a raceme as the flowers expand; bracts  $\frac{1}{2}$ -1 lin. long, subulate, membranous, deciduous; pedicels 4-10 lin. long, puberulous. Sepals 1-1 $\frac{3}{4}$  lin. long, lanceolate, acute, more or less puberulous, ciliate. Corolla rotate, reflexed; lobes 2-3 lin. long, 1-1 $\frac{1}{2}$  lin. broad, ovate or ovate-oblong, obtuse, glabrous, ciliate. Coronal-lobes about 1 lin. long, as long as the staminal-column, obconic, narrowly channelled down the face, truncate, thick and fleshy, with a slightly projecting rim at the apex, and a stout central tooth directed forwards over the tips of the anthers. Follicles solitary (always?), 1 $\frac{1}{2}$ -2 $\frac{3}{4}$  in. long,  $\frac{1}{2}$ - $\frac{3}{4}$  in. thick, lanceolate, acute or acuminate into a beak, more or less tuberculate-echinate, sometimes nearly smooth, glabrous. Seeds 3-3 $\frac{1}{2}$  lin. long, 2 lin. broad, ovate, plano-convex, with a thin wing-like margin, toothed at the broadest end, both sides with some linear ridges, brown, glabrous.—Decne. in DC. Prod. viii. 553; Harvey, Thesaurus Cap. i. 7, t. 11; Schlechter in Engl. Jahrb. xx. Beibl. 51, 43; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 244, and in Engl. Jahrb. xxx. 385.

**Nile Land.** Eritrea: Keren, *Steudner*, 748! Bogos, *Hildebrandt*, 491! Abyssinia: near Deli Dekeno, *Schimper*, 2175! Gerima, 6600 ft., *Schimper*, 941! Alia Amba, *Roth*, 409! British East Africa: Navaisha to Baringo Valley, *Gregory*! Ukamba; Kitui, *Hildebrandt*, 2781! Rabai Hills, *Taylor*! Mombasa, *Kirk*!

**Lower Guinea.** German South-west Africa: Amboland; Amushe, *Schinz*, 1! Oshando, *Schinz*! Damaraland, *Een*!

**Mozamb. Dist.** German East Africa: Usambara: Masheua, *Holst*, 3570! Kilimanjaro; Marangu, 4200 ft., *Volkens*, 1449! Uguenogue Mountains, *Volkens*, 509! Kinga Mountains, near Balangwa, 7200 ft., *Goetze*, 935 (ex *Schumann*). British Central Africa: Ngamiland; on grassy plains near Botlette, *Lugard*, 217! Tropical Transvaal: near Mailas Kop, 2500 ft., *Schlechter*, 4564!

2. ***P. abyssinicum***, *Decne. in DC. Prod.* viii. 553.—Stem, leaves and inflorescence undistinguishable from *P. insipidum*. Coronal-lobes 1 lin. long, nearly or quite twice as long as the staminal-column, rather thin, slipper-shaped, rounded at the apex, with a decurved horn or point overhanging the shallow or narrowly funnel-shaped cavity formed by the infolded margins, or directed over the anthers. Staminal-column  $\frac{1}{2}$  lin. long, much shorter than in *P. insipidum*, the horny anther-wings also shorter.—*Decne. in Delessert, Icon. Select.* v. 30, t. 70; *A. Rich. Tent. Fl. Abyss.* ii. 36; *Vatke in Oest. Bot. Zeitschr.* 1876, 146, and in *Linnaea*, xl. 215; *Engl. Hochgebirgsfl. Trop. Afr.* 342; *K. Schum. in Engl. Pf. Ost-Afr. C.* 323; in *Engl. & Prantl, Pflanzenfam.* iv. 234, fig. 68, K., and 244; and in *Ann. Istit. Bot. Roma*, vii. 38.

**Nile Land.** Abyssinia: Adowa, *Quartin-Dillon & Petit*, 201! without precise locality, *Schimper*, 399! Somaliland: near Giacorse, *Riva*, 213, 220, and on a plain at Salvati, *Riva*, 1554 (ex *Schumann*). Uganda: two days' march from Naudi, *Whyte*!

Var. *angolense*, *N. E. Br.* Coronal-lobes 1-1 $\frac{1}{2}$  lin. long, exceeding the  $\frac{1}{2}$ -1 lin. long staminal-column.—*P. insipidum*, *Hieru in Cat. Afr. Pl. Welw.* i. 687, not of *E. Mey.* *P. abyssinicum*, *De Wild. and Durand, Contrib. Fl. Congo*, ii. ii. 42?

**Lower Guinea.** Lower Congo: Kisantu, on the Inkissi River, *Gillet*, (ex *De Wildeman & Durand*). Angola: Ambriz and by the River Kuanza, *Monteiro!* Quizembo, *Welwitsch*, 4199! Loanda; in thickets near Penedo, *Welwitsch*, 4237! Golungo Alto; at Elinda in Terras de Bumba, *Welwitsch*, 4238! borders of forests along the Quiapose River, *Welwitsch*, 4239! Icolo e Bengo; near the Lagoa de Foto, *Welwitsch*, 4240! Benguella; in the rocky thickets of Nene, towards Empalanca, *Welwitsch*, 4247!

The Angolan plant differs from the Abyssinian only in the relative size of the staminal-column. According to Monteiro the "flowers have a delicious odour," and according to Welwitsch they are white or the corolla is green and the corona brilliantly white.

#### 24. PENTATROPIS, R. Br.; Wight & Arnott, Contrib. Bot. 52.

Calyx 5-partite. Corolla 5-lobed nearly to the base; lobes suberect, with spreading tips, overlapping to the left and more or less twisted to the right in bud. Corona simple, arising from the staminal-column, of 5 laterally compressed lobes, adnate for half to two-thirds of their length to the backs of the anthers. Staminal-column arising from the base of the corolla. Anthers with membranous appendages inflexed over the truncate apex of the style. Pollen-masses pendulous, solitary in each cell of the anthers, affixed in pairs by short slender caudicles to the pollen-carriers. Follicles lanceolate, narrowed into a beak, smooth. Seeds crowned by a tuft of hairs.—Slender twiners with opposite petiolate leaves, and subaxillary or subaxillary umbels of small flowers.

Species about 6; the genus extends through Arabia, Beluchistan, the drier parts of India into China and the Malay Archipelago. There is no outer corona as described by Bentham in Benth. et Hook. f. Gen. Pl. ii. 764.

- |   |                             |
|---|-----------------------------|
| Umbels 3-6-flowered; pedicels 3-8 lin. long;<br>corolla-lobes triangular, acuminate or tailed | 1. <i>P. cyanchooides</i> . |
| Umbels 8-10-flowered; pedicels 2½-3 lin. long;<br>corolla-lobes deltoid, obtuse.              | 2. <i>P. fasciculatus</i> . |

1. ***P. cyanchooides***, R. Br. in *Salt, Voy. Abyss. Append.* lxiv. Stems slender, twining, glabrous, except in the axils of the leaves and at the base of the young shoots, which are more or less pubescent. Leaves spreading; petiole 1-4 lin. long; blade ½-1½ in. long, ¼-1 in. broad, oblong, ovate or elliptic ovate, acute or obtuse, mucronate, more or less fleshy, glabrous. Umbels subaxillary, 3-6-flowered; peduncles slender, 1-3 lin. long, or sometimes almost absent; pedicels 3-5 lin. long, filiform, sparsely puberulous. Sepals ½-¾ lin. long, ovate, acuminate, sparsely puberulous, or subglabrous. Corolla pentagonal and acuminate in bud, 5-lobed nearly to the base; lobes 4-5 lin. long, narrowly linear from a triangular base, twisted in bud, glabrous outside, minutely puberulous within. Coronal-lobes arising ⅓ lin. above the base of the staminal-column and nearly or quite reaching to its apex, varying in different flowers in the same umbel, ½ lin. long, compressed, subtriangular in outline viewed sideways, subtruncate at the base, adnate to the column for ⅔ of their length, with a free narrowly oblong subacute or acute apex. Follicles 2-3 in. long,

and about  $\frac{1}{3}$  in. thick, lanceolate, acuminate into a beak, smooth, glabrous.—Wight & Arnott, Contrib. Bot. 53 in a note. *P. spiralis*, Decne. in Ann. Sc. Nat. 2 sér. ix. 327, t. 11, fig. E.; and in DC. Prod. viii. 536; Engl. & Prantl, Pflanzenfam. iv. ii. 251, fig. 73, P-Q., and 258; Penzig in Atti Congr. Bot. Internaz., 1892, 349. *P. spiralis*, Decne., var. *longepetiolata*, Engl. Hochgebirgsh. Trop. Afr. 343. *Tylophora cirrosa*, Aschers. in Schweinf. Beitr. Fl. Aethiop. 132.

**Nile Land.** Dahlak Island, in the Red Sea, *Ehrenberg* (ex *Ascherson*). Nubia: Gebel Uratab, near Suakin, *Schweinfurth*, 219! Otao, *Johnston*, 4! sea-coast to between 3000-4000 ft., *Bent!* Eritrea; Sarat, near Massaua, *Stuedner*, 199! 752 (ex *Engler*); near Samhar, from the hills of Vurek to the River Amba, *Penzig*; Shoho, *Petit* (ex *Engler*). Abyssinia: Begemeder; near Senka Berr, 7500 ft., *Schimper*, and Anadehr, 7800 ft., *Schimper*, 596 (ex *Engler*), and without precise locality, *Salt!*

Extends through Arabia to the drier parts of India.

Var. *senegalensis* N. E. Br. Stem and leaves as in the above, but the pubescence in the axils of the leaves and base of the young shoots more pronounced. Pedicels 6-8 lin. long. Corolla-lobes  $2\frac{1}{2}$ -3 lin. long, not twisted in bud, elongate-triangular, acuminate, scarcely tapering into linear tails. Coronal-lobes rather larger, about  $\frac{3}{4}$  lin. long and broad.—*Pentatropis senegalensis*, Decne. in Ann. Sc. Nat. 2 sér. ix. 328.

**Upper Guinea.** Senegambia, *Roger!*, *Perrottet*, 476! *Heudelot*, 530! is in moist places\* by the River Senegal, *Leprieur* (ex *Decaisne*).

2. ***P. fasciculatus***, N. E. Br. Stems slender, glabrous, but with a little woolly tomentum at the very base of the branchlets. Leaves spreading; petiole 1-1 $\frac{1}{2}$  lin. long; blade  $\frac{1}{2}$ -1 in. long, 3-6 lin. broad, ovate-oblong, acute or obtuse, mucronate, glabrous. Umbels sub-axillary, 8-10-flowered, quite glabrous in all parts; peduncles  $\frac{1}{2}$ -1 lin. long; pedicels filiform,  $2\frac{1}{3}$ -3 lin. long. Sepals  $\frac{1}{2}$  lin. long, ovate, acute. Corolla pentagonal and obtuse in bud, 5-lobed to  $\frac{3}{4}$  of the way down, rotate; lobes 1 $\frac{1}{2}$  lin. long, 1 $\frac{1}{4}$  lin. broad at the base, deltoid, obtuse, not twisted in bud. Coronal-lobes arising  $\frac{1}{3}$  lin. above the base of the staminal-column and reaching to its apex,  $\frac{3}{4}$  lin. long, compressed, triangular-acuminate in outline when viewed sideways, truncate at the base, adnate to the column for  $\frac{2}{3}$  of their length, with a free linear acute apex.—*Pentarrhinum fasciculatum*, K. Schum. in Engl. Pil. Ost-Afr. C. 323.

**Mozamb. Dist.** German East Africa; Pangani, *Stuhlmann*, Coll. I., 809!

*Imperfectly known species.*

3. ***P. hoyoides***, K. Schum. in Ann. Ist. Bot. Roma, vii. 40. Stem twining, glabrous. Leaves fleshy, glabrous; petiole scarcely exceeding 2 lin. in length; blade  $\frac{1}{2}$ -1 $\frac{1}{2}$  in. long,  $\frac{1}{3}$ -1 in. broad, oblong or ovate-oblong, obtuse or subobtuse, apiculate; veins very inconspicuous. Flowers 4-8 in axillary fascicles; pedicels at the most  $4\frac{1}{2}$  lin. long. Sepals  $\frac{3}{4}$  lin. long, subulate, glabrous. Corolla rotate; tube 1 lin. long; lobes 2 lin. long, acuminate, glabrous outside, pubescent within. Outer coronal-lobes laterally flattened, somewhat foliaceous,

semi-ovate, shortly acuminate. Staminal-column  $1\frac{1}{4}$  lin. long, very shortly stipitate. Follicles  $1\frac{1}{3}$  in. long, when flattened out nearly  $\frac{3}{4}$  in. broad, elongate-ovate, acuminate, 2-nerved down the back.

**Nile Land.** Somaliland : Ogaden and Webi, *Robecchi-Bricchetti*, 321, 333.

25. **OXYSTELMA**, R. Br. ; Benth. et Hook. f. Gen. Pl. ii. 749.

Calyx 5-partite. Corolla with a very short tube enclosing the base of the staminal-column, and a broad saucer-shaped limb 5-lobed to half-way down ; lobes deltoid, acute, valvate at the base and overlapping to the left at the apex in bud. Corona of 5 erect lanceolate-attenuate lobes, arising from the staminal-column, with a crumpled gibbosity at their base, which rests on truncate projections from the top of the filament-part of the staminal-column. Stamens arising from the base of the corolla-tube, united into a column around the ovary and style. Anthers erect, terminated by a short inflexed membranous appendage. Pollen-masses pendulous, elongate-clavate, compressed, attached in pairs by their attenuated ends to the short ovoid pollen-carriers. Style pentagonal, truncate or slightly convex at the apex, not exceeding the anthers. Follicles often solitary, inflated or lanceolate, smooth. Seeds ovate, compressed, crowned with a tuft of hairs.

Species 2, one endemic, the other extending into India, Ceylon, Tonkin and Java.

This very distinct genus appears to have been somewhat incorrectly understood. The authors of the *Genera Plantarum* have mistaken the very short densely pubescent corolla-tube for an outer corona, whilst other authors describe the follicles as winged. I do not find them to be so, but a somewhat wing-like appearance is sometimes produced by pressure in drying. The withered corolla sometimes persists at the base of the follicles, which are often solitary.

Leaves never cordate at the base ; follicles not inflated 1. *O. esculentum*.

Leaves often cordate at the base ; follicles much

inflated . . . . . 2. *O. bornouense*.

1. ***O. esculentum***, R. Br., var. **Alpini**, N. E. Br. Stem twining, with a deciduous white tomentum on the tips of the young shoots, soon becoming glabrous. Leaves spreading ; petiole  $2\frac{1}{2}$ –4 lin. long ; blade  $1\frac{1}{2}$ – $3\frac{1}{2}$  in. long,  $\frac{1}{2}$ –5 lin. broad, linear or linear-lanceolate, acute, usually narrowed into the petiole, but sometimes rounded at the base, glabrous. Cymes pedunculate, subumbellately or racemosely 2–4-flowered, glabrous ; peduncle 1– $1\frac{1}{2}$  lin. long ; pedicels  $\frac{1}{2}$ – $\frac{3}{4}$  in. long, thickened at the apex. Sepals  $\frac{1}{3}$  in. long, ovate-lanceolate, acute. Corolla  $\frac{3}{4}$  in. or more in diam., saucer-shaped, 5-lobed to half-way down, with the margins of the broadly deltoid acute lobes and the mouth and inside of the very short tube velvety pubescent, otherwise glabrous, white or pinkish, veined with purple at the base, whence 5 purple rays extend to the sinuses between the lobes. Coronal-lobes  $2\frac{1}{2}$  lin. long, lanceolate or deltoid-acuminate, entire, bifid, or trifid at the apex, gibbous and crumpled at the base. Style-apex slightly

convex, not exceeding the anthers. Follicles  $1\frac{1}{2}$ –2 in. long, about 5 lin. thick, not inflated, lanceolate, acute, glabrous. Seeds very small, 1 lin. long or less, ovate, biconvex, very narrowly margined, grey.—*O. Alpini*, Decne. in DC. Prod. viii. 543; Schweinf. Pl. Nilot. 29. *O. ægyptiacum*, Decne. in DC. Prod. viii. 504, name only. *O. Secamone*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 229. *Periploca Secamone*, Del. Fl. Ægypt. Illust. 56 (ex Decaisne), not of Linn.

**Nile Land.** Abyssinia: Agow; banks of the River Awarra, near Mawerr, 3300 ft., Schimper, 2305!

Also in Egypt.

A form with acute, non-inflated follicles also occurs in India, but the seeds are larger, about  $1\frac{1}{2}$  lin. long. The quotation by Decaisne of *Secamone*, *Alpinus*, Pl. Ægypt. 53, with fig., and ed. Vesling (1640), 133 and 134 fig., and ed. (1735), 63, t. 48, is altogether wrong for the genus *Oxystelma*, as the plant there figured is *Leptadenia heterophylla*.

2. **O. bornouense**, R. Br. in Denham & Clapp. Trav. in North and Central Africa, App. 239. Characters as in *O. esculentum*, var. *Alpini* except:—petiole of the leaves 3–9 lin. long; blade  $1$ – $2\frac{1}{2}$  in. long,  $\frac{1}{4}$ –1 in. broad, usually elongated oblong-ovate or deltoid-ovate, acute or acuminate, cordate or cordate-hastate at the base, with rounded lobes, or occasionally lanceolate or oblong, acute or obtuse, apiculate, rounded or subtruncate at the base, glabrous. Corolla  $1$ – $1\frac{1}{4}$  in. in diam., the whole interior veined with dark purple except the tips of the lobes. Follicles solitary (always?),  $1\frac{1}{2}$ –2 in. long,  $\frac{3}{4}$ –1 in. in diam., very inflated, ovoid or ovoid-oblong, very obtuse, glabrous. Seeds  $1\frac{1}{2}$ – $2\frac{1}{2}$  lin. long, flattened, with a broad firm wing, brown.—*O. bornouense*, R. Br., and *O. senegalense*, Decne. in DC. Prod. viii. 543; Engl. & Prantl, Pflanzenfam. iv. ii. 228, fig. 66, E.

**Upper Guinea.** Senegal, Roger! Perrottet, 468! Senegambia, Heudelot, 423! Lagos: Abeokuta, Irving, 27! Interior of Western Lagos, Rowland! Niger Territory: Nupe, common on the river-banks, Barter, 1131! Bornu, Oudney, 6!

**Nile Land.** White Nile, at Om Madeb, Schweinfurth, 982! Mittu: Moolo, Schweinfurth, 2850! Somaliland: Webi Abdallah, Keller, 103! near Barcif, Riva, 691 (ex Schumann).

This was separated from *O. esculentum* by R. Brown on account of the different leaves and inflated follicles, but the typical Indian *O. esculentum* has inflated follicles, as originally described by Linnæus. The flowers, however, of *O. bornouense* are much more veined with purple, and the seeds very much larger, much more broadly winged, different in colour, and altogether different in character from those of *O. esculentum*.

26. **SARCOSTEMMA**, R. Br.; Benth. et Hook. f. Gen. Pl. ii. 763.

Calyx 5-partite. Corolla 5-lobed to the base, rotate or rotate-campanulate; lobes overlapping to the left in bud. Corona double, arising from the staminal-column; outer corona annular or cup-shaped, often pentagonal, truncate or shortly lobed; inner corona of 5 erect fleshy compressed or keeled lobes, with their basal part

embraced by the outer corona. Staminal-column arising from the base of the corolla; anthers with terminal membranous appendages inflexed over or suberect and surrounding the apex of the style. Pollen-masses pendulous, solitary in each cell of the anther, attached in pairs by short slender caudicles to the pollen-carriers. Style convex, shortly conical or shortly columnar at the apex.—Leafless, trailing or twining, succulent shrubs. Umbels terminal or lateral at the nodes, sessile. Flowers small.

Species few, distributed through dry parts of the tropical and subtropical regions of the Old World.

Corolla-lobes 2-2½ lin. long . . . . .	1. <i>S. viminale</i> .
Corolla-lobes 3-3½ lin. long . . . . .	2. <i>S. andongense</i> .

1. ***S. viminale***, *R. Br. in Mem. Wern. Soc.* i. 51. Stems trailing or twining, or perhaps forming a bush, sometimes succulent, becoming woody in the lower parts, 1-2 lin. thick in the dried state, glabrous, leafless or with minute rudimentary ovate leaves ½-1 lin. long. Umbels lateral at the nodes or terminal, or terminating short lateral shoots, sessile, many-flowered; pedicels 2½-3 lin. long, minutely and sparsely puberulent. Sepals ½-¾ lin. long, varying from ovate or ovate-oblong to suborbicular, acute or obtuse. Corolla rotate, rotate-campanulate, greenish-white or sulphur coloured, 5-lobed nearly to the base; lobes 2-2½ lin. long, 1-1½ lin. broad, ovate-oblong, obtuse or acute, more or less reflexed along the margins, glabrous. Outer corona arising about ⅓ lin. above the base of the staminal-column, annular, pentagonal, about ⅓ lin. deep, enclosing the bases of the inner coronal-lobes, with a truncate and slightly inrolled margin. Inner corona of 5 laterally compressed erect lobes, ¾ lin. long, with the dorsal margin rounded and the inner margin applied to the backs of the anthers. Follicles 2½-4 in. long, ¼-⅓ in. thick, linear-lanceolate, acuminate, smooth, thinly puberulous. Seeds ¼ in. long, ⅓ in. broad; ovate, plano-convex, narrowly margined, subdenticulate or entire at the broad end, minutely puberulous on the convex face and very sparingly on the flat face, with the hairs often grouped in tufts and the margins minutely ciliate.—*Haw. Synop. Pl. Succ.* 13; *Decne. in DC. Prod.* viii. 538; *A. Rich. Tent. Fl. Abyss.* ii. 34; *Engl. Hochgebirgsfl. Trop. Afr.* 342; *Engl. & Prantl, Pflanzenfam.* iv. ii. 251, fig. 73, N-O, and 256; *Martelli, Fl. Bogos.* 54; *Hiern in Cat. Afr. Pl. Welw.* i. 689; *Penzig in Atti Congr. Bot. Internaz.* 1892, 349; *S. Moore in Journ. Bot.* 1902, 256. *S. aphyllum*, *Hochst. ex Decne. in DC. Prod.* viii. 538, not of *R. Br.* *S. sp.*, *Hook. Niger Fl.* 454. *Cynanchum viminale*, *Linn. Mant.* ii. 392. *Cynanchum aphyllum*, *Linn. Syst. Nat.* ed. 12, iii. 235. *Apocynum viminale*, *Basfi in Comm. Bonon. ex Roem. & Schult. Syst. Veg.* vi. 113. *Euphorbia viminalis*, *Linn. Sp. Pl.* ed. 1, p. 452. *Asclepias nuda*, *Schumach. & Thonn. Beskr. Guin. Pl.* 155.

**Upper Guinea.** Gold Coast: Cape Coast Castle, *Vogel*, 21! Krobo Plains, *Johnson*, 604! Niger Territory, *Nupe, Barter*, 1322!

**Nile Land.** Nubia: Wad Teeki, between Suakin and Berber, *Schweinfurth*, iii. 38! Eritrea: Keren, *Beccari*, 3! Atirba Valley, near Keren, *Steudner*, 762! Mount Alam Kale, *Schweinfurth and Riva*, 1807! common near Gheleb, and near Samhar, from the river Amba to Monkollo, *Penzig* (ex *Penzig*). Abyssinia: upper valley of the River Worrihey, *Schimper*, 708! Wogera, *Schimper*, 1186! Efat, *Roth*, 412! British East Africa: Mombasa, *Hildebrandt*, 1948!

**Lower Guinea.** Angola: Ambriz, *Monteiro!* at Quilombo in the Mossul principality, *Welwitsch*, 4255! Loanda, *Welwitsch*, 4256!

**Mozamb. Dist.** German East Africa: Umba Valley, *Smith!* British Central Africa: Nyasaland; Namasi, near Zomba, *Cameron*, 78! Ngamiland; Kwebe Hills, *Mrs. Lugard*, 185! Rhodesia; Matoppo Mountains, *Hon. Mrs. Evelyn Cecil*, 106! Buluwayo, *Rand*, 363 (ex *S. Moore*).

There may be more than one species included here, but in the dried state I am quite unable to distinguish any of the above from *S. viminale*; if differences exist, they require to be made out and noted from the living plants. To *S. viminale* I am also inclined to refer *S. Daltoni*, Decne. in Hook. Niger Fl. 149, t. 14, from the Cape Verd Islands. This only appears to differ from *S. viminale* in its much stouter stems, which are 2-3 lin. thick in the dried state. To *S. Daltoni* the following references and synonymy belong.—Schmidt, Fl. Cap. Verd. Ins. 214; Krause in Engl. Jahrb. xiv. 412; Henriques in Bolet. Soc. Brot. xiii. 144. *S. nudum*, C. Sm. in Tuckey, Congo, 251; Webb in Hook. Niger Fl. 149; Hiern in Cat. Afr. Pl. Welw. i. 688. *Tithymalus pendulus*, Haw. Syn. Pl. Succ. 138. *Euphorbia pendula*, Link, Enum. Pl. Hort. Berol. ii. 10.

2 **S. andongense**, *Hiern in Cat. Afr. Pl. Welw.* i. 689. Stems 2-3 lin. thick. Inflorescence as in *S. viminale*. Corolla larger, pale greenish-yellow, sulphur-coloured or whitish; lobes 3-3½ lin. long, oblong, obtuse, with strongly reflexed margins. Corona like that of *S. viminale* in structure, white. Follicles 3-3½ in. long, 3-3½ lin. thick, terete, acuminate. Seeds (immature) elongate-ovate, with a broad margin, glabrous on both sides.—*S. Welwitschii*, *Hiern in Cat. Afr. Pl. Welw.* i. 689.

**Lower Guinea.** Angola: Pango Andongo; in the higher rocky places in the Præsidium, *Welwitsch*, 4257! Huilla; in rocky thickets at the base of Morro de Lopollo, *Welwitsch*, 4261!

This may be only a variety of *S. viminale*, but the stems are usually stouter, the flowers are much larger and the seeds glabrous.

## 27. DÆMIA, R. Br.; Benth. et Hook f. Gen. Pl. ii. 764.

Calyx 5-partite. Corolla-tube campanulate or cylindric; lobes 5, widely spreading, overlapping to the left in bud. Corona double; outer corona at the base of the staminal-column, membranous, annular, shortly 5-lobed; lobes subquadrate or oblong, obtuse, truncate, or denticulate; inner corona of 5 erect fleshy lobes adnate to the staminal-column up to the anthers, free above and produced into subulate horns incurved over the staminal-column, at the base produced into spreading or deflexed spurs. Staminal-column arising at the mouth of the corolla-tube, entirely exserted; anthers erect, terminated by a membranous appendage, inflexed over the apex of the style. Pollen-masses

pendulous, solitary in each anther-cell, compressed, attached in pairs to the pollen-carriers by their tapering ends, without caudicles. Follicles lanceolate, echinate or smooth. Seeds crowned with a tuft of hairs.—Twining, with opposite cordate leaves, and sublateral pedunculate corymbs or racemes of moderate-sized flowers.

Species 4, of which 2 extend through Arabia and Syria into India, 2 occur in South Africa, and 1 in Madagascar.

Leaves densely but minutely tomentose on both sides ;  
inflorescence (including the peduncle) 1–2 in.  
long . . . . . 1. *D. cordata*.

Leaves glabrous or pubescent, not tomentose ; in-  
florescence (including the peduncle) 2–16 in.  
long.

Corolla-tube about half as long as the lobes or  
less ; spur of the inner coronal-lobes arising  
 $\frac{1}{2}$ – $\frac{3}{4}$  lin. above the base of the staminal-  
column.

Stem glabrous or finely puberulous ; leaves  
somewhat fleshy . . . . . 2. *D. garipensis*.

Stem with a pubescence of long and short hairs,  
or somewhat hispid ; leaves thin, not  
fleshy . . . . . 3. *D. extensa*.

Corolla-tube  $\frac{2}{3}$  to as long as the lobes ; spur of  
inner coronal-lobes arising 1– $1\frac{1}{3}$  lin. above  
the base of the staminal-column . . . . . 4. *D. barbata*.

1. *D. cordata*, *R. Br. in Mem. Wern. Soc.* i. 50. Stems shortly tomentose, with or without a mixture of long hairs, sometimes slightly hispid. Leaves deflexed ; petiole  $\frac{1}{6}$ – $\frac{3}{4}$  in. long ; blade  $\frac{1}{2}$ – $1\frac{1}{4}$  in. long, 5 lin. to  $1\frac{1}{8}$  in. broad, cordate-orbicular or cordate-ovate, apiculate or shortly cuspidate, rather thick, tomentose on both sides. Flowers in a corymb-like raceme, which (including the peduncle) is 1–2 in. long, tomentose or shortly and softly hairy, as are also the  $\frac{1}{3}$ –1 in. long pedicels, and the 1–2 lin. long ovate acute sepals. Corolla-tube  $1\frac{1}{2}$ –2 lin. long ; lobes 3– $3\frac{1}{2}$  lin. long, oblong-ovate, acute, bearded along their margins. Outer and inner coronal-lobes as in *D. extensa*, except that the inner coronal-lobes rarely exceed  $2\frac{1}{2}$  lin. in length and have a shorter spur, which is about  $\frac{1}{3}$  lin. long. Follicles  $1\frac{1}{2}$ – $2\frac{1}{2}$  in. long, ovoid, acuminate into a beak, more or less echinate, sometimes nearly smooth, minutely tomentose. Seeds  $\frac{1}{3}$  in. long,  $\frac{1}{4}$  in. broad, nearly flat, ovate, margined, minutely tomentose on both sides.—Decne. in DC. Prod. viii. 544. *D. incana*, Decne. in Ann. Sc. Nat. 2 sér., ix. 336. *D. tomentosa*, Pomel, Nouv. Mat. Fl. Atl. 82 ; Vatke in Oest. Bot. Zeitschr. 1876, 146 ; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 258. *Pergularia tomentosa*, Linn. Mant. i. 53. *Asclepias cordata*, Forsk. Flor. Ægypt.-Arab. 49.

**Nile Land.** Nubia : Sea-coast to between 3000 and 4000 ft., *Bent!* Danakil : near Fridelio, *Hildebrandt, 734A* (ex *Vatke*).

Common in North Africa, and extends through Arabia and Syria into Beluchistan. Very similar to *D. extensa*, but with smaller leaves and a shorter inflorescence. The flowers appear to be purple-brown.

2. **D. garipensis**, *H. Meyer, Comm.* 220. Stem twining, very finely puberulous or glabrous. Leaves apparently somewhat fleshy when alive, like rather thick paper in texture in the dried state; petiole  $\frac{1}{3}$ –1 in. long, puberulous; blade  $\frac{3}{4}$ – $1\frac{3}{4}$  in. long,  $\frac{1}{2}$ – $1\frac{1}{4}$  in. broad; broadly ovate, acuminate, deeply cordate at the base, with a broad obtuse sinus almost enclosed by the incurved rounded basal-lobes, green and glabrous on both sides, or with a few very minute hairs on the veins beneath. Racemes (including the peduncles) 3–6 in. long, glabrous or nearly so on all parts except the corolla; pedicels 6–10 lin. long, slender. Sepals  $1\frac{2}{3}$  lin. long,  $\frac{2}{3}$  lin. broad, lanceolate, acute, erect. Corolla glabrous outside; tube  $1\frac{1}{2}$  lin. long, campanulate; lobes 3–4 lin. long, 2– $2\frac{1}{4}$  lin. broad, ovate-oblong, obtuse, broadly bordered with white woolly hairs on the inner face, otherwise glabrous. Outer corona arising at the base of the staminal-column, submembranous, annular at the base, 5-lobed; lobes quadrate, truncate; inner coronal-lobes 2 lin. long, fleshy, gradually tapering from the base to a subulate point, much exceeding the staminal-column and incurved over it; basal spur  $\frac{1}{2}$ – $\frac{3}{4}$  lin. long, horizontally spreading, arising  $\frac{1}{2}$  lin. above the base of the staminal-column, which is 2 lin. long. Follicles solitary (always?), about 2 in. long, lanceolate, tapering into a short beak, covered with soft bristles, otherwise glabrous. Seeds  $2\frac{1}{2}$ –3 lin. long, 2 lin. broad, ovate, plano-convex, minutely tomentose on both sides.—Decne. in DC. Prod. viii. 544. *D. gariepensis*, Engl. in Engl. Jahrb. xix. 148.

**Lower Guinea.** German South-west Africa: Damaraland; Kamkoichas, *Gürich*, 131 (ex *Engler*).

Described from S. African specimens, as I have not seen an example from Tropical Africa.

3. **D. extensa**, *R. Br. in Mem. Wern. Soc.* i. 50. Stem twining, and together with the petioles, peduncles and pedicels pubescent, setose-pubescent or hispid; juice milky. Leaves spreading, thin; petiole  $\frac{3}{4}$ – $3\frac{1}{2}$  in. long; blade 1–6 in. long,  $\frac{3}{4}$ –5 in. broad, cordate-orbicular or cordate-ovate, cuspidate-acuminate, usually glabrous, with hairs on the veins beneath, sometimes with a short pubescence on both sides; basal-lobes incurved, semi-orbicular, with a broad truncate-based sinus between them. Peduncles sublateral, longer than the leaves, with the flowers developing in a corymbose manner at the apex, gradually elongating into a raceme, which (including the peduncle) is 2–16 in. long; bracts very small,  $\frac{1}{2}$ –1 lin. long, linear or subulate; pedicels 1– $1\frac{1}{4}$  in. long, rather slender. Sepals 1–2 lin. long, ovate or lanceolate, acute, glabrous or pubescent. Corolla-tube campanulate,  $1\frac{1}{2}$ –2 lin. long; lobes very spreading, 3–4 lin. long,  $1\frac{1}{2}$ –2 lin. broad, ovate-oblong, acute, bearded along their margins, light green. Outer coronal-lobes  $\frac{1}{2}$  lin. long, subquadrate or oblong, obtuse, truncate or denticulate; inner coronal-lobes  $2\frac{1}{2}$ –4 lin. long, fleshy, white, lanceolate, attenuate into subulate entire or bifid points, rising much above the staminal-column and incurved over it, and with an acute spur about 1 lin. long, arising below the middle ( $\frac{2}{3}$ – $\frac{3}{4}$  lin. above the base) of the staminal column. Follicles 2–3 in. long,  $\frac{1}{2}$  in. thick, lanceolate, attenuate into

a long beak, varying from densely echinate to nearly or quite free from tubercles or processes, pubescent. Seeds  $\frac{1}{3}$  in. long, ovate, plano-convex, marginate, dentate or crenulate at the broad end, pubescent on both sides.—Decne. in DC. Prod. viii. 544; A. Rich. Tent. Fl. Abyss. ii. 35; Engl. Hochgebirgsfl. Trop. Afr. 343; Martelli, Fl. Bogos. 54; Hiern in Cat. Afr. Pl. Welw. i. 690; Penzig in Atti del Congr. Internaz. 1892, 348; De Wild. & Durand, Pl. Thonn. 33, and Reliq. Dewevr. 159. *D. æthiopica*, Decne., and *D. angolensis*, Decne. in DC. Prod. viii. 544; Hook. Niger Fl. 454. *D. bicolor*, Sweet, Hort. Brit. ed. 2, 361. *D. scandens*, G. Don ex Loud. Hort. Brit. 94. *D. guineensis*, G. Don, Syst. iv. 156. *D. barbata*, Schlechter in Engl. Jahrb. xx. Beibl. 51, 43, not of Klotzsch. *D. cordifolia*, K. Schum. in Engl. Pf. Ost-Afr. C. 324, in Engl. & Prantl, Pflanzenfam. iv. ii. 257, fig. 74, and 258, and in Ann. Ist. Bot. Roma, vii. 40, not of R. Br. *Cynanchum extensum*, Jacq. Miscell. ii. 353, and Ic. Rar. i. t. 54. *C. cordifolium*, Retz. Obs. Bot. ii. 15. *C. bicolor*, Andr. Bot. Rep. ix. t. 562. *C. echinatum*, Thunb. Obs. in Cynanch. 8. *C. pendulum*, Poir. Encycl. Suppl. ii. 429. *Asclepias scandens*, Beauv. Fl. Oware et Benin, i. 93, t. 56. *A. convolvulacea*, Willd. Sp. Pl. i. 1269; Schumach. & Thonn. Beskr. Guin. Pl. 152. *A. muricata*, Schumach. & Thonn. Beskr. Guin. Pl. 153. *Raphistemma ciliatum*, Hook. f. Bot. Mag. t. 5704.

**Upper Guinea.** Senegambia, *Heudelot!* banks of the River Fasena, *Dolinger!* River Gambia, *Don, 8!* Gold Coast: Accra, *Moloney!* Vogel, 15! Aquapim, *Thonning, Larte, Johnson, 821!* Cape Coast Castle, *Vogel, 36!* Lagos: Lagos, *Moloney!* Yoruba, *Millson!* Ilaro, *Punch, 38!* Niger Territory, *Vogel, 17!* 178! *Barter, 1320!* *Ansell!* Cameroons, *Preuss, 762!*

**Nile Land.** Nubia: Soturba Mountains, *Schweinfurth, 226,* near Suakin, *Schweinfurth, 228!* coast region, *Bent!* Eritrea: Ailet Gorge, *Schweinfurth & Riva, 424!* Pass of Maigergehit, *Penzig (ex Penzig); Bogos, Hildebrandt (ex Engler), Beccari, 106!* Abyssinia: Tacaze Valley, *Schimper, 1631!* Sennar, *Kotschy, 249!* Kordofan, *Kotschy, 400!* Darfur, *Purdy, 75!* Somaliland, *Miss Edith Cole!* *Mrs. Lort Phillips!* *James & Thrupp!* *Riva, 894,* and *Robecchi Bricchetti, 51, 319 (ex Schumann).* Uganda: Unyoro, *Speke & Grant!* British East Africa: between Lake Navaisha and Baringo Valley, *Gregory, 63!*

**Lower Guinea.** Loango, *Soyaux, 94!* Angola: Golungo Alto; near Muria, *Welwitsch, 4244!* Mossamedes; banks of the River Bero, *Welwitsch, 4246!* German South-west Africa: Amboland, *Schinz!* Damaraland, *Een!*

**Mozamb. Dist.** German East Africa: Usambara, *Holst, 2337!* Tanga, *Holst, 2065!* British Central Africa: Nyasaland! by the River Shire, *Meller!* Shire Highlands, *Buchanan, 263!* Zomba Rock, *Whyte!* Ngamiland; Botletle Valley, *Lugard, 200!* Kwebe Hills, 3300 ft., *Mrs. Lugard, 202!*

Extends into South Africa and Madagascar, and through Arabia into India.

I cannot in any way distinguish the various species enumerated in the above synonymy: the follicles are immensely variable in their amount of echination, and the flowers vary from white or whitish-green, with or without a red blotch at the base of the lobes, to pale yellowish-green or lurid green with a red blotch at the base of the lobes.

4. **D. barbata**, *Klotzsch in Peters, Reise Mossamb. Bot. 274.* Stem twining, and together with the petioles, peduncles, pedicels and

calyx more or less subhispidulous. Leaves spreading; petiole 1-2 in. long; blade  $1\frac{1}{4}$ - $2\frac{1}{2}$  in. long,  $\frac{3}{4}$ -2 in. broad, cordate-ovate or cordate-orbicular, acuminate or cuspidate-acuminate, more or less pubescent on both sides; basal lobes incurved, semiorbicular, with a broad-based sinus between them. Peduncles sublateral, longer than the leaves; flowers at first corymbose, the axis gradually lengthening into a long raceme, which (including the peduncle) is 2-6 in. long; bracts 1- $1\frac{1}{2}$  lin. long, subulate; pedicels slender, 1- $1\frac{1}{4}$  in. long. Sepals  $\frac{3}{4}$  lin. long,  $\frac{1}{3}$  lin. broad, ovate-lanceolate, acute. Corolla-tube  $2\frac{1}{4}$ - $2\frac{1}{2}$  lin. long (3 lin. long, *Klotzsch*), cylindric; lobes  $2\frac{1}{2}$ -3 lin. long,  $1\frac{1}{3}$ - $1\frac{1}{2}$  lin. broad, ovate-lanceolate, acute, bordered with long white intertwined hairs along the margins within, otherwise glabrous. Outer coronal-lobes arising about  $\frac{1}{2}$  a lin. above the base of the staminal-column, nearly  $\frac{1}{2}$  lin. long, oblong, emarginate at the apex; inner coronal-lobes  $1\frac{1}{4}$  lin. long, fleshy, adnate up to the base of the anthers, with the apical part free, just exceeding the staminal-column and incumbent on the tips of the anthers; spur very slender, subulate, spreading-deflexed, about  $\frac{3}{4}$  lin. long, arising above the middle ( $1\frac{1}{3}$  lin. above the base) of the staminal-column.

**Mozamb. Dist.** Portuguese East Africa: Inhambane, *Peters!* British Central Africa: Boruma, on the Zambesi, *Menyharth*, 647! Nyasaland; between Kondowe and Karonga, 2000-6000 ft, *Whyte!*

28. **DIPLOSTIGMA**, K. Schum. in Engl. Pfl. Ost-Afr. C. 324.

Flowers minute. Calyx 5-partite. Corolla rotate; lobes overlapping, but not twisted in bud. Corona double, affixed to the staminal-column; outer corona flattened out and adpressed to the base of the corolla, obscurely lobulate; inner coronal-lobes refracted, oblong, obtuse, subcarinate down the middle on the back, and accumbent on the exterior corona. Style umbonate at the apex, surrounded by a short 5-lobed cup.—Engl. & Prantl, Pflanzenfam. iv. ii. 256.

Monotypic, endemic.

1. **D. canescens**, K. Schum. in Engl. Pfl. Ost-Afr. C. 324. An erect shrublet about  $1\frac{1}{2}$ -2 ft. high, woody at the base. Branches erect, virgate, whitish-puberulous, subtomentose in the upper part. Leaves not more than 8 lin. long, scarcely  $1\frac{1}{2}$  lin. broad at the base, sub-linear, slightly dilated at the truncate base, shortly petiolate, puberulous. Flowers few, fasciculate, axillary. Sepals lanceolate, scarcely  $\frac{1}{2}$  lin. long, puberulous. Corolla  $1\frac{1}{4}$  lin. long. Staminal-column scarcely  $\frac{1}{2}$  lin. long.—K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 257.

**Mozamb. Dist.** German East Africa: without precise locality, *Fischer*. Coll. i. 232.

This plant is unknown to me.

## 29 PROSOPOSTELMA, Baillon, Hist. Pl. x. 247.

Flowers almost as in *Cynanchum*. Calyx short. Corolla rotate; lobes narrow, overlapping to the left. Corona of 5 lobes, affixed to the bottom of the corolla and opposite to the corolla-lobes, broadly petaloid, emarginate and connivent in a cup. Style depressed at the apex.—Glabrous twiners. Leaves opposite, cordate. Cymes lateral, from one axil, shortly pedunculate.—K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 227.

This genus is unknown to me. Baillon states that there are two species natives of W. Tropical Africa, but he does not describe or name them. The position of the petaloid coronal-lobes opposite to the corolla-lobes is a very marked character, and in this respect it is like *Solenostemma*, but in all else it seems to be indistinguishable from *Cynanchum*. Can it be intended for that form of *Cynanchum schistoglossum* in which the corona is divided into 5 cuneately-quadrate lobes alternating with the anthers and therefore opposite to the corolla-lobes?

## 30. CYNANCHUM, Linn.; Benth. et Hook. f. Gen. Pl. ii. 762.

Calyx 5-partite. Corolla very deeply 5-lobed, rotate or rotate-campanulate; lobes overlapping to the left and straight or more or less twisted in bud. Corona arising from the staminal-column near or at its base, often membranous, annular, cup-shaped or tubular, toothed or lobed at the top or divided nearly or quite to the base into 5 entire or toothed lobes, with or without a tooth, lobe, thickening or keels within the tube in front of each of the principal teeth or lobes, or on the inner face or at the base of the lobes when the corona is divided. Staminal-column arising at or near the base of the corolla; filament part varying from almost none to a long slender stipe within the corona; anther-appendages membranous or slightly fleshy, inflexed over the apex of the style or connivent or erect around it. Pollen-masses pendulous, solitary in each anther-cell, affixed in pairs by short or long caudicles to the pollen-carriers. Style shorter or longer than the anther-appendages; apical part truncate, conical, or rostrate. Follicles smooth, winged, or setose. Seeds crowned with a tuft of hairs.—Stem twining or erect, leafy, rarely leafless, fleshy. Leaves opposite. Flowers rather small, in sessile or pedunculate corymbs, racemes or umbel-like or corymbose cymes, which are subaxillary or lateral between the bases of the petioles.—*Vincetoxicum*, Medic. in Act. Acad. Theod. Palat. vi. Phys. 404; Moench, Method. Pl. 717; Benth. et Hook. f. Gen. Pl. ii. 761. *Sarcocyphula*, Harv. Thes. Cap. ii. 58. *Perianthostelma*, Baillon, Hist. Pl. x. 247. *Schizostephanus*, Hochst. ex K. Schum. in Engl. Jahrb. xvii. 139.

A large cosmopolitan genus.

I have united *Schizostephanus* with *Cynanchum*, as I can find no structural difference between them except in the length of the filament-part of the staminal-column, which, in *Schizostephanus*, is very long and slender, and appears to be the only character by which it can be distinguished from *Cynanchum*. A correspond-

ing difference also occurs in *Asclepias*, so that it appears to be a character of specific importance only.

Plant with stems and branches several inches or feet in length, twining or straight.

Stems with well developed leaves.

Leaves linear . . . . . 16. *C. defoliascens*.

Leaves obtusely hastate at the base.

Corona 2 lin. long; style shorter than the corona . . . . . 10. *C. hastifolium*.

Corona 1 lin. long; style longer than the corona . . . . . 11. *C. claridens*.

Leaves cordate, subtruncate or rounded at the base

Stems twining, slender,  $\frac{1}{2}$ - $1\frac{1}{2}$  lin. thick.

Corolla-lobes 2-4 lin. long.

Corona with 5 subulate teeth within the tube in front of its 5 longer teeth . . . . . 1. *C. abyssinicum*.

Corona with 5 slightly hooded lobes within the tube, folded in the bases of the longer teeth . . . . . 2. *C. mossambicense*.

Corona with 5 long and 5 short teeth at the top, without teeth or lobes within its tube.

Petioles 1-2 in. long; coronal-teeth erect or recurved . . . . . 3. *C. polyanthum*.

Petioles 3-3 $\frac{1}{2}$  in. long; coronal-teeth strongly inarched . . . . . 4. *C. longipes*.

Corolla-lobes  $\frac{2}{3}$ -2 lin. long.

Anther-appendages long and narrow, connivent-erect over the conical or terete apical part of the style.

Peduncles  $\frac{3}{4}$ - $1\frac{1}{4}$  in. long . . . . . 5. *C. Mannii*.

Peduncles  $0\frac{1}{4}$  in. long.

Corona tubular, distinctly 10-toothed at the apex . . . . . 6. *C. Adalme*.

Corona tubular, 5-lobed or toothed at the apex . . . . . 9. *C. altiscandens*.

Anther-appendages suborbicular or subquadrate, inflexed over the truncate or dome-shaped apex of the style.

Corolla-lobes 1 lin. long; corona  $1\frac{1}{4}$  lin. long . . . . . 7. *C. fraternum*.

Corolla-lobes  $\frac{2}{3}$ - $\frac{3}{4}$  lin. long; corona  $\frac{1}{2}$ - $\frac{2}{3}$  lin. long . . . . . 8. *C. schistoglossum*.

Stems not twining, 2-3 lin. thick in the lower part.

Corona tubular, 10-toothed, with the alternate teeth entire or bifid . . . . . 12. *C. validum*.

Corona of 5 cuneate trifid lobes . . . . . 13. *C. somaliense*.

Stems fleshy, leafless, or with very minute rudimentary leaves . . . . . 15. *C. sarcostemma-*

*toides*.

Plant 1-2 in. high, erect, leafless at the time of flowering . . . . . 14. *C. praecox*.

1. **C. abyssinicum**, *Decne. in DC. Prod.* viii. 548. Stem slender, twining, shortly hairy, or pubescent along two lines or all round. Leaves spreading, thin; petiole  $\frac{1}{3}$ –1 in. long, pubescent; blade  $1\frac{1}{2}$ –3 in. long,  $\frac{1}{2}$ – $1\frac{1}{2}$  in. broad, elongate-ovate or oblong-lanceolate, acuminate, cordate at the base, both sides nearly glabrous, ciliate. Flowers numerous, in short umbel-like racemes; peduncles  $\frac{1}{2}$ –2 in. long, pubescent or shortly hairy; bracts 1–3 lin. long, subulate or filiform, pubescent; pedicels  $\frac{1}{4}$ – $\frac{1}{2}$  in. long, pubescent. Sepals  $1\frac{1}{2}$ –2 lin. long, ovate or lanceolate, acute, pubescent. Corolla  $\frac{1}{2}$ – $\frac{3}{4}$  in. in diam., rotate; lobes  $2\frac{1}{2}$ –4 lin. long,  $1$ – $1\frac{1}{4}$  lin. broad, lanceolate-attenuate, obtuse, with a scattered pubescence on the back, puberulous within. Corona tubular, toothed at the top, arising near the base of the staminal-column; tube  $1$ – $1\frac{1}{4}$  lin. long, principal teeth 5, filiform or subulate,  $2$ – $2\frac{1}{2}$  lin. long, with 5 short exceedingly variable lobes alternating with them, these are subulate, tapering from the base or deltoid-ovate or abruptly contracted into a short linear recurved tooth, or 3–4-denticulate; within the tube are 5 other filiform or subulate teeth with ovate or deltoid bases,  $\frac{1}{2}$ – $\frac{2}{3}$  as long as the long teeth in front of which they arise. Staminal-column scarcely as long as the coronal-tube; anther-appendages broadly ovate, obtuse, inflexed or convex over the convex or subtruncate apex of the style.—Delessert, *l.c.* v. 29, t. 69; A. Rich. *Tent. Fl. Abyss.* ii. 36; Vatke in *Linnaea*, xl. 215; K. Schum. in *Engl. & Prantl, Pflanzenfam.* iv. ii. 251, fig. 73, A–B, and 253.

**Nile Land.** Abyssinia: Shoa, *Pelit!* Arbateenseca, near Adova, *Quartin-Dillon*, and near Kouaieta (Kuayata), *Quartin-Dillon* (ex *Richard*). Plain of Hamedo, *Schimper*, 940? (ex *Vatke*).

Var. *tomentosum*, *Oliver* in *Trans. Linn. Soc.* ser. 2, Bot. ii. 342. Leaves pubescent above, more or less densely tomentose beneath. The flowers as in the type, and the corona equally variable.—K. Schum. in *Engl. Pfl. Ost-Afr. C.* 324. *Vincetoxicum Holstii*, K. Schum. in *Engl. Jahrb.* xvii. 135. *Cynanchum Holstii*, K. Schum. in *Engl. Pfl. Ost-Afr. C.* 324; and in *Engl. & Prantl, Pflanzenfam.* iv. ii. 253.

**Nile Land.** Abyssinia, *Schimper*, “No. 793?”!

**Mozamb. Dist.** German East Africa: Usambara; Mlalo, *Holst*, 507! Kilimanjaro, 5000–7000 ft., *Johnston*, 177!, *Volken*, 641!

2. **C. mossambicense**, *K. Schum. in Engl. Pfl. Ost-Afr. C.* 324. Stem slender, twining, pubescent with short spreading hairs. Leaves spreading, thin; petioles  $\frac{1}{2}$ – $1\frac{1}{2}$  in. long; blade 1–2 in. long,  $\frac{5}{8}$ – $1\frac{3}{8}$  in. broad, cordate, acute or obtuse, with a mucro  $\frac{1}{10}$  in. long, quite glabrous, whitish-green beneath. Umbels 8–12-flowered; peduncles  $\frac{1}{3}$ – $1\frac{1}{2}$  in. long, glabrous or pubescent; pedicels 3–5 lin. long, glabrous or nearly so; bracts minute or none. Sepals  $\frac{3}{4}$  lin. long, broadly ovate, acute, glabrous. Corolla rotate; lobes 2–3 lin. long,  $\frac{3}{4}$  lin. broad, linear-oblong, obtuse, quite glabrous. Corona tubular, subequally 10-toothed; tube  $1$ – $1\frac{1}{4}$  lin. long; teeth filiform, about 1 lin. long, the alternate ones with a broad ovate complicate base, completely enfolding a short ovate complicate and slightly hooded subacute lobe, that arises from the tube and is adnate to it for  $\frac{3}{4}$  of its length. Staminal-column rather

shorter than the coronal-tube; anther-appendages linear-subulate, connivent-erect. Follicles 2-2½ in. long, lanceolate, acuminate, with one narrow wing on each side, glabrous.—K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 253. *C. complexum*, N. E. Br. in Kew Bulletin, 1895, 256.

**Mozamb. Dist.** Portuguese East Africa: Shamo, *Kirk!* near Mazzaro, *Kirk!* Shupanza Forest, *Scott!* Chiloane, *Scott!* Quillimane, *Stuhlmann,* i. 843! British Central Africa: Nyasaland; Shire Valley, above the Cataracts, *Kirk!*

3. **C. polyanthum**, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 253. Stem twining, more or less pubescent or shortly hairy, mostly along two lines. Leaves spreading, rather paler beneath, thin; petiole 1-2 in. long, shortly hairy; blade 2-3½ in. long, 1½-2½ in. broad, ovate, acute, with a fine point about ¼ in. long, cordate, with rounded lobes and an obtuse sinus between them at the base, glabrous or with a few scattered hairs above and with scattered hairs beneath, the veins also pubescent along each side beneath. Umbels pedunculate, compound, 10-30-flowered; peduncles 1-1½ in. long, shortly hairy along one side or glabrous; bracts 1-1½ lin. long, subulate; pedicels 6-10 lin. long, pubescent. Sepals 1 lin. long, ovate, acute, ciliolate. Corolla-lobes 3-3½ lin. long, linear-lanceolate, apex slightly curved, obliquely obtuse, glabrous. Corona 2-2¼ lin. long, tubular for half its length, then with 5 long subulate erect or recurved lobes and 5 very short obtuse entire or bifid teeth alternating with them, but no teeth or lobes within. Anthers broadly deltoid, subsessile, with orbicular appendages, connivent around the stout fleshy obtuse apical part of the style, which is shortly exerted beyond them.—*C. mossambicense*, Schlechter in Journ. Bot. 1895, 337, not of K. Schum. *C. Welwitschii*, Schlechter & Rendle in Journ. Bot. 1896, 99. *C. obscurum*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 253; Hiern in Cat. Afr. Pl. Welw. i. 688. *Vincetoxicum polyanthum*, K. Schum. in Engl. Jahrb. xvii. 136, not of O. Kunze; Durand & Schinz. Études Fl. Congo, i. 194.

**Upper Guinea.** Cameroons: Yaunde, *Zenker,* 223!

**Nile Land.** British East Africa: Kampala, *Scott-Elliott,* 7294! Uganda; Usoga villages, *Whyte!*

**Lower Guinea.** Angola: Golungo Alto; forests of Sobato de Mussengue, *Welwitsch,* 4222! 4253! Quilombo Quiacatubia, *Welwitsch,* 4224! and without precise locality, *Welwitsch,* 4200!

**South Central.** Congo Free State: Monbuttu; Munza, *Schweinfurth,* 3345!

4. **C. longipes**, N. E. Br. in Kew Bulletin, 1897, 273. Stem twining, glabrous, with one puberulous line alternating at the nodes. Leaves spreading, thin; petiole 3-3½ in. long, slender; blade 2-3 in. long, 1¼-2 in. broad, ovate, shortly acuminate, cordate at the base, with a rather deep broad sinus and semi-orbicular lobes, minutely puberulous on the petiole and veins, otherwise glabrous.

Umbels or umbel-like cymes laxly 5–12-flowered, pedunculate; peduncles 2–6 lin. long, lateral, puberulous on one side; pedicels slender, thread-like,  $\frac{1}{2}$ –1 in. long, puberulous. Sepals  $\frac{3}{4}$  lin. long,  $\frac{1}{3}$ – $\frac{1}{2}$  lin. broad, oblong, acute, glabrous. Corolla when in bud oblong-ovoid, obtuse, with an apiculus, 5-lobed nearly to the base; lobes  $2\frac{1}{2}$  lin. long,  $\frac{3}{4}$  lin. broad, oblong, obtuse, apiculate, quite glabrous on both sides, not ciliate, apparently green or greenish. Corona twice as long as the staminal-column, 2 lin. long, tubular, 10-toothed; 5 of the teeth about  $\frac{3}{4}$  lin. long, more or less bifid or irregularly toothed at the apex, the other 5 shorter and narrower, subulate, not toothed at the apex, all the teeth strongly incurved and forming a dome over the column, with very narrow fissures between the teeth, no teeth or appendages within the tube. Staminal-column 1 lin. long; anthers subsessile, subquadrate, with ovate acute appendages, inflexed over the truncate apex of the style.

**Upper Guinea.** Lagos: Papalayito, *Millen*, 48 (1895 Coll.)!

5. **C. Mannii**, *N. E. Br.* Stem twining, slender, glabrous or with one puberulous line when young. Leaves spreading, thin; petiole  $\frac{1}{2}$ –1 in. long; blade  $1\frac{1}{2}$ –3 in. long,  $\frac{1}{2}$ – $1\frac{1}{2}$  in. broad, oblong-ovate on elliptic, abruptly acuminate, cordate or subsagittate at the base, 5-nerved, glabrous. Flowers small, in compact umbelliform racemes on slender lateral peduncles  $\frac{3}{4}$ – $1\frac{1}{4}$  in. long; bracts very minute; pedicels 2–3 lin. long, puberulous on the inner side. Sepals  $\frac{1}{2}$ – $\frac{3}{4}$  lin. long, ovate, obtuse, minutely ciliate. Corolla probably rotate, 5-lobed nearly to the base; lobes  $1\frac{1}{4}$ – $1\frac{1}{2}$  lin. long, oblong-lanceolate, obtuse, suberect, glabrous. Corona 1 lin. long, tubular for half its length, then 10-lobed, the alternate lobes shorter, channelled and crisped, the larger ones thick and fleshy, more or less crisped, but channelled only at their base, with slightly recurving tips. Anther-appendages erect, fleshy, lanceolate, acute; overtopping the conical apex of the style and rising to the level of the shorter lobes of the corona.—*C. acuminatum*, K. Schum. in *Engl. & Prantl, Pflanzenfam.* iv. ii. 253? *Vincetoxicum Mannii*, *Scott-Elliot* in *Journ. Linn. Soc.* xxx. 93. *Cynoctonum acuminatum*, *Benth.* in *Hook. Niger Fl.* 453; *Walp. Ann.* iii. 52.

**Upper Guinea.** Sierra Leone: Bagru River, *Mann!* Bumban to Port Lokko, *Scott-Elliot*, 5672! near Kabusa, *Scott-Elliot*. 5479! and without precise locality, *Don!*

The name *C. acuminatum* is preoccupied, and specimens received from Berlin, named *C. acuminatum* by Dr. Schumann, do not belong to this species, but to *C. Adalinæ*, K. Schum., so that I am uncertain what plant is intended by *C. acuminatum*, K. Schum., the description given being insufficient. Specimens from Cameroons and French Congo are referred to *C. acuminatum*, K. Schum., by *Schlechter* (*West-afr. Kautschuk Exped.* 309), some of which probably belong to *C. Adalinæ*, K. Schum.

6. **C. Adalinæ**, *K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 253. A glabrous twiner, with slender stems. Leaves spreading, thin; petiole 1– $2\frac{1}{2}$  in. long; blade  $1\frac{1}{2}$ –4 in. long,  $\frac{3}{4}$ –2 in. broad, oblong-ovate or elliptic-ovate, cuspidate-acuminate into a blunt mucronulate point,

cordate at the base, sometimes with a shallow open sinus, sometimes with a narrow and deeper sinus, 5-nerved. Umbels or umbel-like racemes sometimes sessile and pedunculate on the same stem, 10-20-flowered; peduncles  $1\frac{1}{2}$ -3 lin. long; pedicels 2-3 lin. long, slender. Sepals  $\frac{1}{2}$  lin. long, ovate-oblong, obtuse, minutely ciliate. Corolla white, 5-lobed nearly to the base, probably rotate; lobes  $1\frac{1}{2}$  lin. long, lanceolate, acute. Corona-tube  $\frac{2}{3}$ -1 lin. long, 10-toothed, with 5 of the teeth longer than the rest and channelled down the face,  $\frac{1}{3}$ - $\frac{1}{2}$  lin. long, acute or denticulate at the apex, the shorter teeth more or less recurving, or with all the teeth subequal. Staminal-column variable; anther-appendages long, erect, narrowly lanceolate, sometimes reaching to the tips of the coronal teeth, sometimes much shorter than them and connivent around the shorter terete or conical-terete or bifid apical part of the style.—*Vincetoxicum Adalinae*, K. Schum. in Engl. Jahrb. xvii. 134.

**Upper Guinea.** Cameroons: Ambas Bay, *Mann*, 765! Victoria, *Kalbreger*, 3! Batanga, *Bates*, 186! Bipinde, *Zenker*, 2338! Efunde, *Bates*, 220! Yaunde, *Zenker & Staudt*, 426! Fernando Po, *Mann*!

**Lower Guinea.** Gaboon: near Adalina, on the River Ogowe, *Soyaux*, 277!

This plant seems to be very variable in the tothing of the corona and in the relative height which the staminal-column attains.

7. **C. fraternum**, *N. E. Br.* in *Kew Bulletin*, 1895, 256. Stem slender, twining, pubescent on the young parts, becoming glabrous. Leaves herbaceous, thin; petiole 2-6 lin. long; blade  $\frac{3}{4}$ -2 in. long,  $\frac{1}{3}$ -1 in. broad, oblong-ovate, acuminate, broadly rounded, subtruncate or cordate at the base, with a few minute scattered hairs above, glabrous beneath. Racemes or corymbs short, somewhat umbel-like, lateral at the nodes, many-flowered; peduncle 1-4 lin. long, puberulous; pedicels  $1\frac{1}{2}$ -4 lin. long, puberulous. Sepals  $\frac{1}{2}$  lin. long, broadly ovate, subacute, sparsely pubescent. Corolla rotate,  $2\frac{1}{2}$  lin. in diam.; lobes about 1 lin. long, oblong, obtuse, glabrous. Corona  $1\frac{1}{4}$  lin. long, 10-toothed, with 5 long linear-subulate teeth alternating with 5 short teeth  $\frac{1}{4}$ - $\frac{1}{3}$  as long; tubular part rather more than  $\frac{1}{2}$  lin. long. Staminal-column shorter than the coronal-tube; anther-appendages suborbicular or subquadrate, more or less toothed at the subtruncate apex, closely inflexed over the truncate apex of the style, which is not produced beyond them.

**Nile Land.** Abyssinia: near Jelajeranne, *Schimper*, 1802! Tigre or Bege-meder, *Schimper*!

Nearly allied to *C. altiscandens*, K. Schum., and *C. schistoglossum*, Schlechter; from the former it may be at once distinguished by the long subulate coronal-teeth and broad anther-appendages; from the latter by the larger flowers and much longer corona.

8. **C. schistoglossum**, *Schlechter* in *Journ. Bot.* 1895, 271. Stem twining, pubescent, becoming glabrous. Leaves thin, spreading; petiole  $\frac{1}{4}$ - $1\frac{1}{2}$  in. long, slender, minutely pubescent down the face; blade  $1$ - $3\frac{1}{4}$  in. long,  $\frac{1}{3}$ - $1\frac{2}{5}$  in. broad, elongate-oblong or oblong-ovate, acuminate or acute, varying from deeply cordate to subtruncate at the base,

with rounded basal lobes, glabrous or with a sparse pubescence on both sides. Cymes umbel-like, more or less elongating into short racemes as the flowers develop, sublateral, pedunculate or sessile, many-flowered; peduncles 1-4 lin. long, pubescent; pedicels 1-4 lin. long, pubescent. Sepals  $\frac{1}{2}$ - $\frac{3}{4}$  lin. long, ovate, acute or acuminate, pubescent, ciliate. Corolla  $1\frac{1}{2}$ -2 lin. in diam., rotate or rotate-campanulate, white (*Hens*), glabrous; lobes  $\frac{2}{3}$ - $\frac{3}{4}$  lin. long, ovate or ovate-oblong, subacute. Corona arising from the base of the staminal-column and about equaling or slightly longer than it, about  $\frac{1}{2}$ - $\frac{2}{3}$  lin. long, erect, cup-shaped, exceedingly variable in toothing and cutting; sometimes very shortly 5-toothed; sometimes with 5 moderately long teeth of variable form, entire or bifid at the apex, having 5 minute teeth alternating with them; sometimes with 10 filiform teeth in 5 pairs, each pair alternating with 3 minute teeth; sometimes divided nearly to the base into 5 cuneately-quadrate lobes alternating with the anthers, produced at the apical angles into shorter or longer teeth and entire or denticulate between them; two or more variations often occur on the same specimen; usually, but not always, there are 2 slight keels within, opposite each of the 5 principal teeth, or when the corona is divided into quadrate lobes there is a slight keel near each margin. Staminal-column not exceeding the corona; anther-appendages orbicular, inflexed over the truncate or dome-shaped apex of the style.—Hiern in *Cat. Afr. Pl. Welw.* i. 688. *C. vagum*, N. E. Br., and *C. brevidens* and var. *zambesiacum*, N. E. Br. in *Kew Bulletin*, 1895, 257. *C. minutiflorum*, K. Schum. in *Engl. & Prantl, Pflanzenfam. iv. ii. 252*, and in *Bull. Soc. Bot. Belg. xxxvii. 123*.

**Lower Guinea.** Lower Congo: Stanley Pool, 900 ft., *Hens*, B, 77! near Dolo, *Schlechter*, 12484 (ex *Schlechter*); Congo, *Burton*! Angola: Golungo Alto; thickets at the base of the mountains of Alto Queta, *Welwitsch*, 4243! Ponte de Felix Simoes, *Welwitsch*, 4241! and without precise locality, *Welwitsch*, 5949! Huilla; damp thickets near Lopollo, *Welwitsch*, 4251!

**Mozamb. Dist.** Portuguese East Africa: Expedition Island, in the Lower Zambesi, *Kirk*! British Central Africa: Nyasaland; between Kondowe and Karonga, 2000-6000 ft., *Whyte*!

Also in Natal.

This is one of the most variable *Asclepiads*, as to its coronal structure, that I have examined, and when I described *C. vagum* and *C. brevidens*, I had no idea that two such dissimilar coronas could belong to the same plant; on subsequently received specimens, however, I found both forms of corona and some other modifications as well on the same specimen. Usually, within very slight limits of variation, the corona of each species is very constant in its form.

9. ***C. altiscandens***, *K. Schum. in Engl. Pfl. Ost-Afr. C. 324*. Stem twining, slender, pubescent with spreading hairs, or the youngest parts minutely puberulous, soon becoming glabrous. Leaves spreading, less thin than in many species; petiole 2-9 lin. long; blade  $\frac{1}{2}$ - $2\frac{1}{4}$  in. long,  $\frac{1}{3}$ - $1\frac{1}{2}$  in. broad, ovate, elliptic-ovate, oblong-ovate or oblong, acute or obtuse, shortly cuspidate or acuminate, rounded or rarely emarginate at the base, pubescent or glabrous on both sides. Cymes lateral at the nodes, umbel-like, at length very shortly racemose, pedunculate, many-flowered; peduncles  $1\frac{1}{2}$ -3 lin. long, pubescent,

minutely puberulous or nearly glabrous; bracts very minute, acute, puberulous; pedicels 2-3 lin. long, pubescent or puberulous. Sepals about  $\frac{1}{2}$  lin. long,  $\frac{1}{3}$  lin. broad, ovate or oblong-ovate, somewhat obtuse, pubescent or puberulous. Corolla 5-lobed nearly to the base, rotate, 4 lin. in diam.; lobes  $1\frac{3}{4}$ -2 lin. long,  $\frac{3}{4}$  lin. broad, oblong or oblong-ovate, subacute, glabrous on both sides, apparently dull greenish. Corona  $1\frac{1}{3}$ - $1\frac{3}{4}$  lin. long, tubular, shortly 5-lobed or toothed at the apex, without teeth or lobes inside the tube, white; teeth  $\frac{1}{3}$ - $\frac{1}{2}$  lin. long and rather more in breadth, deltoid or rounded, obtuse or subacute, crenulate or entire. Staminal-column  $\frac{2}{3}$ - $\frac{3}{4}$  lin. long; filament part about  $\frac{1}{4}$  lin. long; anther-appendages nearly  $\frac{1}{2}$  lin. long,  $\frac{1}{4}$  lin. broad, oblong-lanceolate, subobtuse or acute, connivent-erect over the shorter conical 5-angled apical part of the style.—Schlechter in Journ. Bot., 1895, 337. *C. mensense*, Schweinf. ex K. Schum. in Engl. Pfl. Ost-Afr. C. 324; and in Engl. & Prantl, Pflanzenfam. iv. ii. 253.

**Nile Land.** Eritrea: near Acrou, 6000 ft., *Schweinfurth & Riva*, 1695! Uganda: Usoga, *Scott-Elliot*, 7227!

**Mozamb. Dist.** German East Africa: Usambara; Kwa Mshuza, *Holst*, 9078! Kitiimanjaro; Marangu, 4900 ft., *Volkens*, 1388! Karagwe; on dry hills, 4000-5000 ft., *Scott-Elliot*, 8163!

This species varies considerably in its pubescence, but the structure of the flowers is constant.

10. **C. hastifolium**, *N. E. Br. in Kew Bulletin*, 1895, 257. Stems twining, slender, woody below, pubescent on the very young shoots and in the leaf-axils, becoming glabrous. Leaves spreading; petiole 3-6 lin. long; blade  $\frac{1}{3}$ - $1\frac{1}{4}$  in. long,  $1\frac{1}{2}$ -3 lin. broad at the middle, 3-7 lin. broad across the basal lobes, hastate; front lobe linear-oblong, acute; basal lobes oblong or deltoid, very obtuse, broadly cuneate or truncate at the very base, both sides glabrous. Umbels sessile between the bases of the petioles on the young shoots, few-flowered; pedicels 2-3 lin. long, puberulous. Sepals 1 lin. long, subulate, puberulous. Corolla 5-lobed almost to the base; lobes  $2\frac{1}{2}$ -3 lin. long,  $\frac{1}{2}$ - $\frac{3}{4}$  lin. broad, linear, acute, glabrous, margins strongly revolute. Corona arising at the base of the staminal-column, with a plicate tube  $1\frac{3}{4}$  lin. long, and 10 teeth  $\frac{2}{3}$  lin. long, alternating with 10 minute teeth, 5 of the teeth deltoid, obtuse or subacute, the other 5 filiform, slightly clavate, with 5 pairs of keels decurrent from them within the tube, opposite the anthers. Staminal-column reaching to the top of the coronal-tube, shortly stipitate within the corona; anther-appendages erect, very large, orbicular or orbicular-quadrangle, subtruncate or apiculate. Apical part of the style about as long as the anther-appendages, shorter than the corona, of equal thickness throughout.—*C. hastifolium*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 253.

**Nile Land.** Eritrea: to the East of Amba Tokhan, 1100 ft., *Schweinfurth & Riva*, 616! Abyssinia: near Jelajeranne, *Schimper*, 1690!

11. **C. clavidens**, *N. E. Br. in Kew Bulletin*, 1895, 256. Branches slender, woody; bark pale grey, glabrous. Leaves rather spreading;

petiole 6-8 lin. long; blade  $\frac{1}{2}$ -1 in. long, about 2 lin. broad at the middle and  $3\frac{1}{2}$ -4 lin. broad at the base, hastate; front lobe narrowly oblong, obtuse; basal lobes shortly deltoid, obtusely rounded, glabrous on both sides; midrib sparsely puberulous beneath. Umbels sessile, lateral, 5-6-flowered; pedicels  $2\frac{1}{3}$ -4 lin. long, puberulous. Sepals  $\frac{3}{4}$ - $1\frac{1}{2}$  lin. long, ovate or lanceolate, acute, puberulous. Corolla rotate, 5-lobed almost to the base; lobes 2' lin. long,  $\frac{3}{4}$  lin. broad, lanceolate, obtuse, glabrous except for a few minute hairs on the back, margins more or less revolute. Corona arising at the base of the staminal-column, tubular, 10-toothed; tube  $\frac{2}{3}$  lin. long, plicate; primary teeth 5, thick, clavate,  $\frac{1}{3}$  lin. long, channelled down their face, alternating with 5 shorter thick recurving teeth; inside the tube are 5 pairs of parallel keel-like folds decurrent from the longer teeth. Staminal-column sessile within the corona, equalling the coronal-tube; anther-appendages subquadrate, erect, with spreading tips. Apical part of the style produced into a beak  $\frac{2}{3}$  lin. long, very slightly tapering, minutely bilobulate at the top, exerted much beyond the anther-appendages and exceeding the corona.—K. Schum. in Ann. Istit. Bot. Roma, vii. 38.

**Nile Land.** Somaliland, Boobi, *James & Thrupp!*

12. **C. validum**, *N. E. Br.* Stem erect, branching, moderately stout, glabrous. Leaves spreading; petiole  $\frac{1}{2}$ - $2\frac{1}{2}$  in. long; blade  $1\frac{1}{4}$ -3 in. long, 1- $2\frac{1}{2}$  in. broad, very broadly ovate, acute, or very shortly cuspidate-acute, cordate or subcordate at the base, with a shallow broad and open sinus, both sides glabrous. Racemes lateral or sublateral; peduncles  $\frac{3}{4}$  in. or more long, glabrous or nearly so; bracts minute; pedicels  $2$ - $2\frac{1}{2}$  lin. long, minutely puberulous on one side. Sepals  $\frac{3}{4}$ -1 lin. long, ovate-lanceolate or lanceolate-oblong, subobtuse, glabrous. Corolla 5-lobed nearly to the base; lobes 2 lin. long, oblong-lanceolate, obtuse, yellow, with a purple base. Corona  $1\frac{1}{2}$  lin. long, tubular for 1 lin. of its length, then equally 10-toothed; tube plicate; teeth deltoid-lanceolate, acute, entire, or the alternate more or less deeply bifid. Staminal-column 1 lin. long, with the stipitate part  $\frac{2}{3}$  lin. long. Pollen-carriers broad, flattened, shield-shaped, incumbent on the sloping angles of the truncate apical part of the style.—*Schizostephanus alatus*, Hochst. ex K. Schum. in Engl. Jahrb. xvii. 139, t. 6, figs. N-Q, in Engl. Pfl. Ost-Afr. C. 324, and in Engl. & Prantl, Pflanzenfam. iv. ii. 254.

**Nile Land.** Eritrea: near Acour, 6000 ft., *Schweinfurth & Riva*, 1688! Abyssinia: Jelajeranne district, on mountains near Mai Mezano, *Schimper*, 1687!

**Mozamb. Dist.** German East Africa: without precise locality, *Fischer*, 391.

13. **C. somaliense**, *N. E. Br.* Stem puberulous. Leaves ascending or spreading; petiole  $1\frac{1}{4}$ -2 in. long; blade  $1\frac{1}{2}$ -3 in. long,  $1\frac{3}{4}$ - $2\frac{1}{2}$  in. broad, broadly cordate-ovate, very obtuse or retuse, minutely apiculate, with a broad open and shallow basal sinus, with a few minute hairs scattered along the veins and on the surface on both sides, minutely ciliate. Racemes shorter than the leaves; peduncles  $\frac{3}{4}$ - $1\frac{1}{4}$  in. long, puberulous; flowers solitary or in pairs, rather distant; bracts minute; pedicels 1- $1\frac{1}{2}$  lin. long, puberulous. Sepals 1- $1\frac{1}{4}$  lin. long,

lanceolate-oblong, obtuse or acute, slightly puberulous or glabrous. Corolla rotate,  $4-4\frac{1}{2}$  lin. in diam.; lobes  $1\frac{3}{4}$  lin. long, 1 lin. broad, oblong, subobtuse, saccate just below the apex, with strongly revolute margins and the whole lobe slightly twisted when fully expanded, glabrous. Corona divided to the base into 5 broad cuneate lobes  $1\frac{1}{2}$  lin. long, trifid to  $\frac{1}{3}$  of the way down; teeth equal, the lateral linear-subulate, divergent; middle tooth deltoid-ovate, acute; inner face of the lobe with two parallel keels down the middle and two oblique keels from the lateral teeth joining them at a little below the middle. Staminal-column  $1\frac{1}{3}$  lin. long, the stipitate part  $\frac{3}{4}$  lin. long. Pollen-carriers very narrow, suberect.—*Schizostephanus somaliensis*, N. E. Br. in Kew Bulletin, 1895, 250; K. Schum. in Ann. Istit. Bot. Roma, vii. 38.

**Nile Land.** Somaliland: Boobi, James & Thrupp!

14. **C. præcox**, *Schlechter in Journ. Bot.* 1902, 256. Plant very small, probably with a tuberous rootstock,  $1-1\frac{1}{4}$  in. high, forming "little tufts close to the ground, no leaves at the time of flowering" (*Rand*). In the type the single stem is about  $\frac{3}{4}$  lin. thick, pubescent, bearing a few ovate acute pubescent scale-leaves  $\frac{2}{3}-1$  lin. long,  $\frac{1}{3}-\frac{2}{3}$  lin. broad, and is cymosely divided at the top into a dense cluster of sessile or pedunculate cymes, forming a head of flowers about  $\frac{3}{4}$  in. in diam.; pedicels  $1\frac{1}{2}-3$  lin. long, puberulous with minute curved hairs. Sepals about 1 lin. long,  $\frac{1}{2}$  lin. broad, lanceolate or ovate-lanceolate, acute, puberulous on the back. Corolla deeply lobed, campanulate, quite glabrous; tube  $\frac{3}{4}$  lin. long; lobes  $1\frac{1}{2}$  lin. long,  $\frac{2}{3}-\frac{3}{4}$  lin. broad, oblong, obtuse, margins recurved. Corona  $1\frac{1}{3}$  lin. long, 10-lobed to about half-way down, without lobes or appendages within, glabrous; tube  $\frac{2}{3}$  lin. long; longer lobes  $\frac{2}{3}-\frac{3}{4}$  lin. long, linear-oblong, obtuse, margins incurved; shorter lobes  $\frac{1}{3}-\frac{1}{2}$  lin. long, ovate, obtuse, plicate. Staminal-column  $\frac{2}{3}$  lin. long; anther-appendages elliptic, subacute, ascending and adpressed to the sides of the shortly conical style-apex, which slightly exceeds them.

**Mozamb. Dist.** Rhodesia: Salisbury district, in the valley of the River Mazoe, *Rand*, 512!

15. **C. sarcostemmatoides**, *K. Schum. in Engl. Pfl. Ost-Afr. C.* 323. Stem twining, succulent, leafless or with minute sessile ovate rudimentary leaves  $\frac{1}{4}$  lin. long, glabrous, very similar to that of *Sarcostemma viminale* but more slender,  $\frac{3}{4}-1\frac{1}{2}$  lin. thick. Flowers few or several, umbellate on short sublateral tubercles, which elongate to  $\frac{1}{8}$  in. and become densely covered with the contiguous spirals of scars of fallen flowers; pedicels 1-2 lin. long, glabrous. Sepals  $\frac{1}{4}-\frac{1}{3}$  lin. long, ovate, acute, glabrous. Corolla rotate, about  $2\frac{1}{2}$  lin. in diam., 5-lobed nearly to the base; lobes 1 lin. long, oblong-ovate, acute, glabrous. Corona arising from the base of the staminal-column and as long as it,  $\frac{3}{4}$  lin. long, campanulate, 5-toothed; teeth shortly ovate or oblong, inflexed over the backs of the anthers, with decurrent keels from their margins within the tube; corona below the keels attached to the

staminal-column by 5 short septa. Anther-appendages broad and rounded, inflexed over the margin of the truncate style-apex. Follicles solitary (always?) 2 in. long, 3-3½ lin. thick, terete, acuminate, smooth, glabrous. Seeds flattened, ⅙ in. long, ovate, softly pubescent on both sides.—*C. sarcostemmoides*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 252. *Sarcostemma aphyllum*, R. Br. in Mem. Wern. Soc. i. 50, partly; Decne. in DC. Prod. viii. 538; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 256. *Asclepias aphylla*, Thunb. Fl. Cap. ed Schult. 234 partly, as confirmed by one of the three specimens in his herbarium. *Sarcostemma tetrapterum*, Turcz., and *Monostemma tetrapterum*, Turcz., & *M. aphyllum*, Turcz. in Bull. Soc. Mosc. 1848, i. 255. *Sarcocophula Gerrardi*, Harv. Thes. Cap. ii. 58, t. 191.

**Mozamb. Dist.** Zanzibar, *Kirk!* Namiqua Island, *Hutton!* German East Africa: Usambara, Amboni, *Helst*, 2706! Pare Mountains, *Folkens*, 2375. Portuguese East Africa: by the River Zambesi, opposite Sena, *Kirk*, 102!

Also in South Africa.

*Vincetoxicum sarcostemmoides*, Schweinf. ex Penzig in Atti del Congr. Bot. Internaz. 1892, 349, from hills to the south of Geleb, in Eritrea, may belong here, but there is no description.

*Imperfectly known species.*

16. **C. defoliascens**, K. Schum in Ann. Istit. Bot. Roma, vii. 38. A shrub; stem 2½-4½ lin. thick; branches slender, flexuose, glabrous, becoming leafless. Leaves ¾-2 in. long, scarcely exceeding 1 lin. in breadth, linear, acute, narrowed at the base into a very short petiole, recurved along the margins, somewhat fleshy, glabrous. Umbels pedunculate, few-flowered; peduncle about 4½ lin. long, filiform, glabrous; pedicels 1-2½ lin. long, slender, glabrous. Sepals 1 lin. long, subulate, glabrous. Corolla about 2 lin. in diam., rotate, glabrous, whitish-green. Coronal-lobes about ⅓ lin. long, free nearly to the base, spatulate, a little shorter than the staminal-column, which is ½ lin. long.

**Nile Land.** Somaliland: on a dry plain, near Mandah, *Robecchi-Bricchetti* 110.

From the description I very much doubt if this plant, which I have not seen, belongs to the genus *Cynanchum*.

17. **C. Dewevrei**, De Wild. & Durand, Contrib. Fl. Congo, i. ii. 42. Stem twining, terete, tomentose. Leaves petiolate; petiole ⅓-1½ in. long, slender, pilose; blade 1-3⅓ in. long, ⅓-1⅓ in. broad, oblong-lanceolate, acute, cordate at the base, subentire, thinly pubescent above, tomentose beneath. Inflorescence from one axil (sublateral?), umbellate or racemose, many-flowered; peduncles shorter or slightly longer than the petioles, velvety; pedicels 1½-2½ lin. long, slender, velvety; bracts minute, shorter than the pedicels, linear, pilose. Sepals about ½ lin. long, triangular-subulate, pilose. Corolla rotate, about 1 lin. long, divided almost to the base into 5 oblong lanceolate lobes, glabrous on

both sides. Corona 5-lobed; lobes rounded, undulate, but prolonged at the middle.—De Wild. & Durand, *Reliq. Dewèvre*, 159.

**South Central.** Congo Free State: Mwanana-Toumbwe, *Dewèvre*, 904, near Kabanga, *Dewèvre*, 976 a.

Stated to be allied to *C. minutiflorum*, K. Schum., but differing in the form of the coronal-lobes. It seems from the description to be very similar to that form of *C. schistoglossum*, which I originally described under the name of *C. brevidens*.

18. **C. heteromorphum**, *Vatke in Linnæa*, xl. 215. A glabrous twiner. Leaves spreading; petiole 5–7 lin. long; blade  $1\frac{1}{4}$ –2 in. long, and up to  $\frac{3}{4}$  in. broad, ovate and acuminate or elliptic and acute, very variable, but all very broad near the base, which is more or less cordate, subrounded, or subauriculate. Peduncles rather shorter than the petioles, several-flowered, puberulous, as are also the pedicels and calyx. Corolla-lobes ovate, somewhat obtuse, minutely papillose within. Corona with acute lobes, furnished within sometimes with elongated ligules of the form of those of *C. acutum*, or sometimes with shorter and broader ligules somewhat like the exterior ones.

**Nile Land.** Abyssinia: Plain of Hamedo, *Schimper*, 940.

19. **C. pleianthum**, *K. Schum. in Ann. Istit. Bot. Roma*, vii. 39. A perennial herb or shrub; branches slender, herbaceous and twining in the upper part. Leaves petiolate, herbaceous; petiole 5–14 lin. long, pubescent with somewhat reddish hairs; blade  $\frac{1}{2}$ – $2\frac{3}{4}$  in. long, oblong or ovate-oblong, shortly and very acutely acuminate, broadly cordate at the base, pilose-pubescent on both sides, ciliate, paler beneath. Umbels simple or 2 to several times forked, pedunculate; peduncle  $4\frac{1}{2}$ – $7\frac{1}{2}$  lin. long, minutely puberulous; pedicels 2–3 lin. long, minutely puberulous. Sepals  $\frac{1}{2}$  lin. long, oblong, acute, subglabrous. Corolla  $1\frac{2}{3}$  lin. in diam. Corona 5-lobed, as long as the staminal-column,  $\frac{1}{2}$  lin. long; lobes ovate-triangular, acute. Style-apex slightly umbonate, somewhat 5-lobed.

**Nile Land.** Somaliland: marshy places in Panure di Savati, *Riva*, 1533.

20. **C. dentatum**, *K. Schum. in Ann. Istit. Bot. Roma*, vii. 39. A perennial woody herb, probably climbing above, submentose on the young parts, afterwards glabrescent. Leaves petiolate, herbaceous; petiole 4–7 lin. long; blade  $\frac{2}{5}$ –2 in. long,  $\frac{1}{3}$ – $1\frac{1}{6}$  in. broad in the basal part, ovate or ovate-oblong, acute, cordate at the base, minutely puberulous on both sides, ciliate. Racemes axillary, few-flowered; peduncle up to  $4\frac{1}{2}$  lin. long, puberulous. Sepals  $\frac{3}{4}$  lin. long, oblong-lanceolate, acuminate, puberulous. Corolla about 3 lin. in diam.; lobes obtuse. Coronal-lobes  $1\frac{1}{2}$  lin. long, free nearly to the base, cuneate, 3-toothed, a little longer than the staminal-column, which is contracted under the anthers into a stipe  $\frac{1}{3}$  lin. long.

**Nile Land.** Somaliland: in dry wooded places between Sasaber and Carbaden, *Riva*, 844.

21. **C. microstegium**, *K. Schum. in Ann. Istit. Bot. Roma*, vii. 39. A divaricately much branched shrub, sometimes climbing; branches slender, soon becoming woody, glabrous. Leaves shortly petiolate, subcoriaceous, glabrous; petiole  $1\frac{1}{2}$ –2 lin. long; blade  $7$ – $9\frac{1}{2}$  lin. long,  $1$ – $2\frac{1}{2}$  lin. broad, ovate-lanceolate, acute or obtuse, cuneate or somewhat rounded at the base, slightly marginate. Umbels pedunculate, 4–5-flowered; peduncle 4–5 lin. long, minutely pubescent; pedicels  $1\frac{1}{2}$ –2 lin. long, minutely pubescent. Sepals  $\frac{1}{2}$  lin. long, triangular, glabrous. Corolla 1 lin. long, carmine. Coronal-lobes not more than  $\frac{1}{3}$  lin. long, ligulate, acute. Follicles 2 in. long, nearly 2 lin. thick, narrow, acuminate.

**Nile Land.** Somaliland, *Riva*.

I have not seen this plant, but from the description suspect it will prove to be a species of *Secamone*.

31. **SOLENOSTEMMA**, Hayne; Benth. et Hook. f. Gen. Pl. ii. 749.

Calyx 5-partite. Corolla deeply 5-lobed; lobes stellately spreading, narrow, overlapping to the left in bud, scarcely twisted. Corona arising from the angle between the corolla and the base of the staminal-column, cup-shaped, 5-lobed; lobes induplicate-cucullate, opposite the corolla-lobes. Staminal-column arising near the bottom of the corolla, nearly as long as the corolla-lobes, clavate, the filament portion slender and longer than the corona; anthers oblong, tipped with a membranous appendage, which is inflexed over the style-apex. Pollen-masses pendulous, attached in pairs to the pollen-carriers by flexuous caudicles. Style not produced beyond the anther-tips, slightly convex at the apex. Follicles stout, ovoid-lanceolate, beaked, smooth. Seeds turgid, crowned with a tuft of hairs.—An erect plant, with woody stems, opposite leaves, and sublateral cymes of moderate sized flowers.

Species 1, extending through Egypt into Arabia. It is very closely allied to *Cynanchum*, and should, perhaps, be united with that genus; the chief difference being that the lobes of the corona are placed opposite to the corolla-lobes, and the filament part of the staminal-column is long, slender and exerted from the corona.

1. **S. Argel**, *Hayne, Arzneik. Gewächse*, ix. t. 38. Stems herbaceous, erect,  $1\frac{1}{2}$ –2 ft. high, branching, very minutely downy, leafy. Leaves longer than the internodes, ascending; petiole 1–2 lin. long; blade  $1$ – $1\frac{1}{2}$  in. long,  $\frac{1}{4}$ – $\frac{3}{4}$  in. broad, thick and rigidly coriaceous when dry, probably fleshy when alive, varying from lanceolate to oblong-ovate, acute or subacute, cuneate at the base, minutely downy on both sides; midrib flat above, prominent beneath; veins indistinct. Cymes axillary,  $1\frac{1}{2}$ –2 in. long (including the  $\frac{1}{4}$ – $\frac{1}{2}$  in. long peduncles),  $1\frac{1}{2}$ –2 in. in diam., densely many-flowered, minutely downy; bracts 2–3 lin. long,  $\frac{1}{4}$ – $\frac{1}{2}$  lin. broad, linear-lanceolate, acute; pedicels 2–3 lin. long. Sepals 2 lin. long,  $\frac{1}{2}$  lin. broad, oblong, acute, minutely downy. Corolla-tube 1 lin. long; lobes  $2\frac{1}{2}$ –3 lin. long,  $\frac{3}{4}$  lin. broad, narrowly oblong, obtuse,

spreading, white, glabrous or with a few scattered hairs on the back. Corona  $\frac{1}{3}$  as long as the corolla-lobes, submembranous, cup-shaped, obtusely 5-lobed to half-way down, and infolded at the sinuses between the lobes, which are deeply concave-hooded, from their margins being inflexed so as to meet or nearly so. Staminal-column 2-2 $\frac{1}{2}$  lin. long, clavate, the part formed by the filaments very slender, as long as the anthers and exceeding the corona. Follicles solitary (always?), 2 in. long, 7 $\frac{1}{2}$ -9 lin. thick, ovoid-lanceolate, acuminate. Seeds turgid, ovoid, channelled down one face, minutely tuberculate, crowned with white hairs.—Decne. in DC. Prod. viii. 533; Schweinf. Pl. Nilot. 29; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 223, fig. 65, S-T. *Cynanchum Argel*, Delile in Mém. Égypte, iii. 319; and Fl. Égypte, 197 (Reprint, 53), t. 20, fig. 2. *Cynanchum oleaceifolium*, Nectoux, Voy. Égypte, 20, t. 3. *Argelia Delilii*, Decne. in Ann. Sc. Nat. 2 sér. ix. 331, t. 11, fig. G.

**Nile Land.** Nubia: Wady Arab, between Suakin and Berber, *Schweinfurth*, 670! along the Nile between Wady Halfa and New Dongola, *Bromfield*! Kordofan, *Pfund*, 218!

Also in Egypt and Arabia.

### 32. TYLOPHOROPSIS, N. E. Br. in Gard. Chron. 1894, xvi. 245.

Calyx 5-lobed almost to the base. Corolla deeply 5-lobed, rotate or rotate-campanulate; lobes overlapping to the left in bud. Corona of 5 fleshy tubercles adnate to the lower half of the staminal-column, alternating with the corolla-lobes, usually having 5 very minute teeth alternating with them (and with the anthers) at the base of the column, representing a rudimentary outer corona. Staminal-column arising just above the base of the corolla; anthers erect, short and broad, obtuse, with an inflexed membranous appendage at their apex. Pollen-masses pendulous, solitary in each anther-cell, attached in pairs to the pollen-carriers by horizontal caudicles. Style not produced beyond the anther-tips. Follicles smooth; seeds crowned with a tuft of hairs.—Perennials with twining stems, opposite leaves, and the peduncles lateral between the bases of the petioles, bearing two or more sessile umbel-like cymes racemosely scattered along them, flowers small.

Species 2, one a native of Arabia. This genus resembles *Tylophora* in everything except that the pollen-masses are distinctly pendulous and have much stouter and very different caudicles.

1. **T. heterophylla**, N. E. Br. in Gard. Chron. 1894, xvi. 245. Stems more or less twining, slender, pubescent, apparently not attaining a greater height than 2-3 ft. Leaves spreading; petiole 1 lin. to 1 $\frac{1}{4}$  in. long; blade  $\frac{1}{2}$ -2 $\frac{1}{4}$  in. long, 4-14 lin. broad, ovate or oblong-ovate, obtuse, subacute or acuminate, subtruncate to slightly cordate at the base, glabrous above, sparsely covered with spreading hairs on the veins beneath, and ciliate on the more or less recurved margins;

peduncles  $\frac{1}{4}$ - $1\frac{1}{2}$  in. long, pubescent, bearing 1-2, 4-9-flowered umbel-like cymes; pedicels 2-3 lin. long, more or less pubescent. Sepals  $\frac{3}{4}$  lin. long, broadly ovate, acute, glabrous, ciliate. Corolla 5-lobed nearly to the base, probably rotate; lobes 2- $2\frac{1}{2}$  lin. long, oblong-lanceolate, obtuse and somewhat cochleate at the apex, glabrous outside, puberulous inside, with one margin glabrous. Corona of 5 oblong fleshy gibbosities on the basal half of the staminal-column, and with or without 5 very minute lobules alternating with them at the base of the column, where they are connected in a ring. Anther-tips inflexed over the 5-rayed dilated part of the style, the apex of which is slightly raised into a button-shaped knob having a depressed line across it and not exceeding the level of the anther-tips.—Hook. *Ic. Pl. t.* 2373; K. Schum. in *Engl. & Prantl, Pflanzenfam.* iv. ii. 255. *Tylophora heterophylla*, A. Rich. *Tent. Fl. Abyss.* ii. 41, t. 71; Walp. *Ann.* iii. 61; Penzig in *Atti del Congr. Bot. Internaz.*, 1892, 349. *Vincetoxicum heterophyllum*, Vatke in *Linnæa*, xl. 212; *Engl. Hochgebirgsfl. Trop. Afr.* 342. *Gymnema longepedunculata*, Schweinf. in *Hölnel, Rudolph-See und Stephanie-See, Sonderabdr.* 8: K. Schum. in *Engl. Pf. Ost-Afr. C.* 325. *Sphaerocodon longepedunculata*, K. Schum. in *Engl. Pf. Ost-Afr. C.* 326, and in *Engl. & Prantl, Pflanzenfam.* iv. ii. 285. *Tylophora longipedunculata*, Schlechter in *Journ. Bot.* 1895, 338.

**Nile Land.** Eritrea: by the River Anseba, the torrent Aibaba, in the Valley of Belta and at Geleb, *Penzig* (ex *Penzig*). Abyssinia: Tigre; Mount Semayata 9300 ft., *Schimper*, 471 (ex *Vatke*); Wojerat; Mount Goumassa, 8000 ft., *Petit* (ex *Richard*); and without precise locality, *Schimper*, 394! 833! Uganda: Ruwenzori; Butagu, in forest, 8000 ft., *Scott-Elliot*, 7973! Without locality, *Hölnel*.

**Mozamb. Dist.** German East Africa: Kilimanjaro; above Marangu, 9100 ft., *Volkens*, 1884!

The flowers appear to be of a dark purple-brown, with a whitish pubescence inside.

### 33. TYLOPHORA, R. Br.; Benth. et Hook. f. *Gen. Pl.* ii. 770.

Calyx 5-partite. Corolla very deeply 5-lobed, rotate or rotate-campanulate; lobes more or less overlapping to the left, and sometimes twisted in bud. Corona of 5 small or minute tubercles, adnate to or radiating from the filament part of the staminal-column and arising near to or at its base. Staminal-column arising from the base of the corolla; anthers erect, opening by crescent-shaped transverse slits, tipped with a small membranous appendage which is often reduced to a mere hyaline margin, their fertile part seated in slight cavities under the margin of the dilated apex of the style. Pollen-masses very minute, erect, suberect, or horizontal, attached by their middle or near their base to very slender caudicles, by which they are affixed in pairs to the pollen-carriers. Style pentagonal or 5-lobed at the depressed, flattened or convex apex, rarely slightly exceeding the anthers. Follicles smooth, sometimes winged. Seeds crowned with a tuft of hairs.—Twining or erect perennials. Leaves opposite, petiolate. Inflorescence sublateral

between the bases of the petioles or axillary, usually consisting of slender, simple or branched cymes of flower-clusters or short racemes, or occasionally the flower-clusters are sessile at the nodes of the stem; flowers usually small.

Species many, widely distributed in the tropical and subtropical regions of the Old World.

In some species I have failed to find any caudicles to the pollen-masses; they are always very slender. I have not found the pollen-masses pendulous as represented in Engler & Prantl, Pflanzenfam., but frequently their longer axis lies horizontally in the anther-cell so that half of the mass is above and half below its attachment to the caudicle.

Stem erect . . . . . 10. *T. orthocaulis*.

Stem twining.

Leaves more or less cordate at the base. (See also *T. anfracta*, in which the leaves are sometimes cordate at the base.)

Corolla-lobes 2-2½ lin. long and as much in breadth.

Staminal-column widened at the base; coronal-tubercles entirely adnate, ovoid . . . . . 1. *T. conspicua*.

Staminal-column not widened at the base; coronal-tubercles minute, radiating, flat above, convex beneath . . . . . 2. *T. oculata*.

Corolla-lobes ¾-1 lin. long, longer than broad.

Cyme-branches glabrous.

Leaves subcoriaceous, drying brownish . . . . . 3. *T. cameroonica*.

Leaves thin, drying green . . . . . 4. *T. apiculata*.

Cyme-branches pubescent; leaves thin . . . . . 5. *T. sylvatica*.

Leaves rounded or cuneate at the base.

Flower-clusters or very short racemes scattered along the axis of the inflorescence or its branches; corolla-lobes 1½-2 lin. long, not linear.

Leaves 2-4½ in. long; pedicels 3-5½ lin. long, slender, but scarcely hair-like.

Inflorescence 2-3 in. long, not zigzag; corolla about 3 lin. in diam. . . . . 6. *T. oblonga*.

Inflorescence 6-7 in. or more long, zigzag; corolla 4½-5 lin. in diam. . . . . 7. *T. anfracta*.

Leaves 1-1½ in. long; pedicels 6-8 lin. long, hair-like . . . . . 8. *T. tenuipedunculata*.

Flower-clusters sessile at the nodes of the stem; corolla-lobes 2½ lin. long, linear . . . . . 9. *T. stenoloba*.

1. **T. conspicua**, *N. E. Br. in Kew Bulletin*, 1895, 258. A large climber. Stem hollow, finely pubescent. Leaves spreading; petiole ¾-2¾ in. long, tomentose; blade 2½-7 in. long, 1¾-3½ in. broad, oblong or obovate-oblong, shortly acuminate or cuspidate, cordate at the base, pubescent on the principal veins on both sides, otherwise glabrous; basal lobes broadly rounded, separated by a sinus ¼-¾ in. deep. Inflorescence lateral at the nodes or subaxillary, 1½-3 in. long, pubescent, consisting of a simple axis bearing 2-3 ascending, densely several-

flowered racemes,  $\frac{1}{4}$ – $\frac{1}{2}$  in. long and  $\frac{1}{4}$ – $\frac{1}{2}$  in. distant; pedicels 3–4 lin. long, pubescent. Sepals 2 lin. long, ovate-lanceolate, acute, pubescent, minutely ciliate. Corolla rotate, 7–8 lin. in diam., 5-lobed to rather more than half-way down, apparently dark purple-brown; lobes  $2\frac{1}{2}$  lin. long and the same in breadth, obliquely orbicular-oblong, very obtusely rounded, with a fold at the apex. Coronal-tubercles stout, ovoid, arising  $\frac{1}{3}$  lin. above the widened base of the 1 lin. long staminal-column, reaching to the base of the anthers and entirely adnate, dark coloured in the dried state. Anthers erect, subtruncate, scarcely appendaged. Style depressed a little below the anthers at the apex, with a convex tubercle in the centre.—Hiern in Cat. Afr. Pl. Welw. i. 691.

**Upper Guinea.** Gold Coast: Aburi, *Johnson!*

**Lower Guinea.** Angola: Golungo Alto; forests of Sobato Mussengue and near Sange, *Welwitsch*, 4212! 4213! 4214! forests by the River Delamboa, *Welwitsch*, 4215! and without precise locality, *Welwitsch*, 4216!

When I first described this I had only seen very young inflorescences, where the flowers appeared to be subumbellate on the branches of the cyme, but later, the branches elongate and the flowers become racemose. The flowers, according to Johnson, are dark and have a disagreeable odour.

2. **T. oculata**, *N. E. Br. in Kew Bulletin*, 1895, 112. Stem twining, slender, glabrous. Leaves spreading; petiole 4–7 lin. long; blade 2– $3\frac{1}{2}$  in. long, 10–15 lin. broad, oblong or ovate-oblong, acuminate, cordate with small rounded lobes at the base, glabrous on both sides, except for a minute pubescence along the upper side of the midrib and petiole. Inflorescence axillary, sometimes from both axils of the leaf-pairs, 2–3 in. long, simple or more usually dichotomously 2-branched 2–3 lin. above the base, unbranched part thinly and very minutely pubescent; branches  $1\frac{1}{2}$ –3 in. long, glabrous, each bearing 2 umbel-like flower-clusters,  $\frac{1}{2}$ – $1\frac{1}{4}$  in. distant, the lower one sometimes shortly pedunculate; bracts minute, broadly ovate, with a border of minute white hairs; pedicels 4–7 lin. long, glabrous. Sepals about  $\frac{1}{2}$  lin. long and broad, deltoid-ovate, subacute, minutely ciliate. Corolla  $\frac{1}{2}$  in. in diam., rotate, pale greenish, with a purple ring around the staminal-column; lobes about 2 lin. long and the same in breadth, obliquely oblong, shortly lacerate-fimbriate at the apex, more or less recurving along the margins, glabrous. Coronal-tubercles radiately spreading from a little above the base of the staminal-column,  $\frac{1}{4}$  lin. long and broad, fleshy, subquadrate, flat above, very convex beneath, obtusely rounded at the apex, dark purple. Staminal-column not widened at the base, about  $\frac{1}{2}$  lin. long; anthers broader than long, rounded, faintly purplish, with a narrow hyaline margin. Style exceeding the anthers, pyramidally convex at the apical part, very pale greenish.

**Upper Guinea.** Sierra Leone, *Scott-Elliot!*

Described from a living plant cultivated at Kew, which was raised from seed brought from Sierra Leone by Mr. Scott-Elliot in 1892.

3. **T. cameroonica**, *N. E. Br. in Kew Bulletin*, 1895, 258. A vigorous climber, with a hollow glabrous stem. Leaves apparently slightly fleshy; petiole  $\frac{3}{4}$ – $1\frac{1}{4}$  in. long; blade 3– $5\frac{1}{2}$  in. long, 2–3 in. broad, ovate to elliptic-ovate, rather abruptly cuspidate-acuminate, cordate, with a shallow broadly open sinus at the base, glabrous; only the primary veins visible on the underside. Flowers in small clusters or very short racemes scattered along the branches of lateral subsessile or shortly pedunculate lax cymes, which have 3 primary branches that are again once or twice trichotomously or dichotomously divided, the whole cyme having a spread of 4–5 in. with a height of 2–3 in., at first minutely rusty-puberulous, becoming glabrous; pedicels  $1\frac{1}{2}$ –2 lin. long, puberulous. Sepals  $\frac{1}{2}$ – $\frac{2}{3}$  lin. long, lanceolate, acute, glabrous. Corolla rotate,  $2\frac{1}{2}$  lin. in diam.; lobes 1 lin. long,  $\frac{2}{3}$  in. broad, ovate, subobtuse, ciliolate along one margin. Coronal-tubercles fleshy, transversely-oblong, radiating from the base of the  $\frac{1}{3}$  lin. long staminal-column, with their upper face sloping nearly up to the base of the anthers, dark coloured in the dried state.

**Upper Guinea.** Cameroons: Rio del Rey, *Johnston!*

4. **T. apiculata**, *K. Schum. in Engl. Pfl. Ost-Afr. C.* 325. Stem twining, slender, perfectly glabrous. Leaves on rather long petioles, ovate, broadly elliptic, or suborbiculate, acute or often obtuse or retuse, apiculate, cordate at the base, membranous, dark green, glabrous. Panicle composed of a few alternating fascicles; pedicels  $1\frac{1}{2}$ –2 lin. long, very slender, glabrous; flowers 1 lin. long. Sepals scarcely  $\frac{1}{2}$  lin. long, green, glabrous. Corolla rotate, 2 lin. in diam., glabrous; lobes  $\frac{2}{3}$  lin. long, elliptic-oblong, obtuse. Coronal-tubercles minute, arising a little above the base of the  $\frac{1}{3}$  lin. long staminal-column.

**Mozamb. Dist.** East German Africa: Pangani, *Stuhlmann*, Coll. i. 848 (884! on the label seen).

I have only seen a single leaf 2 in. long and  $1\frac{2}{3}$  in. broad, and a few flowers of this plant.

5. **T. sylvatica**, *Decne. in Ann. Sc. Nat. 2 sér. ix.* 273. Stem twining, slender, with two puberulous lines. Leaves spreading; petiole  $\frac{1}{2}$ –2 in. long; blade  $1\frac{1}{2}$ –6 in. long,  $1$ – $3\frac{1}{4}$  in. broad, oblong, ovate- or elliptic-cordate, acuminate, acute, or shortly and abruptly apiculate-cuspidate, glabrous, slightly pubescent along the midrib and nerves above and down the face of the petiole. Inflorescence sublateral at the nodes, 4–6 in. long, pedunculate, simple or branched, minutely pubescent, bearing several sessile clusters of small brownish-purple flowers racemosely scattered along it,  $\frac{1}{4}$ – $\frac{3}{4}$  in. distant; pedicels 2–3 lin. long, pubescent. Sepals  $\frac{1}{3}$ – $\frac{1}{2}$  lin. long, ovate, acute or subobtuse, puberulous. Corolla rotate, purplish,  $1\frac{1}{2}$ –2 lin. in diam., 5-lobed nearly to the base; lobes  $\frac{3}{4}$ –1 lin. long, oblong, obtuse or subacute, glabrous. Coronal-tubercles transverse, arising near the base of the barely  $\frac{1}{2}$  lin. long staminal-column, dark coloured in the dried state. Follicles  $2\frac{1}{2}$ – $3\frac{1}{2}$  in. long, lanceolate, acuminate, smooth and glabrous. Seeds  $4\frac{1}{2}$  lin. long,  $1\frac{1}{2}$  lin. broad, elongate-ovate, concave on one face, convex

on the other, with a winged margin, toothed at the broad end, both sides with a minute tufted pubescence, light brown.—DC. Prod. viii. 610; Benth. in Hook. Niger Fl. 455; K. Schum. in Bull. Soc. Bot. Belg. xxxvii. 123; Hiern in Cat. Afr. Pl. Welw. i. 691. *T. silvatica*, K. Schum. in Engl. Pfl. Ost-Afr. C. 325; Schlechter, Westafr. Kautschuk-Exped. 309; Engl. & Prantl, Pflanzenfam. iv. ii. 286, and 283, fig. 85, O-P, the pollen incorrectly represented as pendulous.

**Upper Guinea.** Senegambia (816! from Paris Herbarium, collector not stated). Sierra Leone: near Falaba, *Scott-Elliot*, 5455! Liberia: Cape Palmas, *Vogel*, 3! Gold Coast: Aburi Gardens, *Johnson*, 770! Togo: Mi-aböhe, *Baumann*, 511! Lagos: Efe, *Millen*, 166! Interior, *Rowland*! by the river at Odo Onon, *Dawodu*, 173! Niger Territory: Jeba and Nupe, *Barter*, 1321! River Nun, *Mann*, 479! Akassa, *Everett Dutton*, 29! Cameroons: Batanga district, near Bapa, *Bates*, 197! Fernando Po, *Vogel*, 237!

**Lower Guinea.** Lower Congo: Bingila, *Dupuis* (ex *Schumann*). Angola: Golungo Alto; near Sanches, *Welwitsch*, 4280! Sange district, *Welwitsch*, 4231!

**South Central.** Congo Free State: near Coquilhatville, *Schlechter*, 12610 (ex *Schlechter*).

**Mozamb. Dist.** German East Africa, see Engler Pflanzenw. Ost-Afr. Th. C., 325, no localities or collectors quoted.

Occurs also in Madagascar, but I have not seen it from intermediate localities. Probably *T. bojeriana*, Decaisne in DC. Prod. viii. 607, is this species.

6. **T. oblonga**, *N. E. Br.* in *Kew Bulletin*, 1895, 257. A slender twiner, glabrous in all parts. Leaves spreading or somewhat deflexed; petiole  $\frac{1}{2}$ – $\frac{3}{4}$  in. long; blade  $2\frac{1}{4}$ –3 in. long,  $1$ – $1\frac{3}{4}$  in. broad, oblong to elliptic-obovate, shortly cuspidate-acuminate, rather broadly cuneate or cuneately rounded at the base. Inflorescence lateral or sublateral, consisting of a simple axis 2–3 in. long, bearing 3–4 distant sessile several-flowered racemes  $1\frac{1}{2}$ –3 lin. long scattered along it; pedicels 3–4 lin. long, slender. Sepals  $\frac{2}{3}$ – $\frac{3}{4}$  lin. long, ovate, acute, more or less slightly ciliolate. Corolla rotate, about 3 lin. in diam., white; lobes  $1\frac{1}{2}$  lin. long, 1 lin. broad, oblong, obliquely produced on one side in the upper part, very broadly rounded and minutely fimbriate-laciniate on one side at the apex. Coronal-tubercles minute, spreading from the base of the  $\frac{1}{2}$  lin. long staminal-column, transverse, broadly rounded, fleshy, flattened above, very convex beneath, dark coloured in the dried state. Style truncate, with 5 decurved rays at its apex. Follicles 3 in. long,  $\frac{1}{2}$  in. thick, lanceolate, acuminate, winged on each side, smooth and glabrous. Seeds (unripe) elongate-ovate, winged, concavo-convex, minutely tuberculate on both sides.

**Upper Guinea.** Fernando Po, *Mann*, 277!

By some error the diameter of the corolla as stated in my original description is too great.

7. **T. anfracta**, *N. E. Br.* Stem twining, about 1 lin. thick, glabrous. Leaves glabrous: petiole  $\frac{1}{3}$ – $\frac{2}{3}$  in. long; blade  $1\frac{3}{4}$ – $4\frac{1}{2}$  in. long,  $1\frac{1}{8}$ – $2\frac{3}{8}$  in. broad, elliptic, rather abruptly and shortly acuminate to a very acute point, usually rounded or sometimes cordate at the base.

Axis (or branch?) of the inflorescence 6-7 in. or more long, zigzag, with internodes  $\frac{3}{4}$ - $1\frac{1}{4}$  in. long, glabrous, bearing 10-12 several-flowered racemes  $1\frac{1}{2}$ -2 lin. long, scattered along it; pedicels  $4$ - $5\frac{1}{2}$  lin. long, very slender, thickened at the apex. Sepals  $\frac{1}{2}$ - $\frac{2}{3}$  lin. long,  $\frac{1}{2}$  lin. broad, broadly ovate, acute, glabrous, sparsely and most minutely ciliate. Corolla rotate, about  $4\frac{1}{2}$ -5 lin. in diam., lobed to about half-way from the margin; lobes  $1\frac{1}{2}$  lin. long,  $1\frac{2}{3}$ - $1\frac{3}{4}$  lin. broad, obliquely produced on one side, very broadly rounded. Coronal-tubercles seated near the base of the staminal-column, horizontally projecting for about  $\frac{1}{5}$  lin., convex above, concave beneath, rounded. Staminal-column  $\frac{3}{4}$  lin. long, constricted under the anthers, 5-grooved; anther-appendages thick and fleshy, broadly transversely oblong, very obtuse, erect, overtopping the pentagonal style-apex, which is depressed and bears a small central tubercle.

**Upper Guinea.** Cameroons: Bipinde, Zenker, 1823!

8. **T. tenuipedunculata**, K. Schum. in *Engl. Jahrb.* xvii. 144. A very slender twiner, glabrous in all parts. Leaves spreading; petiole  $3$ - $4\frac{1}{2}$  lin. long; blade  $1$ - $1\frac{1}{2}$  in. long, 4-9 lin. broad, ovate, oblong-ovate, or lanceolate-ovate, tapering to an acute or subobtuse point, mucronate, base rounded or subtruncate. Peduncles sublateral, 1-2 in. long, filiform, bearing two distant clusters of small, dark-coloured flowers; pedicels 6-8 lin. long, hair-like. Sepals  $\frac{2}{3}$  lin. long, lanceolate, acute. Corolla rotate, 4 lin. in diam.; lobes 2 lin. long, narrowly lanceolate-attenuate, acute. Coronal-tubercles minute, fleshy, transverse-oblong, seated at the base of the staminal-column, which is rather more than  $\frac{1}{2}$  lin. long. Style truncate, depressed at the apex.

**Lower Guinea.** Leango: Chinchoco district, on the border of a mountain forest near Povo Zala, Soyaur, 163!

9. **T. stenoloba**, N. E. Br. in *Kew Bulletin*, 1895, 257. Stems slender, twining, pubescent. Leaves probably fleshy; petiole  $1\frac{1}{2}$ -2 lin. long; blade  $\frac{3}{4}$ - $1\frac{1}{4}$  in. long, 4-8 lin. broad, oblong or elliptic-oblong, very obtuse, mucronulate, obtuse or cuneately rounded into the petiole at the base, glabrous on both sides, midrib puberulous above, margins sparingly ciliolate when young. Flower-clusters sessile at the nodes, several-flowered, pubescent on the exceedingly short axis; pedicels 7-8 lin. long, hair-like, glabrous. Sepals  $\frac{1}{2}$  lin. long, lanceolate, acuminate, glabrous. Corolla 5-lobed nearly to the base; lobes  $2\frac{1}{2}$  lin. long, linear from a widened base, slightly dilated at the apex, spirally twisted to the right in bud, glabrous. Coronal-tubercles adnate to the filament part of the staminal-column from near its base up to the anthers, fleshy, truncate at their base, narrowing upwards. Anther-appendages reniform, inflexed over the truncate apex of the style, which does not project beyond them.—*Astephanus stenolobus*, K. Schum. in *Engl. Pfl. Ost-Afr.* C. 321; and in *Engl. & Prantl, Pflanzenfam.* iv. ii. 223, fig. 65, C, D, and 224.

**Mozamb. Dist.** German East Africa: Usambara; Doda, Holst, 7977a!

10. **T. orthocaulis**, *K. Schum. in Engl. Jahrb.* xxiii. 235. Stems several from a short rhizome, 2–2½ ft. high, erect, straight or somewhat curved, youngest parts minutely puberulous, otherwise glabrous. Leaves spreading; petiole 1 lin. long; blade 1¼–2¾ in. long, 1½–4½ lin. broad, lanceolate or linear, attenuate-acute at both ends, recurved at the margins, glabrous. Peduncles axillary, ¾–4¾ in. long, longer than the leaves, generally bearing about 3 fascicles of flowers; pedicels at first about 2½ lin. long, elongating to 6–7 lin., filiform, minutely puberulous. Sepals ½ lin. long, minutely puberulous. Corolla divided nearly to the base; lobes about 1¼ lin. long, narrow, dark purple. Coronal-tubercles adnate to the staminal-column near its base, slightly prominent, obtuse. Staminal-column ½ lin. long. Follicles about 1¼–1¾ in. long, very narrow, cylindrical, acuminate at both ends.

**Upper Guinea.** Without precise locality, *Afzelius*, 138.

*Imperfectly known species.*

11. **T. Adalinæ**, *K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 286. Leaves membranous, with a closed sinus and overlapping basal lobes. Branches of the inflorescence leafless.

West Tropical Africa.

I have not seen this plant, which is said to be somewhat like *T. sylvatica*, Decne., and the above is all the description that is given of it. The description agrees (so far as it goes) with *Marsdenia profusa*, N. E. Br.

34. **ONCOSTEMMA**, *K. Schum. in Engl. Jahrb.* xvii. 148.

Calyx 5-partite. Corolla campanulate-rotate, deeply 5-lobed; lobes overlapping to the left in bud. Corona double; outer of 5 fleshy lobes united into a ring at their base, arising from the base of the corolla, opposite the corolla-lobes and close to the thick fleshy annular slightly lobed inner corona, which is adnate to the staminal-column. Staminal-column arising from the base of the corolla; anthers short, connivent over the apex of the style. Pollen-masses subhorizontal, minute, subglobose, solitary in each anther-cell, attached in pairs by short caudicles to the pollen-carriers. Style flattened at the apex, with a slightly convex or bilobulate centre.—A twining shrub. Leaves opposite. Inflorescence axillary (sublateral?), pedunculate, lax, dichotomously cymose, passing into sessile abbreviated racemes; flowers small.

Species 1, endemic, unknown to me.

1. **O. cuspidatum**, *K. Schum. in Engl. Jahrb.* xvii. 148, t. vi. fig. R—T. Stem twining; branches slender, with a puberulous line down one side. Leaves herbaceous: petiole 7–9 lin. long; blade 2¼–2¾ in. long, 7⁄8–1¼ in. broad, oblong, acuminate and very acute, acute at the base, glabrous on both sides, sometimes variegated with white. Inflorescence about 6 in. long; internodes about 1½ in. long; branches 3–4 lin. long, bearing numerous flowers; pedicels slender. Sepals ½–¾

lin. long, lanceolate, acuminate, ciliate. Corolla about  $\frac{1}{4}$  in. in diam., campanulate-rotate or subrotate, 5-lobed to three-fourths of the way down; tube ventricose 1- $1\frac{1}{4}$  lin. long; lobes elliptic-ovate, obtuse, glabrous, green outside, brownish inside. Outer coronal-lobes minute, deltoid, fleshy, united into a ring at the base; inner corona a thick fleshy ring, about half as long as the  $\frac{1}{2}$  lin. long staminal-column.—K. Schum. in Engl. Jahrb. xxiii, 235, and in Engl. & Prantl, Pflanzenfam. iv. ii. 297; Henriques in Bolet. Soc. Brot. x. 165.

**Upper Guinea.** Cameroons: near Yaunde, *Zenker*, 665.

**Lower Guinea.** Island of St. Thomas: near Batepa, 1750 ft., *Moller*, 99.

### 35. NANOSTELMA, Baill. Hist. Pl. x. 247.

Flowers minute. Corolla subcampanulate, 5-lobed; lobes narrowly overlapping. Corona annular, thick, obtusely 5-crenate, surrounding the short and thick staminal-column under the anthers. Anthers terminated by an inflexed membrane. Style capitate, papillose, with the vertex depressed. Follicles narrowly linear, acute, glabrous.—A perennial glabrous herb, with knotted rhizome and erect stems. Leaves opposite, sessile, lanceolate. Flowers lateral at the uppermost nodes, in long-peduncled lax racemose cymes, and forming a compound terminal raceme.

An endemic genus of one species, not seen by me.

1. **N. congolana**, *Baill. Hist. Pl. x. 248*. Name only, no description beyond the above.—*N. congolanum*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 248.

**Lower Guinea.** Congo.

### 36. SPHÆROCODON, Benth. in Benth. et Hook. f. Gen. Pl. ii. 772.

Calyx 5-partite. Corolla campanulate or subcampanulate, 5-lobed; lobes overlapping and slightly twisted to the left in bud. Corona of 5 small fleshy compressed tubercles or teeth, radiating or ascending from the staminal-column some distance above its base. Staminal-column arising from the base of the corolla; anthers erect, obtuse, without appendages. Pollen-masses erect, solitary in each anther-cell, not very minute, united in pairs by very slender caudicles to the minute and rather thin pollen-carrier. Style shorter than the anthers, truncate and shortly 5-rayed at the apex.—Perennial herbs with a woody or tuberous rootstock. Stems erect, not twining. Leaves opposite, shortly petiolate, elliptic or oblong. Flowers of moderate size, in pedunculate sublateral umbel-like cymes.

Species 2, one of which is also found in Natal.

This genus differs from *Tylophora* in its dwarfer erect habit, unbranched inflorescence with numerous bracts, compressed coronal-lobes and much larger and more oblong pollen-masses.

- Corolla-tube distinctly campanulate,  $2\frac{1}{2}$  lin. long . 1. *S. obtusifolium*.  
 Corolla with its united part  $\frac{2}{3}$  lin. long, not forming a  
 distinct tube, scarcely more than saucer-shaped . 2. *S. melananthus*.

1. ***S. obtusifolium***, Benth. in Hook. Ic. Pl. xii. 78, t. 1190. Rootstock woody. Stems several to a root, erect, 1-3 ft. high, branching at the base only, softly tomentose. Leaves spreading; petiole 2-3 lin. long; blade  $1\frac{1}{2}$ -3 in. long,  $\frac{5}{8}$ - $1\frac{3}{4}$  in. broad, oblong to elliptic, usually very obtuse and apiculate, sometimes subacute, broadly or cuneately rounded at the base, subglabrous or sparsely pubescent above, softly pubescent beneath. Cymes umbel-like, sublateral, pedunculate, 6-13-flowered; peduncles  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, tomentose; bracts 1-2 lin. long, linear, pubescent; pedicels 3-4 lin. long, tomentose. Sepals 2 lin. long, linear-lanceolate, acute, pubescent outside and at the apex inside. Corolla dark purple,  $3\frac{1}{2}$ -4 lin. in diam., broadly campanulate (not globose as originally described), 5-lobed to  $\frac{1}{3}$  of the way down or rather more; tube  $2\frac{1}{2}$  lin. long; lobes  $1\frac{3}{4}$  lin. long, ovate, obtuse, outside more or less puberulous on the lobes, inside loosely clothed with very fine jointed (cobwebby?) hairs. Coronal-lobes arising  $\frac{1}{2}$  lin. above the base of the staminal-column, radiating, fleshy, rather minute, tubercle-like, compressed, oblong, obtuse. Caudicles very slender.—Hiern in Cat. Afr. Pl. Welw. i. 692. *S. obtusifolia*, K. Schum. in Engl. Pfl. Ost-Afr. C. 326, and in Engl. & Prantl., Pflanzenfam. iv. ii. 283, fig. 85, J-L, and 285. *S. natalense*, Benth. in Hook. Ic. Pl. xii. 79. *S. natalensis*, K. Schum. in Engl. & Prantl., Pflanzenfam. iv. ii. 285. *S. caffrum*, Schlechter in Journ. Bot. 1895, 339. *Tylophora caffra*, Meisn. in Hook. London Journ. Bot. 1843, ii. 542, by error 442. *Gongronema Welwitschii*, K. Schum. in Engl. Jahrb. xvii. 145.

**Lower Guinea.** Angola: Pungo Andongo; in thickets near Luxillo River, *Welwitsch*, 4195! 4196!

**Nile Land.** Uganda: East side of Lake Albert Edward, on dry grassy hills, *Scott-Elliott*, 8029!

**Mozamb. Dist.** Portuguese East Africa: by the River Shire near Morambala *Kirk*! British Central Africa: Nyasaland; Namasi, *Cameron*! and without precise locality, *Buchanan*, 1370!

Also in Natal, there being no distinction between *S. natalense* and the tropical plant.

2. ***S. melananthus***, *N. E. Br.* Plant 6-10 in. high, branching at the base. Stems erect, terete, puberulous. Leaves numerous, opposite, 4-8 lin. apart, ascending-spreading; petiole  $\frac{1}{2}$ -1 lin. long; blade  $\frac{3}{4}$ - $1\frac{1}{3}$  in. long,  $3\frac{1}{2}$ -7 lin. broad, elliptic-oblong, subacute, rounded or obtuse at the base, slightly puberulous on the veins and midrib beneath, elsewhere glabrous. Umbels lateral at the nodes, pedunculate, 2-3- or sometimes 1-flowered; peduncles 5-11 lin. long, slender, puberulous; bracts  $\frac{3}{4}$ -3 lin. long, subulate to linear-lanceolate, acute; pedicels 6-8 lin. long, slender, puberulous. Sepals 1 lin. long,  $\frac{1}{3}$ - $\frac{1}{2}$  lin. broad, lanceolate or oblong, acute, spreading, glabrous. Corolla subcampanulate, about  $\frac{1}{4}$ - $\frac{1}{3}$  in. in diam., lobed to  $\frac{2}{3}$  of the way down,

quite glabrous on both sides, blackish-violet or blackish-purple; united part (which scarcely forms a tube)  $\frac{2}{3}$  lin. long; lobes  $1\frac{1}{2}$  lin. long, 1 lin. broad, ascending, ovate-oblong, obtuse. Coronal-lobes arising from the middle of the filamental part of the staminal-column,  $\frac{1}{6}$  lin. long, compressed, incurved-erect, acute, somewhat resembling the curved prickles of a rose. Staminal-column  $\frac{1}{2}$  lin. long, of which  $\frac{1}{4}$  lin. belongs to the blackish-purple filament-part; anthers erect, oblong, obtuse, with very narrow membranous sides to the upper part, but no terminal appendage. Style not exceeding the anthers, truncate or slightly depressed in the centre at the apex.

**Lower Guinea.** Angola: Amboella; by the River Quito, below the River Longa, 3700 ft., Baum, 526!

### 37. GYMNEMA, R. Br.; Benth. et Hook. f. Gen. Pl. ii. 769.

Calyx 5-partite. Corolla 5-lobed to the middle or beyond; tube campanulate; lobes ascending or spreading, overlapping to the left in bud. Corona arising from and adnate to the corolla-tube, either of 5 fleshy lobes adnate up to the mouth of the corolla-tube, with more or less incurved tips, or of 5 pairs of fleshy ridges on the lower part of the tube, alternating with the corolla-lobes, densely ciliate (always?) Staminal-column arising from the base of the corolla. Anthers short, erect, with short membranous appendages. Pollen-masses erect, solitary in each anther-cell. Style often produced beyond the anthers. Follicles smooth. Seeds crowned with a tuft of hairs.—Twining shrubs, with opposite leaves. Umbels sublateral, often opposite. Flowers small.

Species several, distributed through the tropical and subtropical regions of the Old World; only one species that certainly belongs to this genus is known from Tropical Africa. Of the three others recorded, one is *Marsdenia Schimperii*, Deene.; another is probably a *Secamone*; and the third does not belong to the order.

1. **G. sylvestre**, R. Br. in Mem. Wern. Soc. i. 33. Stem climbing, woody,  $1-1\frac{1}{2}$  lin. thick, shortly tomentose, as are also the petioles, peduncles, bracts, pedicels and calyx. Leaves spreading; petiole 3-10 lin. long; blade  $\frac{3}{4}-3$  in. long,  $\frac{1}{3}-1\frac{1}{2}$  in. broad, ovate, elliptic, elliptic-ovate, or lanceolate-ovate, acute or shortly and rather abruptly acuminate, varying from shortly and broadly cuneate to rounded or cordate at the base, glabrous or pubescent (usually sparsely so) above, undersurface varying through all stages from glabrous to softly and densely pubescent. Umbels opposite, subaxillary, pedunculate or sessile, rather densely many-flowered; peduncles 1-5 lin. long, sometimes producing successive umbels or whorls of flowers; pedicels 1-3 lin. long. Sepals 1 lin. long, elliptic-oblong, very obtuse, ciliate. Corolla 2 lin. in diam., glabrous; tube campanulate,  $\frac{3}{4}-1$  lin. long; lobes spreading-recurved, about as long as the tube, oblong-ovate, obtuse, fleshy, minutely ciliate, yellowish-white. Coronal-lobes fleshy, channelled down the face, inserted on and adnate to the corolla-tube,

prominent and glabrous or nearly so at the subacute free incurved tips, densely ciliate on each side of the decurrent part below. Style protruded much beyond the erect anthers, exceeding the corolla-tube, but rarely as long as the corolla-lobes; apical part stout, ovoid, obtuse, slightly two-lobed or entire. Follicles  $2\frac{1}{2}$ – $3\frac{1}{2}$  in. long,  $\frac{1}{3}$  in. thick, lanceolate, attenuate into a beak, glabrous. Seeds  $3\frac{1}{2}$ –5 lin. long, ovate, plano-convex, with a rather broad marginal wing, glabrous, brown.—DC. Prod. viii. 621; A. Rich. Tent. Fl. Abyss. ii. 43; Hook. f. Fl. Brit. Ind. iv. 29; Wight, Ic. Pl. ii. i. 3, t. 349; Martelli, Fl. Bogos. 55; K. Schum. in Engl. Pfl. Ost-Afr. C. 325, and in Engl. & Prantl, Pflanzenfam. iv. ii. 283, fig. 85, F–G, and 284, and in Engl. Jahrb. xxx. 385. *G. rufescens*, Decne., and *G. subvolubile*, Decne., in Ann. Sc. Nat. 2 sér. ix. 277, t. 11, fig. A, and in DC. Prod. viii. 621. *G. subvolubile*, Hook. Niger Fl. 455; De Wild. & Durand, Reliq. Dewevr. 159. *G. humile*, Decne. in DC. Prod. viii. 621; A. Rich. Tent. Fl. Abyss. ii. 42. *G. M'Kenii*, Harv. Gen. S. Afr. Pl. ed. 2, 239. *G. fruticulosum*, Hochst. in Flora, 1844, 101. *G. geminatum*, Hiern in Cat. Afr. Pl. Welw. i. 691, not of R. Br. *Periploca sylvestris*, Retz. Obs. ii. 15; Willd. Phytog. 7, t. 5, fig. 3, and Sp. Pl. i. 1252. *Cynanchum subvolubile*, Schumach & Thonn. Beskr. Guin. Pl. 150. *C. senegalense*, Sieber ex Decne. in DC. Prod. viii. 621. *Asclepias geminata*, Roxb. Hort. Beng. 20, and Fl. Ind. ii. 45 (1832).

**Upper Guinea.** Senegal, *Roger*, 49! *Sieber*, 22! Gold Coast: Accra, *Ansell*! Ada, *Thonning*; Cape Coast Castle, *Vogel*, 72! Lagos: near Owi Owi, *Millen*, 49 (1895 Coll.)! Ogumpa, *Dawodu*, 89! Niger River (Quorra), *Vogel*, 46! 166! *Barter*! Cameroons: Yaunde, *Zenker*, 1497!

**Nile Land.** Eritrea: Keren, *Steudner*, 756! *Beccari*, 283 (ex *Martelli*). Abyssinia: Plain of Hamedo, 4700 ft., *Schimper*, 117! near Gapdia, *Schimper*, 807! Modat Province, *Schimper*, 1752! near Jelajeranne, *Schimper*, 1722! and without precise locality, *Quartin Dillon & Petit*! Jur: Jur Ghattas, *Schweinfurth*, 2347!

**Lower Guinea.** Loango: Chinocho, *Soyaux*, 43! Angola: Pungo Andongo; on lofty ledges of the Præsidium, *Welwitsch*, 4198! Huilla; in thinly wooded parts of Morro de Lopollo, at Ferrao da Sola, *Welwitsch*, 4242!

**Mozamb. Dist.** German East Africa: Usaramo; Dar es Salaam, *Kirk*! Kondeland, on a mountain side by Lake Nyasa at Langenburg, 1600 ft., *Goetze*, 863 (ex *Schumann*). British Central Africa: Nyasaland, *Buchanan*, 1162! Likoma Island in Lake Nyasa, *Johnson*!

Extends into Madagascar, South Africa, and the drier parts of India. The Australian plant united with it by Bentham is quite distinct.

The leaves when chewed destroy the taste of sweetness. This was first observed by M. P. Edgeworth (Proc. Linn. Soc. i. 353). See also Hooper in Nature, xxxv. 565–567.

*Imperfectly known species.*

2. *G. crenatum*, *Klotzsch* in *Peters, Reise Mossamb. Bot.* 273. A climbing shrub, very much branched; branches grey, glabrous; branchlets reddish-pubescent. Leaves small, coriaceous; petiole 1–2 lin. long, reddish-pubescent; blade  $1\frac{1}{2}$  in. long, 9 lin. broad, oblong-ovate, obsolete crenate towards the obtuse apex, tapering below to a cuneate entire base, shining above, puberulous beneath. Cymes

axillary, twice shorter than the leaves, reddish-pubescent. Sepals very short, scarious at the margin, pubescent on the back. Corolla rotate, deeply 5-lobed, conical in bud, very shortly tomentose on both sides; lobes ovate-lanceolate, acute. "Corona none. Style-hood 5-lobed; lobes recurved; stigma obtuse, projecting."

**Mozamb. Dist.** Portuguese East Africa: Lower Zambesi; near Tete, Peters.

I have not seen this plant, but from the description I am sure that it is not a *Gymnema*, but may perhaps belong to the genus *Secamone*.

**Gymnema nitidum**, Benth. in Hook. Niger Fl. 456; Walp. Ann. iii. 61.—This plant is not an Asclepiad! Bentham must have examined a loose flower that did not belong to the plant, as his description, as well as his drawings on the typesheet, indicate the floral structure of *Gymnema*. But the type specimen has one bud still attached; this I have soaked and examined without removing it, and (although immature) I find its structure to be as follows: Sepals 5, short, thick and roundish. Petals 5, free, imbricate. Stamens 4, one being apparently somewhat imperfect, incumbent on the sides of the ovary. Ovary superior, trigonous with a subsessile shortly 3-lobed stigma. I could not dissect the bud further without destroying it. The above characters and the general appearance of the plant refer it to *Salacia*; I therefore propose for it the name of **Salacia nitida**, N. E. Br.

### 38. ANISOPUS, N. E. Br. in Kew Bulletin, 1895, 259.

Calyx 5-partite. Corolla-tube short, campanulate; lobes 5, spreading, very narrowly overlapping or almost valvate in bud. Corona double; outer inserted at the mouth of the corolla-tube, consisting of 5 fleshy lobes at the sinuses (perhaps thickened sinus-angles of the corolla?) or of a membranous ring; inner of 5 fleshy lobes arising from the staminal-column, adnate to it in their lower part, free above, opposite the anthers. Staminal-column arising from the base of the corolla-tube; anthers erect with membranous appendages. Pollen-masses erect, solitary in each anther-cell, attached in pairs by short caudicles to the pollen-carriers. Follicles very long, widely divergent, terete, acute, smooth, seeds crowned with a tuft of hairs.—A tall glabrous twiner. Leaves opposite, petiolate, herbaceous, with distinct veins. Flowers in umbels, axillary and from both axils, one umbel pedunculate, the other sessile and developing later.

Species 2, endemic.

Since the publication of this genus I have seen flowers preserved in fluid, in which the processes I have described as outer coronal-lobes appear to be raised or tubercular projections of the sinuses of the corolla itself rather than true coronal processes. The name is formed from *ἀνισος*, unequal and *πούς*, a foot, in allusion to one umbel of each pair being stalked and the other sessile. The coronal-lobes or tubercles at the mouth of the corolla resemble those of *Leptadenia*, and those on the staminal-column those of *Marsdenia*, near which genus I place it for the present.

Leaves rounded at the base; outer corona of 5 minute lobes . . . . .

1. *A. Mannii*.

Leaves acute at the base; outer corona of a membranous ring . . . . .

2. *A. bicoronata*.

1. **A. Mannii**, *N. E. Br. in Kew Bulletin*, 1895, 259. Stem twining to a height of 12–15 ft., about 1 lin. thick in the flowering part, glabrous, marked with stipulary lines between the bases of the petioles. Leaves spreading; petiole  $\frac{1}{2}$ – $\frac{3}{4}$  in. long, bearing a distinct gland at the apex; blade  $2\frac{1}{4}$ –3 in. long,  $1\frac{1}{4}$ – $1\frac{3}{4}$  in. broad, elliptic or elliptic-oblong, abruptly acuminate into a 5–6 lin. long point, broadly rounded, subtruncate or emarginate at the base, glabrous on both sides, herbaceous. Umbels globose, many-flowered, distinctly axillary and from both axils; the umbel from one axil is pedunculate and bracteate, or the peduncle elongates into a bracteate branch up to 2 in. long (or longer?), with 2–4 (or perhaps more) nodes, bearing a sessile umbel at each node; whilst the opposite umbel is sessile in the axil and develops later; peduncles  $\frac{1}{6}$ – $\frac{1}{2}$  in. long, glabrous; bracts of the pedunculate umbels leafy,  $\frac{1}{2}$ –1 in. long,  $1\frac{1}{2}$ –3 lin. broad, lanceolate, acuminate, shortly petiolate or subsessile, glabrous; of the sessile umbels often minute; pedicels  $3\frac{1}{2}$ –6 lin. long, glabrous. Sepals about  $\frac{3}{4}$  lin. long and nearly as broad, elliptic-ovate, obtuse, with a few very minute hairs on the back, minutely ciliate. Corolla  $5\frac{1}{2}$ –6 (in the dried state  $4\frac{1}{2}$ ) lin. in diam.; tube 1– $1\frac{1}{4}$  lin. long, campanulate; lobes 2 (in the dried state  $1\frac{1}{2}$ ) lin. long,  $1\frac{1}{2}$  lin. broad, ovate-oblong, subobtuse, very spreading, glabrous outside, pubescent all over within. Outer coronal-lobes (?) or thickened sinus-angles  $\frac{1}{4}$  lin. long,  $\frac{1}{2}$  lin. broad, fleshy, broadly rounded, pubescent; inner coronal-lobes arising from the base of the staminal-column and as long as it, 1– $1\frac{1}{4}$  lin. long, adnate up to the base of the anthers, thick and fleshy, channelled down the back, with acute margins, incurved over the anthers at the apex, acute, obtuse or minutely bifid. Anther-appendages ovate, acuminate, erect, adpressed to the apical part of the style, which is shortly exerted beyond them, moderately stout and conical and sometimes bifid at the apex. Follicles 6–8 in. long, 4– $4\frac{1}{2}$  lin. thick (or larger?), terete, tapering to a shortly hooked point, widely divergent, smooth, glabrous. Seeds (very immature) 6– $6\frac{1}{2}$  lin. long,  $1\frac{3}{4}$ –2 lin. broad, narrowly oblong, smooth.—Hook. Ic. Pl. t. 2453; K. Schum. in Engl. & Prantl, Pflanzenfam. Nachtr. zum ii.–iv. 288. *Marsdenia rhynchogyna*, K. Schum. in Engl. Jahrb. xxiii. 234.

**Upper Guinea.** Southern Nigeria: Akassa, *Everett Dutton*, 32! Cameroons: Lolodorf, *Staudt*, 376, 356!

**Lower Guinea.** Spanish Gabcon: Corisco Bay, *Mann*, 1862!

This is the African plant mentioned by Bentham and Hooker f. in *Genera Plantarum*, ii. 777, under *Hoya*!

2. **A. bicoronata**, *N. E. Br.* Stem climbing; branches slender, with a spreading pubescence on the youngest parts. Leaves spreading; petiole  $2\frac{1}{2}$ –7 lin. long; blade  $\frac{3}{4}$ –3 in. long,  $4\frac{1}{2}$ – $16\frac{1}{2}$  lin. broad, oblong, acute or somewhat obtuse, acute at the base, glabrous on both sides. Umbels 7–10-flowered; peduncles up to  $4\frac{1}{2}$  lin. long, puberulous; pedicels 5–6 lin. long, filiform, glabrous; bracts minute, lanceolate, pilose. Sepals  $\frac{1}{2}$  lin. long, narrowly subulate, pilose. Corolla 2 lin. long; tube semiglobose; lobes spreading, ovate. Outer corona a

membranous pubescent ring  $\frac{1}{4}$  lin. high, arising from the mouth of the corolla-tube; inner coronal-lobes  $\frac{1}{4}$  lin. long, arising near the apex of the stipitate staminal-column, tumescent, gibbous, with the apex narrowed and inflexed on the apex of the style. Staminal-column  $1\frac{1}{4}$  lin. long.—*Marsdenia bicoronata*, K. Schum. in Engl. Jahrb. xxiii. 235.

**Upper Guinea.** Without locality, *Azelius*.

I have not seen this plant and refer it to the genus *Anisopus* with some hesitation; but the situation of the outer corona at the mouth of the corolla-tube seems to indicate an alliance with that genus, and it may even be the same as *A. Mannii*, N. E. Br. A specimen (*Staudt*, 356) received from Berlin, under the name of *Marsdenia bicoronata*, K. Schum., does not agree with the description, and is *A. Mannii*.

### 39. MARSDENIA, R. Br.; Benth. et Hook. f. Gen. Pl. ii. 772.

Calyx 5-partite. Corolla-tube campanulate; lobes 5, erect, spreading or rotate-campanulate, overlapping to the left and straight or slightly twisted in bud. Corona of 5 fleshy lobes arising from the staminal column, with their basal part adnate to it, but often with free margins, or projecting like tubercles, which are sometimes confluent at the base, producing more or less the appearance of an outer corona, their apical part free, erect or somewhat connivent, applied to the backs of the anthers. Staminal-column arising from or near the base of the corolla; anthers erect, with the cells usually more or less concealed under the margin of the dilated part of the style; appendages membranous, free or connate, more or less incumbent on the top of the style. Pollen-masses erect, solitary in each anther-cell, attached in pairs to the pollen-carriers by short or elongated, moderately stout caudicles. Style depressed, convex, conical, or produced into a long beak at the apex. Follicles with a thick pericarp, smooth, sometimes winged. Seeds crowned with a tuft of hairs.—Climbing or erect perennials. Leaves opposite. Flowers small or of moderate size, arranged in umbel-like cymes, or in small sessile umbels or clusters scattered along the branches of the cymes or panicles, which are lateral at the nodes or axillary.—*Dregea*, E. Meyer; Benth. et Hook. f. Gen. Pl. ii. 775. *Pterophora*, Harv. Gen. South Afr. Pl. ed. i. 223. *Traunia*, K. Schum. in Notizbl. Königl. Bot. Gart. Berlin, i. 23.

A large genus, widely distributed throughout the tropical and subtropical regions.

I cannot find any character whatever to separate *Dregea* from *Marsdenia*. The coronal-lobes of *Dregea* are erect in the species on which Meyer founded his genus, as well as in all the others that I have examined, but in one or two they are very much laterally compressed, and as viewed from above present a stellate appearance.

\*Corolla-lobes  $2-4\frac{1}{2}$  lin. long.

Stem and petioles densely villous with long spreading hairs. . . . . 1. *M. crinita*.

Stem and petioles pubescent, subtomentose or glabrous, without long hairs, except in *M. angoleusis*.

- Corolla-lobes linear,  $\frac{3}{4}$ -1 lin. broad; apex of style exerted beyond the anthers into a long beak . 2. *M. Schimperii*.
- Corolla-lobes oblong, 1-2 lin. broad; apex of the style not beaked.
- Sepals  $2\frac{1}{2}$ - $4\frac{1}{2}$  lin. long; coronal-lobes linear-oblong or lanceolate, about as long as the staminal-column . . . . . 3. *M. zambesiaca*.
- Sepals  $1\frac{1}{2}$  lin. long; coronal-lobes truncate, shorter than the staminal-column . . . . . 4. *M. spissa*.
- Sepals 1 lin. long; coronal-lobes subulate-tipped, much longer than the staminal-column . . . . . 5. *M. rubicunda*.
- \*\*Corolla-lobes under 2 lin. long.
- Leaves not cordate at the base.
- Style produced much beyond the anther-appendages into a long filiform beak . . . . . 6. *M. umbellifera*.
- Style not produced beyond the anther-appendages.
- Pedicels  $1-1\frac{1}{2}$  lin. long . . . . . 7. *M. Taylora*.
- Pedicels 6-8 lin. long . . . . . 8. *M. efulensis*.
- Leaves cordate at the base.
- Flowers umbellate at the ends of the cyme-branches . . . . . 9. *M. angolensis*.
- Flowers in small fascicles or sessile umbels, which are compactly racemose along the cyme-branches.
- Leaves cordate-oblong, twice as long as broad.
- Stems puberulous; corolla-tube hairy within . 10. *M. leonensis*.
- Stem glabrous; corolla-tube glabrous within . 11. *M. glabriflora*.
- Leaves very broadly cordate-ovate, not more than  $\frac{1}{3}$  longer than broad.
- Coronal-lobes with a tubercle at their base . 12. *M. racemosa*.
- Coronal-lobes without a tubercle at their base . 13. *M. profusa*.

1. ***M. crinita***, *Oliver in Hook. Ic. Pl. t. 1993*. A large twiner, all the younger parts of the stem, together with the petioles and all parts of the inflorescence (except the corolla) densely covered with long spreading tawny or rust-coloured hairs. Leaves spreading; petiole  $\frac{5}{8}$ - $1\frac{1}{2}$  lin. long; blade  $2-4\frac{1}{2}$  in. long,  $1\frac{1}{4}$ - $2\frac{3}{4}$  in. broad, ovate or elliptic-ovate, acute or shortly acuminate, broadly rounded or cordate at the base, sparsely hairy above, hairy like the stem on the veins beneath, but with shorter hairs, ciliate. Cymes lateral or subaxillary, pedunculate, many-flowered,  $1\frac{1}{2}$ -2 in. in expanse; peduncles  $\frac{5}{8}$ - $1\frac{1}{4}$  in. long; pedicels 5-8 lin. long. Sepals 3-4 lin. long, lanceolate, acuminate. Corolla quite glabrous on both sides, white; tube  $1\frac{1}{2}$  lin. long, globose-campanulate; lobes 3-4 lin. long, oblong, obliquely acute, very spreading, with one twist. Coronal-lobes reaching to the apex of the style; their basal part  $\frac{3}{4}$  lin. long, orbicular or rhomboid-orbicular, adnate to the filament part of the staminal-column, projecting as broad wings at the sides; their apical part  $\frac{3}{4}$  lin. long, erect, free, oblong-linear, obtuse or denticulate. Anther-appendages scarcely reaching to the apex of the style, lanceolate, acute. Style not or scarcely exerted beyond the coronal-lobes, apical part very stout, shortly conical, with an obtuse or truncate apex.

**Upper Guinea.** Lagos : Oyo, Barter, 3426! Millson! Sierra Leone : near Bendemba, Scott-Elliott, 5651!

2. **M Schimperii**, Decne. in DC. Prod. viii. 616. A woody climber, with pale brown bark; young parts closely subtomentose. Leaves spreading; petiole  $\frac{1}{4}$ -1 in. long; blade 2-4 in. long, 1- $\frac{3}{4}$  in. broad, ovate or elliptic-ovate, more or less abruptly acuminate, broadly rounded at the base, tomentose or pubescent on the petioles and veins on the underside, pubescent above on the veins and with minute hairs sprinkled over the surface. Cymes lateral, pedunculate, many-flowered,  $1\frac{1}{2}$ -2 in. in expanse, about half as long as the leaves, tomentose on all parts except the corolla; peduncles  $\frac{1}{2}$ - $\frac{3}{4}$  in. long; bracts about 1 lin. long, lanceolate or ovate, acute, deciduous; pedicels 4-6 lin. long. Sepals  $1\frac{1}{4}$ -2 lin. long, ovate or ovate-lanceolate, acute. Corolla-tube globose-campanulate,  $1\frac{1}{4}$ - $1\frac{1}{2}$  lin. long, sparsely hairy within; lobes spreading,  $2\frac{3}{4}$ - $3\frac{1}{4}$  lin. long,  $\frac{3}{4}$ -1 lin. broad, linear-oblong, obtuse, more or less twisted, glabrous, minutely ciliate along one margin at the apex. Coronal-lobes 1 lin. long, erect, lanceolate, acute, their basal part adnate to the staminal-column, with thick free margins, their apical half free, shorter than the anther-appendages. Staminal-column,  $1\frac{1}{3}$  lin. long, conical; anther-appendages very membranous, more or less connate into a tube. Apical part of the style exerted  $1\frac{1}{2}$  lin. beyond the anther-appendages, very slender, slightly tapering, obtuse. Follicles 3 in. long,  $\frac{3}{4}$  in. or more thick, ovate-lanceolate, tapering gradually to an obtuse point, softly pubescent, probably fleshy or leathery when alive. Seeds 5 lin. long,  $2\frac{1}{2}$  lin. broad, plano-convex, with a narrow marginal wing, glabrous, light brown.—A. Rich. Tent. Fl. Abyss. ii. 42; Engl. Hochgebirgsfl. Trop. Afr. 343; Martelli, Florul. Bogos. 55; Penzig in Atti Congr. Bot. Internaz. 1892, 349; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 292. *Cynanchum Schimperii*, Hochst. ex Decne. in DC. Prod. viii. 617. *Gymnema? macrocarpum*, A. Rich. Tent. Fl. Abyss. ii. 43; Walp. Ann. iii. 62. *Traunia albiflora*, K. Schum. in Notizbl. Königl. Bot. Gart. Berlin, 1895, 23; in Engl. Pf. Ost-Afr. C. 326; and in Engl. & Prantl, Pflanzenfam. iv. ii. 283, fig. 85, T-V, and 287.

**Nile Land.** Eritrea : Mount Alam Kale, Schweinfurth & Riva, 1626! near Sambar, and from the River Amba to Monkullo, Penzig (ex Penzig); Keren, Beccari, 292! Habab; Rora Azgede Mountains, Hildebrandt, 488 (ex Engler). Abyssinia : near Gennia, Schimper, 260! Adowa, Quartin Dillon & Petit! Shireh; Beless Plain, Quartin Dillon (drawing seen!); Shoa, Petit (ex Richard); Jenda, Steudner, 260! Gafat, Steudner, 761 (ex Engler), and without precise locality, Schimper, 1012! Quartin Dillon & Petit, 20!

**Mozamb. Dist.** German East Africa : Kilimanjaro; Marangu, 4600 ft., Volkens, 2110!

Vatke (in Oest. Bot. Zeitschr., 1876, 146) suggests that *Gymnema macrocarpum*, A. Rich., may be the same as *Astephanus Schimperii*, Vatke (now *Podostelma Schimperii*, K. Schum.), but an examination of Richard's type made for me by Mr. Burkill proves it to belong here.

3. **M. zambesiaca**, *Schlechter in Journ. Bot.* 1895, 338. Stem twining, at first more or less puberulous, with the tips and unexpanded leaves reddish-tomentose, becoming glabrous, with a pale brown bark. Leaves spreading; petiole  $\frac{1}{2}$ – $1\frac{1}{4}$  in. long; blade  $\frac{3}{4}$ – $3\frac{1}{2}$  in. long,  $\frac{1}{2}$ – $2\frac{1}{2}$  in. broad, sublanceolate, ovate or elliptic-ovate, obtuse, acute or acuminate, often rather abruptly so, varying from cuneate to subcordate at the base, quite glabrous on both sides when fully developed. Cymes umbel-like, pedunculate, lateral at the nodes, several-flowered; peduncles  $\frac{1}{4}$ – $\frac{1}{2}$  in. long, rusty-pubescent or subtomentose; bracts leafy, deciduous,  $\frac{1}{4}$ – $\frac{1}{3}$  in. long, 1–2 lin. broad, oblanceolate or obovate, acute, glabrous; pedicels  $\frac{1}{2}$ – $\frac{3}{4}$  in. long, reddish-pubescent. Sepals large,  $2\frac{1}{2}$ – $4\frac{1}{2}$  lin. long,  $1\frac{1}{2}$ –2 lin. broad, varying from oblong to elliptic-oblong, subacute, thin, glabrous, very minutely ciliate. Corolla creamy-white; tube  $1\frac{1}{2}$ – $1\frac{3}{4}$  lin. long, campanulate; lobes rotately spreading, 4 lin. long, 2 lin. broad, oblong, obtuse or emarginate, glabrous on the back, pubescent within. ciliolate along one margin. Coronal-lobes  $1\frac{3}{4}$ –2 lin. long, as long as or slightly exceeding the staminal-column, reaching to the mouth of the corolla-tube, linear-oblong or ovate-lanceolate, obtuse or subacute, with their free tips incurved over the apex of the style and with narrow free margins to their adnate part. Anther-appendages deltoid-ovate, acute or obtuse. Style truncate, with a convex disc at the apex. Follicles about  $\frac{3}{4}$  in. long,  $1\frac{1}{4}$  in. thick, ovoid, narrowed to an obtuse point, somewhat fleshy, smooth, glabrous, olive-brown.—*Dreyea macrantha*, Klotzsch in Peters, Reise Mossamb. Bot. 272; K. Schum. in Engl. Jahrb. xxviii. 460, and in Engl. Pfl. Ost-Afr. C. 326. *Periploca petersiana*, Vatke in Oest. Bot. Zeitschr. 1876, 147.

**Lower Guinea.** Angola: Amboella; by the River Kubango, 3200 ft., *Baum*, 450!

**Mozamb. Dist.** German East Africa: Uhehe; by the River Lukosse, 2600 ft., *Goetze*, 481 (ex *K. Schumann*). Portuguese East Africa: Ruza Island, *Forbes!* Lower Zambesi; Tete, *Kirk!* British Central Africa: Nyasaland; Chiromo, *Scott-Elliot*, 2791 (not 3791 as originally quoted)! Boruma on the Zambesi, *Mengharth*, 802! Ngamiland; Kwebe Hills, 3000–3500 ft., *Lugard*, 60! *Mrs. Lugard*, 17!

Sir John Kirk states on his label that the flowers are “of a faint yellowish colour and have a most offensive smell, unlike anything else I know. If this remains near one for a short time it produces pain in the forehead with all the feelings of cold in the head.”

4. **M. spissa**, *S. Moore in Journ. Bot.* 1901, 260. A woody climber or shrub; young shoots  $\frac{1}{8}$  in. or more in thickness, at first reddish-puberulous or subtomentose, becoming glabrous. Leaves rather ascending or spreading; petiole  $\frac{1}{3}$ – $1\frac{1}{4}$  in. long; blade  $1\frac{1}{2}$ –4 in. long,  $\frac{3}{4}$ – $2\frac{1}{4}$  in. broad, ovate or elliptic-ovate, acuminate or cuspidate into an obtuse point, varying from cuneately-rounded to subtruncate or slightly emarginate at the base, at first with a reddish pubescence, becoming glabrous on both sides. Cymes lateral or sublateral, pedunculate, subumbellately and densely many-flowered, minutely reddish-tomentose on all parts except on the corolla; peduncles  $\frac{1}{4}$ –1 in. long; bracts 1–3 lin. long, linear-oblong to oblanceolate, acute, deciduous;

pedicels  $\frac{1}{2}$  in. long. Sepals  $1\frac{1}{2}$  lin. long and nearly as broad, very broadly ovate, acute. Corolla rotate-campanulate, 5-6 lin. in diam.; lobes  $1\frac{3}{4}$ - $2\frac{1}{4}$  lin. long,  $1\frac{1}{2}$  lin. broad, oblong or ovate-oblong, very obtuse, tomentose along the more or less revolute margins and at the apex within. Coronal-lobes barely 1 lin. long, thick and fleshy, obliquely truncate at the apex, arising from the base of the staminal-column, adnate to it in their lower half, and a little shorter than it. Anther-appendages inflexed or connivent over the shortly conical style-apex. Follicles 3- $3\frac{1}{2}$  in. long,  $1\frac{1}{4}$ - $1\frac{1}{2}$  in. in diam., elongate-ovoid, acuminate, with numerous broad frill-like wings.—*Pterygocarpus abyssinicus*, Hochst. in Flora, 1843, 78; Walp. Rep. vi. 491. *Hoya africana*, Decne. in DC. Prod. viii. 639; A. Rich. Tent. Fl. Abyss. ii. 46; Vatke in Linnæa, xl. 217. *Dregea africana*, Martelli, Florul. Bogos. 55; Penzig in Atti Congr. Bot. Internaz. 1892, 349. *Dregea abyssinica*, K. Schum. in Engl. Pfl. Ost-Afr. C. 326; and in Engl. & Prantl, Pflanzenfam. iv. ii. 293 and 294, fig. 90, B. *D. rubicunda*, Hiern in Cat. Afr. Pl. Welw. i. 693, not of K. Schum.

**Upper Guinea.** Lagos: Abeokuta, Barter, 3369!

**Nile Land.** Eritrea: Ginda Valley, 2800-3300 ft., *Schweinfurth & Riva*, 2186! Keren, *Beccari*, 48! Galabat: region of Matamma, *Schweinfurth*, 239! Abyssinia: near Sabra, *Schimper*, 1294! 1366! Medschara (Mejara) Region, *Schimper*, 1573! and without precise locality, *Quartin Dillon & Petit*, 27! Semar: Fazokl, *Kotschy*, 566! Jur: Wau, *Schweinfurth*, 1696! British East Africa: near Lake Marsabit, *Lord Delanere*! near Lake Baringo, 3400 ft. *Johnston*!

**Lower Guinea.** Lower Congo, *Smith*! Angola: Cazengo: forests of Muxaulo, *Welwitsch*, 4226! Libongo; forests by the River Litume, *Welwitsch*, 4227! Bumbo; in the Chella Mountains, *Welwitsch*, 4248! Huilla; near the Banza, *Welwitsch*, 4249!

Barter notes the flowers as cream-coloured, Welwitsch as greenish-yellow outside, whitish inside.

5. **M. rubicunda**, *N. E. Br.* A stout woody climber, with the tips of the shoots, young leaves, inflorescence (except the corolla), and young fruit more or less covered with a salmon-red tomentum. Leaves  $1\frac{1}{4}$ - $3\frac{1}{2}$  in. long,  $\frac{3}{4}$ -3 in. broad, elliptic or elliptic-ovate, acute, obtuse or subtruncate, apiculate, varying from broadly cuneate to cordate at the base, glabrous or pulverulent beneath in the adult state. Cymes as in *M. abyssinica*; pedicels 3 lin. long. Sepals 1 lin. long,  $\frac{3}{4}$  lin. broad, elliptic-oblong or elliptic-ovate, obtuse. Corolla about  $\frac{1}{2}$  in. in diam.; tube short, 1 lin. long; lobes rotate,  $2\frac{1}{2}$  lin. long,  $1-1\frac{1}{4}$  lin. broad, oblong, obliquely retuse at the apex, glabrous on the back, pubescent within. Coronal-lobes  $1\frac{1}{2}$ - $1\frac{3}{4}$  lin. long, much longer than the staminal-column, ovate, with broad free margins to the adnate part, tapering above into free subulate or linear tips, that are incurved and acute, emarginate or bifid at the apex, channelled down the face. Staminal-column arising near the bottom of the corolla-tube,  $1-1\frac{1}{4}$  lin. long; anther-appendages ovate, acute, inflexed over the convex apex of the style. Follicles 3- $3\frac{1}{2}$  in. long, lanceolate, tapering to a blunt point, broadly 4-winged; wings more or less crenate or obtusely toothed.

Seeds 5 lin. long,  $3\frac{1}{2}$  lin. broad, ovate, concave-convex, brown, with a yellow-brown marginal wing, glabrous.—*Dregea rubicunda*, K. Schum. in Engl. Jahrb. xvii. 147; in Engl. Pfl. Ost-Afr. C. 326, t. 39, figs. A—H; in Engl. & Prantl, Pflanzenfam. iv. ii. 293, 294, fig. 90, A; and in Ann. Istit. Bot. Roma, vii. 43.

**Nile Land.** Somaliland: Ogaden; from Sassaber to Pozzi di Carbadani, *Riva*, 972 (285). *Robecchi-Bricchetti*, 122, 125, 129, 331, and by the River Dana (Dana?) *Riva*, 473 (all ex *Schumann*). Meshra, on the Gazelle River, *Schweinfurth*, 1255! Darfur, *Purdy*, 67! Denka: near Iao, *Schweinfurth*, sér. iii. 33 (ex *Schumann*). Mombasa, *Hildebrandt*, 2024! and 1944 (ex *Schumann*).

**Mozamb. Dist.** German East Africa: Usambara, Bombuera, *Holst*, 2195! Muo, *Holst*, 3041! Tanga, *Volkens*, 154!

The foliicles of this plant are very similar to those of *M. floribunda*, N. E. Br. (*Dregea floribunda*, E. Meyer).

6. ***M. umbellifera***, K. Schum. in Engl. Jahrb. xxviii, 460. A woody bush 3–6 ft. high, of compact habit; young branches tomentose, becoming glabrous. Leaves chiefly near the ends of the branches, thin; petiole 2–4 lin. long, tomentose; blade somewhat rhomboid or sublanceolate, broadest at the middle, narrowed in a curved line to an obtuse or subacute apex, cuneately tapering to an acute base, thinly covered with minute pubescence on both sides. Umbels sublateral at the upper nodes, very shortly pedunculate, 3–8-flowered; peduncle  $\frac{1}{2}$ – $1\frac{1}{2}$  lin. long, tomentose; pedicels  $\frac{3}{4}$ – $1\frac{1}{2}$  lin. long, tomentose. Sepals  $\frac{3}{8}$ – $\frac{1}{2}$  lin. long,  $\frac{2}{5}$ – $\frac{1}{2}$  lin. broad, ovate-oblong, acute, subtomentose. Corolla glabrous outside; tube  $\frac{3}{4}$ –1 lin. long, cylindric-campanulate, about  $\frac{3}{4}$  lin. in diam., with ten tufts of deflexed hairs in a ring at the middle, and bearded with long deflexed hairs at the mouth; lobes 1 lin. long,  $\frac{1}{3}$  lin. broad, linear, obtuse, puberulous on the inner face. Coronal-lobes  $\frac{2}{5}$  lin. long, erect, not quite reaching to the tips of the anther-appendages; basal half adnate, rectangular in transverse section, not winged; upper half free, linear, acute, membranous. Staminal-column  $\frac{1}{2}$  lin. long; anther-appendages lanceolate, acute, erect around the base of the terminal part of the style, which is produced much beyond them into a filiform beak  $1\frac{1}{4}$  lin. long.

**Mozamb. Dist.** German East Africa: Uhehe; by the Lukoma River (on the dry Steppe, 2600 ft., ex *Schumann*), *Goetze*, 478!

7. ***M. Taylori***, *Schlechter & Rendle in Journ. Bot.* 1896, 100. Stem twining,  $\frac{3}{4}$  lin. thick, glabrous; internodes 6–8 in. long. Leaves opposite, spreading, herbaceous, rather thin, glabrous; petiole 7–9 lin. long; blade 4– $4\frac{1}{4}$  in. long, 2 in. broad, elliptic-ovate, shortly acuminate, broadly cuneate at the base. Cymes from both axils, about 7–9 lin. in diam., rather dense, many-flowered; peduncles 2–4 lin. long, glabrous; bracts  $\frac{1}{4}$ – $\frac{1}{2}$  lin. long, suborbicular, glabrous, ciliate; pedicels 1– $1\frac{1}{2}$  lin. long, glabrous. Sepals  $\frac{3}{4}$  lin. long,  $\frac{2}{3}$  lin. broad, elliptic, obtuse, glabrous, minutely ciliate. Corolla urceolate, glabrous outside, densely bearded with white hairs at the mouth of the tube and with 5 tufts of deflexed hairs within; tube  $1\frac{1}{2}$  lin. long, about 1 lin. in diam. at the broadest

part; lobes  $\frac{2}{3}$  lin. long,  $\frac{1}{2}$  lin. broad, erect, oblong-ovate, obtuse and slightly emarginate at the apex, glabrous. Coronal-lobes  $\frac{1}{3}$ - $\frac{1}{4}$  lin. long, arising at the base of and about as long as the pollen-bearing part of the anthers, erect, thin in the dried state, closely applied to the backs of the anthers and easily overlooked. Staminal-column arising from the base of the corolla, 1 lin. long; filament part  $\frac{2}{3}$  lin. long, rather stout; anthers erect, subquadrate in the adnate basal part, which has very small projecting horny wings; pollen-bearing part free, oblong, terminated by short oblong-lanceolate acute connivent membranous appendages exceeding the coronal-lobes. Style not produced beyond the anther-appendages; terminal part conical, acute.

**Nile Land.** British East Africa: Rabai Hills, near Mombasa, *Taylor!*

This species is very distinct from all the other African members of the genus, and may be best likened to *M. verruculosa*, Decne., from Madagascar, from which it differs in its foliage and distinct filamental part to the staminal-column.

8. **M. efulensis**, *N. E. Br. in Hook. Ic. Pl. t. 2497.* Stem twining, woody, glabrous. Leaves distant; petiole 1-1 $\frac{1}{2}$  in. long; blade 3-4 $\frac{1}{2}$  in. long, 1 $\frac{1}{4}$ -2 $\frac{1}{4}$  in. broad, elliptic or elliptic-oblong, abruptly cuspidate-acute, with a cusp about  $\frac{1}{4}$  in. long, rounded at the base, glabrous on both sides. Cymes umbel-like, sessile, axillary and from both axils of each pair of leaves, 10-12-flowered; pedicels 6-8 lin. long, slender, very minutely asperate, or almost glabrous. Sepals elliptic-ovate, obtuse, ciliolate, with a few minute hairs on the back. Corolla subrotate; tube  $\frac{1}{2}$ - $\frac{3}{4}$  lin. long, broadly campanulate; lobes 1 $\frac{1}{2}$ -1 $\frac{3}{4}$  lin. long, 1 lin. broad, widely spreading, ovate, obtuse, glabrous outside, puberulous within, green. Coronal-lobes 1 $\frac{1}{4}$  lin. long, erect, overtopping the staminal-column, and adnate to it at their lower part, free above, concave on the back and winged on each side at the base, the middle part laterally compressed into a broad oblong wing-like gibbosity at the middle, and the apex abruptly contracted into a subulate point, glabrous. Staminal-column 1 lin. long; anthers oblong, erect, with broadly ovate membranous appendages incumbent on the very convex or shortly conical style-apex.

**Upper Guinea.** Cameroons: Efulen, *Bates, 378!*

9. **M. angolensis**, *N. E. Br. in Kew Bulletin, 1895, 258.* Stem twining, slender, with a short soft dense pubescence, mingled with long spreading hairs. Leaves spreading; petiole 1-1 $\frac{1}{2}$  in. long, pubescent like the stem; blade 2-3 in. long, 1 $\frac{1}{4}$ -2 in. broad, cordate-ovate, acuminate, pubescent above, subtomentose beneath. Cymes subaxillary, subsessile, about 1 $\frac{1}{2}$ -1 $\frac{3}{4}$  in. long and 2-3 in. in expanse, lax, composed of 2-3 primary branches, which are once or twice dichotomously divided, each division terminating in an umbel of 10-14 flowers, softly pubescent on all parts; pedicels 4-5 lin. long. Sepals  $\frac{3}{4}$ -1 lin. long,  $\frac{1}{2}$ - $\frac{3}{8}$  lin. broad, obovate-oblong to elliptic-oblong, very obtuse. Corolla retrorsely pubescent outside; tube 1 $\frac{1}{2}$ -2 lin. long, campanulate, retrorsely pubescent within; lobes  $\frac{2}{3}$ -1 lin. long, spreading, elliptic-oblong, very obtuse, fleshy, glabrous on the inner face. Coronal-lobes as long as the staminal-

column,  $1\frac{1}{2}$  lin. long, somewhat compressed, adnate in the lower half, which is deeply grooved on the back, with slightly spreading wing-like sides; apical half free, linear-oblong, obtuse or acute, slightly concave on the inner face, incurved over the backs of the anthers and apex of the style. Anther-appendages  $\frac{1}{3}$  lin. long, deltoid or ovate, acute, free, connivent around the stout subhemispherical apex of the style, which does not exceed them in length.—Hiern in Cat. Afr. Pl. Welw. i. 692.

**Lower Guinea.** Angola: Pungo Andongo; in thickets in the Præsidium at Cambondo, *Welwitsch*, 4245! Huilla; in woods to the west of Lopollo, 5200 ft., *Welwitsch*, 4250!

10. **M. leonensis**, *Benth. in Hook. Niger Fl.* 455. Stem twining, minutely puberulous, slender. Leaves spreading or deflexed; petiole  $1-1\frac{1}{4}$  in. long; blade 3-4 in. long,  $1\frac{1}{2}-1\frac{3}{4}$  in. broad, cordate-oblong, abruptly acuminate into an acute point  $\frac{1}{3}-\frac{1}{2}$  in. long, glabrous on both sides. Cymes subaxillary,  $\frac{3}{4}$  in. long, pedunculate, two-branched, puberulous; branches  $\frac{1}{4}-\frac{1}{2}$  in. long, bearing several flowers racemosely arranged; bracts minute; pedicels  $1\frac{1}{2}-2$  lin. long, puberulous. Sepals barely 1 lin. long, elliptic or orbicular, very obtuse, puberulous. Corolla glabrous outside; tube  $\frac{3}{4}$  lin. long, broadly campanulate, with long retrorse white hairs within, and 5 tufts of similar hairs on minute tubercles at the sinuses of the corolla-lobes, which are as long as the tube, ovate, subacute. Coronal-lobes arising at the base of and a little shorter than the  $\frac{3}{4}$  lin. long staminal-column, adnate at their basal half to the column and dorsally produced into dark-coloured ascending tooth-like tubercles, which are grooved behind, distinctly confluent at their base and reach up between the pairs of anther-wings to their middle or a little beyond; their apical half free, subulate, acute, white, erect, applied to the backs of the anthers. Staminal-column with the filament part undeveloped, and the anther-wings extending nearly to its base; anther-appendages ovate-oblong, obtuse, longer than broad, incumbent on the short conical style-apex, which they cover.—Walp. Ann. iii. 61.

**Upper Guinea.** Sierra Leone, *Vogel!*

11. **M. glabriflora**, *Benth. in Hook. Niger Fl.* 455. A woody climber, with hollow glabrous stems. Leaves spreading; petiole  $\frac{1}{2}-1\frac{1}{4}$  in. long; blade  $1\frac{1}{2}-3$  in. long,  $\frac{2}{3}-1\frac{1}{2}$  in. broad, oblong-ovate, acuminate, cordate at the base, with a broad open sinus and rounded lobes, glabrous on both sides. Inflorescence terminal and subaxillary on the lateral shoots, cymose or cymose-paniculate; flowers small, racemosely arranged and rather crowded on the short puberulous branches; pedicels  $1-1\frac{1}{2}$  lin. long, puberulous. Sepals  $\frac{1}{2}-\frac{2}{3}$  lin. long, elliptic or orbicular-ovate, obtuse, sparsely puberulous, ciliolate. Corolla  $1-1\frac{1}{4}$  lin. long, glabrous inside and out, or with here and there a hair in the campanulate tube; lobes as long as the tube, deltoid-ovate, acute. Corolla-lobes not quite reaching to the tops of the  $\frac{2}{3}$  lin. long staminal-column; basal part adnate, fleshy, grooved behind; apical half free, ovate-lanceolate, acute, applied to the backs of the anthers. Anther-appendages short, somewhat inrolled over the tips of the anthers and resting on the margin of

the hemispherical style-apex, which is slightly raised above them.—Walp. Ann. iii. 61.

**Upper Guinea.** Sierra Leone, *Vogel!*

Var. *orbicularis*, N. E. Br. Sepals glabrous. The free apical part of the coronal-lobes orbicular, obtuse. Follicles 3 in. long and about  $\frac{1}{2}$  in. thick, but unripe, lanceolate, acuminate, smooth, glabrous. All the rest as in the type.

**Upper Guinea.** Southern Nigeria: River Bonny, *Mann!*

12. **M. racemosa**, K. Schum. in *Engl. Jahrb.* xvii. 147. A vigorous climber with milky juice; flowering part of the stem 1–2 lin. thick, terete, hollow, and together with the petioles, nerves of the leaves beneath, and all parts of the inflorescence (except the corolla) more or less pubescent with short curved hairs, densest on the inflorescence. Leaves spreading; petiole  $\frac{5}{8}$ –5 in. long; blade  $1\frac{1}{2}$ –5 in. long, 1–4 $\frac{1}{4}$  in. broad, broadly cordate-ovate, cuspidate-acuminate; basal sinus varying from narrow to broad and open; both sides sprinkled with short hairs or glabrous except on the nerves beneath; veins conspicuously reticulate beneath. Panicles cymose, lateral,  $1\frac{1}{2}$ –8 in. long, including the  $\frac{1}{2}$ –3 in. long peduncle, formed of 2–5 alternate branches  $\frac{3}{4}$ –4 $\frac{1}{2}$  in. long, each with numerous 2–4-flowered fascicles of small flowers racemosely scattered along them; pedicels 1–2 lin. long. Sepals  $\frac{1}{2}$ – $\frac{3}{4}$  lin. long, elliptic, obtuse. Corolla  $2\frac{1}{2}$ –3 lin. in diam., 5-lobed to below the middle, rotate, yellow; lobes 1–1 $\frac{1}{4}$  lin. long, oblong-ovate, subacute, glabrous outside, retrorsely and sparsely pubescent with fine silky hairs on the basal part within. Coronal-lobes arising from the base of the staminal-column, shorter than the anthers, their basal part adnate to the column, and dorsally produced into radiating tubercles that are grooved behind or beneath and somewhat compressed into a ridge above, their apical part free, erect, subulate, acute, applied to the backs of the anthers. Style convex at the apex, slightly exceeding the anther-appendages, which are incumbent upon it. Staminal-column (including the style)  $\frac{3}{4}$  lin. long.—Durand and Schinz, *Études Fl. Congo* i. 194; Hiern in *Cat. Afr. Pl. Welw.* i. 692. *M. latifolia*, Schlechter, Westafr. Kautschuk-Exped. 309. *Gongronema latifolium*, Benth. in Hook. Niger Fl. 456; Walp. Ann. iii. 62; K. Schum. in *Engl. Jahrb.* xxiii. 236.

**Upper Guinea.** Gold Coast: Kwabu, 2000 ft., *Johnson*, 649! Togo, *Baumann*, 465! Lagos: Ikoradu, *Schlechter*, 13000; interior, *Rowland!*

**Lower Guinea.** Island of St. Thomas, *Don!* Gaboon: near Libreville, *Schlechter*, 12823. Angola: Golungo Alto; forests of the higher mountains of Queta, *Welwitsch*, 4228!

**South Central.** Lunda: Lulu River, *Pogge*, 1249!

The Angolan specimens have smaller leaves and panicles, probably caused by the drier climate, but show no other difference.

13. **M. profusa**, N. E. Br. in *Kew Bulletin*, 1895, 258. A vigorous climber, with a hollow glabrous stem. Leaves thin; petiole 1–2 in. long; blade 3–5 in. long, 2–3 $\frac{1}{4}$  in. broad, elliptic-cordate, cuspidate or acuminate, with a cusp  $\frac{1}{2}$  in. long, glabrous on both sides; basal lobes broadly rounded, sometimes overlapping, with a narrow sinus  $\frac{3}{4}$  in.

deep between them; veins conspicuously reticulate beneath. Panicles 5-8 in. long, lateral, composed of 3-5 distant simple alternate (unilateral?) branches  $1\frac{1}{4}$ - $2\frac{1}{2}$  in. long, bearing several sessile umbels of small white flowers scattered along them, minutely and sparsely puberulous; pedicels  $1\frac{1}{4}$ - $1\frac{3}{4}$  lin. long, puberulous. Sepals  $\frac{1}{2}$  lin. long, and nearly as broad, broadly elliptic, obtuse, very minutely ciliate. Corolla rotate-campanulate,  $1\frac{1}{2}$  lin. in diam., 5-lobed to  $\frac{2}{3}$  the way down; lobes  $\frac{2}{3}$  lin. long, ovate, acute, glabrous. Coronal-lobes arising from near the base of the staminal-column, erect, free, closely applied to the backs of the anthers, and subinflexed over their tips, flat, oblong, subacute; no tubercular dilatations at the base of the staminal-column, which is barely  $\frac{1}{2}$  lin. long and is almost destitute of the filamental portion; anther-wings nearly touching the bottom of the corolla.

**Upper Guinea.** Southern Nigeria: Brass, *Barter*, 16!

"Twining on shrubs and trees, with a profusion of white flowers," *Barter*.

#### 40. **PERGULARIA**, Linn.; Benth. et Hook. f. Gen. Pl. ii. 773.

Calyx 5-partite. Corolla salver-shaped; tube inflated at the base; lobes overlapping to the left and straight or twisted in bud. Corona of 5 erect lobes arising from the base of the staminal-column and adnate to it in their lower part, free above, with a narrow or subulate process on their face. Staminal-column arising from the base of the corolla; anthers oblong, erect, with long erect membranous appendages connivent over the apex of the style. Pollen-masses solitary in each anther-cell, erect, attached in pairs to the pollen-carriers by very short caudicles. Style not exceeding the anther-appendages, apical part stout, pentagonal-ovoid. Follicles smooth. Seeds crowned with a tuft of hairs.—Stem twining. Leaves opposite. Flowers of moderate size, numerous, in pedunculate or sessile umbel-like cymes, subaxillary or lateral between the bases of the petioles.

Species several, mostly Indian and Malayan, 1 in Tropical Africa, which also extends into South Africa.

1. **P. africana**, *N. E. Br. in Kew Bulletin*, 1895, 259. Stem climbing, slender, glabrous. Leaves spreading, thin; petiole  $\frac{1}{3}$ -3 in. long; blade 2-4 in. long, 1-3 in. broad, ovate-oblong to very broadly ovate, shortly cuspidate into an obtuse point, varying from rounded to cordate or occasionally cuneate-acute at the base, both sides glabrous or sparsely and minutely puberulous above. Umbels lateral or subaxillary, many-flowered; peduncles 0-5 lin. long, minutely puberulous or subglabrous; bracts minute, ovate; pedicels 2-3 lin. long, glabrous. Sepals  $1\frac{1}{4}$ -2 lin. long, lanceolate or ovate, acute, glabrous, minutely ciliate. Corolla yellow; tube 3-4 lin. long, globose-inflated in the lower half, constricted above, somewhat plicate, glabrous outside, inside densely hairy at the throat and in the upper half, glabrous with 5 lines of hairs alternating with the coronal-lobes in the lower half; lobes  $3\frac{1}{2}$ -6 lin. long,  $\frac{3}{4}$  lin. broad, linear, obtuse, very spreading, reflexed or revolute,

and sometimes twisted, shortly villous or bearded on their face, twisted to the right in bud. Coronal-lobes adnate for  $\frac{1}{3}$  of their length to the staminal-column at the base, expanded above into an elliptic-lanceolate, orbicular-obovate or obovate-oblong blade  $1-1\frac{3}{4}$  lin. long, obtuse, subtruncate and subdenticulate or subacute at the apex, with a linear or lanceolate-attenuate acute process 1 lin. long, arising at or a little above the middle of their inner face and connivent over the staminal-column. Anther-appendages  $\frac{3}{4}-1$  lin. long, ovate-lanceolate, acute, connivent. Style much shorter than the anther-appendages, apical part ovoid, obtuse.—*P. sanguinolenta*, Britten in Trans. Linn. Soc. ser. 2, Bot. iv. 29, and K. Schum. in Engl. Pf. Ost-Afr. C. 326, not of Lindley.

**Upper Guinea.** Sierra Leone: near Kafogo, *Scott-Elliott*, 5489! woods about Bufodeya, *Scott-Elliott*, 5498! 5553! Lagos: interior, *Rowland*! Ijaye, *Barter*, 3332! Niger Territory: Nupe, *Barter*! Old Calabar, *Thomson*, 113!

**Mozamb. Dist.** British Central Africa: Nyasaland; Zomba, *Whyte*! Also in Natal.

41. **FOCKEA**, Endl. ; Benth. et Hook. f. Gen. Pl. ii. 773.

Calyx 5-partite. Corolla-tube very short; lobes spreading, overlapping to the left or twisted in bud. Corona arising at the mouth of the corolla-tube at the insertion of the staminal-column and longer than it, tubular, toothed at the top and with teeth on the inner face of the tube, which are arranged in 2 distinct superposed series of 5, or the lower series dorsally adnate to the upper series so as to appear as one series of unequally bifid teeth, opposite to or alternating with the longer teeth of the tube, decurrent on the lower part of the tube as 5 prominent keels or 5 pairs of keels. Staminal-column inserted in the throat or at the mouth of the corolla-tube; anthers erect, triangular, their appendages very large, erect, membranous, inflated. Pollen-masses erect, solitary in each anther-cell, very flat and thin, sessile in pairs at the apex of the minute pollen-carriers. Style produced to about the level of the top of the anther-cells; terminal part terete or thickened and somewhat 2-lobed at the apex. Follicles not echinate. Seeds crowned with a tuft of hairs.—Perennials with large tuberous rootstocks and twining stems. Leaves opposite. Flowers in axillary clusters, cymes, or very short dense racemes.

Species few, some of them natives of South Africa.

This genus is very remarkable on account of the large inflated anther-appendages and the flat thin pollen-masses. It appears to form a connecting link between the tribes *Secamoneæ* and *Marsdeniææ*.

Flowers in corymb-like cymes; pedicels 2-7 lin. long.

Corolla-lobes glabrous within, subacute . . . . . 1. *F. multiflora*.

Corolla-lobes finely pubescent within, obtuse . . . . . 2. *F. Schinzii*.

Flowers in axillary clusters or very shortly and densely spicate; pedicels not more than  $\frac{1}{2}$  lin. long.

Corolla-lobes  $3-3\frac{1}{4}$  lin. long . . . . . 3. *F. sessiflora*.

Corolla-lobes 5-7 lin. long . . . . . 4. *F. Lugardi*.

1. **F. multiflora**, *K. Schum. in Engl. Jahrb.* xvii. 145. Stems not manifestly twining, rather stout, sparsely leafy or leafless during flowering, pubescent on the young parts; bark brown. Leaves densely tomentose on both sides; petiole  $3-4\frac{1}{2}$  lin. long; blade  $\frac{3}{4}-2$  in. long,  $\frac{1}{3}-\frac{2}{3}$  in. broad, ovate, acute, truncate or subcordate at the base. Cymes corymb-like, many-flowered, axillary; peduncles  $\frac{1}{3}-\frac{3}{4}$  in. long; pedicels  $4\frac{1}{2}-7$  lin. long, subtomentose. Sepals  $1\frac{1}{2}$  lin. long, pubescent. Corolla glabrous on both sides or most minutely papillate (not pubescent) within; tube  $\frac{3}{4}$  lin. long; lobes  $3\frac{1}{2}$  lin. long, rotate, oblong, subacute, revolute along the margins. Corona 20-toothed, besides the teeth within; tube 1 lin. long; the 5 longer teeth  $1\frac{1}{4}-1\frac{1}{3}$  lin. long, spirally coiled at the tips, each alternating with a group of 3 shorter recurved teeth  $\frac{1}{3}-\frac{1}{2}$  lin. long; teeth within the tube 5, filiform,  $\frac{3}{4}-1$  lin. long, with or without a very short or rudimentary tooth at about their middle on the dorsal side, adnate nearly to the top of the tube, forming 5 keels on the lower part of the latter. Anther-appendages large, inflated-oblong. Style with 2 rounded knobs at its apex.—*K. Schum. in Engl. Pfl. Ost-Afr. C.* 326, and in *Engl. and Prantl, Pflanzenfam.* iv. ii. 294, fig. 90, P-U, and 296.

**Mozamb. Dist.** German East Africa: Uzinja; near the French Mission at Usambiro, *Stuhlmann*, 848!

In this species and in *F. Schinzii*, N. E. Br., the inner or lower coronal teeth within the tube are longer than those next above, which are adnate to them for the greater part of their length.

2. **F. Schinzii**, *N. E. Br. in Kew Bulletin*, 1895, 259. Stem twining, rather stout,  $\frac{1}{8}-\frac{1}{4}$  in. thick, with a brown bark and small scattered tubercles at the lenticels, shrivelling in drying, minutely and densely pubescent or subtomentose on the young shoots, becoming glabrous, leafless at the time of flowering. Undeveloped leaves accompanying the flowers  $2\frac{1}{2}-3$  lin. long,  $1-1\frac{1}{2}$  lin. broad, oblong, obtuse, densely tomentose; midrib very prominent beneath; petioles  $1-1\frac{1}{2}$  lin. long; scars of the fallen leaves very large. Cymes corymb-like, axillary, or terminal on very short lateral shoots or tubercles, rather dense and compact or shortly paniced, many-flowered, pedunculate; the whole inflorescence 1-3 in. long, hoary-tomentose on all parts except the corolla; pedicels 2-5 lin. long. Sepals  $1-1\frac{1}{4}$  lin. long, ovate, acute. Corolla 6-7 lin. in diam.; tube 1 lin. long; lobes  $3\frac{1}{2}-4$  lin. long, narrowly oblong, obtuse, with revolute margins, glabrous on the back, finely pubescent all over the inner surface. Corona 20-toothed besides the teeth within; tube 1 lin. long; 5 principal teeth  $\frac{2}{3}-\frac{3}{4}$  lin. long, erect, not spirally coiled at the tips, each alternating with a group of 3 shorter recurved teeth  $\frac{1}{8}-\frac{1}{6}$  lin. long; teeth within the tube in 5 superposed pairs adnate nearly to the top of the tube and to each other, forming 5 prominent keels, the outer or upper tooth of each pair  $\frac{1}{4}-\frac{1}{3}$  lin. long, inner or lower tooth  $\frac{1}{3}-\frac{3}{4}$  lin. long. Anther-appendages about as long as the corona-tube, erect, inflated-ovate. Style not exceeding the anther-cells; apical part terete, subentire or minutely 2-5-lobulate at the apex. Follicles 8-9 in. long, 1 in. thick, lanceolate-fusiform, acuminate into a beak, smooth, glabrous, with a keel down each side.

Seeds 5 lin. long,  $\frac{1}{4}$  in. broad, ovate, concavo-convex, margined, glabrous, pale yellowish-brown.—*P. multiflora*, Hiern in Cat. Afr. Pl. Welw. i. 693, not of K. Schum.

**Lower Guinea.** Angola: Bumbo; in Matas de Unteate, between Bumbo and Bruco; *Welwitsch*, 4194! German South-west Africa: Amboland; Ombanja, *Schinz*, 5!

3. **F. sessiliflora**, *Schlechter in Engl. Jahrb.* xx. *Beibl.* 51, 44. Stem woody, glabrous. Leaves erect or somewhat spreading,  $\frac{3}{4}$ – $1\frac{1}{2}$  in. long, 4–7 lin. broad, lanceolate or lanceolate-oblong, acute, narrowed into the very short petiole, usually revolute or undulate along the margins, glabrous. Flowers few, sessile, clustered in the axils of the leaves. Sepals lanceolate-triangular, much shorter than the corolla, thinly puberulous, mealy. Corolla-lobes 3– $3\frac{1}{4}$  lin. long, slightly spreading, linear-ligulate, obtuse, flexuose, thinly puberulous on both sides. Outer corona tubular, with 5 short trifid lobes, the lateral teeth of which are rather shorter than the middle tooth; median coronal-lobes filiform, erect, adnate far up the outer corona-tube and half longer than it, with the inflexed margins below the middle forming 10 parallel keels; inner coronal-lobes opposite those of the median corona and half as long, scarcely equalling the tube of the outer corona to which they are adnate high up. Anther-appendages lanceolate, obtuse, 3–4 times as long as the anthers.

**Mozamb. Dist.** Transvaal: near Klipdam, 4500 ft. *Schlechter*, 4493.

This locality is just south of the Tropic of Capricorn, but in all probability the plant will be found to occur in the tropical part of the Transvaal. *Schlechter* regards the superposed teeth within the coronal-tube as belonging to 2 distinct coronal whorls; I regard them as mere appendages of one, such as occur in *Cynanchum*, *Schizoglossum*, and *Asclepias*.

4. **F. Lugardi**, *N. E. Br.* Stem creeping on rocks, under 1 ft. high (*Lugard*), probably also twining,  $\frac{3}{4}$ –1 lin. thick, puberulous on the young parts, becoming glabrous. Leaves large, spreading; petiole  $1\frac{1}{2}$ –2 lin. long; blade 1– $3\frac{1}{2}$  in. long,  $\frac{1}{3}$ –1 in. broad, lanceolate or oblong-lanceolate, obtuse or acute, more or less cuneate at the base, flat, glabrous on both sides. Inflorescence axillary, subsessile or shortly pedunculate, spicate; axis stout, 2–6 lin. long (including the peduncle); flowers subsessile, densely crowded, developing successively; bracts minute, ovate, subtomentose; pedicels about  $\frac{1}{2}$  lin. long, subtomentose. Sepals  $\frac{1}{2}$  lin. long, elongate-deltoid, acute, subtomentose. Corolla green, subtomentose outside, minutely puberulous on the basal part of the lobes inside, otherwise glabrous; tube about  $\frac{1}{2}$  lin. long, broadly funnel-shaped; lobes spreading, much twisted in bud, 5–7 lin. long,  $\frac{2}{3}$ –1 lin. broad at the base, narrowly linear, obtuse; margins strongly reflexed or revolute. Corona tubular, with about 20 unequal teeth besides the teeth within; tube  $1\frac{1}{3}$ – $1\frac{1}{2}$  lin. long; 5 longer teeth  $\frac{3}{4}$ –1 lin. long, linear, acute, bifid or irregularly denticulate at the apex, with a small subulate inflexed tooth on each side inside the base, alternating with 1 or more minute irregular teeth; teeth within the

tube 10, in two superposed series alternating with the longer teeth of the tube, upper series arising near the top of the tube and decurrent as keels within it,  $1\frac{1}{4}$ – $1\frac{1}{3}$  lin. long, linear, thicker than the teeth of the tube; lower series arising near the middle of the tube  $\frac{1}{2}$  lin. long. Staminal-column with scarcely any filament-part; anther-appendages large, about 3 times as long as the anthers, reaching slightly beyond the middle of the corona-tube, inflated-oblong, obtuse.

**Mozamb. Dist.** British Central Africa: Ngamiland; on the Kwebe Hills, 2000 ft., *Lvgard*, 299!

42. **LEPTADENIA**, R. Br.; Benth. et Hook. f. Gen. Pl. iii. 778.

Calyx 5-lobed to the middle or nearly to the base. Corolla deeply 5-lobed, rotate or with a very short campanulate tube and spreading lobes, valvate in bud, pubescent or bearded within. Corona of 5 short, transverse or rounded, fleshy lobes, tipped with a tuft of hairs, or with a subulate hairy point, inserted at the sinuses of the corolla. Staminal-column arising from the bottom of the corolla, sometimes with a slightly prominent inconspicuous undulate fleshy ring at the base; anthers incumbent on the top of the style, subhorizontal or suberect, without an appendage. Pollen-masses subhorizontal or suberect, solitary in each anther-cell, pellucid at the apex, attached in pairs by short caudicles to the pollen-carriers. Follicles smooth. Seeds crowned with a tuft of hairs.—Shrubs, with twining or erect, rigid, much branched, rush-like stems. Leaves opposite or none, very variable in the same species. Cymes umbel-like, lateral between the bases of the leaves or subaxillary, sessile or pedunculate, many-flowered; flowers small.

Species 5 or 6; one of the African species extends through Egypt into Arabia and India, besides 1 other in India and 1 in Madagascar.

Leafy twiners.

Corolla-lobes  $2$ – $2\frac{1}{2}$  lin. long, densely bearded inside

with long jointed hairs . . . . . 1. *L. lancifolia*.

Corolla-lobes  $1$ – $1\frac{1}{4}$  lin. long, pubescent inside . . . . . 2. *L. heterophylla*.

Leafless shrubs.

Branches terete, slender . . . . . 3. *L. Spartium*.

Branches compressed, jointed . . . . . 4. *L. ? visciformis*.

1. **L. lancifolia**, *Decne. in Ann. Sc. Nat. 2 sér. ix. 269*. Stem twining, densely covered with a very minute tomentum. Leaves spreading; petiole  $\frac{1}{4}$ – $\frac{3}{4}$  in. long; blade 1–5 in. long,  $\frac{1}{6}$ – $1\frac{3}{4}$  in. broad, very variable in form, usually ovate, ovate-lanceolate or lanceolate, acute or acuminate, and cuneate, rounded or subcordate at the base, but sometimes subhastate-ovate or linear-oblong or linear, with a cordate, subhastate or rounded base, all forms occurring on different branches of the same stem, both sides puberulous, sometimes becoming glabrous on the upper surface, sometimes both sides become more or less scabrous. Umbels lateral, pedunculate, many-flowered, minutely tomentose in all parts; peduncles 2–7 lin. long; pedicels  $1\frac{1}{2}$ –3 lin. long. Calyx 5-lobed nearly to the base; lobes 1–2 lin. long. Corolla campanu-

late or rotate-campanulate; tube 1 lin. long; lobes 2-2½ lin. long, twisted, lanceolate or linear-lanceolate, acute, more or less reflexed along the margins, minutely tomentose and green outside, densely bearded inside with long jointed white hairs on the apical ⅓, pubescent on the basal part, except a narrow glabrous space up the middle. Coronal-lobes inserted at the sinuses of the corolla, ⅔-1½ lin. long, fleshy, ovate or rounded and glabrous at the base, contracted into a subulate hairy point ¼-1 lin. long. Follicles 3-4 in. long, lanceolate, attenuate into an obtuse beak, smooth, glabrous.—DC. Prod. viii. 628, incl. var. *scabra*, Decne.; A. Rich. Tent. Fl. Abyss. ii. 44; Hook. Niger Fl. 456. *L. hastatum*, Decne. in DC. Prod. viii. 551. *L. hastata*, Vatke in Linnæa, xl. 217; K. Schum. in Engl. Pfl. Ost.-Afr. C. 327, and in Engl. & Prantl. Pflanzenfam. iv. ii. 269, fig. 79, E-F, and 270. *L. cordata*, Hochst. ex Decne. in DC. Prod. viii. 628. *Cynanchum lancifolium*, and *C. scabrum*, Schumach. & Thonn. Beskr. Guin. Pl. 150, 152. *Tylophora incana*. Brunner in Flora, 1840, ii. Beibl. 26. *T. syringæfolia*, Spruner ex Walp. Rep. vi. 491 (a false reference to *T. incana*, Brunner), not of E. Meyer.

**Upper Guinea.** Senegambia: near Richard Toll, *Dollinger!* near Lampsar, *Roger!* by the River Salum, *Brunner*, 158! Gold Coast: Accra, *Brown*, 309! Lagos: Oyo, *Barter*, 3336! *Millson*, 90! interior, *Rowland!* Guinea, *Thonning!* Bornu: Kuka, on Lake Chad, *Vogel*, 25!

**North Central.** Darfur, *Purdy*, 78!

**Nile Land.** Sennar, *Kotschy*, 405! Fazokl, *Kotschy*, 559! Kordofan, *Pfund*, 451! 745! Abyssinia: near Jelaïeranne, *Schimper*, 626! and without precise locality, *Schimper*, 954! White Nile: at Fashoda, *Schweinfurth*, 1075! Upper Nile, *Freeman & Lucas*, 87! Gondokoro, *Muriel*, S, 90! Madi, *Speke & Grant*, 749!

The variety *scabra*, Decne., is a condition with scabrous leaves, but sometimes scabrous leaves and the ordinary puberulous leaves occur on the same stem.

*Cynanchum hastatum*, Pers. Syn. i. 273, and *C. lanceolatum*, Poir. Encycl. Suppl. ii. 430, Roem. & Schult Syst. vi. 111, are referred by Decaisne to this species, but I doubt if the identification is correct, as Persoon describes the flowers as sessile, which they are not in this plant; Poirët does not appear to have seen Persoon's specimen, but has merely copied his description and changed the name.

2. **L. heterophylla**, Decne. in *Ann. Sc. Nat.* 2 sér. ix. 270. Stem twining, glabrous. Leaves very variable; petiole ¼-1¼ in. long; blade ¾-3 in. long, ⅓-2 in. broad, sometimes linear or linear-lanceolate, acute or acuminate, with a hastate base and rounded auricles, but usually varying from lanceolate or ovate and acuminate at the apex, to elliptic, obtuse and apiculate or acute at the apex, cuneate, rounded, subtruncate or cordate at the base, glabrous on both sides. Umbels subaxillary, sometimes two from the same node, pedunculate, several-flowered; peduncles 2-7 lin. long, glabrous; pedicels 3-4 lin. long, minutely puberulous. Calyx campanulate, ⅓ lin. long, puberulous, 5-lobed to half-way down; lobes ovate, acute. Corolla 2-2½ lin. in diam.; tube as long as the calyx; lobes 1-1¼ lin. long, very spreading, oblong-ovate or linear-lanceolate, subacute, somewhat keeled on the apical half, slightly reflexed along the margins, canescent on the back,

pubescent on the face, except a median depressed glabrous line at their base. Coronal-lobes inserted at the sinuses of the corolla, minute, fleshy, rounded, glabrous, dorsally tipped with a tuft of rather long hairs. Follicles solitary,  $2\frac{1}{4}$ –3 in. long, 4–5 lin. thick, lanceolate, obtusely acuminate, smooth, glabrous. Seeds  $2\frac{1}{2}$ –3 lin. long, narrowly ovate-lanceolate, concave-convex, glabrous.—DC. Prod. viii. 628; Hochst. in Flora, 1844, 101; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 270, and in Ann. Instit. Bot. Roma, vii. 41. *L. Forskalii*, Decne. in Ann. Sc. Nat. 2 sér. ix. 269, t. 10, fig. B., and in DC. Prod. viii. 628; A. Rich. Tent. Fl. Abyss. ii. 45; Vatke in Oest. Bot. Zeitschr. 1876, 146; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 270. *L. abyssinica*, Decne. in DC. Prod. viii. 628; A. Rich. Tent. Fl. Abyss. ii. 45; Penzig in Atti Congr. Bot. Internaz. 1892, 349; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 270; Martelli, Florul. Bogos. 55. *L. Delilii*, Decne. in DC. Prod. viii. 628. *L. pallida*, Hochst., and *L. schimperiana*, Hochst. in Flora, 1844, 101. *Cynanchum heterophyllum*, Delile, Cent. Plant. Afr. Voy. Meroe, 47, t. 63, fig. 4.

**North Central.** Darfur, *Purdy*, 79!

**Nile Land.** Eritrea: Shotel, on the slopes of the Zedamba, *Beccari*, 105! Abyssinia: by the River Tacazze, *Schimper*, 166! 632! near Geleb and at the torrents Belta and Lava, *Penzig* (ex *Penzig*); Modat Province, *Schimper*, 1007! Somak, Efat, *Roth*, 411! Somaliland, *Miss Cole*! Riva, 1038, and *Robecchi-Bricchetti*, 327 (ex *Schumann*). Sennar, *Kotschy*, 169! White Nile: at the 6th Cataract, *Schweinfurth*, 469! at Kirfeh, *Schweinfurth*, 609! near Khartoum, *Schweinfurth*, 768! between New and Old Dongola, *Bronfield*! Wod Schellai, *Schweinfurth*, 934! Blue Nile: near Suba Deleib, *Muriel*, L. 9!

This plant was figured by Alpino in 1592 (Pl. Ægypt. 53, with fig.), under the name of *Secamone*, which figure has been erroneously referred to *Secamone Alpini*, Schultes, and *Oxytelma Alpini*, Decne., which see.

3. **L. Spartium**, *Wight, Contrib. Bot. Ind.* 48. A much branched leafless bush (rarely with leaves on the young shoots), attaining a height of 5–10 ft.; trunk 4–6 in. thick; branches erect, slender, terete, straight, puberulous on the tips of the growing shoots, soon becoming glabrous; 1–2 nodes at the growing apex alone provided with minute subulate leaves 1–2 lin. long, which soon fall away, or rarely remain on the young shoots and grow out to 1–2 in. long,  $\frac{1}{2}$ –1 $\frac{1}{2}$  lin. broad, linear, acute. Umbels subaxillary, several-flowered; flowers successively developing so that a short floral axis up to 2 lin. long is sometimes formed; peduncles 1–2 lin. long; pedicels  $\frac{1}{2}$ –1 lin. long, puberulous. Calyx  $\frac{3}{4}$  lin. long, 5-lobed to the middle, puberulous; lobes ovate, subacute. Corolla 2–2 $\frac{1}{2}$  lin. in diam., subrotate; tube funnel-shaped, as long as the calyx; lobes 1 lin. long, ovate, acute, thickened in the apical half, slightly reflexed along the margins, glabrous outside, pubescent inside, with the tube and a central line at the base of the lobes glabrous. Coronal-lobes at the sinuses of the corolla very small, fleshy, tubercle-like or semicircular, pubescent at the apex; staminal-corona minute, annular, close to the base of the  $\frac{1}{3}$  lin. long staminal-column. Follicles  $3\frac{1}{2}$ –4 $\frac{1}{2}$  in. long,  $\frac{1}{4}$  in. thick, terete, attenuate into a long beak. Seeds 4 lin. long, 1–1 $\frac{1}{4}$  lin.

broad, narrowly lanceolate, plano-convex, glabrous.—Decle. in DC. Prod. viii. 629; Hook. f. Fl. Brit. Ind. iv. 64. *L. gracilis*, Decne., *L. pyrotechnica*, Decne., and *L. jacquemontiana*, Decne. in Ann. Sc. Nat. 2 sér. ix. 269–270, and in DC. Prod. viii. 629; K. Schum. in Ann. Istit. Bot. Roma, vii. 41. *L. jacquemontiana*, Hook. Ic. Pl. ix. t. 838. *L. gracilis* and *L. pyrotechnica*, K. Schum. in Engl. and Prantl, Pflanzenfam. iv. ii. 269, fig. 79A and D, excl. B–C, and 270. *Cynanchum pyrotechnicum*, Forsk. Fl. Ægypt.-Arab. 53; Delile, Descrip. de l'Égypt. Hist. Nat. ii. 54, t. 20, fig. 3. *Sarcostemma pyrotechnicum*, Roem. and Schult. Syst. vi. 116. *Microlooma pyrotechnicum*, Spreng. Syst. i. 855.

**Upper Guinea.** Senegal, Roger! Heudelot, 482!

**North Central.** Kanem: Tiboo country, Vogel!

**Nile Land.** Nubia, Bromfield! Bent! Speke & Grant, 775! between Suakin and Berber, Schweinfurth 460! sér. iii. 35! Kordofan: Wadi Hawai, Pfund, 397! Sherkela, Muriel, L. 125! Somaliland: from Res (Ras?) es Sogair to Berbera, Robeechi-Bricchetti, 322 (ex Schumann).

Extends through Arabia into the drier parts of India.

4. **L. ? visciformis**, Vatke in Oest. Bot. Zeitschr. 1876, 146. A leafless much branched shrub, 3 ft. high; branches and branchlets short, crowded, subvirgate, compressed, jointed. Leaves reduced to sheath-like scales surrounding the nodes. Flowers unknown. Follicles mentioned, but not described.

**Nile Land.** British Somaliland: Ahl Mountains, near Maid, Hildebrandt, 1432.

I have not seen this plant. Vatke states that it may be a species of *Periploca*, which recalls to mind by its habit some of the Asiatic species of *Viscum*.

#### 43. ORTHANTHERA, Wight, Contrib. Bot. Ind. 48.

Calyx 5-partite. Corolla-tube elongated, more or less inflated at the base, often with the inflation extending between the sepals into 5 blunt angles; lobes 5, erect or spreading, valvate in bud. Corona arising at or near the base of the staminal-column, of 5 erect A-shaped lobes, adnate to the column between the anther-wings, reaching nearly or quite to the base of the anther-cells, with broad free outstanding margins diverging downwards; coronal-lobes at the mouth of the corolla-tube none or reduced to very minute and inconspicuous papillæ or folds. Staminal-column arising from the bottom of the corolla-tube and enclosed in the inflated part; anthers erect, linear in the fertile part, apiculate; anther-wings below the pollen-cells decurrent on the filament part, subparallel or diverging downwards. Pollen-masses erect, with a pellucid margin at the apex, solitary in each anther-cell, attached in pairs by slender caudicles to the pollen-carriers. Style equalling or shorter than the anthers which surround the slender conical or needle-like terminal part. Follicles terete and acute or fusiform and acuminate, smooth. Seeds crowned with a tuft of hairs.—Erect, virgate shrubs, leafless or with linear leaves,

or herbs with leafy stems trailing on the ground. Leaves opposite. Flowers small or of moderate size, in pedunculate or subsessile umbels or clusters, lateral or sublateral at the nodes.—*Barrowia*, Decne. in DC. Prod. viii. 629.

Species 3, one extending into South Africa and one inhabiting India.

In Benthams and Hooker's *Genera Plantarum*, *Orphanthera* is united with *Leptadenia*. I cannot distinguish *Barrowia* from *Orphanthera*, and as the latter name claims priority it should be substituted for *Barrowia*.

An erect bush, with straight glabrous branches . . . 1. *O. albida*.  
Stems herbaceous, trailing, pubescent or scabrous . . . 2. *O. jasminiflora*.

1. ***O. albida***, Schinz in *Verhandl. Bot. Ver. Brandenb.* xxx. 265. A much-branched bush; branches erect, crowded, slender, white-glaucous. Leaves distant, erect or ascending,  $\frac{3}{4}$ – $1\frac{1}{2}$  in. long,  $\frac{1}{2}$ –1 lin. broad, linear, pungent-acute, channelled down the face, subsessile, glabrous. Umbels lateral at the nodes, 4–6-flowered; peduncles  $\frac{1}{2}$ –1 lin. long, white-tomentose, as well as the bracts and calyx; bracts about 1 lin. long, linear-subulate; pedicels  $\frac{1}{2}$  lin. long or less. Sepals 1 lin. long, lanceolate, acute. Corolla-tube  $2\frac{1}{3}$ – $2\frac{1}{2}$  lin. long, narrow, slightly inflated below; lobes  $1\frac{1}{2}$  lin. long, erect, linear, subacute, whitish-pubescent outside, glabrous within; sinuses between the lobes with minute fleshy obtuse thickenings. Corona arising about  $\frac{1}{4}$  lin. above the base of the 1 lin. long staminal-column; lobes ovate-deltoid, adnate, with free margins, erect between the anther-wings and scarcely reaching to their tips. Anthers linear, with short acute appendages, erect around the slender terete apex of the style, which does not exceed them.—Engl. in Engl. Jahrb. xix. 148; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 266. *O. stricta*, Hiern in Cat. Afr. Pl. Welw. i. 694.

**Lower Guinea.** Angola: Loanda, *Monteiro!* in rocky maritime situations to the south of the town of Mossamedes, *Welwitsch*, 4259! German South-west Africa: Hereroland; Modderfontein, north of Salem, *Gürich*, 11 (ex *Engler*). Zwartbank Mountain, *Stappf* (ex *Schinz*).

Also in Great Namaqualand, south of the Tropic.

2. ***O. jasminiflora***. *N. E. Br. ex Schinz in Verhandl. Bot. Ver. Brandenb.* xxx. 265. Rootstock stout, woody. Stems  $1\frac{1}{2}$ –15 ft. long, procumbent, branching, more or less scabrous or pubescent. Leaves petiolate, scabrous-pubescent; petiole 1–5 lin. long; blade  $\frac{2}{3}$ – $2\frac{1}{2}$  in. long,  $\frac{1}{8}$ –1 in. broad, linear, linear-oblong, ovate-oblong, ovate or elliptic, acute at the apex, rounded truncate or cordate at the base, rather thick and rigid, often wavy or crisped on the margins. Umbels lateral at the nodes, pedunculate, 2–13-flowered; peduncle  $\frac{1}{3}$ – $1\frac{1}{2}$  in. long, scabrous; bracts 1– $2\frac{1}{2}$  lin. long,  $\frac{1}{4}$ – $\frac{2}{3}$  lin. broad, subulate or ovate-lanceolate, acute; pedicels 2–7 lin. long, scabrous or pubescent. Sepals  $1\frac{1}{2}$ –3 lin. long,  $\frac{2}{3}$ –1 lin. broad, lanceolate, acute or acuminate, rather roughly pubescent on the back. Corolla cream-coloured, strongly scented, pubescent all over the outside, and within the tube; tube  $3\frac{1}{2}$ –9 lin. long, globose-pentagonal (*i.e.* with 5 inflations

between the sepals) at the base, cylindric and 1 lin. in diam. above; lobes  $2\frac{1}{2}$ –6 lin. long,  $1\frac{1}{4}$  lin. broad, more or less spreading, linear-lanceolate, acute, recurved along the margins, glabrous on the inner face. Coronal lobes  $\frac{1}{2}$  lin. long, adnate to the staminal-column, deltoid, with broad free outstanding wing-like margins, widely diverging downwards, glabrous. Anthers connivent-erect,  $\frac{2}{3}$  lin. long, linear, apiculate. Style shorter than the anthers; apical part slender, conical, acute. Follicles  $\frac{1}{2}$  in. long,  $\frac{1}{2}$  in. thick, fusiform, tapering into a long beak.—K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 266 and 264, fig. 77, D–E, inaccurate. *O. browniana*, Schinz in Verhandl. Bot. Ver. Brandenb. xxx. 264; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 266. *Barrowia jasminiflora*, Decne. in DC. Prod. viii. 630; Delessert, Ic. v. 37, t. 88 (inaccurate as to fig. 1). *Pergularia? jasminiflora*, Burch. ex Decne. in DC. Prod. viii. 630.

**Lower Guinea.** Angola: Amboella; by the Kubango River above Kabindere, 3700 ft., Baum, 362! and near Kubulo, 3600 ft., Baum, 429! German Southwest Africa: Amboland; Oshiheke, Schinz! Olukonda, Schinz! Omulongo, Schinz, 144!

**Mozamb. Dist.** British Central Africa: Ngamiland; near Lake Ngami, Lugard, 23!

Also in South Africa.

The Amboland specimens collected by Schinz and described as a distinct species (*O. browniana*), differ from typical *O. jasminiflora* only in their smaller flowers, the corolla-tube being  $3\frac{1}{2}$ –4 lin. long and the lobes  $2\frac{1}{2}$ –3 lin. long. The specimens collected by Baum and Lugard, however, completely connect the two extreme forms, so that we must regard *O. browniana* as merely a small-flowered condition of *O. jasminiflora*. The foliage of this plant varies very much.

#### 44. CEROPEGIA, Linn.; Benth. et Hook. f. Gen. Pl. ii. 779.

Calyx 5-partite. Corolla tubular, usually more or less inflated at the base, straight or curved, 5-lobed; lobes free or more or less connate at their tips, valvate in bud. Corona double, arising from the staminal-column; outer corona cup-shaped, entire or 5–10-toothed, or of 5 bifid or bipartite lobes more or less adnate to the inner coronal-lobes and often appearing to form one series with them, or reduced to minute pouches alternating with the stamens; inner corona of 5 short or long lobes opposite the anthers and incumbent on them, or erect, dorsally adnate at their base to the cup of the outer corona, or laterally to its lobes; in the latter case, the corona appears to be formed of 5 lobes with a tooth on each side at their base. Staminal-column arising a little above the base of the corolla, very short and with the corona included in the inflated part of the corolla; anthers erect, ascending or incumbent on the top of the style; oblong or subquadrate, unappendaged; pollen-masses erect, ascending or subhorizontal, solitary in each anther-cell, attached in pairs by very short caudicles to the pollen-carriers, or sessile upon them. Style not longer than the anthers, truncate or shortly conical at the apex. Follicles lanceolate or linear-fusiform, acuminate, smooth. Seeds crowned with a tuft of

hairs.—Perennial herbs. Rootstock a tuber or a fascicle of thick fleshy roots. Stems erect or twining, herbaceous or succulent. Leaves opposite or rarely absent. Flowers large or of moderate size, of singular forms, solitary, in pairs, in umbel-like cymes or rarely racemose, lateral at the nodes, rarely terminal.

A large genus of many species, found throughout the tropics of the Old World, and in extratropical South Africa. The tubers of many species are eaten.

Corolla-lobes free at the tips.

Dwarf plants, stem not twining.

Flowers 1–2 in. long in the dried state . . . . . 1. *C. pygmaea*.

Flowers about  $\frac{1}{2}$  in. long in the dried state . . . . . 2. *C. pumila*.

Stem twining or rambling among other plants.

Corolla-tube distinctly pubescent or hairy outside.

Corolla-tube 3–5 times as long as the sepals.

Corolla-tube very distinctly narrowed above the inflated base.

Corolla-tube curved, 5–6 lin. long . . . . . 3. *C. nigra*.

Corolla-tube straight, 8–9 lin. long . . . . . 4. *C. kroboensis*.

Corolla-tube stout, of nearly equal diameter throughout . . . . . 6. *C. ringens*.

Corolla-tube not longer than the sepals, of equal diameter throughout, campanulate . . . . . 5. *C. loranthiflora*.

Corolla-tube glabrous outside; lobes sometimes pubescent.

Corolla-tube 2 lin. in diam. at the middle; lobes without hair-like points . . . . . 7. *C. sinuata*.

Corolla-tube about 1 lin. in diam. at the middle; lobes ending in hair-like points . . . . . 8. *C. tentaculata*.

Corolla-lobes connate into a slender tube which terminates in a small globose-pentagonal head . . . . . 9. *C. distincta*.

Corolla-lobes connate in the upper part for at least  $\frac{1}{4}$  of their length into an umbrella-like canopy; stem erect, not twining . . . . . 43. *C. medoensis*.

Corolla-lobes connate or cohering at their tips only.

\*Stem twining or rambling among other plants.

†Leaves quite glabrous on both surfaces, but sometimes ciliolate on the margin; stem quite glabrous in all the specimens examined.

Peduncles  $\frac{1}{4}$ –4 in. long, and together with the pedicels glabrous.

Flowers racemously arranged along a long peduncle with distant nodes.

Flowers solitary; corolla-lobes 6–7 lin. long . . . . . 34. *C. racemosa*.

Flowers in pairs or fascicles; corolla-lobes 3 lin. long . . . . . 20. *C. Perrottetii*.

Flowers 1-many, subumbellate or crowded at the end of the peduncle, not distant.

Corolla-tube ovoid-inflated at the base, then constricted, and with a long fusiform inflation at the middle . . . . . 24. *C. fusiformis*.

Corolla slightly or very distinctly inflated at the base or basal half only.

- Inflation distinctly constricted at the middle . . . . . 18. *C. mozambicensis*.
- Inflation not constricted.
- Corolla-lobes not more than 2 lin. long ;  
leaves linear-lanceolate . . . . . 38. *C. angusta*.
- Corolla-lobes  $2\frac{1}{2}$ - $3\frac{1}{2}$  lin. long.  
Leaves  $\frac{1}{2}$ -1 lin. broad, very slender ;  
peduncles  $\frac{1}{4}$ - $\frac{1}{2}$  in. long . . . . . 39. *C. debilis*.
- Leaves  $1\frac{1}{4}$ -8 lin. broad, not cordate  
at the base ; peduncles  $\frac{1}{3}$ - $1\frac{1}{4}$  in.  
long.  
Leaves subtruncate or rounded at  
the base ; corolla-tube and  
lobes pilose within.  
Leaves  $\frac{5}{8}$ - $1\frac{1}{2}$  in. long . . . . . 12. *C. affinis*.  
Leaves  $2\frac{1}{2}$ - $2\frac{3}{4}$  in. long . . . . . 13. *C. ruspoliana*.
- Leaves cuneate at the base ;  
corolla-tube glabrous within ;  
lobes pilose.  
Corolla  $1\frac{1}{2}$  in. long . . . . . 17. *C. nilotica*.  
Corolla less than 1 in. long . . . . . 14. *C. biddumana*.
- Leaves 6-16 lin. broad, cordate at  
the base ; peduncles  $\frac{1}{8}$ - $1\frac{1}{2}$  in.  
long.  
Corolla  $\frac{2}{3}$ - $\frac{7}{8}$  in. long ; tube  $2\frac{1}{2}$  lin.  
in diam. at the mouth . . . . . 16. *C. volubilis*.  
Corolla 1 in. long ; tube  $3\frac{1}{2}$ -4  
lin. in diam. at the mouth . . . . . 15. *C. beccariana*.
- Corolla-lobes  $4\frac{1}{2}$ -6 lin. long.  
Corolla-tube 9-10 lin. in diam.  
at the mouth ; leaves 7-8  
lin. broad . . . . . 19. *C. denticulata*.
- Corolla-tube 1-5 lin. in diam. at  
the mouth.  
Leaves 12-18 lin. broad . . . . . 21. *C. scandens*.  
Leaves 2-10 lin. broad.  
Corolla-lobes erect, glabrous  
(and see 41, *C. in-*  
*fausta*). . . . . 40. *C. stenantha*.
- Corolla-lobes incurved over  
the mouth of the tube  
in the form of a globe,  
ciliate . . . . . 23. *C. purpurascens*.
- Corolla-lobes 9-10 lin. long ; tube  
 $\frac{1}{2}$  in. in diam. at the mouth . . . . . 32. *C. Luquardæ*.
- Peduncles none or exceedingly short ; flowers  
pedicellate ; corolla rather slender.  
Leaves  $\frac{1}{3}$ -1 lin. broad ; sepals 1 lin. long . . . . . 40. *C. stenantha*, var.  
Leaves 4-8 lin. broad ; sepals 2- $2\frac{1}{2}$  lin. long . . . . . 41. *C. infonsta*.
- ††Leaves pubescent or puberulous on one or both  
surfaces, or at least on the veins beneath.
- Stem pubescent, pilose or puberulous all round or  
on opposite sides along two broad lines.
- Cymes or umbels distinctly pedunculate ;  
flowers pedicellate. (See also 28, *C.*  
*papillata*.)

- Corolla-tube and lobes pubescent outside . 31. *C. convolvuloides*.  
 Corolla-tube and lobes glabrous outside.  
 Corolla-lobes nearly or quite as long as  
 the tube, 6-9 lin. long . . . 33. *C. kwebensis*.  
 Corolla-lobes much shorter than the tube,  
 2½-(5 ?) lin. long.  
 Corolla-tube slightly inflated at the  
 base ; lobes lanceolate-triangular . 35. *C. setifera*.  
 Corolla distinctly globose- or ovoid-  
 inflated at the base ; lobes linear  
 or linear-oblong.  
 Corolla-lobes erect ; tube slightly  
 dilated at the mouth . . . 36. *C. pachystelma*.  
 Corolla-lobes strongly incurved over  
 the broadly funnel-shaped  
 mouth of the tube, which is  
 4-5 lin. in diam. . . . 22. *C. Meyeri-Johannis*.  
 Cymes or umbels sessile or subsessile at the  
 nodes ; flowers pedicellate.  
 Cymes or umbels in pairs at the nodes ;  
 4-6-flowered . . . . 37. *C. paricyma*.  
 Cymes or umbels solitary at the nodes ;  
 2-20-flowered.  
 Corolla-tube 4-lin. long.  
 Corolla-tube and lobes pubescent out-  
 side . . . . 27. *C. Giletii*.  
 Corolla-tube glabrous, lobes pubescent  
 outside . . . . 26. *C. leucotænia*.  
 Corolla-tube 8-9 lin. long, glabrous out-  
 side.  
 Pedicels pubescent . . . . 28. *C. papillata*.  
 Pedicels glabrous . . . . 29. *C. calcarata*.  
 Corolla-tube 12-13 lin. long, glabrous  
 outside ; pedicels pubescent . . 30. *C. Meyeri*.  
 Stem glabrous, or with a pubescent or puberulous  
 line along one side only, alternating at the  
 nodes.  
 Peduncles ½-1 in. long, and together with the  
 pedicels and corolla-tube outside pube-  
 scent . . . . 25. *C. Johnsoni*.  
 Peduncles none ; pedicels glabrous, or pube-  
 scent along one side ; corolla-tube gla-  
 brous outside.  
 Flowers 1-2 at a node ; corolla-tube 2-3 lin.  
 in diam. at the middle.  
 Leaves 1¾-3½ in. long, ovate, cordate to  
 subtruncate at the base . . . 10. *C. subtruncata*.  
 Leaves ¾-1 in. long, lanceolate, rounded  
 at the base . . . . 11. *C. sobolifera*.  
 Flowers in dense clusters of 5-20 or more  
 at each node ; corolla-tube ¾ lin. in  
 diam. at the middle . . . . 42. *C. floribunda*.  
 \*\*Stem erect, not twining.  
 Corolla-tube 1½-1¾ in. long ; leaves 4-9 lin. broad,  
 ovate or oblong-lanceolate . . . 44. *C. umbraticola*.

- Corolla-tube  $1-1\frac{1}{4}$  in. long; leaves  $\frac{2}{3}-2\frac{1}{2}$  lin. broad,  
 linear or linear-lanceolate.
- Corolla-lobes 10-11 lin. long . . . . . 45. *C. campanulata*.
- Corolla-lobes 3-4 lin. long . . . . . 48. *C. vignaldiana*.
- Corolla-tube  $\frac{1}{3}-\frac{2}{3}$  in. long.
- Corolla-lobes about 8 lin. long; leaves 6-12 lin.  
 broad . . . . . 46. *C. filipendula*.
- Corolla-lobes about 5 lin. long; leaves  $1\frac{1}{2}-5$  lin.  
 broad . . . . . 47. *C. abyssinica*.
- Corolla-lobes less than 4 lin. long.
- Leaves ovate or ovate-oblong, up to 1 in.  
 broad . . . . . 49. *C. Steudneri*.
- Leaves linear or linear-subulate,  $\frac{1}{2}-\frac{3}{4}$  lin.  
 broad . . . . . 50. *C. humilis*.

1. **C. pygmæa**, Schinz in *Verhandl. Bot. Ver. Brandenb.* xxx. 265. Tuber 1-2 in. in diam., ovoid or subglobose, subtruncate at the base, buried 2-3 in. in the ground, emitting a single stem which branches at ground-level. Branches erect,  $1\frac{1}{2}-3$  in. long, pubescent with minute curved hairs. Leaves erect or ascending,  $\frac{3}{4}-4$  in. long, 1-5 lin. broad, from linear to oblanceolate or spatulate-obovate, acute or obtuse, pubescent with minute curved hairs chiefly along the midrib and margins; the broader leaves gradually tapering from above the middle into a short petiole. Cymes or umbels subaxillary, 1-3-flowered, sessile or with thinly pubescent peduncles up to  $2\frac{1}{2}$  lin. long; pedicels 5-7 lin. long, thinly pubescent. Sepals  $1\frac{1}{2}-2\frac{1}{4}$  lin. long, lanceolate, acute, pubescent. Corolla large, pubescent outside, glabrous within, purple-black when dried, somewhat resembling the flowers of an *Aristolochia* in form, the tube being abruptly bent at a right angle below the middle; part below the bend  $\frac{2}{3}-1$  in. long,  $\frac{1}{2}$  in. in diam., ovoid-inflated; part above the bend  $1-1\frac{3}{4}$  in. long,  $3\frac{1}{2}-4$  lin. in diam., tubular, slightly funnel-shaped at the mouth, which is truncate, with 5 deltoid acute teeth or lobes  $1-1\frac{1}{2}$  lin. long, quite free, replicate, incurved. Outer corona  $1-1\frac{1}{2}$  lin. long, three times as long as the staminal-column, deeply cup-shaped, very shortly 5-toothed, sparsely covered with short purple hairs within; inner coronal-lobes  $\frac{1}{4}$  lin. long, linear-subulate, slightly gibbous at the base, incumbent on the backs of the anthers, and not exceeding them, adnate at their base to the bottom of the outer corona, glabrous. The entire corona of the same colour as the corolla in the dried state.—*C. gymnopoda*, Schlechter in *Bull. Herb. Boiss.* iv. 450.

**Lower Guinea.** German South West Africa: Amboland; in sandy soil at Olukonda and between Olukonda and Uukuambi, Schinz, 147! Uukuambi, *Rautanen*, 81! 82!

*C. gymnopoda*, Schlechter, was described from broad-leaved specimens with very immature flowers; when fully developed the flowers are identical with those of *C. pygmæa*. Linear and spatulate leaves sometimes occur on the same specimen.

2. **C. pumila**, N. E. Br. in *Kew Bulletin*, 1898, 309. Tuber flattened,  $1\frac{1}{2}-2$  in. in diam. Stems 2-3 from a tuber, 4-6 in. high, erect, branched, more or less pubescent on the young parts. Leaves spreading; petiole  $1-1\frac{1}{2}$  lin. long; blade 6-11 lin. long,  $1\frac{1}{2}-2$  lin. broad,

fleshy, narrowly lanceolate, acute, ciliate on the margins, sparsely pubescent on the midrib beneath, glaucous-green, paler beneath. Flowers 1-3 together at the nodes, with occasionally a deflexed peduncle up to  $\frac{3}{4}$  in. long bearing 2-3 flowers; pedicels  $1\frac{1}{2}$  lin. long, slightly pubescent. Corolla about 6 lin. long, pubescent and of a lurid purple-brown outside, glabrous and blackish-purple inside; tube about 4-5 lin. long, curved or oblique, 2 lin. in diam. at the inflated-ovoid basal half, constricted below the short funnel-shaped mouth; lobes  $1\frac{1}{2}$  lin. long, free, slightly spreading, tapering from a deltoid base to a short linear point, slightly keeled down the face. Outer corona campanulate, about  $\frac{3}{4}$  lin. long, subtruncate, obscurely 5-toothed, blackish-purple; inner coronal-lobes barely  $\frac{1}{4}$  lin. long, incumbent on the backs of the anthers and shorter than them, dorsally adnate to the outer corona.—Hiern in Cat. Afr. Pl. Welw. i. 696.

**Lower Guinea.** Angola: Huilla; in a rocky bushy place near Lopoll, 5200 ft., *Welwitsch*, 4267!

3. *C. nigra*, *N. E. Br.* in *Kew Bulletin*, 1895, 261. Stem twining, pubescent. Leaves spreading; petiole  $\frac{1}{3}$ - $\frac{1}{2}$  in. long; blade  $\frac{3}{4}$ - $1\frac{1}{2}$  in. long,  $\frac{1}{2}$ -1 in. broad and probably larger, ovate or elliptic-ovate, acute or acuminate, cordate or truncate rounded at the base, both sides with a short and rather harsh pubescence, but more sparse above. Cymes umbel-like, subsessile, several-flowered; pedicels 4-6 lin. long, pubescent. Sepals  $1\frac{1}{2}$ -2 lin. long, subulate or lanceolate-subulate, pubescent. Corolla-tube 5-6 lin. long, curved above the somewhat oblique inflated-ovoid base, which is about  $1\frac{1}{2}$  lin. in diam., narrowed above, shortly funnel-shaped at the mouth, pubescent outside, glabrous inside and striate with black in the upper part; lobes widely spreading, with free tips,  $2\frac{1}{2}$  lin. long,  $1\frac{1}{2}$  lin. broad at the base, deltoid-ovate, obtuse, with recurved margins, pubescent on the back, very minutely puberulous on the inner face at the base and around the mouth of the tube, black in the dried state. Outer coronal-lobes  $\frac{1}{5}$  lin. long, erect, rectangular, bifid, with slightly incurved teeth, pallid; inner coronal-lobes  $1\frac{1}{4}$  lin. long, filiform, erect, with incurved penicillate tips, blackish.

**Upper Guinea.** By the River Niger, *Baikie*!

In the dried state the lobes and mouth of the corolla-tube are black, but as the same parts of *C. kroboensis*, *N. E. Br.*, are stated to be "metallic blue-green" when alive, it is probable that *C. nigra* is also of that colour in the living state, the two species being very similar.

4. *C. kroboensis*, *N. E. Br.* Stem twining, pubescent, about 1 lin. thick; internodes 3-5 in. long. Leaves spreading; petiole 1- $1\frac{1}{2}$  in. long, pubescent; blade  $1\frac{1}{4}$ - $2\frac{1}{2}$  in. long,  $\frac{3}{8}$ - $1\frac{1}{4}$  in. broad, cordate-ovate, shortly acuminate, thinly covered with rather long jointed hairs on the upper side, minutely pubescent beneath, ciliolate. Cymes lateral at the nodes, subsessile or very shortly pedunculate, many-flowered; very often a branch originates at the same node; peduncles 0-2 lin. long, pubescent; bracts minute, subulate, pubescent; pedicels 5-7 lin. long, slender, minutely pubescent, thickening and growing to about  $\frac{3}{4}$  in. long

when in fruit. Sepals  $1\frac{3}{4}$  lin. long,  $\frac{1}{4}$  lin. broad, linear-subulate, acute, pubescent, ascending. Corolla metallic blue-green (black in the dried state) on the lobes and in the mouth of the tube, yellow below (*Johnson*), pubescent outside, especially on the constricted part and lobes, very minutely puberulous at the base of the lobes and around the mouth of the tube, otherwise glabrous within; tube straight, 8-9 lin. long, inflated-cylindric-oblong for about  $\frac{1}{2}$  an in. of its length and there about 2 lin. in diam. in the dried state, constricted above, very shortly and broadly funnel-shaped at the mouth; lobes very spreading, not cohering at the tips,  $2\frac{1}{4}$ - $2\frac{1}{2}$  lin. long, oblong, replicate, 1 lin. broad and subobtusate when flattened out. Outer corona of 5 small emarginate or shortly bifid lobes about  $\frac{1}{8}$  lin. long, forming 5 small pockets, hairy within; inner coronal-lobes about  $\frac{1}{2}$  lin. long, filiform, incumbent at the base on the backs of the anthers, then connivent-erect, slightly incurved in the upper part, dark-coloured in the middle part in the dried state, thinly hairy at the base, where they are dorsally adnate to the outer corona. Follicles linear-fusiform, glabrous.

**Upper Guinea.** Gold Coast: Krobo Plains, *Johnson*, 790!

In the dried state this species is, at first sight, exceedingly like *C. nigra*, N. E. Br.: it differs, however, in its longer corolla and very different coronal structure.

5. ***C. loranthiflora***, *K. Schum. in Engl. Jahrb.* xvii. 150. Tuber globose,  $\frac{3}{4}$ -1 in. in diam. Stem  $1\frac{1}{2}$ -3 ft. high, twining, more or less densely pubescent or subtomentose with jointed hairs. Leaves herbaceous; petiole  $\frac{1}{3}$ - $\frac{2}{3}$  in. long; blade 1- $2\frac{3}{4}$  in. long,  $\frac{1}{3}$ - $\frac{2}{3}$  in. broad, lanceolate or oblong-lanceolate, acuminate, rounded or cuneately rounded at the base, pubescent on both sides. Umbels 3-4-flowered, subsessile or on peduncles about 1 lin. long, all parts, including the outside of the corolla, covered with spreading jointed hairs; bracts  $1\frac{1}{2}$ -3 lin. long, subulate, recurving; pedicels 4-7 lin. long, rather slender. Sepals  $3\frac{1}{2}$ -4 lin. long, lanceolate, acuminate. Corolla straight; tube  $\frac{1}{4}$  in. long, about 2 lin. in diam., tubular-campanulate, not inflated at the base, pubescent outside, glabrous? inside; lobes twice as long as the tube, 6-7 lin. long, linear from a deltoid base, replicate, suberect, with free tips, densely and minutely puberulous on the inner face, reticulate with dark-coloured veins on their basal part, at the base the angles formed by their union project abruptly beyond the diameter of the tube. Outer coronal-lobes arising  $\frac{1}{2}$  lin. above the base of the staminal-column and reduced to 5 small pouches not reaching to the level of the base of the anthers; inner coronal-lobes about  $\frac{1}{3}$  lin. long, linear-oblong, obtuse, incumbent on the backs of the anthers and not produced beyond them. Staminal-column with 5 linear blackish markings immediately under the outer coronal-lobes.—*K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 272. *C. abyssinica*, *A. Rich. Tent. Fl. Abyss.* ii. 46 (excl. synonym *C. hirsuta*, *Hochst.*); *Vatke in Linnæa*, xl. 217; *Engl. Hochgebirgsfl. Trop. Afr.* 343 (not of *Decaisne*).

**Nile Land.** Abyssinia: near Tchelatchekanne (Jelajeranne), *Quartin Dillon!* near Guendepa, *Schimper (ex Richard)*; Amogai, 7200 ft., *Schimper*, 751 (*ex Vatke & Engler*), 781 (*ex Schumann*); and without precise locality, *Parkyn!*

Except in habit there is no technical character whereby this plant differs from the genus *Brachystelma*.

6. **C. ringens**, *A. Rich. Tent. Fl. Abyss.* ii. 48. Rootstock a globose tuber. Stem twining, pubescent, herbaceous. Leaves very variable, ovate-lanceolate, acute, emarginate-cordate or rarely rounded or gradually attenuate at the base, pilose-pubescent on both sides. Umbels subsessile, several-flowered; pedicels hairy. Sepals lanceolate ("very narrow, linear," in note), acute, hairy. Corolla curved; tube 4 times as long as the calyx, inflated at its base, shortly pilose; limb oblique; lobes free, lanceolate-linear, obtuse at the apex, ciliolate.—*Walp. Ann.* iii. 67.

**Nile Land.** Abyssinia: between Mai Gougou and Debra-Sina, *Quartin Dillon* (ex Richard).

I have not seen this species, but the type in A. Richard's Herbarium has been examined and a drawing of a flower made for me by Mr. I. H. Burkill, from whom I learn that the plant is like an entire-leaved specimen of *C. sinuata*, *Decne.*, except that the young leaves are more hairy and the corolla-lobes shorter. Mr. Burkill's drawing of the flower (drawn to scale in its dried state) represents the corolla to be exactly as in *C. sinuata*, with the tube slightly curved, of nearly equal diameter throughout,  $6\frac{1}{2}$  lin. long and 2 lin. in diam., and the lobes  $2\frac{1}{2}$  lin. long. *C. convolvuloides*, A. Rich., has been mistaken for this species by other authors.

7. **C. sinuata**, *Decne. ex A. Rich. Tent. Fl. Abyss.* ii. 47. Stem twining, more or less pubescent. Leaves herbaceous; petiole  $\frac{1}{4}$ – $\frac{3}{4}$  in. long; blade 1– $2\frac{1}{2}$  in. long,  $\frac{1}{2}$ – $1\frac{1}{2}$  in. broad, lanceolate to deltoid-ovate or cordate, acute or acuminate, rounded or cordate at the base, coarsely and irregularly toothed or sinuate on the basal part or entire, sparsely pubescent on both sides, ciliolate. Umbels sessile or with peduncles up to 2 lin. long, 5–7-flowered, all parts except the corolla covered with a spreading pubescence; bracts 1–2 lin. long, subulate; pedicels 6–7 lin. long. Sepals 3– $3\frac{1}{2}$  lin. long,  $\frac{1}{2}$  lin. broad, lanceolate-subulate. Corolla-tube 1 in. long, curved above the obliquely ellipsoid-inflated base, which is  $\frac{1}{4}$  in. in diam., cylindrical up to the mouth above, about 2 lin. in diam., glabrous outside and inside; lobes free and spreading,  $\frac{1}{2}$  in. long, linear from a deltoid base, acute, replicate, blackish, sparsely pubescent on the back, glabrous on the face. Outer coronal-lobes arising  $\frac{1}{3}$  lin. above the base of the staminal-column,  $\frac{1}{3}$  lin. long, spreading, rectangular, dilated at the base, truncate at the apex, glabrous; inner coronal-lobes 1 lin. long, connivent-erect, linear, obtuse, minutely papillate on the apical part.—*Walp. Ann.* iii. 67; *Vatke in Linnæa*, xl. 218; *K. Schum. in Engl. Pfl. Ost-Afr. C.* 327, and in *Engl. & Prantl, Pflanzenfam.* iv. ii. 272.

**Nile Land.** Abyssinia: near Jelajeranne, *Schimper*, 2049! Shireh Province, *Quartin Dillon* (ex Richard); Serraba, *Schimper*, 451!

**Mozamb. Dist.** German East Africa, ex *Schumann*.

Richard describes *C. sinuata*, as follows: "Rootstock a globose tuber. Stem slender, twining, pubescent. Leaves petiolate, oblong, acute, obtuse at the base, with the margin unequally sinuate, slightly hairy, especially beneath. Flowers outside the axils, 2–3 together, pedicellate; pedicels slender, shortly hairy. Sepals linear,

very acute, hairy outside. Corolla-tube terete, straight, scarcely subinflated at the base, 4 times as long as the sepals, pubescent; lobes short, lanceolate, obtuse. In habit it resembles *C. abyssinica*, Decr., but is easily distinguished by its irregularly sinuate leaves, and especially by its corolla, in which the tube is 4 times as long as the calyx and the lobes very short and obtuse."

My description is made exclusively from Schimper's specimen, which was received from the Paris Herbarium under this name and bears the same number (451) as the specimen at Paris, named *C. sinuata* by Decaisne; but it may not be the same as Quartin Dillon's plant, which I have not seen, and upon which A. Richard based his description, according to which, his plant differs from Schimper's in having only 2-3 flowers in an umbel, and a corolla with a straight tube and very short obtuse lanceolate lobes. Vatke quotes Schimper's number as 491 for this plant.

8. **C. tentaculata**, *N. E. Br. in Kew Bulletin*, 1895, 261. Tuber depressed,  $1\frac{1}{2}$ -5 in. in diam. Stem twining, slender, growing to 6-10 ft. in length, branching, glabrous. Leaves succulent; petiole 1-3 lin. long; blade  $\frac{3}{4}$ -2 in. long,  $\frac{1}{8}$ - $1\frac{1}{4}$  in. broad, linear, oblong, ovate-lanceolate, ovate, or spatulate-ovate or spatulate-ob lanceolate, acute or obtuse, mucronulate, varying from cuneate-acute to subtruncately rounded at the base, glabrous, often undulate on the margins. Umbels sessile, one or many-flowered; bracts  $\frac{1}{2}$  lin. long, subulate; pedicels 3-5 lin. long, slender, glabrous. Sepals 1 lin. long, lanceolate, acute, glabrous. Corolla slightly curved, sometimes drying nearly or quite straight; tube 7-9 lin. long, inflated-ovoid and about  $\frac{1}{8}$  in. in diam. at the base, cylindric and about 1 lin. in diam. above, slightly funnel-shaped at the mouth, glabrous outside, with a few minute scattered hairs inside (base of the tube rosy-purple, the rest yellowish, *Welwitsch*); lobes free, widely spreading, 5-6 lin. long, tapering from a deltoid base to fine hair-like points, with a few minute hairs on the basal part (dull yellowish or greenish, *Welwitsch*). Outer corona arising  $\frac{1}{4}$  lin. above the base of the staminal-column, not produced into teeth, but forming 5 truncate pouches alternating with the stamens; inner coronal-lobes  $\frac{1}{2}$  lin. long, erect, linear-spatulate, slightly cohering at their tips (always?), the entire corona glabrous (greenish, *Welwitsch*). Follicles 4-6 in. long,  $\frac{1}{6}$  in. thick, linear-terete, acuminate into a beak. Seeds 2 lin. long, oblong-ovate, plano-convex, with a thickened margin, glabrous.—Hiern in *Cat. Afr. Pl. Welw.* i. 694.

**Lower Guinea.** Angola: Loanda; in dry hilly places, *Welwitsch*, 4277! in the grass plains in Muecques, near Loanda, *Gossweiler*, 90! Amboland: Omatope and Ondonga, *Schinz*!

Var. *puberula*, Hiern in *Cat. Afr. Pl. Welw.* i. 695. Stems and leaves more or less puberulous. Flowers dull violet-greenish.

**Lower Guinea.** Angola: Huilla; in rocky thickets in Morro de Lopollo, *Welwitsch*, 4268! in sandy thickets near Lopollo, *Welwitsch*, 4269!

9. **C. distincta**, *N. E. Br. in Kew Bulletin*, 1895, 262. Stem probably twining, stout, 2-2 $\frac{1}{2}$  lin. thick, hollow, glabrous. Leaves probably fleshy, thin in the dried state; petiole 5-8 lin. long; blade 2-3 in. long, 1-2 in. broad, oblong, ovate oblong, ovate-lanceolate, broadly elliptic-ovate or elliptic-oblong, shortly and abruptly cuspidate-acute or acute or acuminate, cordate, with short broadly rounded lobes at the base,

with a shallow acute sinus between them, glabrous. Peduncles  $1-1\frac{1}{2}$  in. long, moderately stout, glabrous, 1-2- (or more?) flowered; bracts  $1\frac{1}{2}-3$  lin. long, linear or subulate, acute, glabrous; pedicels 4-8 lin. long, moderately stout, glabrous. Sepals 5-6 lin. long,  $1-1\frac{1}{3}$  lin. broad, lanceolate, attenuate-acuminate, glabrous. Corolla glabrous outside, hairy at the mouth and base of the tube inside; tube about 1 in. long, abruptly curved at a right angle above its slightly globose-inflated base, where it is  $3-3\frac{1}{2}$  lin. in diam., cylindric above and about  $2\frac{1}{2}$  lin. in diam., shortly dilated into a broad funnel-shaped mouth about 7-8 lin. in diam.; lobes about  $\frac{1}{2}$  in. long (only seen in bud), broadly deltoid-ovate at the base, connivent, then contracted and connate into a short narrow erect tube about  $\frac{1}{8}$  in. long, then abruptly dilated at the apex into a small 5-winged depressed knob, nearly 2 lin. in diam. Outer corona? (decayed and eaten); inner coronal-lobes  $1\frac{1}{2}$  lin. long, erect, spatulate-linear, obtuse.

**Mozamb. Dist.** Zanguebar, *Kirk*, 28!

10. **C. subtruncata**, *N. E. Br. in Kew Bulletin*, 1895, 260. Stem twining, with one pubescent line. Leaves herbaceous; petiole  $\frac{1}{2}-\frac{3}{4}$  in. long; blade  $1\frac{3}{4}-3\frac{1}{2}$  in. long,  $1-1\frac{3}{4}$  in. broad, ovate or oblong-ovate, subcuspidate-acuminate, cordate, emarginate or subtruncate at the base, glabrous above, more or less pilose with jointed hairs beneath, ciliate. Flowers solitary; pedicels 7-9 lin. long, thinly pubescent. Sepals 2-4 lin. long, lanceolate-attenuate, with a few short hairs on the back. Corolla curved, glabrous outside and inside; tube  $\frac{3}{4}$  in. long, rather stout, about  $\frac{1}{2}$  in. in diam., slightly inflated at the base, cylindric above, not dilated at the mouth; lobes 5 lin. long, 4 lin. broad, erect, with connate tips, broadly rhomboidal-obovate, replicate, forming a subtruncate apiculate limb broader than the tube. Outer corona arising about  $\frac{3}{4}$  lin. above the base of the staminal-column; lobes deeply bifid, with teeth  $\frac{3}{4}$  lin. long, ascending and attaining the level of the anthers, glabrous; inner coronal-lobes  $1\frac{1}{2}$  lin. long, linear, acute, connivent-erect, connected at their base to the outer corona by 5 partitions, glabrous.

**Nile Land.** Abyssinia: without precise locality, *Schimper*, 628!

11. **C. sobolifera**, *N. E. Br. in Kew Bulletin*, 1895, 261. Subterranean stems apparently widely creeping, tuberous? Stem twining, rather slender, with a pubescent line down one side. Leaves apparently somewhat fleshy; petiole 2-3 lin. long; blade  $\frac{2}{3}-1$  in. long, 2-4 lin. broad, lanceolate, acuminate, rounded at the base, glabrous above, ciliate and with a few hairs beneath, at least on the nerves. Flowers in pairs or occasionally solitary; pedicels 3-4 lin. long, apparently 4-angled, but perhaps from shrinking in drying, glabrous. Sepals  $1\frac{1}{2}$  lin. long, oblong-lanceolate, acute, glabrous. Corolla very slightly curved, glabrous outside and inside; tube 7-8 lin. long, rather stout, cylindric, slightly inflated in the lower half and there about  $\frac{1}{4}$  in. in diam., about  $2\frac{1}{2}$  lin. in diam. at the mouth; lobes 4 lin. long, 2 lin. broad, connate at the tips, replicate, forming in outline a globose limb to the corolla, keeled down the face within. Outer coronal-lobes

$\frac{3}{4}$  lin. long, deeply bifid; teeth linear-attenuate, obtuse, fringed with long hairs, and rising above the level of the anthers; inner coronal-lobes 1 lin. long, connivent-erect, linear, dorsally connected at the base to the outer corona.

**Nile Land.** Abyssinia: without precise locality, *Schimper*, 463!

12. **C. affinis**, *Vatke in Linnæa*, xl. 218. Glabrous in all parts except the inside of the corolla. Stem twining. Leaves somewhat fleshy; petiole 2-3 lin. long; blade  $\frac{5}{8}$ - $1\frac{1}{2}$  in. long,  $1\frac{1}{4}$ -5 lin. broad, linear-oblong, narrowly oblong or narrowly lanceolate, acute or subtruncate and apiculate at the apex, subtruncate or rounded at the base, narrowly revolute along the margins. Peduncles  $\frac{1}{3}$ -1 in. long, umbellately 3-6-flowered; bracts  $\frac{1}{2}$  lin. long, ovate-lanceolate, acute; pedicels 3-5 lin. long. Sepals 1 lin. long, lanceolate, acuminate. Corolla slightly curved, glabrous outside, clothed inside from the base of the tube to the tips of the lobes with long straight hairs; tube  $7\frac{1}{2}$  lin. long, slightly inflated and 2 lin. in diam. at the base, very shortly funnel-shaped at the mouth, which is about  $\frac{1}{4}$  in. in diam.; lobes  $2\frac{1}{2}$  lin. long, incurved and connate at the tips, deltoid-ovate, acuminate, replicate. Outer coronal-lobes  $\frac{1}{2}$  lin. long, ascending, subquadrate, with a broad notch at the apex, concave, ciliate with rather long hairs; inner coronal-lobes  $1-1\frac{1}{4}$  lin. long, connivent-erect, linear, with recurved or revolute tips, glabrous.—*Martelli, Florul. Bogos.* 56.

**Nile Land.** Eritrea: near Keren, *Beccari*, 305! Mount Alam Kale, *Schweinfurth & Riva*, 1633! Abyssinia: without precise locality, *Schimper*, 301!

13. **C. ruspoliana**, *K. Schum. in Ann. Istit. Bot. Roma*, vii. 42. Stem twining, slender, glabrous. Leaves petiolate, glabrous; petiole  $2\frac{1}{2}$ - $3\frac{1}{2}$  lin. long; blade  $2\frac{1}{2}$ - $2\frac{3}{4}$  in. long,  $2\frac{1}{2}$  lin. broad at the middle, very acutely acuminate, shortly rounded at the base, recurved along the margins, paler beneath. Umbels pedunculate, about 5-flowered; peduncle  $\frac{3}{4}$ - $1\frac{1}{6}$  in. long; pedicels scarcely exceeding  $\frac{1}{3}$  in. in length. Sepals 1 lin. long, subulate. Corolla probably spotted with purple-brown in the upper part, clothed with long scattered hairs inside; tube  $7\frac{1}{2}$  lin. long, slightly dilated at the mouth; lobes 3 lin. long, cohering at their tips, recurved along the margins (replicate?), pilose with long hairs on the inner face. Outer coronal-lobes  $\frac{1}{3}$  lin. long, concave, notched at the apex, furnished with some hyaline hairs within; inner coronal-lobes  $\frac{3}{4}$  lin. long, overtopping the staminal-column, subulate, revolute at the apex.

**Nile Land.** Galla Territory: in wooded places on Coromme Mountain, *Riva*, 1373.

I have not seen this species, but judging from the description it must be very closely allied to *C. affinis*, *Vatke*, with which it may prove to be identical; the only difference appears to be in the size of the leaves.

14. **C. bidumana**, *K. Schum. in Ann. Istit. Bot. Roma*, vii. 41. Stem twining. Leaves petiolate, herbaceous, thin; petiole 2- $3\frac{1}{2}$  lin. long, slender; blade  $\frac{3}{4}$ - $1\frac{2}{3}$  in. long, 4-5 lin. broad, oblong-lanceolate,

acute, cuneate at the base, glabrous on both sides, very minutely ciliolate. Umbels pedunculate, several-flowered; peduncle up to  $1\frac{1}{4}$  in. long; bracts minute; pedicels scarcely  $\frac{1}{2}$  lin. long. Sepals 1 lin. long, oblong-triangular. Corolla white at the base, purple above, paler at the apex, obscurely spotted; tube  $7\frac{1}{2}$  lin. long, dilated at the mouth, glabrous within; lobes cohering at the tips,  $2\frac{1}{2}$  lin. long, pilose. Outer coronal-lobes concave, notched at the apex, pilose, blackish-purple; inner coronal-lobes erect, cylindric, convolute at the apex, blackish-purple.

**Nile Land.** Galla Territory: Bidduma, in shady woods, *Riva*, 1212.

I have not seen this species, which is imperfectly described, but appears to be allied to *C. affinis*, Vatke.

15. **C. beccariana**, *Martelli, Florul. Bogos*. 56. Stem twining, glabrous, about 1 lin. thick. Leaves herbaceous; petiole 4-7 lin. long; blade  $1-1\frac{3}{4}$  in. long,  $\frac{1}{2}$ -1 in. broad, cordate-ovate, acuminate or acute, glabrous on both sides, distinctly ciliolate with a few very minute incurved hairs on the margins, and with similar hairs along the channel of the petiole. Peduncles lateral, 1-2 in. long, terminating in a few-flowered umbel-like cyme, glabrous; bracts small, lanceolate, acuminate or subulate, glabrous; pedicels 5-6 lin. long, glabrous. Sepals 1 lin. long, linear-lanceolate, acute, glabrous. Corolla-tube about 9 lin. long, much incurved, inflated at the base, where it is  $2\frac{1}{2}$ -3 lin. in diam., funnel-shaped, and about  $3\frac{1}{2}$ -4 lin. in diam. at the mouth, glabrous outside; lobes about 3 lin. long, connivent-erect, connate at the tips, replicate, with crisped margins, glabrous, not ciliate.

**Nile Land.** Abyssinia: near Keren, 4500 ft., *Beccari*, 306!

A specimen of this plant was sent to Kew for determination by Dr. Martelli in 1885, but as there was but one flower I did not dissect it, and the corona and interior of the corolla are not described by the author.

16. **C. volubilis**, *N. E. Br. in Kew Bulletin*, 1895, 261. Root fibrous (*Welwitsch*). Stem twining, slender, glabrous, "more or less glaucous" (*Welwitsch*). Leaves membranous in the dried state, spreading; petiole  $4\frac{1}{2}$ -9 lin. long, ciliate along the edges of the channelled face; blade  $1\frac{1}{4}$ -3 in. long,  $\frac{5}{8}$ - $1\frac{1}{8}$  in. broad, cordate-ovate, acute or acuminate, mucronate, with short rounded basal lobes separated by a small acute sinus, glabrous on both sides, ciliolate. Peduncles 2-5 lin. long, glabrous, umbellately 2-4-flowered; bracts  $\frac{1}{2}$ -1 lin. long, subulate; pedicels 3-4 lin. long, glabrous or with short spreading hairs. Sepals  $1\frac{1}{2}$  lin. long, subulate, glabrous, or with here and there a short hair. Corolla-tube  $5\frac{1}{2}$ -7 lin. long,  $1\frac{1}{2}$  lin. in diam. at the short inflated base, slightly curved above, slightly enlarged into a funnel-shaped mouth  $2\frac{1}{2}$  lin. in diam., glabrous outside and inside; lobes 3- $3\frac{1}{2}$  lin. long, erect, connate at the tips, deltoid-oblong, somewhat abruptly narrowed just above the middle, replicate, ciliate in the upper part with vibratile purple hairs, otherwise glabrous. (Base of the corolla-tube yellowish, then in the inflated part and outside of the tube spotted with

purple-brown on a whitish-yellow ground; upper part striate inside with blackish-purple; throat and basal part of the lobes reticulate with purple-brown; apex of the lobes within velvety purple, and covered with long purple rigid hairs; greyish outside, *Welwitsch.*) Outer corona divided nearly to the base into 10 ascending-spreading lobes; adnate on one side for half their length to the backs of the inner coronal-lobes, their free part  $\frac{1}{2}$  lin. long, oblong, obtuse, ciliate with rather long hairs; inner coronal-lobes 1 lin. long, linear, obtuse, erect, glabrous.—Hiern in *Cat. Afr. Pl. Welw. i.* 695.

**Lower Guinea.** Angola: Golungo Alto; by the River Coango in the Queta Mountains, *Welwitsch*, 4272! 4272B!

In the Catalogue of *Welwitsch's* Plants, by some error, which Mr. Hiern informs me he is unable to explain, this plant is described as "shaggy throughout," but the type specimens and that at Kew are as described above.

17. **C. nilotica**, *Kotschy in Sitzungsber. Wien. Math.-Nat. Akad.* 1865, li. 356. Tuberos, glabrous. Stem twining, slender, fleshy; internodes 2 in. long. Leaves somewhat fleshy, 1 in. long, 8 lin. broad, ovate-lanceolate, narrowed at both ends, acuminate, denticulate towards the apex with callose cuspidate teeth. Peduncles lateral, quadrangular, two-flowered (described as being shorter than the leaves in the diagnosis, and longer than the leaves in the description). Sepals  $1\frac{1}{2}$  lin. long, subulate, spreading. Corolla  $1\frac{1}{2}$  in. long; tube clavate, slightly inflated at the base, dilated and  $\frac{1}{2}$  in. broad at the mouth, glabrous; lobes  $\frac{1}{4}$  in. long, deltoid, connate at the apex, blackish-purple and pilose within, marked with a yellow spot at the base. Outer coronal-lobes horizontal, short, dilated truncate, entire, glabrous; inner coronal-lobes linear-spathulate, straight, three times as long as the outer corona, glabrous, yellowish.

**Nile Land.** Kingdom of Barri: near Gondokoro, *Knoblecher*, 35.

I have not seen this species. The pedicels are not mentioned in the description.

18. **C. mozambicensis**, *Schlechter in Journ. Bot.* 1895, 273. Stem twining,  $1-1\frac{1}{3}$  lin. thick, probably somewhat fleshy, glabrous; internodes 4-7 in. long. Leaves spreading; petiole 3-6 lin. long; blade  $\frac{3}{4}-1\frac{3}{4}$  in. long, 5-10 lin. broad, lanceolate, ovate or elliptic, rather abruptly mucronate-acute or, in the lanceolate forms, more or less acuminate, broadly or acutely cuneate at the base, glabrous, often undulate, setulose-denticulate on the margins, thin in the dried state, but probably somewhat fleshy when alive. Peduncles  $\frac{1}{2}-1\frac{1}{4}$  in. long, moderately stout, about 2-3-flowered at the apex, glabrous; bracts  $\frac{3}{4}-1$  lin. long, subulate, glabrous; pedicels 3-5 lin. long, glabrous. Sepals 2 lin. long, lanceolate, acuminate, glabrous. Corolla glabrous outside; tube  $1\frac{1}{8}-1\frac{3}{8}$  in. long, slightly curved, inflated for nearly half its length, constricted at the middle of the inflated part, cylindrical in the upper, abruptly widened into a short funnel-shaped mouth  $\frac{5}{8}-\frac{3}{4}$  in. in diam.; tube externally whitish or greenish, spotted with blackish-purple, basal part below the constriction inside purple, greenish or whitish? above, blackish-purple at the mouth, which is

covered with long straight purple hairs, middle of the upper part of the tube with a broad band of similar colourless hairs, constriction of the inflated part with a ring of fluffy hairs; lobes  $\frac{1}{3}$ – $\frac{1}{2}$  in. long and about the same in breadth at the base when flattened out, connivent, connate at the tips, broadly deltoid-ovate, obtuse, apiculate, replicate, with a broad keel down the face, bulging out and terminating rather abruptly at its base, blackish-purple, with a greenish or whitish? transverse band at the middle, covered on the inner face with long straight purple hairs and ciliate with similar hairs of a darker purple. Outer coronal-lobes  $\frac{1}{3}$  lin. long, forming 5 small pockets, slightly sinuate or subtruncate at the margin, glabrous, whitish; inner coronal-lobes almost  $\frac{1}{3}$  in. long, erect, linear-subulate, keeled behind at the base where joining the outer corona, glabrous, whitish.—*C. constricta*, N. E. Br. in Kew Bulletin, 1895, 260.

**Nile Land.** British East Africa: coral cliffs south-east of Mombasa Island, Taylor!

**Mozamb. Dist.** Portuguese East Africa: mouth of the River Pungwe, Schlechter, 7106 (ex Schlechter). Kavala Islands in Lake Tanganyika, Carson, 35!

I have not seen the Pungwe plant, and describe entirely from the specimens collected by Carson & Taylor; the flowers of the latter, however, I have not dissected, but externally they seem identical with those of Carson's plant. *C. mozambicensis* may prove to be identical with *C. denticulata*, K. Schum., which was published a month earlier, although Schumann neither describes nor figures the remarkable constriction at the middle of the inflated part of the corolla-tube.

19. ***C. denticulata***, K. Schum. in Engl. Pfl. Ost-Afr. C. 327, t. 40, f. Stem twining, glabrous. Leaves subsessile or shortly petiolate,  $1\frac{1}{2}$  in. long, 7–8 lin. broad, fleshy, ovate or subrhomboidal, acute at both ends, denticulate at the apex. Peduncle moderately long, 2-flowered; bracts, bracteoles and sepals filiform-subulate. Corolla about 20 lin. long, whitish, spotted with fuscous, glabrous outside; tube 15 lin. long, moderately inflated in the lower part; mouth dilated, broadly funnel-shaped, 9–10 lin. in diam., ciliate, lobes 5 lin. long, linear, erect, connate at the tips, pubescent, ciliate with long vibratile clavate hairs.—K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 272, fig. 81A.

**Mozamb. Dist.** German East Africa: Silai, Holst, 3533.

I have not seen this species, but it would appear to be allied to and may prove to be the same as *C. mozambicensis*, Schlechter. The dimensions of the flower are taken from the figures quoted.

20. ***C. Perrottetii***, N. E. Br. in Kew Bulletin, 1898, 308. Stem twining, about 1 lin. thick, glabrous. Leaves glabrous on both sides, apparently fleshy; petiole  $3-4\frac{1}{2}$  (or more?) lin. long; blade 6–8 lin. long, 5–6 lin. broad, ovate, acute, apiculate, cordate or subcordate at the base. Peduncles lateral at the nodes,  $1\frac{1}{4}$ – $3\frac{3}{4}$  in. long, with 2–3 distant pairs or clusters of 3–4 flowers racemously scattered along them, glabrous; pedicels 3–4 lin. long, glabrous. Sepals  $1\frac{1}{2}$  lin. long, lanceolate, acuminate, glabrous. Corolla about 11 lin. long in the dried state;

tube 9 lin. long, glabrous outside, inflated and 2 lin. in diam. at the base, 4 lin. in diam. at the funnel-shaped mouth; lobes 3 lin. long, connivent and cohering at the tips, deltoid-ovate, acute, replicate, quite glabrous, not ciliate, apparently dark purple.

**Upper Guinea.** Senegal, *Perrotlet*, 791!

Described from a specimen in the herbarium of the British Museum, which I have not dissected.

21. **C. scandens**, *N. E. Br. in Kew Bulletin*, 1895, 262. Root fibrous, not tuberous (*Welwitsch*). Glabrous on all the green parts. Stem twining, moderately stout, about  $\frac{1}{8}$  in. thick. Leaves rather fleshy and limp (*Welwitsch*); petiole 6–10 lin. long; blade 2–3 $\frac{1}{4}$  in. long, 1 $\frac{1}{4}$ –1 $\frac{1}{2}$  in. broad, ovate, oblong-ovate or elliptic-ovate, acuminate or acute, broadly rounded or emarginate at the base, membranous in the dried state, minutely ciliolate. Peduncles  $\frac{3}{4}$ –1 in. long, umbellately 4–10-flowered; bracts 1 $\frac{1}{2}$ –2 $\frac{1}{2}$  lin. long, subulate, more or less revolute at the tips; pedicels 5–6 lin. long. Sepals 2 $\frac{1}{2}$ –3 lin. long, subulate, with revolute tips. Corolla-tube 9–10 lin. long, curved above the slightly inflated base, where it is 2 lin. in diam., funnel-shaped and 4–5 lin. in diam. at the mouth, glabrous outside and inside; lobes 5 lin. long, erect, connate at the tips, oblong-ovate, replicate, ciliate to their base with vibratile purple hairs, otherwise glabrous, keeled within; keel somewhat bulging at the middle. (Outside of corolla pale sulphur-yellow spotted with blood-red; inside of the lobes covered with long white hairs at the apex, and marked at their middle with a large black-purple spot, *Welwitsch*.) Outer coronal-lobes  $\frac{1}{4}$  lin. long, bifid; teeth erect, ciliate with long hairs on their outer margin; inner coronal-lobes  $\frac{3}{4}$  lin. long, much overtopping the staminal-column, erect, linear, subacute, glabrous.—Hiern in *Cat. Afr. Pl. Welw.* i. 696.

**Lower Guinea.** Angola: Golungo Alto, hills by the Coango River, near Sange, rare and solitary, *Welwitsch*, 4273! 4273b!

22. **C. Meyeri-Johannis**, *Engl. Hochgebirgsfl. Trop. Afr.* 343. Stem twining, rather slender, pubescent with short curved retrorse hairs. Leaves herbaceous; petiole  $\frac{1}{2}$ – $\frac{3}{4}$  in. long; blade 1–1 $\frac{3}{4}$  in. long,  $\frac{5}{8}$ –1 in. broad, cordate-ovate or cordate-oblong, acuminate, with an acute basal sinus 2–3 lin. deep, pubescent on both sides. Peduncles 4–7 lin. long, pubescent, umbellately many-flowered; bracts  $\frac{1}{2}$ –1 lin. long, lanceolate, pubescent; pedicels 3 $\frac{1}{2}$ –6 lin. long, glabrous or with here and there a hair. Sepals 2 $\frac{1}{2}$  lin. long, linear, acute, with recurving tips, hispidulous-pubescent. Corolla glabrous outside; tube  $\frac{3}{4}$  in. long, abruptly curved nearly at a right-angle just above the ovoid- or globose-inflated base, which is 2 $\frac{1}{2}$ –3 lin. in diam., cylindric and 1 $\frac{1}{4}$  lin. in diam. above, broadly and shortly dilated into a funnel-shaped mouth about 4–5 lin. in diam.; mouth and upper part of the tube hairy within, glabrous in the lower part; lobes  $\frac{1}{4}$  in. long, narrowly linear from a broadly deltoid base, replicate, incurved and connate at their tips, hairy on their inner face. Outer corona 1 $\frac{1}{4}$  lin. long, deeply cup-shaped, 10-toothed to nearly half-way down; teeth linear, acute, erect, glabrous; inner coronal-

lobes erect, 1 lin. long, spathulate-linear, obtuse, only slightly overtopping the outer corona, glabrous.—K. Schum. in Engl. Pfl. Ost-Afr. C. 327, t. 40, fig. A–E, corona very inaccurate, and in Engl. & Prantl, Pflanzenfam. iv., ii. 272, fig. 81, C.

**Mozamb. Dist.** German East Africa: Kilimanjaro, 6000 ft., *Johnston!* between 900 and 5400 ft., *Meyer*, 196 (ex *Engler*).

23. **C. purpurascens**, *K. Schum. in Engl. Jahrb.* xvii. 152. Stem twining, slender,  $\frac{1}{2}$ – $\frac{3}{4}$  lin. thick, glabrous. Leaves herbaceous; petiole  $2\frac{1}{2}$ –5 lin. long; blade  $\frac{2}{3}$  to  $1\frac{5}{8}$  in. long,  $4\frac{1}{2}$ –10 lin. broad, oblong, ovate-oblong or rarely broadly elliptic, acute, mucronulate, truncate or acute at the base, glabrous. Peduncles umbellately several-flowered, glabrous. Sepals  $\frac{3}{4}$  lin. long, subulate-lanceolate, acuminate, glabrous. Corolla  $9\frac{1}{2}$  lin. long; tube inflated at the base; lobes about as long as the tube, attenuate into linear tails from an ovate-triangular base, incurved over the mouth of the tube in the form of a globe and connate at their tips, ciliate. Outer corona  $\frac{1}{2}$  lin. long, cup-shaped, 10-toothed; inner coronal-lobes linear-subspathulate three times as long as the outer corona.

**Lower Guinea.** Angola: near Pungo Andongo, *Mechow*, 122.

I have not seen this plant, which is stated to be allied to *C. leucotaenia*, K. Schum., and *C. ringens*, A. Rich.

24. **C. fusiformis**, *N. E. Br. in Kew Bulletin*, 1897, 273. Stem twining, glabrous, moderately slender; internodes 4–7 in. long. Leaves (only 3 seen) petiolate; petiole 6–8 lin. long; blade  $1\frac{1}{4}$ – $2\frac{1}{2}$  in. long,  $\frac{3}{4}$ – $1\frac{1}{4}$  in. broad, ovate or elliptic-oblong, acute or shortly acuminate, apiculate, cuneately narrowed into the petiole at the base, glabrous, minutely and sparsely ciliate on the margins. Peduncles lateral,  $1$ – $1\frac{3}{4}$  in. long, subumbellately 6–10-flowered, glabrous; floral axis ultimately 2–7 lin. long; bracts minute,  $\frac{1}{2}$ – $\frac{3}{4}$  lin. long, subulate; pedicels 3–4 lin. long, glabrous. Sepals 2 lin. long, elongate-ovate at the base, acuminate into a complicate-subulate point. Corolla-tube rather abruptly curved near the base and about  $1\frac{1}{2}$  in. or rather more in length along the curve, ovoid-inflated and about 2  $\frac{1}{2}$  lin. in diam. at the base, then narrowed and again enlarged into a fusiform inflation about 3 lin. in diam. at the middle, then dilated into a funnel-shaped mouth 4 lin. in diam., glabrous outside, hairy within in the basal part; lobes erect,  $4$ – $4\frac{1}{2}$  lin. long, connate at the tips, broadly deltoid, strongly replicate, with the keels formed by the folds straight, all meeting at the centre and terminating at the base in nearly a right-angle, quite glabrous on both sides, not ciliate. Outer coronal-lobes  $\frac{1}{2}$  lin. long,  $\frac{3}{4}$  lin. broad, erect, broadly ovate-deltoid, minutely bifid or emarginate at the apex, glabrous outside, clothed with long retrorse hairs within; inner coronal-lobes  $1\frac{1}{3}$  lin. long, much overtopping the staminal-column, connivent-erect, flat, oblong-linear, narrowed at the base and there dorsally connected with the outer corona, covered with rather long hairs on the back.

**Upper Guinea.** Gold Coast : Krobo Plains, *Johnson*, 499 ! Lagos : Abeokuta, *Millen*, 89 (1895 collection) !

25. **C. Johnsoni**, *N. E. Br.* Stem twining, 1-1½ lin. thick, quite glabrous, even on the youngest parts. Leaves spreading, herbaceous ; petiole ½-1 in. long, clothed with a short spreading pubescence ; blade 1½-4½ in. long, ¾-2 in. broad, ovate, oblong or ovate-oblong, varying from obtuse to acuminate, but always terminating in a slender linear-filiform point 1½-2½ lin. long, cordate at the base, very thinly pubescent or almost glabrous above, densely pubescent with spreading hairs on the midrib and principal veins beneath, and thinly so between them. Cymes pedunculate, umbellately 3-6-flowered ; peduncles ½-1 in. long, with very short spreading hairs ; bracts very minute ; pedicels 3-6 lin. long, shortly hairy. Sepals 2 lin. long, ½ lin. broad, linear, acute, applied to the base of the corolla, spreading at the tips, shortly hairy. Corolla curved ; tube 1¼-1½ in. long, 2 lin. in diam. at the ovoid inflated base, narrower above, 5 lin. in diam. at the funnel-shaped mouth, apparently dull purple in the lower part, whitish, spotted with purple on the dilated upper part, greenish inside the throat, thinly pubescent outside, pubescent within in the lower part ; lobes 4 lin. long, erect, cohering at the incurved tips, replicate, very broad, 2½-3 lin. across when folded, whitish, veined with purple on the upper part and with green on the basal part, thinly pubescent on both sides, with a few short hairs at the cohering tips. Outer corona about ¾ lin. long, cup-shaped, 5-lobed ; lobes ½ lin. long, ¼ lin. broad, subrectangular, obtuse or emarginate, somewhat spreading, concave, ciliate with rather long hairs ; inner coronal-lobes 1¼ lin. long, erect, linear-filiform, shortly revolute at the apex. Follicles 10-11 in. long, 2-2½ lin. thick, linear-terete, beaked at the apex, glabrous. Seeds ½ in. long, 1½ lin. broad, linear-oblong, tapering into a short beak, dark brown, surrounded by a broad thickened light brown border, crowned with a tuft of long white hairs.

**Upper Guinea.** Gold Coast : Aburi, *Johnson*, 768 !

The corolla-tube of all the flowers examined was filled with many small flies, all apparently of one species.

26. **C. leucotænia**, *K. Schum. in Engl. Jahrb.* xvii. 151. Tuber depressed hemispherical (*Welwitsch*). Stem twining, herbaceous, rather slender, with a spreading pubescence. Leaves herbaceous ; petiole 5-8 lin. long, pubescent ; blade 1¼-2½ in. long, 5-10 lin. broad, ovate-lanceolate to oblong, acuminate, cordate at the base (truncate or subcordate, *Schumann*), pubescent on both sides, but the hairs are shorter and more numerous beneath. Cymes umbel-like, subsessile, 4-6-flowered ; bracts 1½-2½ lin. long, villous ; pedicels ½-½ in. long, slender, villous. Sepals 2½-3 lin. long, subulate, villous. Corolla straight ; tube cylindric, very slightly inflated at the base, about 4 lin. long, 1¼-1½ lin. in diam., glabrous, pale sulphur-yellow outside, more intense within, with two purple bands at the base and another near the top ; lobes about 3 lin. long, erect, linear, cohering at the tips, replicate, pubescent on the back, glabrous within, with a narrow wing-like keel

down their face, pale yellowish or whitish, with blackish lines extending a little way down the tube. Outer coronal-lobes arising  $\frac{1}{3}$  lin. above the base of the staminal-column, exceedingly short, spreading, transverse, distantly 2-toothed, dark-coloured; inner coronal-lobes  $\frac{1}{2}$  lin. long, connivent-erect, slightly clavate, blackish, much overtopping the incumbent anthers.—Engl. & Prantl, Pflanzenfam. iv. ii. 272, fig. 81, B; Hiern in Cat. Afr. Pl. Welw. i. 695.

**Lower Guinea.** Angola: Malange, *Mechow*, 417! Pungo Andongo; near Quibanga, very rare, *Welwitsch*, 4271! and without precise locality, *Mechow*, 80 (ex *Schumann*), Golungo Alto; Queta Mountains, near Carengue, *Welwitsch*, 4270!

27. **C. Giletii**, *De Wild. & Durand in Bull. Soc. Bot. Belg.* xxxviii. 95. Stem twining, terete, pubescent. Leaves: petiole about  $2\frac{1}{2}$  lin. long; blade about 17 lin. long, 7 lin. broad, oblong-lanceolate, acuminate, rounded or cordate at the base, with scattered hairs above, rather softly pubescent beneath. Umbels subaxillary, from one axil, sessile, several-flowered; bracts linear, villous; pedicels 8 lin. long, villous. Sepals 4 lin. long, linear-subulate. Corolla about 7 lin. long: tube about 4 lin. long, 1 lin. in diam., slightly inflated at the base, sparsely pilose, violaceous at the base and with a narrow violet band around the middle; lobes about  $\frac{1}{4}$  in. long, linear, replicate, cohering at the tips, puberulous outside, violaceous, longitudinally striated on the inner face. Corona undescribed. Follicles  $1\frac{1}{4}$  in. long, 1 lin. thick, glabrous, longitudinally striated.

**Lower Guinea.** Congo Free State: Lower Congo; near Dembo (Ndembo), *Gillet*.

I have not seen this species, which is closely allied to *C. leucotania*, K. Schum., and (according to the description) only appears to differ in having the corolla-tube pilose outside.

28. **C. papillata**, *N. E. Br. in Kew Bulletin*, 1898, 308. Stem twining, about  $\frac{2}{3}$  lin. thick, pubescent all round with short curved hairs. Leaves herbaceous; petiole  $\frac{1}{2}$ –1 in. long; blade  $1\frac{1}{4}$ – $2\frac{1}{2}$  in. long,  $\frac{1}{2}$ –1 in. broad, elongate-ovate, very acuminate, cordate at the base, with short rounded lobes, densely and minutely pubescent or subtomentose on both sides. Cymes umbel-like, sessile or subsessile, rarely with a very short peduncle, 10–20-flowered; bracts 2–4 lin. long, linear-subulate, pubescent; pedicels 4–5 lin. long, slender, pubescent with short spreading hairs. Sepals 3 lin. long,  $\frac{1}{2}$ – $\frac{2}{3}$  lin. broad, linear-lanceolate, acute, pubescent on the back. Corolla 1 in. long, straight, or nearly so, dull green at the basal part of the tube, pallid (whitish?) above, the apical half of the lobes and the margins of their basal half blackish-green; tube 9– $9\frac{1}{2}$  lin. long, ovoid-inflated and 2 lin. in diam. at the base, cylindric and  $\frac{2}{3}$ – $\frac{3}{4}$  lin. in diam. above, scarcely or not at all dilated at the mouth, glabrous on both sides, but strongly papillate or tuberculate along the veins within the inflated part; lobes 3 lin. long,  $\frac{3}{4}$  lin. broad, erect, connate at the tips, linear, replicate, keeled down the upper part within, glabrous on the back, villous with rather long white hairs within. Outer corona arising  $\frac{1}{2}$  lin. above the base of the

$\frac{3}{4}$  lin. long staminal-column and much exceeding it, shortly cup-shaped at the base, with 5 erect linear more or less bifid lobes or teeth  $\frac{3}{4}$  lin. long, glabrous, white; inner coronal-lobes  $\frac{2}{3}$ - $\frac{3}{4}$  lin. long, connivent-erect, linear, white, glabrous. Anthers oblong, incumbent on the truncate apex of the style.

**Mozamb. Dist.** British Central Africa: plateau of Mount Zomba, 5000-6000 ft., *W'hyle!*

29. **C. calcarata**, *N. E. Br.* Stem slender, twining, thinly covered with a minute reflexed pubescence mingled with a few longer hairs. Leaves herbaceous, spreading; petiole 8-15 lin. long, pubescent; blade  $1\frac{1}{4}$ -4 in. long,  $\frac{3}{4}$ -3 in. broad, cordate-ovate, obtusely pointed or shortly acuminate; basal lobes about 2-9 lin. long, rounded, in young plants separated by a narrow sinus, in older plants overlapping and enclosing a small rhomboid sinus; upper surface green, thinly pubescent; under surface paler, puberulous. Cymes sessile or subsessile, umbellately 3-6-flowered in young plants, densely many-flowered in adult plants; flowers opening in pairs or in succession; pedicels 3-5 lin. long, rather slender, glabrous. Sepals applied to the base of the corolla,  $1\frac{1}{2}$  lin. long,  $\frac{1}{2}$  lin. broad, subulate, acute, somewhat gibbous at the very base, with a few minute hairs on the back. Corolla (when in bud) with 5 short horizontal spurs at the base of the obtuse narrowly conical limb; tube 9 lin. long, slightly curved immediately above the very abruptly inflated base, which is depressed pear-shaped, 2 lin. long,  $2\frac{1}{2}$  lin. in diam.; middle part slender, cylindric,  $\frac{2}{3}$  lin. in diam., dilated at the apex into a funnel-shaped mouth 3 lin. in diam.; outside glabrous, dull purple; inside dark purple in the lower part, passing into dark green above, and at the mouth veined with dark green on a whitish ground, thinly pubescent with long and short hairs in the mouth, glabrous in the lower part, with numerous longitudinal tuberculate ribs in the inflated part; lobes 3 lin. long, straight, connivent-erect, connate at the tips, linear from a deltoid base, replicate, glabrous on the back, dark green within on the margins and at the apex, whitish with a dark green central line on the lower part of the face, covered with deflexed simple hairs on the margins and central part of the keel-like face, those on the face longest. Outer corona arising at the base of the staminal-column, 1 lin. long, cup-shaped, 5-lobed to half-way down, pure white, with the tips of the lobes red and with 5 black spots at the base inside, glabrous; lobes  $\frac{1}{2}$  lin. long and as much in breadth at the base, erect or slightly incurved, deltoid-oblong, minutely bifid or 3-toothed at the apex; inner coronal-lobes very much longer than the anthers, 1 lin. long, filiform, connivent-erect, recurved at the apex, dorsally adnate to the outer corona at the very base, glabrous, white, marked with light green at the base, blood-red or carmine at the recurved tips. Anthers narrowly oblong, obtuse, yellow.

**Mozamb. Dist.** British Central Africa: Nyasaland; Zomba, *Mahon!*

Described from a living plant sent to Kew by Mr. John Mahon, which flowered in September 1899.

Allied to *C. papillata*, N. E. Br., but the more slender flowers, glabrous pedicels, spurred buds, shorter depressed pear-shaped inflation at the base of the corolla, broader mouth of the tube and different coloration of the corolla, easily distinguish it.

30. **C. Meyeri**, *Decne. in DC. Prod.* viii. 645. Stem twining, pubescent. Leaves herbaceous; petiole 4–6 lin. long; blade  $1-1\frac{3}{4}$  in. long,  $\frac{1}{2}-\frac{3}{4}$  in. broad, ovate, narrowed into a blunt point, rounded or somewhat cordate at the base, near which the margins are often slightly undulate or crisped, pubescent on both sides. Umbels sessile at the nodes, 2–4-flowered; pedicels  $3\frac{1}{2}-4$  lin. long, slender, pubescent. Sepals 2–4 lin. long, linear, pubescent. Corolla  $1\frac{1}{4}-1\frac{1}{2}$  in. long, straight; tube 12–13 lin. long, inflated, cylindric-oblong for two-thirds of its length, about  $\frac{1}{4}$  in. in diam., tapering above to about  $1\frac{1}{2}$  in. in diam., abruptly dilated at the mouth to about  $2\frac{1}{2}$  lin. in diam., glabrous on both sides, whitish, marked with purple-brown lines; lobes  $4-4\frac{1}{2}$  lin. long, connivent-erect or inarching, connate at the tips, linear, replicate, glabrous on both sides, ciliate with long hairs, apparently blackish-purple. Outer corona  $\frac{3}{4}$  lin. long, arising  $\frac{3}{4}$  lin. above the base of the staminal-column, cup-shaped, with 5 elongate-deltoid acute teeth as long as the tubular part, glabrous; inner coronal-lobes 1 lin. long, connivent-erect, linear-spathulate, obtuse. The entire corona white, variegated with blackish-purple.—Schlechter in *Engl. Jahrb.* xx. Beibl. 51, 47. *C. pubescens*, E. Meyer, *Comment.* 193, not of Wallich.

**Mozamb. Dist.** Tropical Transvaal: among shrubs by the rivers Litonandoa and Limvovo, 1800 ft., *Schlechter*, 4527.

I have not seen a tropical specimen of this plant, and describe it from South African material.

31. **C. convolvuloides**, *A. Rich. Tent. Fl. Abyss.* ii. 47. Stem twining, covered with spreading hairs. Leaves herbaceous; petiole 5–15 lin. long, pubescent with spreading hairs; blade  $2-3\frac{1}{2}$  in. long,  $\frac{3}{4}-2\frac{1}{4}$  in. broad, cordate-ovate or ovate-lanceolate, acuminate, cordate at the base, softly pubescent on both sides. Cymes umbel-like, 12–20-flowered; peduncles 3–6 lin. long, pubescent with spreading hairs; bracts  $1\frac{1}{2}-3$  lin. long, narrowly lanceolate or subulate, acute, pubescent; pedicels 3–6 lin. long, pubescent with spreading hairs. Sepals  $2-2\frac{1}{4}$  lin. long,  $\frac{2}{3}-\frac{3}{4}$  lin. broad, oblong-lanceolate, acute, pubescent like the pedicels. Corolla 10–12 lin. long, covered outside with a short spreading pubescence, glabrous in all parts within; tube 6–7 lin. long,  $1\frac{3}{4}$  lin. in diam. at the inflated base, above which it is slightly curved and cylindric, shortly funnel-shaped and about 2 lin. in diam. at the mouth, blackish-purple within, except at the apex and base; lobes 4–5 lin. long, greenish-black within, ovate in the basal part, linear above, replicate, erect, connate at the apex, gibbous-carinate within near the base, where, at the sinuses, they are externally produced downwards into five spur-like projections  $1\frac{1}{2}-1\frac{3}{4}$  lin. long. Outer corona  $1\frac{1}{3}-1\frac{1}{2}$  lin. long, cup-shaped at the base, with 5 erect oblong lobes  $\frac{3}{4}$  lin. long, bifid. to

half-way down, the segments linear and divergent-curved at their tips; inner coronal-lobes 1 lin. long, erect, linear, arising just within the sinuses between the lobes of the outer corona and neither incumbent on, nor inflexed over the anthers. Staminal-column  $\frac{1}{2}$ – $\frac{2}{3}$  lin. long; filaments of the stamens very shortly free above their attachment to the dilated top of the style; anthers small, oblong, inflexed over the convex top of the style.—Walp. Ann. iii. 67. *C. ringens*, Vatke in Linnæa, xl. 219; Engl. Hochgebirgsh. Trop. Afr. 343; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. 272, fig. 81, E, not of A. Rich.

**Nile Land.** Abyssinia: Begemeder; Gomaro Valley, 6500 ft., *Schimper*, 1171! and mountain slopes towards the River Reb, 7500 ft., *Schimper*, 1240! Shireh Province, *Quartin Dillon* (ex *Richard*).

32. **C. Lugardæ**, *N. E. Br. in Gard. Chron.* 1901, xxx. 302. Stem twining or rambling, 1–1 $\frac{1}{3}$  lin. thick, glabrous; internodes 1 $\frac{1}{2}$ –1 $\frac{1}{2}$  in. long. Leaves thin, herbaceous, green, spreading; petiole 4–6 lin. long, terete, channelled above, puberulous in the channel; blade  $\frac{3}{4}$ –2 in. long,  $\frac{1}{2}$ –1 in. broad, oblong, notched at the apex, with an apiculus or cusp in the notch, or occasionally obtuse, apiculate, cordate, subtruncate, rounded or cuneate at the base, flat or wavy, glabrous on both sides, very minutely ciliate on the margins. Cymes lateral at the nodes, subumbellately 3–6-flowered, the flowers developing successively; peduncles  $\frac{1}{2}$ –1 $\frac{1}{2}$  in. long,  $\frac{1}{2}$ – $\frac{2}{3}$  lin. thick, glabrous; bracts minute, subulate; pedicels 3–6 lin. long, glabrous, green, spotted with purple towards the apex. Sepals 1 $\frac{1}{2}$ –2 lin. long,  $\frac{1}{2}$  lin. broad, subulate, glabrous, purple-dotted. Corolla-tube about 1 in. long, abruptly curved immediately above the globose-inflated base, which is about  $\frac{1}{4}$  in. in diam. and has 5 depressions outside on the lower part opposite the sepals, forming a slight constriction there, cylindric above the inflation, and dilated at the apex into a funnel-shaped mouth about  $\frac{1}{2}$  in. in diam.; outside white at the very base, very light green on the inflated part, then white passing into sulphur-yellow on the dilated part, and except at the very base covered with purple spots; inside hairy at the base and in the upper half, glabrous in the middle part, rich blackish-crimson on the basal half, sulphur-yellow above, with the purple spots on the outside faintly showing through; lobes 9–10 lin. long, connivent-erect, connate at the tips, broadly deltoid in the basal half, linear-spathulate in the upper half, replicate, sulphur-yellow (pale greenish, veined with purplish-brown on the basal part, according to Mrs. Lugard's drawing), ciliate with very fine white hairs on the margins and on the basal part of the keel inside. Outer corona 1 lin. long, cup-shaped, 5-lobed; lobes about  $\frac{2}{3}$  lin. long, deltoid-ovate, bifid to nearly half-way down, with parallel teeth, dark purple-brown, covered with long white simple hairs on the inner side; inner coronal-lobes 1 $\frac{1}{2}$  lin. long, standing high above the staminal-column, stoutly filiform, obtuse, connivent-erect, with recurved tips, hairy and purple-brown at the base where adnate to the outer corona, glabrous and yellow above, with purplish tips.

**Mozamb. Dist.** British Central Africa: Ngamiland; Kwebe Hills, 3000 ft., *Mrs. Lugard*, 262! also a cultivated specimen, *Mrs. Lugard*!

Described partly from *Mrs. E. J. Lugard's* dried specimen and drawing, and partly from a living plant presented by her to Kew.

33. **C. kwebensis**, *N. E. Br.* Stem twining, slender, about  $\frac{2}{3}$  lin. thick, puberulous; internodes 4-5 in. long. Leaves spreading, herbaceous; petiole 6-10 lin. long, puberulous; blade  $1\frac{3}{4}$ - $2\frac{3}{4}$  in. long,  $\frac{1}{2}$ - $1\frac{1}{2}$  in. broad, ovate or ovate-oblong, obtuse, apiculate, very broadly rounded or slightly cordate at the base, when young minutely puberulous on both sides, afterwards almost glabrous above and puberulous on the veins beneath. Cymes axillary, umbellately 10-15-flowered, the flowers developing successively; peduncles 8-9 lin. long, slender, with a minute scattered pubescence along one side; bracts minute, subulate; pedicels 4-5 lin. long, slender, glabrous. Sepals 1 lin. long,  $\frac{1}{4}$  lin. broad, subulate, glabrous. Corolla-tube  $\frac{2}{3}$ - $\frac{3}{4}$  in. long, bent at a right-angle immediately above the slightly inflated base, which is  $2$ - $2\frac{1}{4}$  lin. in diam., cylindrical and  $1\frac{3}{4}$  lin. in diam. above, dilated into a funnel-shaped mouth  $3\frac{1}{2}$  lin. in diam., green and glabrous outside, purplish, or dull reddish-brown inside and very sparsely beset with long and very fine hairs; lobes 6-10 lin. long, linear from a short deltoid base  $1\frac{1}{2}$  lin. broad, erect, connate at the tips, replicate, green, ciliate and with long fine purple hairs on the inner face. Outer corona cup-shaped, white, tinted with mauve and margined with red, 10-toothed; teeth  $\frac{1}{4}$  lin. long, approximate and parallel in pairs behind the inner coronal-lobes, hairy; inner coronal-lobes 1 lin. long,  $\frac{1}{4}$  lin. broad or thick, much exceeding the staminal-column, stout, compressed? falcate, very obtuse, erect, with the tips directed outwards, slightly hairy, white, tinted with mauve on the basal part.

**Mozamb. Dist.** British Central Africa: Ngamiland; Kwebe Hills, at 3400 ft., apparently rare, *Mrs. Lugard*, 116!

34. **C. racemosa**, *N. E. Br. in Kew Bulletin*, 1895, 262. Stem twining, rather slender, glabrous. Leaves probably thinly fleshy; petiole  $1\frac{1}{2}$ -3 lin. long; blade  $1\frac{1}{4}$ -2 in. long, 4-9 lin. broad, lanceolate or oblong-lanceolate, acute or obtuse, apiculate, rounded at the base, glabrous, but scaberulous above near and along the narrowly revolute margins. Peduncles racemously few (2-4?) flowered, glabrous, including the flowering part  $1\frac{3}{4}$ -4 in. long; flowers  $\frac{1}{3}$ - $1\frac{1}{2}$  in. apart; bracts opposite,  $\frac{1}{2}$  lin. long, acute; pedicels  $2\frac{1}{2}$ -3 lin. long, glabrous. Sepals  $1\frac{1}{2}$  lin. long, ovate-lanceolate, acute, glabrous. Corolla straight, but slightly oblique at its insertion, glabrous outside; tube about  $\frac{3}{4}$  in. long, cylindrical, rather slender and about  $1\frac{1}{4}$  lin. in diam. in the lower two-thirds, not inflated at the base; mouth broadly funnel-shaped, about  $4$ - $4\frac{1}{2}$  lin. in diam.; inside throughout its length clothed with long straight hairs; lobes 6-7 lin. long, straight, connivent and cohering at the tips, linear from a somewhat dilated base, replicate, fringed with long hairs along the fold within. Outer coronal-lobes very deeply divided, forming 10 obliquely deltoid subacute teeth about  $\frac{1}{2}$  in. long,

rising to the level of the anthers, ciliate with long hairs; inner coronal-lobes 1 lin. long, connivent erect, linear, with revolute tips, glabrous.

**Nile Land.** Jur: Jur Ghattas, *Schweinfurth*, 2105!

35. **C. setifera**, *Schlechter in Engl. Jahrb.* xx. *Beibl.* 51, 48. Stem twining, thinly pilose. Leaves  $\frac{3}{4}$ – $2\frac{3}{8}$  in. long, 5–16 lin. broad, ovate-oblong, acuminate or acute, rarely subcordate at the base, sparsely pilose, ciliate. Cymes lateral, lax, few-flowered, as long as the leaves or a little longer. Sepals  $1\frac{1}{2}$  lin. long, linear, lanceolate, subacute, puberulous. Corolla 12–14 lin. long, subclavate; tube slightly inflated at the base, glabrous outside, thinly pilose with white hairs inside; lobes short, lanceolate-triangular, connate at the apex, reflexed at the margins, thinly pilose within. Outer coronal-lobes connate at the base into a short tube, free part subquadrate, deeply bifid at the apex; segments divaricate, falcate-lanceolate, setaceous-acuminate; inner coronal-lobes linear, erect, with reflexed tips, much longer than the outer corona.

**Mozamb. Dist.** Tropical Transvaal: near Mahilas Kop, 2500 ft., *Schlechter*, 4515; near Valdesia, bank of the Limvovo River, 1800 ft., *Schlechter*, 4543.

I have not seen this species. From the statement that the cymes are as long as the leaves, I have assumed in the key to the species that they are pedunculate.

36. **C. pachystelma**, *Schlechter in Engl. Jahrb.* xx. *Beibl.* 51, 47. Stem twining, more or less pilose. Leaves subcoriaceous; petiole  $2\frac{1}{2}$ –5 lin. long; blade  $\frac{2}{3}$ –2 in. long,  $\frac{1}{3}$ –1 in. broad, ovate-oblong, shortly acuminate, subcoriaceous, glabrescent or thinly puberulous. Cymes lateral, subumbellate, few-flowered; peduncle scarcely exceeding the petiole, puberulous; pedicels equalling the peduncle, slender, deflexed after flowering. Sepals lanceolate or lanceolate-triangular, acute, slightly pilose. Corolla about 1 in. long; tube about 10 lin. long, globose-inflated and  $2\frac{1}{2}$  lin. in diam. at the base, slightly dilated at the mouth; lobes  $2\frac{1}{2}$  lin. long, erect, connate at the apex, linear-oblong, reflexed along the margins, glabrous outside, tomentose-villous within. Outer corona cup-shaped, with very obtuse semi-orbicular lobes, thickened at the margin; inner coronal-lobes erect, linear-oblong, obtuse, dilated below the middle, much longer than the outer corona.

**Mozamb. Dist.** Tropical Transvaal: near Valdesia, on the banks of the Limvovo, 1800 ft., *Schlechter*, and near Mahilas Kop, 2500 ft., *Schlechter*, 4511.

Also in South Africa. I have not seen this species.

37. **C. paricyma**, *N. E. Br. in Kew Bulletin*, 1898, 309. Stem apparently solitary, about 2 ft. long, twining at the top, slender, slightly pubescent. Leaves spreading; petiole 3–8 lin. long; blade 1–2 in. long,  $\frac{1}{2}$ –1 in. broad, oblong-ovate, tapering to a blunt point, cordate at the base, or the lowest leaves cuneately narrowed into the petiole, sparsely pubescent on both sides. Cymes in pairs, subsessile at the nodes, 4–6-flowered; bracts  $\frac{1}{2}$ – $\frac{3}{4}$  lin. long, subulate; pedicels 3–5 lin. long, slender, glabrous: Sepals 1– $1\frac{1}{4}$  lin. long,  $\frac{1}{3}$  lin. broad, lanceolate-subulate, subglabrous. Corolla-tube straight, 7– $7\frac{1}{2}$  lin. long, inflated

and  $2\frac{1}{2}$  lin. in diam. at the dark purple base, pallid (whitish?) above, gradually tapering to about  $1\frac{1}{4}$  lin. in diam. at the base of the lobes, glabrous; lobes erect, cohering at the tips,  $3\frac{1}{2}$  lin. long, linear-spathulate from broad deltoid bases (which, at the sinuses, are reflexed for about  $\frac{2}{3}$  lin. below the mouth of the tube, and in the bud form 5 short, blunt, deflexed spurs), replicate throughout their length, fringed with rather long hairs in the lower part, blackish at the mouth of the tube and base of the lobes, shading into blackish-green or dark dull green in the upper part. Outer corona? of 5 subulate broad-based processes,  $1\frac{1}{2}$  lin. long, erect at the base, then bending outwards, with the tips shortly erect.

**Mozamb. Dist.** Lake Nyasa, *Simons!*

In the flower examined, I was unable to make out the exact structure of the corona, and the processes described may possibly belong to the inner corona.

38. **C. angusta**, *N. E. Br. in Kew Bulletin*, 1895, 261. Roots thick and fleshy, fusiform, fasciculate. Stem twining, 4–8 ft. long, very slender, glabrous. Leaves widely spreading; petiole 2–4 lin. long; blade  $1-2\frac{1}{4}$  in. long,  $1\frac{3}{4}-3$  lin. broad, linear-lanceolate, acute or obtuse, mucronulate, rounded and subpeltate at the base, glabrous, with narrowly revolute sparsely and minutely scabrid margins; peduncles 3–9 lin. long, 1–2-flowered, glabrous; flowers  $\frac{1}{2}-1\frac{1}{2}$  lin. apart; bracts minute; pedicels  $2\frac{1}{2}-3$  lin. long, glabrous. Sepals  $1\frac{1}{4}$  lin. long, lanceolate-attenuate, glabrous. Corolla straight; tube  $4\frac{1}{2}-5$  lin. long,  $1\frac{1}{2}$  lin. in diam. at the ovoid-inflated base, cylindrical above and scarcely widened at the mouth, which is  $1\frac{1}{4}-1\frac{1}{3}$  lin. in diam., glabrous and minutely papillate-rugulose outside, glabrous within; lobes 2 lin. long,  $1-1\frac{1}{4}$  lin. broad, erect, connate at the tips, narrowly elliptic-lanceolate, replicate (with apparently involute margins), fringed with long hairs along the narrow keel on the face. Outer coronal-lobes very deeply bifid, forming 10 obliquely deltoid teeth  $\frac{1}{2}$  lin. long adnate to the base of the inner coronal-lobes, reaching to or above the level of the anthers, fringed with rather long hairs; inner coronal-lobes  $\frac{3}{4}$  lin. long, connivent-erect, linear, glabrous. Follicles  $4\frac{1}{2}$  in. long, slender, terete-attenuate, divergent-reflexed, glabrous.—*Hiern in Cat. Afr. Pl. Welw. i. 695.*

**Lower Guinea.** Angola: Pungo Andongo; in the Præsidium, by the streams of Pedra de Cazella, *Welwitsch*, 4275! 4276!

39. **C. debilis**, *N. E. Br. in Gard. Chron.* 1895, xviii. 358. Tuber flattened, with a short woody neck, producing several slender weak stems 3–4 ft. long, about  $\frac{1}{2}$  lin. thick, twining (or sometimes pendulous under cultivation), glabrous. Leaves  $1\frac{1}{2}-2\frac{1}{2}$  in. apart,  $\frac{1}{2}-1\frac{1}{4}$  in. long,  $\frac{1}{2}-1$  lin. broad, fleshy, semiterete, slightly channelled down the face, acute, more or less curved, glabrous, light green; midrib rather stout and prominent beneath. Peduncles  $\frac{1}{4}-\frac{1}{2}$  in. long, glabrous, umbellately 1–3-flowered; bracts minute; pedicels  $1\frac{1}{2}-2$  lin. long, glabrous. Sepals  $\frac{3}{4}-1$  lin. long, lanceolate or subulate, acute, glabrous. Corolla slightly bent above the inflation, glabrous outside; tube  $7\frac{1}{2}-10$  lin. long, 2 lin. in diam. at the ovoid-inflated base, cylindrical above, scarcely enlarged

and about  $2\frac{1}{2}$  lin. in diam. at the mouth, greenish-white, tinged a faint dull purple outside, pale purplish within, having a few deflexed hairs in the upper part; lobes  $3-3\frac{1}{2}$  lin. long, erect, connate at the tips, linear from a deltoid base, replicate, keeled along the fold within, greenish, blackish-purple on the keel, covered with rather long deflexed hairs on the inner face. Outer corona  $\frac{1}{2}$  lin. long, white, somewhat cup-shaped, shortly 10-lobulate; 5 of the lobules alternating with the anthers, forming small truncate slightly ciliate pouches, the other 5 opposite the inner coronal-lobes, erect, obtuse; inner coronal-lobes  $1-1\frac{1}{4}$  lin. long, erect, narrowly lanceolate, acute, white.—Gard. Chron. 1901, xxix. 238, fig. 89.

**Mozamb. Dist.** British Central Africa: Nyasaland; Zomba, cultivated specimen, *Buchanan!*

Described from a cultivated plant sent to Mr. J. O'Brien by Mr. John Buchanan. In the dried state the leaves are filiform and much more slender than described above, but in the figure in the Gardeners' Chronicle they are represented as being much stouter than any I have seen.

40. **C. stenantha**, *K. Schum. in Engl. Jahrb.* xvii. 152. Stem twining, rather slender, glabrous. Leaves thin in the dried state, probably somewhat fleshy when alive; petiole 2-4 lin. long; blade  $1-2\frac{1}{2}$  in. long, 2-6 lin. broad, lanceolate, acute, apiculate, cuneate-acute at the base, glabrous on both sides, ciliolate on the margin with a few adpressed distant hairs; midrib prominent beneath. Cymes umbel-like, sublateral at the nodes, 3-6-flowered; peduncles  $1\frac{1}{2}-6$  lin. long, glabrous; bracts minute, subulate, glabrous; pedicels  $\frac{1}{2}-2$  lin. long, glabrous. Sepals 1 lin. long, scarcely  $\frac{1}{4}$  lin. broad, subulate, acute, suberect, glabrous. Corolla straight, glabrous outside and on the lobes within, thinly pilose with extremely fine hairs inside at the base and middle of the tube, apparently concolorous or with the lobes rather darker than the tube, probably greenish; tube 5-6 lin. long, slightly inflated and about  $1\frac{1}{4}$  lin. in diam. in the basal half, tapering above, not dilated at the mouth, which is about  $\frac{3}{4}-1$  lin. in diam.; lobes 5-6 lin. long, scarcely  $\frac{1}{2}$  lin. broad, linear, replicate, erect, slightly curved, connate at the tips, not ciliate. Outer corona of 5 minute pouches alternating with the anthers; inner coronal-lobes  $\frac{3}{4}$  lin. long, flat, linear-lanceolate, obtuse, erect or connivent to about their middle, then recurving, glabrous.

**Nile Land.** Jur: Jur Ghattas, *Schweinfurth*, 2104!

Var. *parvifolia*, *N. E. Br.* Leaves, at least on the terminal flowering part of the stem, much shorter than the flowers they subtend,  $\frac{1}{4}-\frac{1}{2}$  in. long (including the short petiole),  $\frac{1}{4}-1$  lin. broad, linear, mucronate, glabrous, ciliate on the margins. Cymes or umbel-like racemes subsessile or with a flowering axis 2-5 lin. long; pedicels 2- $2\frac{1}{2}$  lin. long, glabrous. Calyx, corolla and corona as in the type.

**Mozamb. Dist.** German East Africa: Coast district, *Hannington!* British Central Africa: Rhodesia; central Leshumo Valley, *Holub!*

41. **C. infausta**, *N. E. Br.* Stem twining, slender, glabrous. Leaves membranous; petiole  $2\frac{1}{2}-4$  lin. long; blade  $\frac{3}{4}-2\frac{3}{4}$  in. long, 4-8

lin. broad, lanceolate-oblong or oblong, acute, narrowed at the base, minutely denticulate or serrulate, glabrous on both sides. Umbels from one axil of each pair of leaves, 3-6-flowered; bracts subulate, glabrous; pedicels slender, glabrous. Sepals 2-2½ lin. long, subulate, glabrous. Corolla glabrous; tube 7 lin. long, slightly inflated and somewhat curved; lobes 6 lin. long, narrowly linear, cohering at the tips, subsagittate at the base, with replicate margins. Coronal-lobes very short, truncate, the outer (inner?) clavate. Staminal-column 1 lin. long.—*Riocreuxia longiflora*, K. Schum. in Engl. Jahrb. xxviii. 459.

**Mozamb. Dist.** German East Africa: between Khutu and Uhehe at the River Mloha, 2900 ft., *Goetze*, 495b.

Unknown to me. According to the description this plant is a *Ceropegia*, and appears to be very closely allied to *C. stenantha*, K. Schum. The specific name given by K. Schumann is already occupied under *Ceropegia*. The author does not state whether the umbels are sessile or pedunculate.

42. **C. floribunda**, *N. E. Br.* Stem twining,  $\frac{3}{4}$ -1 lin. thick, glabrous; internodes  $1\frac{3}{4}$ - $3\frac{1}{2}$  in. long in the flowering part. Leaves apparently fleshy, rather rigid in the dried state; petiole 1-3 lin. long; blade  $\frac{1}{2}$ -1 in. long,  $\frac{1}{3}$ - $\frac{3}{4}$  in. broad (probably larger in the lower leaves), elliptic or elliptic-oblong, obtuse or retuse, apiculate, broadly rounded or somewhat cuneate at the base, glabrous above, sparsely and very minutely pubescent beneath, very minutely ciliate. Flowers very numerous, in dense sessile globose many-flowered umbels or clusters, which are lateral at every node; bracts minute  $\frac{1}{4}$ - $\frac{2}{3}$  lin. long, subulate, glabrous; pedicels 1-1½ lin. long, glabrous. Sepals 1 lin. long, linear-subulate, glabrous. Corolla straight, glabrous outside, sparsely hairy inside the cylindric part of the tube, green or yellowish-green, with the inflated part of the tube purplish on both sides; tube  $\frac{1}{2}$  in. long,  $1\frac{3}{4}$ -2 lin. in diam. at the globose-inflated base, cylindric and about  $\frac{3}{4}$  lin. in diam. above, not dilated at the mouth; lobes  $\frac{1}{4}$  in. long,  $\frac{1}{3}$  lin. broad at the base, erect, connate at the tips, linear-attenuate, flat on the back, not replicate, glabrous, not ciliate. Outer corona  $\frac{1}{3}$  lin. long, cup-shaped, obtusely pentagonal, truncate, not toothed, glabrous, white; inner-coronal lobes much exceeding the anthers, connivent-erect,  $\frac{1}{2}$  lin. long,  $\frac{1}{3}$  lin. broad, linear-spathulate, very obtuse, glabrous, white. Anthers ovate, obtusely apiculate. Follicles about 6 in. long and  $\frac{1}{4}$  in. thick, terete, tapering to an acute apex, according to Mrs. Lugard's drawing.

**Mozamb. Dist.** British Central Africa: Ngamiland; Kwebe Hills, 3000 ft., very rare, *Mrs. Lugard*, 161!

43. **C. medoensis**, *N. E. Br. in Kew Bulletin*, 1895, 262. Stem erect, simple, shortly and softly villous, about 1½ ft. high. Leaves distant; petiole  $\frac{1}{2}$ -1½ lin. long; blade  $\frac{2}{3}$ -2½ in. long;  $\frac{1}{4}$ -1½ in. broad, ovate, ovate-lanceolate or oblong, subacute, rounded or subcordate at the base, concolorous and shortly and softly pilose on both sides, with the hairs rather denser at the ciliate margins. Flowers 1-2 at the apex of the stem, large; pedicels 2-4 lin. long, pubescent. Sepals 3-3½ lin.

long, lanceolate-subulate, pubescent. Corolla straight,  $2\frac{1}{2}$  in. long, very sparsely pubescent outside, glabrous within, "dark reddish-violet outside, yellow inside up to the lower half of the lobes" (*Schumann*); tube  $1\frac{1}{2}$ – $1\frac{3}{4}$  in. long, inflated for  $4\frac{1}{2}$ –6 lin. at the base, narrowly funnel-shaped and probably 5–6 lin. in diam. at the mouth, about  $1\frac{1}{2}$  lin. in diam. at the intermediate part; lobes about 1 in. long, connate for  $\frac{1}{4}$ – $\frac{1}{3}$  of their length at the elliptic-spathulate or obovate-spathulate more or less replicate apical part into a short broad apiculate cone or umbrella-like top, with a broad wing-like keel down their inner face; claw linear. Outer corona arising about  $\frac{1}{3}$  lin. above the base of the staminal-column, campanulate, 10-toothed; tube  $\frac{1}{2}$ – $\frac{2}{3}$  lin. long; teeth  $1$ – $1\frac{1}{4}$  lin. long, linear, obtuse, glabrous; inner coronal-lobes 1 lin. long, attaining the same level as the teeth of the outer corona, erect, subulate, glabrous, dorsally connected to the outer corona by 5 vertical truncate partitions.—*C. dichroantha*, K. Schum. in Engl. Jahrb. xxx. 385.

**Mozamb. Dist.** German East Africa: Kondeland; on Ukungu Mountain, near Langenburg, *Goetze*, 839! Portuguese East Africa: Medo country; between Lujenda River and Ibo, *Last*!

Of *C. dichroantha*, I have seen only a leaf and one calyx from the type specimen, which are perfectly identical with those of *C. medoensis*; the description also quite agrees with the latter species.

44. **C. umbraticola**, K. Schum. in Engl. Jahrb. xvii. 153. Stem herbaceous, erect from a curved base, puberulous and scaberulous above, glabrous in the lower part. Leaves: petiole 2–4 lin. long; blade 1–2 in. long, 4–9 lin. broad, ovate, ovate-oblong or lanceolate, acute, rounded at the base, minutely pubescent on both sides, 3-nerved at the base. Flowers solitary, large; pedicels 4–10 lin. long, moderately stout, puberulous. Sepals  $2\frac{1}{2}$ –3 lin. long, lanceolate-attenuate, puberulous. Corolla nearly straight; tube  $1\frac{1}{2}$  ( $2\frac{1}{3}$  *Schumann*) in. long, somewhat inflated in the lower half, scarcely dilated at the mouth, which is about  $\frac{1}{4}$  in. in diam., pubescent outside on the upper two-thirds, glabrous within; lobes about 1 in. long,  $1$ – $1\frac{1}{4}$  lin. broad at the base, erect, linear, connate at the tips, reflexed or perhaps replicate along the margins, pubescent on the back and ciliate with similar short hairs, glabrous on the inner face. Outer corona arising from near the base of the staminal-column, campanulate, 10-toothed; tube  $1\frac{1}{2}$  lin. long; teeth  $1$ – $1\frac{1}{4}$  lin. long, erect, linear, obtuse, sparsely covered on the inner face and margins with long straight hairs; inner coronal-lobes  $\frac{2}{3}$  lin. long, not nearly reaching the same level as the teeth of the outer corona, linear, obtuse, glabrous, connivent-erect over the backs of the anthers, dorsally connected to the outer corona by 5 vertical truncate partitions.—Engl. & Prantl, Pflanzenfam. iv. ii. 272, fig. 81, F.

**Lower Guinea.** Angola: near Malange, *Mechow*, 370!

*Schumann* describes the corolla as being about  $3\frac{1}{2}$  in. (8.5 cm.) long, of which the tube measures  $2\frac{1}{3}$  in. (6 cm.) in length, and states that the corolla-tube and the corona are both glabrous. I find them as described above.

45. **C. campanulata**, *G. Don, Gen. Syst.* iv. 112. A small bulbous-rooted plant (*Don*). Stem 6 in. high,  $\frac{1}{2}$  lin. thick, simple, apparently not twining, pubescent in the upper part, 1-2-flowered. Leaves erect, subsessile,  $1\frac{1}{4}$ - $1\frac{1}{2}$  in. long,  $\frac{2}{3}$ -1 lin. broad, linear, acute, tapering at the base, minutely scaberulous along the margins and on the midrib beneath. Flowers terminal; pedicel of the detached flower broken, 2 lin. long, thinly puberulous at the apex. Sepals ascending, 2 lin. long,  $\frac{1}{2}$  lin. broad at the base, whence they gradually taper to an acute point, thinly pubescent. Corolla about 2 in. long, straight; tube 13 lin. long,  $2\frac{3}{4}$  lin. in diam. at the inflated base, gradually narrowing to  $1\frac{1}{2}$  lin. in diam. at the middle, then dilating into a funnel-shaped mouth  $4\frac{1}{2}$  lin. in diam., glabrous outside; lobes erect, cohering at their tips, 10-11 lin. long, linear from a deltoid base, replicate, and in the folded state  $\frac{1}{2}$  lin. broad, inside rather densely covered with woolly white hairs.—Hook. Niger Fl. 457.

**Upper Guinea.** Gold Coast: Accra, *Don*!

The above is compiled partly from *Don*'s brief description and partly from the type specimen in the British Museum, which consists of a single stem  $5\frac{1}{2}$  in. long, with the top broken off, and a single detached flower, which I have not dissected. The above measurements are taken from the dried flower, the colour of which is pallid with a dark base to the tube, but *Don* describes it as dark purple-brown.

46. **C. filipendula**, *K. Schum. in Engl. Jahrb.* xvii. 150. Rhizome short; roots fusiform. Stem solitary, erect, simple, about  $1\frac{1}{2}$  ft. high,  $\frac{1}{10}$  in. thick, puberulous, subscabrid. Leaves very shortly petiolate, herbaceous,  $\frac{2}{3}$ - $1\frac{1}{3}$  in. long,  $\frac{1}{2}$ -1 in. broad, ovate-oblong, obtuse or somewhat acute, mucronulate, scabrid-puberulous on both sides. Inflorescence terminal, racemose, about  $4\frac{1}{4}$  in. long; pedicels short, stout, puberulous. Sepals 2- $2\frac{1}{2}$  lin. long, oblong-lanceolate, puberulous, ciliolate. Corolla  $1\frac{1}{6}$ - $1\frac{3}{8}$  in. long; tube 6-8 lin. long, globose-inflated at the base, broadly dilated at the mouth, minutely puberulous outside; lobes as long as or rather longer than the tube, about 8 lin. long, broadly ovate, connate at the apex, recurved along the margins (replicate?). Outer corona  $1\frac{1}{2}$  lin. long, cup-shaped, 10-toothed; teeth linear, glabrous; inner coronal-lobes 2 lin. long, linear, erect, dorsally connected at the base to the outer corona by 5 partitions, glabrous.—Engl. & Prantl, Pflanzenfam. iv. ii. 272, fig. 81, D, and 273.

**Lower Guinea.** Angola: near Cissacola in the neighbourhood of the River Coango, *Mechow*, 553B.

47. **C. abyssinica**, *Decne. in DC. Prod.* viii. 644. Tuber  $\frac{1}{2}$ -1 in. in diam., subglobose. Stem  $\frac{3}{4}$ -1 ft. high, erect, simple, not twining, hairy. Leaves herbaceous; petiole 1- $1\frac{1}{2}$  lin. long; blade 1- $1\frac{1}{2}$  in. long,  $1\frac{1}{2}$ -5 lin. broad, varying from oblong-lanceolate to lanceolate-linear, with scattered hairs on both sides. Flowers 1-3 (or more?) at the uppermost nodes (reduced sessile umbels), forming a moderately compact, terminal, racemose inflorescence; bracts 1- $1\frac{1}{2}$  lin. long, subulate, hairy; pedicels  $\frac{1}{4}$ - $\frac{1}{3}$  in. long, clothed with spreading hairs, as are also the  $2\frac{1}{2}$  lin. long subulate sepals. Corolla straight, 11 lin. long;

tube  $\frac{1}{2}$  in. long, about 2 lin. in diam., subcylindric, slightly constricted just below the mouth, which is about 2 lin. in diam., glabrous outside and inside, whitish, with the base and a band above the middle purplish; lobes 5 lin. long, erect, connate at the tips, spathulate; lower half linear,  $\frac{2}{3}$  lin. broad, flat; spathulate part  $1-1\frac{1}{4}$  lin. broad, narrowly elliptic, replicate, apparently blackish or greenish-black, which colour extends to the mouth of the tube, outside sparsely pubescent towards the tips, glabrous within. Corona arising about  $\frac{1}{2}$  lin. above the base of the staminal-column, about 1 lin. long, black, quite glabrous; outer coronal-lobes reduced to minute pallid notched pouches, reaching to the level of the anthers; inner coronal-lobes  $\frac{1}{2}$  lin. long, connivent-erect, linear, spathulate (? trigonous).—*C. hirsuta*, Hochst. ex Decne. in DC. Prod. viii. 644.

**Nile Land.** Abyssinia: Tigre; near Gafta, *Schimper*, 1416! and without precise locality, *Schimper*, 368!

Both A. Richard and Vatke have mistaken *C. loranthiflora* for this species.

48. **C. vignaldiana**, *A. Rich. Tent. Fl. Abyss.* ii. 48. Tuber globose. Stem herbaceous, 3-4 in. high, not twining. Leaves  $\frac{3}{4}-1\frac{1}{2}$  in. long,  $1\frac{1}{2}-2\frac{1}{2}$  lin. broad, linear-lanceolate, acute, attenuate at the base, scarcely petiolate, glabrous. Umbels lateral, very shortly pedunculate, 2-3-flowered; pedicels 2-3 lin. long. Sepals about  $1\frac{1}{2}$  lin. long, lanceolate, acute. Corolla-tube about 1 in. long, curved above the globose-inflated base, rather slender, abruptly dilated at the mouth, purplish at the base, greenish above; lobes about  $3\frac{1}{2}$  lin. long, erect, connate at the tips, linear from a deltoid base, replicate, yellowish-green. Corona campanulate, with 5 long narrow ligulate (subulate?) acute lobes (probably the inner coronal-lobes, the outer ones are probably small and pouch-like).—Walp. Ann. iii. 67.

**Nile Land.** Abyssinia: Wojerat; in the Sensata meadows, *Petit* (ex *Richard*.)

I have only seen a drawing of this plant copied from a coloured drawing made by Vignald, which accompanies Richard's type specimen in the Herbarium of M. Drake del Castillo, from which I partly describe.

49. **C. Steudneri**, *Vatke in Linnæa*, xl. 217. Tuber globose,  $\frac{1}{2}-\frac{3}{4}$  in. in diam. Stem solitary, erect, not twining, simple, hairy, growing to more than 20 in. high. Leaves petiolate in the lower part, subsessile on the upper part of the stem; petiole up to  $\frac{1}{3}$  in. long; blade  $1-2\frac{1}{8}$  in. long, and up to 1 in. in breadth; lower leaves oval (ovate?), upper oval-oblong, acute, all crenulate, pilose. Cymes sessile, 1-6-flowered; pedicels about  $\frac{1}{3}$  in. long, slender, hairy. Calyx-lobes subulate, hairy. Corolla 7 lin. long, straight; tube more or less ventricose, about 3 times as long as the sepals, striate; lobes obovate-oblong, connate at the tips, more or less hairy outside towards the apex. Corona simple; segments united at the base, produced above into fleshy ligules; ligules free, black, furnished with a tuft of long hairs at the base, puberulous at the apex, glabrous elsewhere.—Engl.

Hochgebirgsfl. Trop. Afr. 344. *C. steudneriana*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 272.

**Nile Land.** Eritrea: Keren, *Steudner*, 765. Abyssinia: Tigre; Schahagenne, *Schimper*, 225.

This species appears from the description to be very similar to *C. abyssinica*, of which it may be only a form, with larger leaves and a hairy corona.

50. **C. humilis**, *N. E. Br.* Plant about 4 in. high. Tuber globose. Stem erect, not twining, slender, glabrous. Leaves erect, 1–1 $\frac{3}{4}$  in. long,  $\frac{1}{2}$ – $\frac{3}{4}$  lin. broad, linear or linear-subulate, acute, glabrous. Peduncles lateral at the nodes, 1–3 lin. long, 1–2-flowered, slender, glabrous; pedicels 1 $\frac{1}{2}$ –3 lin. long, glabrous. Sepals 1–1 $\frac{1}{4}$  lin. long, subulate, acute, glabrous. Corolla straight; tube 6–7 lin. long, slightly and gradually inflated in the lower part, slightly dilated at the mouth, glabrous outside; lobes 2 $\frac{1}{2}$  lin. long, connivent-erect, cohering at the tips, linear from a deltoid base, ciliate.—*C. vignalidiana*, Vatke in Linnæa, xl. 219; Engl. Hochgebirgsfl. Trop. Afr. 344; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 271, fig. 80, E, not of A. Richard.

**Nile Land.** Abyssinia: Tigre; Amba-Sea, 6500 ft., *Schimper*, 763.

I describe this plant from the figure and the few diagnostic characters given by Schumann in the work above quoted; it is very distinct from *C. vignalidiana*, A. Rich., the leaves being very much narrower, and the corolla small and altogether different in form.

*Imperfectly known species.*

51. **C. aristolochioides**, *Decne. in Ann. Sc. Nat. 2 sér. ix. 263.* Glabrous. Stem twining, fleshy. Leaves fleshy, petiolate, 2–3 $\frac{1}{2}$  in. long, 1 $\frac{1}{2}$ –2 $\frac{1}{2}$  in. broad, cordate, shortly acuminate, very acute. Peduncles spreading, sometimes longer than the leaves, few-flowered; flowers pedicellate, purple-brown. Sepals subulate, acuminate. Corolla-tube curved, inflated at the base; lobes lanceolate (rounded in another description), cohering into a hemispherical limb, apiculate. Outer coronal-lobes bifid, pilose with long hairs; inner coronal-lobes ligulate, glabrous.—Decne. in DC. Prod. viii. 642; Vatke in Oest. Bot. Zeitschr. 1876, 147, and in Linnæa, xl. 219; Engl. Hochgebirgsfl. Trop. Afr. 343.

**Upper Guinea.** Senegambia: near Lebar, *Heudelot*.

**Nile Land.** Eritrea: Habab, 6200 ft., *Hildebrand*, 384. Abyssinia: Abba Gerima, 6800 ft., *Schimper*; near Schahagenne, 5000 ft., *Schimper*, 750.

I have not seen this plant, and quote the specimens from Eritrea and Abyssinia on the authority of Vatke & Engler. Dr. Schumann in Engler, Pfl. Ost-Afr. C. 327 records it from German East Africa, but I have not seen any specimens from that region.

45. **RIOCREUXIA**, Decne. ; Benth. et Hook. f. Gen. Pl. ii. 780.

Calyx 5-partite. Corolla tubular, more or less inflated at the base, straight, 5-lobed; lobes linear, erect, connate at their tips, very slightly overlapping to the left in bud, not strictly valvate. Corona double, arising from the staminal-column; outer corona of 5 small spreading bifid lobes, alternating with the anthers or united into a spreading 10-toothed frill-like ring; inner corona of 5 linear or shortly oblong lobes, erect and closely applied to the backs of the anthers, sometimes longer than the anthers and connivent over them. Staminal-column arising from or near the bottom of the corolla-tube, very short and together with the corona included in the inflated part of the corolla; anthers erect, oblong, terminated by a small, somewhat fleshy appendage. Pollen-masses erect, pellucid at the apex, solitary in each anther-cell, attached slightly below their middle in pairs to the pollen-carriers by exceedingly short caudicles. Style not exceeding the anthers, truncate at the apex. Follicles linear-fusiform, acuminate, usually more or less beaded, from being constricted between the seeds, smooth. Seeds crowned with a tuft of hairs.—Tuberous rooted perennials with annual twining stems several feet in length. Leaves opposite, cordate. Inflorescence lateral at the nodes, consisting either of a cymose panicle with the flowers in few- or many-flowered sessile umbels racemously arranged along the branches, or of 2 or more sessile umbels racemously arranged along a single peduncle, and often with a sessile umbel at the node itself. Flowers usually numerous, of moderate size.

Species few, chiefly natives of South Africa.

This genus is closely allied to *Ceropegia*, and only differs in the character of its inflorescence.

Stem pubescent along one line alternating at the nodes; inner coronal-lobes longer than the anthers. 1. *R. profusa*.

Stem villous; inner coronal-lobes shorter than the anthers. . . . . 2. *R. splendida*.

1. **R. profusa**, *N. E. Br. in Kew Bulletin*, 1895, 260. Stem twining,  $\frac{3}{4}$ – $1\frac{1}{2}$  lin. thick, pubescent along one line alternating at the nodes, otherwise glabrous. Leaves spreading; petiole 1– $2\frac{1}{2}$  in. long, pubescent; blade  $2\frac{1}{2}$ – $5\frac{1}{2}$  in. long,  $1\frac{1}{2}$ –4 in. broad, cordate-ovate or elliptic-ovate, shortly cuspidate, acute or acuminate, deeply cordate at the base, with a broad subtruncate sinus between the semiorbicular incurved or overlapping basal-lobes, palmately 7-nerved, denuded along the basal nerves at the sinus, thinly and rather minutely pubescent on both sides or nearly glabrous above. Cymes large, glabrous, divided at their origin into 2–3 branches from  $\frac{1}{2}$ –7 in. long, which are dichotomously or trichotomously branched and bear several umbel-like cymules of 3–4 flowers; bracts subulate  $\frac{1}{2}$ –1 lin. long; pedicels  $\frac{2}{3}$ – $1\frac{1}{2}$  in. long, slender, glabrous. Sepals  $1\frac{1}{2}$  lin. long, lanceolate, acuminate, glabrous. Corolla 7– $8\frac{1}{2}$  lin. long, glabrous outside and within; tube 4– $5\frac{1}{2}$  lin. long, subcylindric or slightly inflated at the base; lobes 3– $3\frac{1}{2}$  lin. long, linear-lanceolate, attenuate-acute, erect, connate at the tips, apparently orange-

red. Outer coronal-lobes  $\frac{1}{6}$  lin. long, arising  $\frac{1}{2}$  lin. above the base of the 1 lin. long staminal-column, spreading, subrectangular, bifid, concave; inner coronal-lobes  $\frac{1}{2}$  lin. long, linear, acute, truncate or slightly broadened and bifid at the apex, longer than the anthers, closely applied to their backs and connivent over them. Follicles 6–6 $\frac{1}{2}$  in. long, 2–2 $\frac{1}{2}$  lin. thick, linear, tapering into a slender beak at the apex and into a stipe at the base, very slightly torulose. Seeds  $\frac{1}{3}$  in. long, 1 lin. broad, much rounded on one face, deeply concave on the other, glabrous, crowned with a tuft of hairs.—*R. torulosa*, K. Schum. in Engl. Pf. Ost-Afr. C. 327, not of Decne.

**Mozamb. Dist.** British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 205! Namasi, *Cameron*! and without precise locality, *Buchanan*, 455!

2. **R. splendida**, *K. Schum. in Engl. Jahrb.* xxviii. 460. Stem twining, rather stout, 1 $\frac{2}{3}$ –2 lin. thick in the flowering part, villous. Leaves membranous; petiole 2 $\frac{1}{3}$ –2 $\frac{3}{4}$  in. long, villous; blade 4 $\frac{1}{2}$ –6 in. long, 2 $\frac{3}{4}$ –4 in. broad, ovate, with a long acutely acuminate point, cordate at the base, 7–9-nerved, puberulous on both sides. Flowers collected into subglobose subumbellate fascicles; pedicels 4 $\frac{1}{2}$ –9 lin. long. Sepals 1 $\frac{1}{2}$  lin. long, subulate, glabrous. Corolla broadly tubular, somewhat dilated at the base, in the living state whitish-green outside, orange-red within, in the dried state the lower part yellowish and the upper reddish-brown; tube 5 $\frac{1}{2}$  lin. long; lobes 3 $\frac{1}{2}$  lin. long, subulate. Inner coronal-lobes oblong, obtuse, shorter than the anthers. Staminal-column 1 lin. long.

**Mozamb. Dist.** German East Africa: Uhehe; near Makombe, 5900 ft., *Goetze*, 681.

I have not seen this species, which is said to differ from *R. profusa*, N. E. Br., in its much richer inflorescence and more copious indumentum.

46. **BRACHYSTELMA**, R. Br.; Benth. et Hook. f. Gen. Pl. ii. 781.

Calyx 5-partite. Corolla rotate, saucer-shaped, or with a short campanulate tube, 5-lobed; lobes free or connate at their tips, valvate or replicate-valvate in bud. Corona double, arising from the staminal-column, very variable; outer corona of 5 spreading or erect bifid lobes, alternating with the anthers, often adnate to the inner coronal-lobes and appearing to form one series with them in the form of lateral teeth, or more or less annular or cup-shaped at the base, 10-toothed and often with the teeth of two adjacent lobes closer together than are the teeth of the same lobe, rarely reduced to a fleshy ring without evident teeth or lobes; inner corona of 5 lobes incumbent on the backs of the anthers and sometimes produced beyond them into long erect tips, often dorsally adnate at their base to the outer corona or connected to it by fleshy partitions. Staminal-column arising near or at the base of the corolla; anthers inflexed or incumbent upon the apex of the style. Pollen-masses horizontal or ascending, solitary in each anther-cell, with a pellucid margin at their apex, attached in pairs by very short

caudicles to the pollen-carriers or subsessile upon them. Style truncate or convex at the apex. Follicles fusiform or linear-fusiform, smooth. Seeds crowned with a tuft of hairs.—Perennial herbs with a tuberous rootstock or a fascicle of thick fleshy roots, usually of dwarf habit. Stem simple or much branched, erect, prostrate, or rarely twining, leafy to the top. Leaves opposite. Flowers small or of moderate size, solitary and sub-lateral at the nodes, or two to many together in lateral or terminal umbels or umbel-like cymes.

Species many, natives of Africa and India. Closely allied to *Ceropegia*, differing in habit, and in the corolla-tube being saucer-shaped or campanulate and not inflated at the base, but *Ceropegia loranthiflora* tends to connect the two genera. The tubers of most, if not all, of the species are eaten by the natives.

Flowers in terminal umbels.

Leaves elliptic, oblong or oblanceolate-oblong; corolla-lobes broadly deltoid.

Corolla entirely blackish-purple . . . . . 1. *B. Buchanani*.

Corolla concentrically zoned with yellowish and blackish-purple . . . . . 2. *B. magicum*.

Leaves linear; corolla-lobes linear.

Corolla-lobes 3 in. long, with long white hairs on their inner face . . . . . 3. *B. Johnstoni*.

Corolla-lobes  $\frac{3}{4}$  in. long, glabrous on their inner face . . . . . 4. *B. phyteumoides*.

Flowers in pairs or 1-4 at the nodes.

Leaves elliptic-oblong to oblanceolate,  $\frac{1}{2}$ -1 in. broad; corolla-lobes deltoid-ovate . . . . . 5. *B. Bingeri*.

Leaves linear or linear-lanceolate,  $\frac{1}{3}$ - $2\frac{1}{2}$  lin. broad.

Corolla-lobes 6-10 lin. long, linear or lanceolate-linear.

Pedicels and corolla quite glabrous . . . . . 6. *B. plocamoides*.

Pedicels pubescent or subtomentose.

Leaves  $\frac{1}{2}$ - $1\frac{1}{4}$  in. long; corolla rotate . . . . . 7. *B. Tavalla*.

Leaves  $1\frac{1}{4}$ - $2\frac{1}{4}$  in. long; corolla with a campanulate tube 2 lin. long . . . . . 8. *B. lineare*.

Corolla-lobes  $1\frac{1}{2}$  lin. long, broadly ovate . . . . . 9. *B. Schinzii*.

1. **B. Buchanani**, *N. E. Br. in Kew Bulletin*, 1895, 263. Root-stock a large fleshy tuber. Stem erect, stout, with a very short spreading pubescence. Leaves large, subsessile,  $1\frac{1}{2}$ -5 in. long,  $\frac{3}{4}$ - $2\frac{3}{4}$  in. broad, elliptic-obovate, very obtusely rounded with or without a very short triangular point at the apex, cuneate-acute at the base, both sides shortly pubescent, ciliolate. Umbel terminal, sessile, 20-30-flowered; pedicels 1 in. long, shortly pubescent. Sepals 2-3 lin. long, lanceolate, acuminate, pubescent. Corolla  $\frac{3}{4}$ -1 in. in diam., saucer-shaped, blackish-purple, glabrous on both sides, 5-lobed to half-way down; lobes triangular, acute. Outer corona shortly cup-shaped at the base, 10-toothed; teeth connected in pairs by a fleshy partition to the backs of the inner coronal-lobes, their free part  $\frac{1}{2}$  lin. long, deltoid-subulate, erect or ascending (not spreading as originally described), retrorsely pubescent; inner coronal-lobes  $\frac{1}{2}$ - $\frac{2}{3}$  lin. long, oblong, emarginate, incumbent on the backs of the anthers and equalling or slightly

exceeding them, glabrous.—*B. shirensis*, Schlechter in Journ. of Bot. 1895, 339.

**Mozamb. Dist.** British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 116! Mount Sochi, 4500 ft., *Scott-Elliot*, 8520! Mount Mlanji, *Scott-Elliot*, 8666! Chiromo, *Scott-Elliot*, 8697! Namasi, *Cameron*, 5!

In my original description the inflorescence is inaccurately described, the umbel of the specimen has been split for drying so as to resemble a cyme, which I had not perceived when first describing it. Mr. Buchanan states that "the large fleshy root is said to possess remarkable healing qualities. When applied to a wound the root is simply chewed and then laid on. Wounds of a serious nature thus dressed are said to heal rapidly." Both this plant and *Margaretta Whytei* were accidentally numbered 8666 by Scott-Elliot.

2. ***B. magicum***, *N. E. Br. in Kew Bulletin*, 1895, 263. Leaf  $3\frac{1}{2}$  in. long,  $1\frac{1}{8}$  in. broad, oblanceolate-oblong, subobtuse, cuneate-acute at the base, pubescent on both sides, especially on the veins and midrib beneath. Pedicels about 1 in. long, slender, pubescent. Sepals  $\frac{1}{4}$  in. long, lanceolate-attenuate, pubescent. Corolla quite glabrous, concentrically zoned with yellowish and blackish-purple or dark purple-brown, about 1 in. in diam., rotate or broadly saucer-shaped; lobes reduced to 5 short deltoid teeth, about  $1\frac{1}{2}$ –2 lin. long, separated by intervals of  $\frac{1}{2}$  an inch. Outer corona annular or shortly cupular at the base, 10-toothed; teeth adnate at their base to the partitions connecting them with the inner coronal-lobes, their free part 1 lin. long, subulate, probably erect, glabrous; inner coronal-lobes  $\frac{1}{2}$ – $\frac{2}{3}$  lin. long, linear, obtuse, incumbent on the backs of the anthers and not exceeding them, glabrous.

**Mozamb. Dist.** German East Africa: "collected a long day's journey this side of Ujiji," by the Belgian Consul at Zanzibar, in January 1884!

Of this very distinct species I have only seen a single leaf and a flower, but it is probably a large stout-stemmed species allied to *B. Buchananii*. The zoning of the corolla is very distinct and rather pretty. This species is stated to be "regarded by the natives as a magic plant, causing them to lose their way when met with on a journey."

3. ***B. Johnstoni***, *N. E. Br. in Hook. Ic. Pl.* xxviii. t. 2754. Plant 6–9 in. high. Stem branching, compressed, with rather acute edges, puberulous. Leaves opposite, spreading,  $\frac{1}{2}$ – $1\frac{1}{2}$  in. long, 1–2 lin. broad, linear, acute, narrowed at the base into a very short petiole or subsessile, apparently longitudinally folded or with incurved more or less undulate margins, glabrous above, very thinly pubescent beneath; midrib very prominent beneath. Flowers 4–5 at the top of the stem, large, umbellate in the axils of the terminal or subterminal pair of leaves; peduncle none; pedicels 1– $1\frac{1}{2}$  lin. long, rather stout, pubescent. Sepals 3 lin. long,  $\frac{2}{3}$  lin. broad at the base, thence gradually tapering to a very acute apex, pubescent on the back, channelled on the face in the upper part. Corolla glabrous and purplish- or dull greenish-brown outside, densely covered with long white woolly hairs on the inner face of the lobes, puberulous in the tube, which is dark purple-brown, marked with a few narrow whitish or yellowish concentric zones at the mouth; tube  $\frac{1}{4}$  in. long, about  $\frac{1}{3}$  in. in diam. at the mouth, cam-

panulate; lobes 3 in. long, 2 lin. broad at the base, thence gradually tapering into very long linear or linear-filiform tails, ascending-spreading. Outer corona arising from the base of the staminal-column, about 1 lin. long, cup-shaped, 10-toothed, blackish-purple; teeth about  $\frac{1}{4}$  lin. long and broad, deltoid-oblong, very obtuse, furnished with a tuft of minute deflexed hairs at the apex on the inner face; inner coronal-lobes  $\frac{1}{2}$  lin. long,  $\frac{1}{5}$  lin. broad, linear-oblong, obtuse, incumbent on the backs of the anthers, which they completely cover but do not exceed.

**Nile Land.** British East Africa: Uganda Protectorate; Nandi district, at Fort Ternau, *Johnston!*

4. **B. phyteumoides**, *K. Schum. in Engl. Jahrb. xvii. 149.* Stems several from a thick rhizome (or tuber?), slender, sparingly branched, about 4 in. high, sparsely puberulous in the upper part. Leaves erect,  $1\frac{1}{2}$ – $2\frac{1}{2}$  in. long,  $\frac{1}{2}$ – $2\frac{1}{2}$  lin. broad, linear, acuminate, revolute along the margins, glabrous, with a few minute hairs on the midrib beneath. Flowers shortly pedicellate, in a terminal many-flowered umbel placed between a pair of leaves; bracts subulate, sparsely puberulous, with solitary glands between them; pedicels 1– $1\frac{1}{2}$  lin. long, puberulous. Sepals 1– $1\frac{1}{4}$  lin. long, lanceolate-attenuate, glabrous. Corolla-tube short, campanulate, about  $1\frac{1}{4}$  lin. long,  $1\frac{1}{2}$  lin. broad; lobes  $\frac{3}{4}$  in. long, spreading, slender, almost filiform from a deltoid-ovate base, with revolute margins, glabrous within, sparsely puberulous outside, dark purple-brown. Corona included within the corolla-tube, glabrous; outer coronal-lobes  $\frac{1}{3}$  lin. long, bifid; inner coronal-lobes scarcely  $\frac{1}{2}$  lin. long, linear, obtuse, incumbent on the back of the anthers and not exceeding them.—*K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 268.*

**Nile Land.** Jur: near Jur Ghattas, *Schweinfurth, sér. iii. 37!*

*B. euphorbioides*, *K. Schum. ex Durand & Jackson, Index Kewensis Suppl. i. 62*, is manifestly an error for *B. phyteumoides*, as the name *B. euphorbioides* does not occur at the place cited for it, nor have I found it elsewhere.

5. **B. Bingeri**, *A. Chevalier in Rev. Cult. Colon. viii. 67, with fig.* Tuber variable in form, often somewhat globose or oblong,  $1\frac{1}{2}$ – $3\frac{1}{4}$  in. in diam. Stem slightly branching at the base, 2–4 in. high. Leaves in 3–5 pairs to each branch, shortly petiolate, 1– $2\frac{1}{3}$  in. long,  $\frac{1}{2}$ –1 in. broad, varying from broadly elliptic-oblong to oblanceolate, acute to very obtuse, cuneate at the base, shortly puberulous above, glabrous or with some hairs on the midrib beneath. Flowers axillary, in a 3–4-flowered cymule or solitary; bracts about  $\frac{3}{4}$  lin. long, ovate, acute, rusty-puberulous; pedicels 3–10 lin. long, slender, rusty-puberulous. Sepals 1– $1\frac{1}{4}$  lin. long, ovate, acute, rusty-puberulous. Corolla about 7 lin. in diam., reddish-white, puberulous outside; tube about 1 lin. long; lobes about 3 lin. long, deltoid-ovate, subacute. Outer corona cup-shaped, furnished with 5 exterior filiform erect appendages equalling or longer than the corolla-lobes; inner coronal-lobes lanceolate, pointed, half as long as the outer corona. Fruit unknown.—*N. E. Br. in Gard. Chron. 1901, xxix. 175.*

**Upper Guinea.** French Soudan : between the River Baule and the town of Sikaso, *Binger*.

This plant is called "*Fikongo*," by the natives of the region of the Upper Niger, who eat its tubers, chiefly in the months of May and June, when their stores of millet and rice are used up. The measurements given above are partly taken from the original description and partly from the figure which accompanies it.

6. **B. plocamoides**, *Oliver in Trans. Linn. Soc.* xxix. 112, t. 77, fig. 1. Tuber large and fleshy, like a turnip, tasting something like liquorice (*Grant*). Stem repeatedly trichotomously or dichotomously branched from the base, 8-9 in. high, glabrous. Leaves 2-3½ in. long, ⅓-½ lin. broad, linear, shortly and abruptly uncinat-mucronulate at the apex, glabrous. Flowers solitary, sublateral between the bases of the leaves; pedicels 6-7 lin. long, glabrous, occasionally bearing a linear bract at about their middle. Sepals 1½-2 lin. long, glabrous. Corolla stellate-rotate, 5-lobed nearly to the base; lobes 9-10 lin. long, 1-1½ lin. broad at their base, lanceolate-linear, acute, glabrous, dark purple (*Grant*). Outer corona 10-toothed; teeth in 5 contiguous pairs, ¾-1 lin. long, deltoid-acuminate, ascending, glabrous; inner coronal-lobes scarcely ¼ lin. long, oblong, obtuse, incumbent on the backs of the anthers and shorter than them, dorsally adnate to the outer corona, glabrous.—*K. Schum. in Engl. Pfl. Ost-Afr. C.* 327, and in *Engl. & Prantl, Pflanzenfam.* iv. ii. 264, fig. 77, H, and 268. *B. sp.*, Thomson in Speke, Nile, Append. 640.

**Mozamb. Dist.** German East Africa: Uyansi; in dry forest at Jiwa la Mkoa, in the Mgunda Mkali, 3700 ft., *Speke & Grant!*

7. **B. Tavalla**, *K. Schum. in Engl. Jahrb.* xxviii. 459. Tuber globose. Stems about 9 in. high, subsimple, subtomentose above. Leaves sessile, ½-1¼ in. long, 1½-2½ lin. broad, linear-lanceolate, acute, narrowed at the base, subtomentose on both sides. Flowers axillary, solitary or in pairs; pedicels 2-3 lin. long, subtomentose. Sepals 1½ lin. long, lanceolate, acuminate, tomentose. Corolla rotate, violet, green within, puberulous outside near the base, densely villous with long violet hairs within; tube 1¼ lin. long; lobes 7½ lin. long, linear, somewhat dilated at the base. Outer corona not described; inner coronal-lobes ⅔ lin. long, overtopping the anthers, truncate, toothed. Staminal-column ½ lin. long.

**Mozamb. Dist.** German East Africa: Uhehe; near Rugaro, *Goetze*, 541.

8. **B. lineare**, *A. Rich. Tent. Fl. Abyss.* ii. 49, t. 72. Tuber depressed-globose, about 2 in. in diam. Stems 3-4 in. high, branching at the base, pubescent. Leaves 1¼-2¼ in. long, 1-1½ lin. broad, ascending, linear, acute, narrowed at the base, scarcely petiolate, glabrous. Flowers solitary or in pairs, sublateral at the nodes; pedicels 1½-2 lin. long, slender, pubescent. Sepals about 1 lin. long, lanceolate, acute. Corolla-tube campanulate, about 2 lin. long; lobes 6-7 lin. long, linear-attenuate, very acute. Coronal-lobes arising from the middle of the staminal-column, broadly obcordate, abruptly

apiculate. Follicles  $1\frac{1}{4}$ – $1\frac{1}{2}$  in. long,  $3\frac{1}{2}$ – $4\frac{1}{2}$  lin. thick, stout, fusiform, beaked, glabrous.—Walp. Ann. iii. 68; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 268.

**Nile Land.** Abyssinia: by the Tacazze River, in moist shady places, *Quartin Dillon*.

I have only seen a tracing of part of Richard's type, which quite agrees with his figure, from which the measurements in the above description are taken. On the plate the outer corona is represented as forming five pouches, shortly bifid, with rounded lobules, and the inner coronal-lobes as linear-lanceolate, acute, inflexed over and longer than the anthers.

9. **B. Schinzii**, *N. E. Br.* A dwarf species, the entire plant (including the tuber) 3–5 in. high. Tuber about 1 in. in diam., fleshy, conical-ovoid, flattish at the base. Stem solitary, divided at the surface of the ground into a few prostrate branches,  $\frac{3}{4}$ – $2\frac{1}{2}$  in. long, puberulous with short curved hairs; underground part simple,  $1$ – $1\frac{1}{2}$  in. long, glabrous. Leaves erect or ascending,  $\frac{3}{4}$ –2 in. long,  $\frac{1}{3}$ – $\frac{3}{4}$  lin. broad, sessile, linear or subterete, from the margins being revolute until they touch each other, somewhat fleshy, obtuse or subacute, more or less puberulous with short curved hairs. Flowers usually in pairs, sub-lateral between the bases of the leaves; pedicels 6–8 lin. long, slender, sparsely puberulous. Sepals  $1$ – $1\frac{1}{2}$  lin. long, lanceolate, acuminate, glabrous. Corolla rotate, 4–5 lin. in diam., 5-lobed to half-way down, purple-brown, with a white centre; lobes  $1\frac{1}{2}$  lin. long and as much in breadth, broadly ovate, acute, glabrous outside, villous inside with long purple hairs, which taper towards each end. Outer corona arising from the middle of the  $\frac{1}{2}$  lin. long staminal-column and reaching to the level of its top, annular or very shortly cup-shaped, subpentagonal, entire, glabrous, whitish (or yellowish?) with the margin purple-brown; inner coronal-lobes obsolete, represented by the rather thick partitions which connect the base of the anthers with the outer corona. Anthers oblong, retuse, incumbent on the top of the truncate depressed apex of the style.—*Craterostemma Schinzii*, K. Schum. in Engl. Jahrb. xvii. 154; and in Engl. & Prantl, Pflanzenfam. iv. ii. 266.

**Lower Guinea.** German South-west Africa: Amboland; Olukoudu, *Schinz!*

*Imperfectly known species.*

10. **B. keniense**, *Schweinf. in Höhnel, Zum Rudolph-See und Stephanie-See, Sonderabdr.* 8. Subcaulescent, branched, puberulous. Leaves lanceolate, petiolate. Flowers overtopping the leaves, axillary, solitary. Calyx puberulous. Corolla lobed more than two-thirds the way down, glabrous. Corona subsimple, with the interior scales adnate to the back of the stamens and there incumbent upon a fold, appendaged at the base by a rectangular tooth on each side (the lobes of the outer corona). Anthers with an obtuse thickened apex.—Engl. Hochgebirgsfl. Trop. Afr. 344; K. Schum. in Engl. Pfl. Ost-Afr. C. 327, and in Engl. & Prantl, Pflanzenfam. iv. ii. 268.

**Nile Land.** British East Africa: Kikuyu region, near the foot of Mount Kenia, 5200-6500 ft., *Höhnel*, 29.

11. **B. ellipticum**, *A. Rich. Tent. Fl. Abyss.* ii. 49. Tuber depressed. Stems about 3-4 in. high, branched, scarcely pulverulent-puberulous. Leaves 5-7 lin. long,  $1\frac{1}{2}$ - $2\frac{1}{2}$  lin. broad, oblong-lanceolate or elliptic-oblong, acute, narrowed at the base into a short petiole, glabrous. Flowers unknown. Fruiting pedicels solitary at the nodes, about 3 lin. long. Sepals  $2\frac{1}{2}$ -3 lin. long, lanceolate, acuminate. Follicles about 10-11 lin. long, 4 lin. thick, ovoid-lanceolate, tapering at the apex, glabrous.—*Walp. Ann.* iii. 68; *K. Schum. in Engl. & Prantl, Pflanzenfam.* iv. ii. 268.

**Nile Land.** Abyssinia: Tacazze River, *Quartin Dillon*.

I describe this partly from a drawing of a portion of Richard's type which is now in the herbarium of M. Drake del Castillo. This plant may possibly prove to be a species of *Raphionacme*.

47. **TENARIS**, *E. Meyer; Benth. et Hook. f. Gen. Pl.* ii. 775.

Calyx 5-partite. Corolla-tube very short; lobes 5, linear or linear-spathulate, spreading or ascending, replicate-valvate in bud. Corona small, double, arising from the staminal-column above its base; outer corona of 5 concave, more or less spreading lobes, alternating with the anthers; inner corona of 5 linear or subulate lobes, incumbent on the back of the anthers and sometimes produced beyond them. Staminal-column arising from the base of the corolla-tube; anthers incurved-erect or incumbent on the apex of the style, with or without a very short appendage. Pollen-masses minute, subsascending or subhorizontal, solitary in each anther-cell, turgid, with a pellucid margin near the apex, attached in pairs by very short caudicles to the very minute pollen-carriers. Style obtuse at the apex. Follicles slender, smooth, erect. Seeds crowned with a tuft of hairs.—Perennial herbs with tuberous rootstock. Stems slender, erect, usually leafless in the flowering part. Leaves opposite, linear. Inflorescence terminal, subracemose or paniculate; flowers usually in pairs, pedicellate.

Species 5, two being South African.

There is little beyond habit to distinguish this genus from *Brachystelma*. The aetivation is wrongly described in the *Genera Plantarum*, and the minute teeth described and figured by Harvey, and described by myself as existing on the face of the outer coronal-lobes, do not belong to the corona at all, but are anther-wings, which, viewed from above, appear to be on the face of the coronal-lobes at their base, hence the mi-conception.

Leaves very minute, not more than 1 lin. long, the plant appearing leafless.

- |   |    |                        |
|---|----|------------------------|
| Corolla-lobes fringed with long purple hairs . . . . .        | 1. | <i>T. somalensis</i> . |
| Corolla-lobes not fringed with hairs . . . . .                | 2. | <i>T. subaphylla</i> . |
| Leaves 1-3 in. long, linear, in a few distant pairs . . . . . | 3. | <i>T. rostrata</i> .   |

1. **T. somalensis**, *N. E. Br.* Apparently a tall slender herb; the unique specimen is 10 in. long, leafless, glabrous, and is evidently only the inflorescence, being marked to the base by the scars of fallen flowers, which are racemously arranged in moderately distant pairs, 1 of each pair opening and falling away before the other expands. Bracts minute, acuminate; pedicels 4 lin. long, slender, glabrous. Sepals 1-1 $\frac{1}{4}$  lin. long,  $\frac{1}{2}$  lin. broad at the base, gradually tapering to an acute apex, glabrous. Corolla outside whitish? spotted with purple-brown, glabrous; inside dark purple or purple-brown on the lobes, marked with 2-3 yellowish or whitish transverse bars at the base and densely fringed with long purple flattened fusiform hairs; tube 1 lin. long, campanulate or cup-shaped; lobes suberect or slightly spreading, 5 lin. long, 1 lin. broad, spathulate-oblongate, acute, with an apiculus  $\frac{1}{2}$  lin. long. Outer coronal-lobes bifid, glabrous; inner coronal-lobes ligulate, obtuse, nearly twice as long as the outer coronal-lobes, glabrous.—*Lasiostelma somalense*, Schlechter in Journ. Bot. 1899, 61.

**Nile Land.** Somaliland, *Mrs. Lort-Phillips!*

2. **T. subaphylla**, *N. E. Br.* Stems several to a plant, slender, slightly branched, nearly leafless, glabrous. Leaves minute, scarcely 1 lin. long, sessile, subulate, acuminate, glabrous, adpressed to the stem. Raceme terminal, about 4 in. long, slender; bracts small, subfiliform; flowers in pairs, pedicellate; pedicels 5-7 lin. long, very slender, glabrous. Sepals  $\frac{3}{4}$ -1 $\frac{1}{4}$  lin. long, triangular, acuminate. Corolla campanulate, probably purple-brown, quite glabrous; tube 1 lin. long; lobes  $4\frac{1}{2}$  lin. long, subulate, acuminate, broadly recurved along the margins. Outer corona arising  $\frac{1}{4}$  lin. above the base of the staminal-column, urceolate, 10-toothed; inner coronal-lobes  $\frac{3}{4}$  lin. long, subulate, about equalling the anthers. Follicles (immature)  $4\frac{3}{4}$  lin. long, 1 lin. thick.—*Brachystelma subaphyllum*, K. Schum. in Ann. Istit. Bot. Roma, vii. 40.

**Nile Land.** Somaliland: on a dry plain near Mendah, *Robecchi-Bricchetti*, 113.

This species is stated to be easily distinguished by its minute leaves, which cause it to appear falsely leafless.

3. **T. rostrata**, *N. E. Br. in Gard. Chron.* 1885, xxiv. 39. Tuber  $1\frac{3}{4}$  in. in diam., depressed-globose. Stem  $1\frac{1}{2}$ -2 $\frac{1}{2}$  ft. high, simple, slender, glabrous. Leaves in 4-6 distant pairs, 1-3 in. long,  $\frac{1}{3}$ -1 $\frac{1}{2}$  lin. broad, linear or linear-filiform, acute, glabrous, recurved-spreading. Inflorescence terminal, racemose or paniculate, leafless; flowers in pairs or 1-4 together at the ends of the branches of the panicle; bracts minute; pedicels 2-3 $\frac{1}{2}$  lin. long, slender, glabrous. Sepals  $\frac{3}{4}$ -1 lin. long, ovate or lanceolate, acute, glabrous. Corolla rotate,  $\frac{3}{4}$ -1 $\frac{1}{4}$  in. in diam.; lobes 4-7 lin. long,  $\frac{3}{4}$ -1 $\frac{1}{4}$  lin. broad, linear, or slightly dilated at the obtuse or subacute apex, whitish, densely covered with minute purple dots on the basal part, giving the flower a pinkish hue, especially when dried. Outer coronal-lobes about  $\frac{1}{3}$  lin. long, spreading, concave, ovate, bifid at the apex, yellowish; inner coronal-lobes much exceeding the anthers,

about  $\frac{2}{3}$  lin. long, erect or slightly recurving, subulate, slightly gibbous at their base, pinkish.—Schlechter in Journ. Bot. 1895, 339; K. Schum. in Engl. Pf. Ost-Afr. C. 327, and in Engl. & Prantl, Pflanzenfam. iv. ii. 296. *T. Volkensii*, K. Schum. in Engl. Pf. Ost-Afr. C. 327, and in Engl. & Prantl, Pflanzenfam. iv. ii. 295, fig. 91.

**Mozamb. Dist.** German East Africa: Karagwe and Urundi, *Scott-Elliot*, 8211! 8374! Usagara, *Last!* *Kirk!* Kilimanjaro; Himo River below Marangu, *Volkens*, 2183 (ex *Schumann*), and without precise locality, *Smith!*

48. **ECHIDNOPSIS**, Hook. f.; Benth. et Hook. f. Gen. Pl. ii. 781.

Calyx 5-partite. Corolla rotate or rotate-campanulate, 5-lobed, fleshy. Corona arising from the staminal-column; outer corona none or cupular or of 5 short lobes or pouches alternating with the anthers; inner corona of 5 fleshy lobes horizontally inflexed and incumbent on the backs of the anthers. Staminal-column arising from the base of the corolla, very short; anthers horizontally incumbent on the top of the subtruncate style. Pollen-masses horizontal, solitary in each anther-cell, united in pairs to the minute pollen-carriers. Follicles not seen.—Leafless succulent plants, with stout cylindric several-angled branching stems; angles tessellately divided by impressed transverse lines into very obtuse and minutely apiculate tubercles, the apiculus being a rudimentary leaf. Flowers small, in fascicles (sometimes solitary by abortion) along the grooves between the angles, and mostly towards the apex of the stems.

Species few, natives of Tropical Africa, Arabia, and Socotra.

*Echidnopsis* cannot be technically distinguished from *Caralluma* by its floral structure, but as all the species are well characterised by their peculiar many-angled tessellate stems, it is perhaps, more convenient to keep them generically distinct. Prof. Schumann states in the Monatschr. für Kakteenkunde, 1893, iii. 98, that *Echidnopsis* is distinguished by the flowers arising in the grooves between the angles of the stem, whilst in the other *Stapelieæ* they arise from the axils of the tubercles; but throughout the tribe (with the exception of a few species of *Caralluma* in which the umbels are terminal, or the flowers subaxillary), I find that they always arise from the groove between the angles, although usually a little to one side of the middle of the channel.

Outer coronal-lobes or pouches none.

Corolla  $3\frac{1}{2}$ –4 lin. in diam.

Flowers yellow . . . . . 1. *E. cereiformis*.

Flowers purple-brown, corona yellow . . . . . 1. *E. cereiformis*, var.

Corolla  $1\frac{1}{2}$ –2 lin. in diam.; flowers purple-brown . . . . . 2. *E. nubica*.

Outer corona of 5 distinct lobes or small pouches, alternating with the inner coronal-lobes.

Stems 8–10-angled; outer coronal-lobes or pouches spreading or deflexed, not attaining to the level of the inner corona . . . . . 3. *E. dammanniana*.

Stems 6–8-angled.

Outer coronal-pouches attaining to about the level of the inner corona . . . . . 4. *E. Virchowii*.

Outer coronal-lobes linear, incurved-erect, overtopping the inner corona . . . . . 5. *E. somalensis*.

1. **E. cereiformis**, *Hook. f. in Bot. Mag. t. 5930*. Stems fleshy, leafless,  $\frac{1}{2}$ – $\frac{5}{8}$  in. thick, cylindric, obtusely 8-angled; angles tessellately divided into obtuse tubercles, glabrous. Flowers fascicled near the tips of the stems, subsessile, bright yellow. Sepals  $\frac{1}{2}$ – $\frac{3}{4}$  lin. long, broadly ovate, acute, glabrous. Corolla  $3\frac{1}{2}$ –4 lin. in diam., rotate-campanulate, 5-lobed to half-way down; lobes  $1\frac{1}{2}$  lin. long, broadly ovate, acute, glabrous. Outer corona none; inner corona of 5 smooth fleshy deltoid-ovate acute lobes, horizontally inflexed and incumbent on the backs of the anthers, yellow.—Penzig in *Atti Congr. Bot. Internaz.* 1892, 349; Berger in *Malpighia*, 1902, 160, t. 3, figs. 3 and 6–10. *E. tessellata*, K. Schum. in *Engl. & Prantl, Pflanzenfam. iv. ii. 274*, and in *Ann. Istit. Bot. Roma*, vii. 42. *Apteranthes tessellata*, Decne. in *Ann. Sc. Nat. 5 sér. xiii. 406*. *Stapelia cylindrica*, Hort. ex Hook. f. in *Bot. Mag. t. 5930*. *Piarranthus fuscicularis*, Hort. ex K. Schum. in *Monatsschr. für Kakteenkunde*, 1893, iii. 101.

**Nile Land.** Eritrea: near Geleb, *Penzig* (ex *Penzig*). Abyssinia: among rocks in the district of Maschila and in the vicinity of Dschedscha, *Schimper* (ex *Dcaisne*). Somaliland: in dry chalky soil near Passo di Cavernan (Carbedan), *Riva*, 943 (ex *Schumann*). Also cultivated specimens!

Described from living cultivated plants.

Var. *brunnea*, Berger in *Malpighia*, 1902, 160. Flowers purple-brown, paler towards the centre; coronal-lobes yellow. No other distinction.—*E. dammanniana*, var. *brunnea*, Dammann, *Cat.* 1893, 46.

**Nile Land.** Eritrea or Abyssinia: cultivated specimen!

Described from a living plant, introduced into cultivation by Messrs. Dammann & Co. of Naples.

Var. *obscura*, Berger in *Malpighia*, 1902, 160. Flowers of an intense brown.

**Nile Land.** Eritrea, *Schweinfurth* (ex *Berger*).

2. **E. nubica**, *N. E. Br. in Kew Bulletin*, 1895, 263. Stems and inflorescence as in *E. cereiformis*. Sepals  $\frac{1}{2}$ – $\frac{3}{4}$  lin. long, lanceolate, acute, minutely papillate on the back. Corolla rotate or rotate-campanulate,  $1\frac{1}{2}$ –2 lin. in diam., 5-lobed to rather more than half-way down; lobes  $\frac{1}{2}$ – $\frac{3}{4}$  lin. long, ovate, acute, glabrous, smooth within, minutely papillate on the outside. Outer corona none; inner coronal-lobes deltoid-ovate, about  $\frac{1}{4}$  lin. long, incumbent on the backs of the anthers and about equalling them in length. Follicles attaining a length of 4 in. and a thickness of 4 lin., purplish with darker markings.—Berger in *Malpighia*, 1902, t. 3, figs. 11–12. *E. dammanniana*, *Schweinf.* in *Gartenflora*, 1895, 633, fig. 124–125, not of Sprenger.

**Nile Land.** Nubia: Mount Erkowit, near Stakin, *Schweinfurth*, 228! Eritrea: Geleb, *Schweinfurth* (ex *Schweinfurth*).

The flowers are much smaller than in any of the other species, and are described by Schweinfurth as purple-brown in colour, or dotted with purple-brown on a greenish ground.

3. **E. dammanniana**, *Sprenger in Dammann, Cat.* 1892, 4, fig. 5. Stems like those of *E. cereiformis*,  $\frac{5}{8}$  to  $\frac{3}{4}$  in. thick, tessellately 8–10-angled, dull greyish- or purplish-green, glabrous. Flowers solitary or

2-5 together, subsessile, but the pedicels lengthening to 1 lin. long in fruit. Sepals  $\frac{3}{4}$  lin. long, ovate-acuminate, glabrous, very minutely papillate. Corolla rotate,  $3\frac{1}{2}$  lin. in diam., dark purple-brown on the lobes, yellowish with dark purple-brown dots on the disk; lobes  $1\frac{1}{4}$  lin. long, 1 lin. broad, ovate, acute, glabrous, papillate outside. Outer coronal-lobes small, spreading or deflexed, concave, tooth-like or with the sides more or less pinched together at about the middle, dark purple-brown, glabrous; inner coronal-lobes  $\frac{1}{2}$  lin. long, deltoid, acute, incumbent on the backs of the anthers, dark purple-brown, glabrous.—Wiener Ill. Gartenzeit. 1892, 351, fig. 59; Gartenflora, 1892, 526, fig. 107; N. E. Br. in Gard. Chron. 1894, xvi. 530; Penzig in Atti Congr. Internaz. 1892, 349; Berger in Malpighia, 1902, 161, t. 3, fig. 13-14. *E. dammaniana*, K. Schum. Monatsschr. für Kakteenkunde, iii. 101, and in Engl. & Prantl, Pflanzenfam. iv. ii. 274 (not of Schweinfurth).

**Nile Land.** Eritrea: *cultivated specimen!* frequent around Geleb, Penzig (ex Penzig).

Described from a cultivated plant introduced by Messrs. Dammann & Co. of Naples.

Specimens collected by Schweinfurth & Riva (1273) on the north side of Saganeiti towards Selet, 6000-7000 ft., in Eritrea, may belong to this species, but there are no flowers on the specimens I have seen. Possibly the Geleb plant collected by Penzig (which I have not seen) may be *E. nubica*, N. E. Br., which is easily distinguished by its very much smaller flowers.

Probably *Boucerosia cylindrica*, Brongn. in Bull. Soc. Bot. France, vii. 900, should be referred to this species; it was collected by Courbon near Halmi, in Eritrea.

4. **E. Virchowii**, K. Schum. Monatsschr. für Kakteenkunde, iii. 98, with fig. Habit and general appearance as in *E. cereiformis*, Hook f., but more slender. Stems  $3\frac{1}{2}$ -5 lin. thick, 6-angled, tessellately divided into slightly pronounced tubercles. Flowers subsessile, flat-topped in bud. Sepals about  $\frac{1}{2}$  lin. long, ovate, acute, minutely papillate. Corolla about  $3\frac{1}{2}$  lin. in diam., rotate, 5-lobed to half-way down, outside minutely tuberculate, dingy green or dull purplish, inside very minutely papillate, either entirely dull greenish or yellowish-green, dotted with purple-brown or with the apical part of the lobes entirely dull purple-brown; lobes about 1 lin. long and broad, ovate, acute. Outer corona distinct, cupular, rising to the level of the inner, obscurely 5-angled, with 5 small minutely apiculate pouches alternating with the angles, which are opposite the inner coronal-lobes, dark purple-brown, with the inside of the pouches yellowish, spotted with purple-brown; inner coronal-lobes deltoid, acute, obtuse or minutely and irregularly toothed or bifid at the apex, horizontally incumbent on the backs of the anthers and not produced beyond them, dark purple-brown indistinctly mottled with dull yellowish.—K. Schum. in Engl. Pf. Ost-Afr. C. 328, and in Engl. & Prantl, Pflanzenfam. iv. ii. 276, fig. 83, B; Berger in Malpighia, 1902, 162, t. 3, fig. 15-16. *Virchowia africana*, Vatke ex K. Schum. Monatsschr. für Kakteenkunde, iii. 101.

**Mozamb. Dist.** German East Africa: Usambara; Tanga, cultivated specimen, *Hildebrandt!*

Described from a living plant cultivated at Kew.

5. **E. somalensis**, *N. E. Br.* Stems cylindrical, 4-8 in. long.  $\frac{1}{2}$ - $\frac{3}{4}$  in. thick, tessellately 6-8-angled, dull green, glabrous. Flowers solitary or 2-3 together, subsessile. Sepals  $\frac{1}{2}$  lin. long, ovate, acute, very minutely papillate. Corolla rotate-campanulate, about  $3\frac{1}{2}$  lin. in diam., dull purple-brown, variegated with yellow on the lobes, yellow, spotted with purple-brown on the disk; lobes spreading,  $1\frac{1}{2}$ - $1\frac{3}{4}$  lin. long,  $1\frac{1}{4}$  lin. broad, ovate, acute, minutely tuberculate on the back, covered with minute conical acute or almost bristle-like papilla on the inner face. Outer coronal-lobes overtopping the inner corona,  $\frac{1}{3}$  lin. long, very narrow, linear, obtuse, ascending-incurved, channelled down the inner face, dark purple-brown, glabrous; inner coronal-lobes about  $\frac{1}{3}$  lin. long, deltoid-oblong, very obtuse or emarginate, incumbent on the backs of the anthers and not exceeding them in length, greenish.

**Nile Land.** British Somaliland: without precise locality, cultivated specimen, *Mrs. Lort-Phillips!*

Described from a living plant.

*Imperfectly known species.*

6. **E. cylindrica**, *K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 274.* Stems cylindrical, as thick as the little finger; tubercles marked with a white point. Flowers small, crowded at the ends of the branches, subsessile. Corolla-lobes ovate-deltoid, subacuminate, yellow, densely mottled with fuscous (purple-brown?). Coronal-lobes ovate. Anthers truncate, destitute of a membrane.—*Apteranthes cylindrica*, Deene. in Ann. Sc. Nat. 5 sér. xiii. 406.

**Nile Land.** Abyssinia: Samen; Nahia, in the district of Maschila, *Schimper* (ex *Decaisne*).

I have not seen this plant. Decaisne states that it differs from *Apteranthes tessellata* (*E. cereiformis*) in its longer branches, which are almost destitute of areolæ, and in the rather larger flowers. It may be the same as *E. cereiformis*, var. *brunnea*, Berger.

49. **CARALLUMA**, R. Br.; Benth. et Hook. f. Gen. Pl. ii. 782.

Calyx 5-partite. Corolla rotate, broadly cup-shaped or with a distinct campanulate or subglobose tube, 5-lobed; lobes varying from broadly ovate to linear-attenuate, valvate in bud. Corona double, arising from the staminal-column; outer corona sometimes annular or cup-shaped, entire, crenulate, denticulate, 5-10 (rarely 20) toothed or lobulate, adnate to the backs of the inner coronal-lobes at their base or connected to them by narrow partitions; sometimes of 5 lobes more or less adnate by their margins to the sides or backs of the inner coronal-lobes forming 5 small pouch-like cavities alternating with the anthers, or spreading, rarely quite free to the base, usually more or less

bifid, sometimes so deeply that the whole corona (inner and outer) appears to consist of 5 trifid lobes; inner coronal-lobes incumbent on the backs of the anthers and not longer than them, or produced into erect connivent or recurved tips, with or without a dorsal tooth or horn near or at their base, where they are dorsally connected with the outer corona. Staminal-column arising from the bottom of the corolla, short; anthers horizontally inflexed or ascending, not appendaged. Pollen-masses horizontal or ascending, solitary in each anther-cell, pellucid along the inner margin or at the apex, attached to the pollen-carriers in pairs by short and rather slender caudicles; pollen-carriers with or without a wing-like expansion on each side, black or brown. Style not produced beyond the anthers, truncate at the apex. Follicles narrowly fusiform, linear-terete or trigonous, smooth. Seeds crowned with a tuft of hairs.—Succulent perennial herbs, branching, leafless. Stems 3–6-angled, thick and fleshy, obtusely tubercled or acutely toothed along the angles. Flowers in few or many-flowered fascicles or sessile umbels at the base, apex, or along the sides of the stems between the angles, small or of moderate size, pedicellate or subsessile.—*Piarranthus*, Benth. et Hook. f. Gen. Pl. ii. 782, not of R. Br. *Boucerosia*, W. & A.; Benth. et Hook. f. Gen. Pl. ii. 782.

Species numerous, distributed throughout Africa into the South of Europe, and through Arabia into India.

The majority of species of *Caralluma* are easily recognised by their habit and by the outer corona being cupular or its lobes forming 5 small pouches. A few species, however, having the outer coronal-lobes nearly or quite free to the base, cannot be technically distinguished from *Stapelia*, but are so very similar in every other character to species having the typical coronal-structure of *Caralluma* that they cannot be generically separated from them. Yet it appears to me unadvisable to unite the two genera, since in the majority of cases it is easy to decide to which genus any given species should belong; but where the coronal-structure is not clearly that of a typical *Caralluma*, both genera should be consulted.

The dimensions of the corolla (unless otherwise stated) are given from flowers that have been swelled by boiling in water, but may not be quite as large as those of the living flowers.

\*Corolla-lobes  $\frac{1}{6}$ – $\frac{3}{4}$  in. long, equalling or up to about twice as long as the basal united part

†Flowers numerous, in large globose umbels or fascicles at the apex of the stem or its short lateral branches.

Stems 4–5-angled.

Corolla large,  $1\frac{3}{4}$  in. in diam., campanulate; tube about 9 lin. long and as much in breadth . . . . .

1. *C. speciosa*.

Corolla  $\frac{1}{3}$ – $1\frac{1}{4}$  in. in diam. subrotate, or with a campanulate tube  $1\frac{1}{2}$ –4 lin. long.

Corolla without a tuft of long hairs at the tips of the lobes, ciliate.

Corolla  $1\frac{1}{4}$  in. in diam., densely covered with persistent long hairs on the inner face

2. *C. hirtiflora*.

Corolla  $\frac{1}{2}$ – $\frac{2}{3}$  in. in diam., glabrous or thinly covered with long hairs on the inner face, which easily fall away from the dried flowers . . . . .

3. *C. retrospectans*.

- Corolla with a tuft of long hairs at the tips of the lobes, tuberculate within, otherwise glabrous
- Corolla about 6 lin. in diam., with a campanulate tube about  $1\frac{1}{2}$  lin. long; outer corona with 10 subulate teeth . . . 4. *C. Edithæ.*
- Corolla 4 (-5 ?) lin. in diam., with scarcely any tube; outer corona nearly truncate . . . 5. *C. robusta.*
- Corolla minutely velvety-pubescent within, entirely destitute of long hairs and not tuberculate . . . 6. *C. somalica.*
- Stems acutely 3-angled; corolla verrucose and papillose-puberulous within . . . 7. *C. acutangula.*
- ††Flowers 2-6 in small fascicles, or solitary, scattered along the upper part of the stem.
- Stems tapering and much more slender in the upper part.
- Outer corona with 10 linear-subulate teeth.
- Teeth of outer corona  $2-2\frac{1}{2}$  lin. long . . . 8. *C. longidens.*
- Teeth of outer corona  $\frac{1}{2}-\frac{2}{3}$  lin. long . . . 9. *C. vittata.*
- Outer corona hardly conspicuous (probably reduced to small pouches) . . . 10. *C. gracilipes.*
- Stems of nearly equal diameter throughout.
- Outer corona annular, truncate; inner coronal-lobes oblong, scarcely longer than the anthers . . . 11. *C. Sprengeri.*
- Outer corona of 5 short lobes; inner coronal-lobes linear-terete several times as long as the anthers . . . 12. *C. atrosanguinea.*
- \*\*Corolla-lobes  $\frac{2}{3}-1\frac{1}{2}$  in. long, more than twice as long as the basal united part.
- Corolla-lobes ciliate with long clavate vibratile hairs, (N.B.—These hairs all fall off from specimens preserved in alcohol and sometimes also from dried specimens, and are then only to be found in unopened buds.)
- Pedicels  $1\frac{1}{2}-9$  lin. long.
- Corolla-lobes  $1\frac{1}{4}-1\frac{1}{2}$  in. long.
- Outer coronal-lobes oblong or subquadrate, bifid, with short divergent teeth . . . 13. *C. caudata.*
- Outer coronal-lobes cuneately subquadrate, subtruncate, denticulate, 3-5-keeled . . . 14. *C. lateritia.*
- Corolla-lobes  $\frac{2}{3}-\frac{3}{4}$  in. long; outer coronal-lobes oblong-lanceolate or linear-oblong, 2-3-keeled down the inner face . . . 15. *C. valida*
- Pedicels 15-18 lin. long; outer corona cupular, truncate . . . 18. *C. maculata.*
- Corolla-lobes  $\frac{3}{4}-1$  in. long, sparingly ciliate with minute simple hairs; outer corona 15-20-toothed . . . 16. *C. Lugardi.*
- Corolla-lobes  $1\frac{1}{4}-1\frac{1}{2}$  in. long, not ciliate; outer coronal-lobes 5, revolute . . . 17. *C. huillensis.*

1. **C. speciosa**, *N. E. Br. in Gard. Chron.* 1892, xii. 370. Stem unknown. Flowers large, umbellate; bracts  $1-1\frac{1}{2}$  lin. long, subulate,

sparsely covered with minute thick hairs; pedicels 2-3 lin. long, stout, glabrous. Sepals about  $1\frac{1}{2}$  lin. long, lanceolate, acute, with a few minute thick hairs. Corolla about  $1\frac{3}{4}$  in. in diam.; tube large, campanulate, about  $\frac{3}{4}$  in. long and broad; lobes 6-7 lin. long and as much in breadth, spreading, ovate, acute, ciliate with clavate hairs on the revolute margins, otherwise the corolla is entirely glabrous. Outer coronal-lobes spreading,  $1\frac{1}{2}$  lin. long, narrowly lanceolate-oblong, bifid to half-way down; teeth parallel; inner coronal-lobes  $\frac{3}{4}$  lin. long, oblong, obtuse, truncate or emarginate, incumbent on the backs of the anthers, which are ascending and reach to the top of the truncate conical apex of the style.—*Sarcocodon speciosus*, N. E. Br. in Journ. Linn. Soc. xvii. 170, t. 12, fig. 4-8.

**Nile Land.** South Somaliland: near Magadoxo, Kirk!

Probably *C. codonoides*, K. Schum. in Engl. Pfl. Ost-Afr. C. 328, is a synonym of this species, but the description is insufficient for identification; it runs as follows: Stems 10 in. high, tetragonal, bearing at the apex a many-flowered umbel of brownish-black flowers, similar in form and size to those of *Campanula Trachelium*. Follicles about  $4\frac{1}{2}$  in. long, glabrous. Seeds  $4\frac{1}{2}$  lin. long,  $3\frac{1}{2}$  lin. broad, broadly margined, adorned with a tuft of hairs nearly 14 lin. long. It was collected by Volkens (2382) between Gouja and Kinhiro in Usambara, German East Africa.

2. **C. hirtiflora**, N. E. Br. in *Kew Bulletin*, 1895, 264. Stems not seen, stated on the label to be "very thick, fleshy, square," and the flowers in a rough sketch are shown to be in large terminal umbels. Pedicels 1 in. or more long, glabrous. Sepals  $1\frac{1}{2}$ -2 lin. long, lanceolate-attenuate, with a few minute hairs on the back. Corolla rotate, 5-lobed to half-way down, glabrous outside, ciliate and densely covered inside with long purple persistent hairs; lobes 3-5 lin. long,  $2\frac{1}{2}$ - $4\frac{1}{2}$  lin. broad, deltoid-ovate, acute. Outer corona arising at the base of the staminal-column and as long as it, cup-shaped, with 10 subulate teeth 1 lin. long, and often with a minute tooth between each pair, hairy and more or less ciliate; inner coronal-lobes  $\frac{1}{3}$  lin. long, linear, incumbent on the backs of the anthers and not produced beyond them, dorsally connected to the outer corona by narrow partitions, glabrous. Staminal-column 2 lin. long; anthers subquadrate, obtuse, without an appendage, incumbent on the truncate apex of the style.

**Nile Land.** Harnish Island, in the Red Sea, Slade, 20! Eritrea: neighbourhood of Saati, Schweinfurth & Riva, 519!

Of this I have seen only a few flowers and a rough sketch of the plant. It appears to be similar to *C. retrospiciens*, N. E. Br., in habit; the flowers are also similar but twice as large, and very hairy within. In the specimens collected by Schweinfurth & Riva (519), the flowers are smaller in the dried state, although densely covered with persistent hairs as in *C. hirtiflora*.

3. **C. retrospiciens**, N. E. Br. in *Gard. Chron.* 1892, xii. 370. Stems  $1\frac{1}{2}$ -2 ft. high, branched, very stout, acutely 4-angled; angles much compressed, about  $\frac{3}{4}$  in. broad, with broad deltoid decurved teeth, glabrous. Umbels terminal, sessile, usually several clustered together, forming a large compound globose umbel 3-4 in. in diam., with a hundred or more flowers; pedicels  $\frac{3}{4}$ - $1\frac{1}{2}$  in. long, glabrous. Sepals

1-2½ lin. long, lanceolate-attenuate, with a few minute hairs on the back. Corolla 6-8 lin. in diam., rotate, 5-lobed to half-way down, blackish-purple; lobes 2½-3 lin. long and the same in breadth, broadly deltoid-ovate, acute, glabrous on the back, rugulose, sparsely covered with long purple hairs or sometimes glabrous on the inner face, ciliate with similar vibratile hairs. Outer corona arising ½ lin. above the base of the staminal-column, cup-shaped, with 5 pairs of diverging-arcuate subulate teeth ½-¾ lin. long, more or less pubescent, purple-brown; the two teeth belonging to each of the five united lobes that form the cup rather wide apart at the base, and sometimes with a minute tooth between them; inner coronal-lobes linear, obtuse, incumbent on the backs of the anthers and not exceeding them, dorsally adnate to the outer corona, purple-brown. Follicles 5-6 in. long, 3-4 lin. thick in the dried state, apparently subterete, acuminate, erect and subparallel. Seeds 5 lin. long, 3 lin. broad, deeply channelled down the face, from the broad margins being strongly incurved, smooth, glabrous, brown.—*C. respiciens*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 278; and in Ann. Istit. Bot. Roma, vii. 42. *Desmidorchis retrospicens*, Ehrenb. in Abhandl. Acad. Berl. 1831, 33. *Boucerosia russeliana*, Courbon ex Brongn. in Bull. Soc. Bot. France, 1860, vii. 900, and in Compt. Rend. Acad. Paris, lii. 437; and Courbon in Ann. Sc. Nat. 4 sér. xviii. 143, t. 7; Penzig in Atti Congr. Bot. Internaz. 1892, 348.

**Nile Land.** Red Sea: Dahlac Island, *Ehrenberg!* Dessi Island, *Courbon* (ex *Courbon*). Nubia: near Kassala, *Schweinfurth*, 186! Uaratab Mountain, near Suakin, *Schweinfurth*, 187! O-Kurr, *Schweinfurth*, 467! Singat, *Schweinfurth*, ser. iii. 39! Eritrea: valley of the Torrent Lava, *Penzig* (ex *Penzig*). Abyssinia: between Sero and Mequedel, *Courbon* (ex *Brongniart*), from Tajura through the whole country of the Adeile (Adal) as far as E'at, *Roth*, 410! Somaliland: Miluil, *Riva*, 803, 963, and near Marro Umberto, *Riva*, 719, 1164 (ex *Schumann*); Berbera, *Walcott!*

Var. *glabra*, N. E. Br. Corolla glabrous within and not ciliate, otherwise as in the type.

**Nile Land.** British East Africa: Witu, *Thomas!*

Probably *Stapelia congestiflora*, Delile in Rochet d'Héricourt, Second Voy. dans le pays des Adels et le royaume de Choa, 345, should be referred to this species. It is described as "A clammy plant, with violaceous flowers collected in a ball." According to Rochet d'Héricourt it is found in several localities in the desert of the Adel (Adal) country.

4. **C. Edithæ**, N. E. Br. in *Kew Bulletin*, 1895, 219. Plant robust, bushy, succulent, glabrous in all parts except the corolla. Stems acutely 4- (rarely 5-) angled, 1 in. or more thick; angles with broad deltoid teeth having horizontal or more or less deflexed indurated points. Umbels terminal, sessile, globose, about 2½ in. in diam., 60-70-flowered; pedicels 9 lin. long. Sepals 2½-3 lin. long, linear-subulate, attenuate to a fine point, strongly revolute at the apical part. Corolla about ½ in. in expanse, glabrous and smooth outside, tuberculate-rugose within, with a tuft of long purple vibratile hairs at the apex of each lobe, otherwise quite glabrous and not ciliate, dark purple-brown; tube short, campanulate, about 1½-1¾ lin. long, 3 lin. in

diam. outside; lobes about  $2\frac{1}{2}$  lin. long and the same in breadth at the base, more or less spreading, deltoid-ovate, acute, slightly hooked at the tips. Outer corona arising from the base of the staminal-column, glabrous, cup-shaped, with 5 erect lobes  $\frac{1}{2}$ – $\frac{3}{4}$  lin. long, deeply bifid, their subulate segments contiguous at their base, then divergent-arcuate; cupular part of the corona reaching to the same level as the top of the staminal-column; inner coronal-lobes  $\frac{1}{2}$  lin. long, linear, obtuse, incumbent on the backs of the anthers and not or scarcely exceeding them, dorsally adnate to the outer corona, glabrous.—K. Schum. in Ann. Istit. Bot. Roma, vii. 42.

**Nile Land.** British Somaliland, *Miss Edith Cole!*

Allied to *C. robusta*, N. E. Br., and to the Arabian *C. penicillata*, N. E. Br., but differing from both in the corona.

5. ***C. robusta***, N. E. Br. Stems tall, robust, 1–3 in. square, acutely 4-angled, glabrous and apparently glaucous; angles toothed; teeth rather small, 1–2 lin. long, deltoid, horizontally spreading. Umbels lateral, sessile or on very short (1–3 lin. long) lateral shoots, scattered along the upper part of the stems, globose, 20–40- or more-flowered,  $\frac{3}{4}$ – $1\frac{1}{4}$  in. in diam.; pedicels about 4 lin. long, glabrous. Sepals 1– $1\frac{1}{4}$  lin. long, oblong or oblong-lanceolate, acute. Corolla about 4 (–5?) lin. in diam., rotate; lobes  $1\frac{1}{4}$ –2? lin. long, 1– $1\frac{1}{4}$  lin. broad, ovate, acute, tuberculate within, with a tuft of long vibratile purple hairs at the incurved apex, glabrous outside. Outer corona arising about  $\frac{1}{4}$  lin. above the base of the staminal-column and reaching to its top, cup-shaped, subtruncate, forming 5 pouches alternating with the anthers, sparsely covered with short spreading hairs all over, outside and inside; inner coronal-lobes minute, incumbent on the backs of the anthers and shorter than them, dorsally adnate to the outer corona, and appearing to be 5 minute inflexed teeth of the latter, glabrous.

**Nile Land.** Eritrea: Arrot Valley to the south of Aidereso, 4300 ft., *Schweinfurth & Riva*, 1574! and near Acnur, 6000 ft., *Schweinfurth & Riva*, 1762!

This is very closely allied to the Arabian *C. penicillata*, N. E. Br., of which I have not seen flowering specimens; but according to the description and figure of Deffers it differs in having the pouches of the outer corona truncate and hairy all over, inside and out, whilst in *C. penicillata* they are (according to the figure) produced into a blunt tooth on each side of the anther and inflexed inner coronal-lobe, and only ciliate on the margin. In a sketch made from the living plant by Schweinfurth, the corolla is represented as about 5 lin. in diam., but in the dried state they are only about 3 lin., and after boiling in water do not exceed 4 lin. in diam.

6. ***C. somalica***, N. E. Br. in *Kew Bulletin*, 1895, 264. Stem apparently acutely 4-angled, glabrous; angles slightly toothed. Flowers very numerous, in a terminal globose umbel about 2 in. in diam.; pedicels 6–8 lin. long, glabrous. Sepals  $1\frac{1}{2}$ –2 lin. long, lanceolate-attenuate, with a few minute hairs on the back. Corolla 6–7 lin. in diam.; tube short, campanulate, enclosing the corona; limb rotate, 5-lobed to half-way down; lobes  $2\frac{1}{2}$  lin. long, 2 lin. broad, deltoid-ovate, acute, quite glabrous outside, with a very minutely velvety surface

within, not ciliate. Outer coronal-lobes arising  $\frac{3}{4}$  lin. above the base of the staminal-column, somewhat spreading,  $\frac{1}{2}$  lin. long, deltoid-oblong, terminated by two divergent subulate teeth about  $\frac{1}{2}$  lin. long, which sometimes have a minute tooth between them, minutely and sparsely hairy on the back; inner coronal-lobes about  $\frac{1}{3}$  lin. long, linear, incumbent on the backs of the anthers and not exceeding them. Staminal-column 1 lin. long; anthers subquadrate, not appendaged.—K. Schum. in Ann. Istit. Bot. Roma, vii. 42.

**Nile Land.** South Somaliland: near Magadoxo, *Kirk!*

7. **C. acutangula**, *N. E. Br. in Gard. Chron.* 1892, xii. 369. Stems succulent, triangular; angles acute, very prominent. Umbels terminal, many-flowered; pedicels short. Corolla-lobes smooth outside, densely verrucose and papillose-puberulous within. Corona not described, beyond that "the gynostegium is 20-angular with a few scattered hairs."—*Desmidorchis acutangula*, Decne. in Ann. Sc. Nat. 2 sér. ix. 265. *Bocerosia acutangula*, Decne. in DC. Prod. viii. 648.

**Upper Guinea.** Senegambia, *Perrottet.*

I have not seen this species. If a constant character, the triangular stems readily distinguish it from all other species hitherto known.

8. **C. longidens**, *N. E. Br. in Gard. Chron.* 1892, xii. 369. Stems erect, branching, glabrous; branches erect, 5–8 in. long, attenuated upwards, 4-angled; angles slightly toothed; teeth furnished with fleshy terete acuminate deciduous leaves 1–3 lin. long. Flowers solitary or occasionally two together, subaxillary along the upper part of the stem; pedicels  $\frac{1}{4}$  in. long, elongating to  $\frac{1}{3}$ – $\frac{1}{2}$  in. long when in fruit, glabrous. Sepals 1–1 $\frac{1}{2}$  lin. long, ovate, acuminate, glabrous. Corolla apparently of a dark purple-brown colour, entirely glabrous; tube 3–4 lin. long and about 2 $\frac{1}{2}$ –3 lin. in diam., campanulate; lobes 2 $\frac{1}{2}$ –3 lin. long, spreading, ovate-lanceolate, acute. Outer corona of 10 linear-subulate teeth 2–2 $\frac{1}{2}$  lin. long, each pair with divergent-curved tips, much exceeding the staminal-column; inner corona of 5 linear-subulate teeth 1 $\frac{1}{2}$  lin. long, incurved over the top of the staminal-column, with their tips closely inrolled in a circinnate manner. Staminal-column about 2 lin. long; anthers incumbent on the truncate apex of the style, oblong, with a short, erect, obtuse appendage.

**Nile Land.** Nubia: Wady Laëmeb, between Suakin and Berber, *Schweinfurth*, 441!

9. **C. vittata**, *N. E. Br.* Plant apparently about 6 or 8 in. high, branching. Branches 4-angled, glabrous, about 4 lin. thick in the dried state, much attenuated upwards; angles slightly toothed; teeth bearing minute deciduous fleshy ovate very acuminate leaves  $\frac{1}{2}$ –1 lin. long. Flowers solitary or 2–4 together, scattered along 2–4 in. of the very slender terminal part of the branches, erect; pedicels 2–5 lin. long, glabrous. Sepals 1 lin. long,  $\frac{2}{3}$  lin. broad, ovate, acuminate, glabrous. Corolla-tube about 1 $\frac{1}{2}$  lin. long and 1 $\frac{1}{2}$ –2 lin. broad, campanulate (or globose-campanulate?), whitish, longitudinally striped with dark-purple,

glabrous on both sides; lobes spreading (or ascending?), 2 lin. long, 1 lin. broad at the base, elongate-deltoid, acute, dark purple, glabrous, not ciliate on the reflexed margins. Outer corona of 10 linear-subulate teeth,  $\frac{1}{2}$ – $\frac{2}{3}$  lin. long, ascending, each pair divergent-curved at the tips; inner coronal-lobes  $\frac{1}{2}$ – $\frac{2}{3}$  lin. long, subulate, incumbent on the backs of the anthers and a little longer than them; anthers oblong, obtuse, unappendaged, incumbent on the truncate apex of the style.

**Nile Land.** Nubia, Bent!

10. **C. gracilipes**, *K. Schum. in Engl. Pfl. Ost-Afr. C.* 328. Stems about 12–15 in. high, 3–4 lin. thick in the lower part, gradually tapering and becoming slender in the upper part, 4-angled, minutely and distantly toothed (probably the teeth bear subulate deciduous leaves); terminal part slender, bearing as many as 15 distant flowers. Pedicels slender,  $3\frac{1}{2}$ –4 lin. long. Corolla about  $4\frac{1}{2}$  lin. long, with an inflated tube. Outer coronal-lobes hardly conspicuous, arising considerably above the base of the staminal-column; inner coronal-lobes spathulate.—*K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 278.*

**Mozamb. Dist.** British East Africa: Ukamba; Kitui, *Hildebrandt, 2700.*

Only known to me from Dr. Schumann's description, where the stems are said to be  $2\frac{1}{4}$ – $2\frac{3}{4}$  in. long, the apex running out into a peduncle about a foot long, but this is evidently intended to describe the gradual tapering of the stems that takes place in several species. The thickness of the stems is doubtless taken from the dried specimens and is probably much exceeded in the living state.

11. **C. Sprengeri**, *N. E. Br. in Kew Bulletin, 1895, 263.* Stems up to 5 in. high, branched, 4-angled, about  $\frac{3}{4}$  in. square (including the teeth), glabrous, green, mottled with purple on darker green; angles obtusely rounded, strongly toothed; teeth 3–6 lin. long, ascending-spreading, conical, tapering to a fine point. Flowers in fascicles of 5–6 between the angles, near the apex of the branches; pedicels  $\frac{1}{8}$  in. long, stout, glabrous. Sepals about  $\frac{1}{8}$  in. long, attenuate-deltoid, acuminate, glabrous. Corolla rotate about  $\frac{3}{4}$  in. in diam., purple, glabrous on the back, minutely and densely pubescent on the inner face; disk with a slightly raised rim around the mouth of the very shallow depression in which the corona is contained and contiguous to the latter; lobes 4–5 lin. long,  $2\frac{1}{2}$ – $2\frac{3}{4}$  lin. broad at the base, ovate, acuminate, flat. Outer corona arising from the  $\frac{3}{4}$  lin. long staminal-column and as long as it, annular, truncate and rather thick and fleshy at the rim, reddish; inner coronal-lobes oblong, obtuse or denticulate at the apex, dorsally attached at the base to the outer corona, ascending above the level of the latter, incumbent on the backs of the anthers and equalling or slightly longer than them, reddish. Anthers subquadrate, not appendaged, incumbent on the sloping sides of the truncate style.—*Huernia Sprengeri*, Schweinf. ex Dammann, *Cat. 1893, 46*; *Weiner Ill. Gartenzeit. 1893, 142, fig. 30*; *K. Schum. Monatsschr. für Kakteenkunde, iii. 74, 104*; *Gartenfl. 1897, 274, fig. 35.*

**Nile Land.** Eritrea, *cultivated specimens!* Abyssinia: Adowa, *Petit!*

Chiefly described from the living plant, introduced into cultivation by Dammann & Co. of Naples. I originally described the colour of the corolla as olivaceous, but the colour had faded in transit. See a note under *C. Ango*, N. E. Br.

12. **C. atrosanguinea**, *N. E. Br.* Stems 2-3 in. long, 5-6 lin. thick, 4-angled, cæspitose, branching and decumbent at the base, greyish-green, marbled with brownish-purple, glabrous; angles obtuse, toothed; teeth  $1\frac{1}{2}$ -3 lin. long, stout, conical, tipped with a subulate acute quickly withering leaf-rudiment, having 2 minute teeth at its base. Flowers in fascicles of 2-3 at about the middle of the younger stems, developing successively; bracts  $1\frac{1}{2}$ -2 lin. long, subulate; pedicels  $2\frac{1}{2}$ -3 lin. long, stout, glabrous. Sepals  $4\frac{1}{2}$  lin. long, 1 lin. broad, lanceolate, acuminate, spreading. Corolla about  $1\frac{3}{4}$  in. in diam., outside quite glabrous, greyish-green, mottled with purplish; inside rich deep blackish-crimson, without spots or markings; tube  $3\frac{1}{2}$  lin. long, about 7 lin. in diam. outside, campanulate; lobes  $\frac{2}{3}$ - $\frac{3}{4}$  in. long,  $\frac{1}{2}$  in. broad, ovate, very acute, tipped with a short mucro, very spreading, slightly recurved along the margins, excavated at the mouth of the tube opposite the lobes of the outer corona, very slightly rugulose and very minutely papillate on the inner face. Outer coronal-lobes arising  $\frac{1}{2}$  lin. above the base of the staminal-column, horizontally spreading, firm, rather fleshy, about 1 lin. long and broad, deltoid-ovate, longitudinally folded, forming a channel in which nectar is secreted, bifid at the obtuse apex, dull orange-yellow, reddish in the channel; inner coronal-lobes 5 lin. long, linear-terete, obtuse, much exceeding and incumbent on the anthers at the base, then divergent, ochreous at the base passing into pale sienna above, whitish at the tips.—*Stapelia atrosanguinea*, N. E. Br. in Gard. Chron. 1901, xxx. 425.

**Mozamb. Dist.** Bechuanaland: northern Kalahari Desert, 3000 ft., *Lugard*, 263! and *cultivated specimens!*

Described from a living plant sent to Kew by Captain Lugard in February 1899. When out of flower the plant much resembles *Huerniopsis decipiens*, N. E. Br.

I originally placed this remarkable plant in the genus *Stapelia*, but after my present revision of the genera of this group, I believe it to be better placed in *Caralluma*, on account of its habit, very distinct corolla-tube, and peculiar channelled outer coronal-lobes.

13. **C. caudata**, *N. E. Br.* Stems (only one piece seen, 3 in. long,  $\frac{1}{4}$  in. thick, excluding the teeth), erect, glabrous, 4-angled; angles rounded, toothed; teeth about 5 lin. long, rather distant, straight, spine-like. Flowers several, in sessile umbel-like fascicles near the base of the young stems; bracts very small, about 1 lin. long, acute; pedicels  $\frac{3}{4}$  in. long, 1 lin. thick, glabrous, erect. Sepals 3 lin. long,  $\frac{2}{3}$ - $\frac{3}{4}$  lin. broad, lanceolate, acuminate, glabrous. Corolla in bud  $1\frac{1}{2}$  in. long, pentagonal, tapering into a long acuminate slightly twisted point; very deeply 5-lobed when expanded, yellow, mottled with purple; united part  $2\frac{1}{2}$ -3 lin. long, somewhat saucer-shaped, minutely papillate within; lobes  $1\frac{1}{4}$ - $1\frac{1}{2}$  in. long,  $3\frac{1}{2}$  lin. broad at the ovate base, thence gradually

tapering into long narrow tails, spreading, glabrous on both sides, sparingly ciliate with long vibratile clavate purple hairs. Outer coronal-lobes  $\frac{3}{4}$  lin. long, shortly united at the base, spreading, subquadrate, bifid, with short divergent teeth at the apex, or sometimes nearly truncate, with the teeth horizontally spreading and somewhat resembling the letter T; inner coronal-lobes  $\frac{3}{4}$ –1 lin. long, linear, obtuse, incumbent on the backs of the anthers and not exceeding them, adnate at the base to the outer corona.

**Mozamb. Dist.** British Central Africa: Nyasaland; Namasi, *Cameron*, 25!

14. **C. lateritia**, *N. E. Br.* Stems not seen, "grows to 9 in. high" (*Lugard*). Pedicels about  $\frac{3}{4}$  in. long, about  $1\frac{1}{2}$  lin. thick, glabrous. Sepals  $2\frac{1}{2}$ –3 lin. long,  $\frac{3}{4}$ –1 lin. broad, lanceolate, acuminate, glabrous. Corolla  $\frac{5}{8}$ – $3\frac{1}{2}$  in. in diam., rotate, very deeply 5-lobed, glabrous on both sides, finely papillate-rugulose on the inner face, ciliate with long vibratile clavate purple hairs to the tips of the lobes, "brick-red" (*Lugard*); lobes  $1\frac{1}{2}$  in. long, 5 lin. broad at the base, thence gradually tapering to an acute apex. Outer coronal-lobes with their margins slightly adnate at the base to the base of the inner coronal-lobes,  $1\frac{1}{3}$ – $1\frac{1}{2}$  lin. long,  $1\frac{2}{3}$  lin. broad, cuneately subquadrate, irregularly denticulate at the subtruncate recurved apex, and with 5 closely placed ridges or keels on the middle of the upper side, glabrous, apparently brick-red, with a broad yellow stripe down the middle; inner coronal-lobes  $1\frac{3}{4}$  lin. long, unequally 2-horned, glabrous, brick-red; inner horn  $1$ – $1\frac{1}{4}$  lin. long, erect, subulate; outer horn  $\frac{1}{3}$ – $\frac{2}{3}$  lin. long, erect, subulate.

**Mozamb. Dist.** Bechuanaland: Northern Kalahari; on the Botletie Flats, near Tame's and Rakop's Villages, at about 3000 ft., *Lugard*, 307!

This is exceedingly like the S. African *C. lutea*, *N. E. Br.*, but its flowers are very much larger and different in colour. Captain *Lugard* notes on his label that it is "foul scented."

15. **C. valida**, *N. E. Br. in Kew Bulletin*, 1895, 264. Stems glabrous, 4 in. or more high, 7–10 lin. thick, not including the teeth, probably 4-angled; angles with very stout conical acute spreading teeth  $\frac{1}{2}$ – $\frac{3}{4}$  in. long and  $\frac{1}{3}$  in. thick at the base. Pedicels 4–5 lin. long, glabrous. Sepals  $3\frac{1}{2}$  lin. long, ovate-lanceolate, acuminate, recurving at the tips, glabrous. Corolla very deeply 5-lobed; lobes 8–9 lin. long,  $2\frac{1}{2}$  lin. broad at the base, gradually tapering in a nearly straight line to an acute apex, rugose on the face, ciliate with long clavate vibratile purple hairs, otherwise glabrous, apparently dark brown-purple. Outer coronal-lobes  $1\frac{1}{4}$  lin. long, shortly adnate at the base to the sides of the inner coronal-lobes, oblong-lanceolate and acute, with a small blunt tooth on each side, or linear-oblong and subtruncate, 2–3-keeled down the inner face; beneath them on the very short staminal-column are 5 small tubercles; inner coronal-lobes  $1\frac{1}{2}$  lin. long, connivent-erect, flat, broadly linear, rather deeply bifid at the apex, with the tips apparently recurving, crested at the base.

Locality uncertain, collected by *Dr. Holub* either in the Zambesi region or in the Transvaal.

The specimen consists of one piece of stem and several detached flowers, but probably the latter are produced in large umbels near the base of the young stems, as in *C. lutea*, N. E. Br., which seems to be its nearest ally. The flowers are pressed out flat, but when alive they probably have a short campanulate or funnel-shaped tube  $\frac{1}{3}$ – $\frac{1}{4}$  as long as the lobes.

16. **C. Lugardi**, *N. E. Br.* Plant  $2\frac{1}{2}$ –3 in. high, branching at the base. Stems  $3\frac{1}{2}$ –5 lin. thick, obtusely 4-angled, glabrous; angles with spreading stout subulate acute teeth  $1\frac{1}{2}$ – $2\frac{1}{2}$  lin. long. Flowers in fascicles of 3–7, lateral below the apex of the stems, developing successively; bracts  $\frac{1}{2}$ –1 lin. long, broadly ovate, acute; pedicels  $1\frac{1}{2}$ –3 lin. long,  $\frac{3}{4}$  lin. thick, glabrous. Sepals 2– $2\frac{1}{2}$  lin. long,  $\frac{1}{2}$ – $\frac{2}{3}$  lin. broad, lanceolate, acuminate, glabrous. Corolla  $1\frac{1}{2}$ – $1\frac{3}{4}$  in. in diam., very deeply 5-lobed, glabrous outside, very minutely puberulous within and sparingly ciliate with minute simple hairs, entirely bright chocolate, or the apical part of the lobes olive-green; tube  $2\frac{1}{2}$ –3 lin. long, campanulate; lobes  $\frac{3}{4}$ –1 in. long,  $1\frac{1}{2}$ –2 lin. broad at the base, linear-attenuate, acute, campanulately spreading. Outer corona 15–20-toothed, glabrous; basal part  $\frac{1}{2}$  lin. long, cup-shaped, with 5 pairs of elongated-deltoid acute divergent blackish-purple teeth  $\frac{3}{4}$  lin. long, alternating with the anthers, and 5 pairs of smaller teeth or 5 oblong entire or bifid lobes (often with a very minute middle tooth), opposite to and forming a dorsal projection from the inner coronal-lobes,  $\frac{1}{3}$  lin. long, dull purplish; inner coronal-lobes 2 lin. long, subulate, connivent-erect, glabrous, dull orange.

**Mozamb. Dist.** British Central Africa: Ngamiland; Totin near Lake Ngami, *Lugard*, 74!

17. **C. huillensis**, *Hiern in Cat. Afr. Pl. Welw.* i. 697. Plant broadly tufted. Stems ascending, 2–3 in. long, thick, club-shaped, 4-angled, softly but obsoletely pubescent; angles with stout teeth, straight or slightly decurved at the tips. Flowers in clusters of 6–10 at or near the apex of the stems; pedicels  $\frac{2}{3}$ –1 in. long, rather stout, glabrous; bracts about 2 lin. long, lanceolate-subulate, glabrous. Sepals rather more than  $\frac{1}{4}$  in. long, lanceolate-subulate, glabrous. Corolla dusky red, thinly or obsoletely pubescent outside, nearly glabrous and rugulose on the inner face, deeply 5-lobed; tube about  $\frac{1}{3}$  in. long, sub-hemispherical; lobes  $1\frac{1}{4}$ – $1\frac{1}{2}$  in. long in their dried state, lanceolate-linear. Outer coronal-lobes short, very obtuse, excised, revolute; inner coronal-lobes about  $\frac{1}{6}$  lin. long, stoutly subulate.

**Lower Guinea.** Angola: Huilla, *Welwitsch*, 4266.

18. **C. maculata**, *N. E. Br.* Stems not seen, “3–4 in. high” (*Lugard*). Cymes very short, raceme-like, sessile, progressively several-flowered; pedicels  $1\frac{1}{4}$ – $1\frac{1}{2}$  in. long,  $\frac{3}{4}$  lin. thick, erect, glabrous. Sepals  $2\frac{1}{2}$ –3 lin. long,  $\frac{3}{4}$ –1 lin. broad, lanceolate, tapering into a long acuminate point, glabrous. Corolla about  $1\frac{3}{4}$  in. in diam., deeply 5-lobed, yellowish-green, marked with small dark claret-coloured spots from the tips of the lobes to the bottom of the tube, glabrous on both sides, not rugose, ciliate for  $\frac{3}{4}$  the way along the lobes with long vibratile clavate

white hairs; tube very short, apparently about  $1\frac{1}{2}$  lin. deep and  $\frac{1}{4}$  in. in diam.; lobes very spreading, about  $\frac{3}{4}$  in. long and  $\frac{1}{2}$  lin. broad, narrowly oblong or somewhat spathulate-oblong, acute, reflexed along the margins. Outer corona cupular, circular in outline, truncate, glabrous; inner coronal-lobes 1 lin. long, incumbent on the backs of the anthers, rhomboid, acute, dorsally and rather broadly adnate to the outer corona almost up to its margin.

**Mozamb. Dist.** Bechuanaland: near T'Klakane Pits in the northern Kalahari Desert, 3000 ft., *Lugard*, 297!

*Imperfectly known species.*

19. **C. Anjo**, *N. E. Br. in Gard. Chron.* 1892, xii. 369. Stems a span high, erect, branched, 3-4-angled, glabrous; angles stoutly toothed; teeth acute, usually ascending. Flowers arising from the upper part of the branches, shortly pedicellate. Sepals oblong-lanceolate, acute, glabrous. Corolla scarcely 1 in. in diam., deeply 5-lobed; lobes ovate-oblong, acute, green on the back blackish-purple within.—*Stapelia Anjo*, A. Rich. Tent. Fl. Abyss. ii. 50; Walp. Ann. iii. 69; Martelli, Florul. Bogos. 56.

**Nile Land.** Eritrea: Deban Mountain, near Keren, 4500-5000 ft., *Beccari*, 188 (ex *Martelli*). Abyssinia: province of Shireh, *Quartin Dillon*.

I have not seen this plant and I am informed that there is no specimen of it in Richard's herbarium. I doubt if *Beccari's* plant is the same as that collected by *Quartin Dillon*. There is a specimen named *S. Anjo*, in the Museum d'Histoire Naturelle, Paris, collected at Dschadscha (Jaja), 4000 ft. elevation, by *Schimper* (1289); of this I have only seen a drawing, which appears to me to represent the plant I have described as *C. Sprengeri*. Possibly *C. Sprengeri* may prove to be synonymous with *C. Anjo*, but as many species of this group are much alike in general appearance, and this native name *Anjo* is applied to several distinct species, it appears to me best to consider them as distinct.

20. **C. decaisneana**, *N. E. Br. in Gard. Chron.* 1892, xii. 369. Stems erect, cylindric, 4-ribbed rather than tetragonal (elongate, weak, 4-angled, ex *Decaisne*), whitish-green speckled with red; ribs rounded, very prominent (angles acutely toothed, ex *Decaisne*). Flowers small (few, congested at the apex of the stems, ex *Decaisne*); lobes elongated-triangular (ovate, ex *Decaisne*), spreading like a star, reddish-brown, powdered with very minute whitish papillæ.—*Boucerosia decaisneana*, *Lemaire*, Herb. Gén. Amat. 2 sér. iv. t. 21, Horticult. Universel, v. 99 with fig. and Pl. Grasses autres que les Cact. 28; *Decne*. in DC. Prod. viii. 648.

**Upper Guinea.** Senegal, ex *Lemaire*.

I have not seen this plant, nor *Lemaire's* figure of it.

21. **C. adscendens**, *R. Br.* (an Indian species), is quoted by *Terracciano* in Ann. Istit. Bot. Roma, 1894, v. 105, as growing on Mandola Island in the Red Sea, but no description is given of the plant, and I altogether doubt the identification.

22. **C. subulata**, *Decne.* (an Arabian species), is quoted by K. Schumann in *Ann. Istit. Bot. Roma*, vii. 43, as having been collected in Somaliland, at Milmil, on hill sides near the river, *Riva* 3, and in Ogaden district, *Riva* 44, but I doubt the correctness of the identification.

50. **TRICHOCAULON**, *N. E. Br.* in *Journ. Linn. Soc.* xvii. 164.

Calyx 5-partite. Corolla rotate or with a very short tube, 5-lobed to half-way down; lobes valvate in bud. Corona double, arising from the staminal-column; outer corona of 5 deeply bifid or bipartite lobes, with subulate divergent-arcuate segments, or somewhat cup-shaped, with 5 short emarginate or shortly bifid lobes; inner coronal-lobes linear, incumbent on the backs of the anthers, with or without a dorsal tooth-like process at their base, which is adnate to the outer corona. Staminal-column arising from the bottom of the corolla, short; anthers suberect, linear-oblong, not appendaged. Pollen-masses ascending, solitary in each anther-cell, pellucid along the inner margin, attached in pairs to the pollen-carriers by very short caudicles. Style not exceeding the anthers, truncate at the apex.—Succulent perennials of dwarf habit. Stems simple or branched at the base, leafless, thick, fleshy, many-angled; angles formed of crowded tubercles, which are terminated by a spine or rarely very blunt and pointless. Flowers rather small, arising from the angles between the tubercles towards the summits of the stems, subsolitary, pedicellate.

Species 6, four of them natives of South Africa.

Pedicels 1 lin. long; corolla-lobes deltoid-ovate . . . 1. *T. officinale*.

Pedicels 2–2½ lin. long; corolla-lobes lanceolate or ovate-lanceolate . . . . . 2. *T. pedicellatum*.

1. **T. officinale**, *N. E. Br.* in *Kew Bulletin*, 1895, 264. Stems thick and fleshy, probably about 1½ in. in diam., with many tuberculate angles; tubercles terminated by a subulate spine. Flowers arising from the grooves between the angles, subsolitary, or perhaps one flower following another; pedicels 1 lin. long, glabrous. Sepals about 1¼ lin. long, lanceolate, acuminate, glabrous. Corolla rotate-campanulate, about 5 lin. in diam., flat, without a tube; lobes 2–2½ lin. long, 2 lin. broad, deltoid-ovate, rather abruptly acuminate into a fine point, more or less spreading, dark purple-brown, glabrous outside, minutely papillate within, many (all?) of the papillæ terminated by a minute hair. Outer coronal-lobes about ½ lin. long and ¾ lin. broad, arising close to the base of the staminal-column, forming small emarginate pouches alternating with the anthers, glabrous; inner coronal-lobes linear-oblong, obtuse, shorter than the anthers on which they are incumbent, dorsally adnate to the outer corona, glabrous.

**Mozamb. Dist.** Bechuanaland: without precise locality!

I include this among the Tropical African species, although it is uncertain if it comes from the tropical or extratropical part of Bechuanaland. All I know

of it is, that dried slices of the stem were imported into America as a remedy for piles; some of the slices (which have flowers attached to them) were presented to Kew by Mr. E. M. Holmes of the Pharmaceutical Society, and from them I have made the above description.

2. **T. pedicellatum**, *Schinz in Verhandl. Bot. Ver. Brandenb.* xxx. 266. Stems dwarf, glabrous, cylindrical, as thick as the thumb, many-angled; angles tubercled, each tubercle terminated by a bristle 1-1½ lin. long. Flower-fascicles 1-4-flowered; pedicels 2-2½ lin. long, glabrous. Sepals ¾-1 lin. long, lanceolate, acuminate, glabrous. Corolla about 4-5 lin. in diam., rotate; tube small, ½ lin. long; lobes very spreading, 2 lin. long, 1-1¼ lin. broad, lanceolate, acuminate, glabrous, papillate within, dark purple-brown. Outer coronal-lobes arising from the middle of the ½ lin. long staminal-column and slightly overtopping it, bifid, purple-brown, glabrous; teeth of the lobes ¼ lin. long; inner coronal-lobes ½ lin. long, linear, obtuse, incumbent on the backs of the anthers and longer than them, dorsally adnate to the lobes of the outer corona, purple-brown, glabrous. Anthers incumbent on the top of the style, which is truncate, depressed and covered by the inner coronal-lobes.—K. Schum. in *Engl. & Prantl, Pflanzenfam.* iv. ii. 275.

**Lower Guinea.** German South-west Africa: west Hereroland; probably from the neighbourhood of Hope Mine, *Staff!*

I have only seen flowers and a small fragment of the stem about 1 in. long, which I believe to have been much larger than described.

51. **HOODIA**, Sweet: Benth. et Hook. f. *Gen. Pl.* ii. 783.

Calyx 5-partite. Corolla-tube very small, enclosing the corona; limb large, flat, concave, or cup-shaped, obsolete or but slightly 5-lobed; lobes abruptly terminated by a subulate point. Corona double, arising from the staminal-column; outer corona of 5 concave spreading lobes, emarginate or bifid at the apex; inner corona of 5 linear lobes incumbent on the backs of the anthers, dorsally connected to the outer corona by 5 short partitions. Staminal-column arising from near the base of the small corolla-tube; anthers incumbent on the top of the style, subquadrate, not appendaged. Style not produced beyond the anthers, truncate at the apex. Follicles elongate, divaricate, smooth.—Stout succulent perennials, with cylindrical, many-angled stems; angles spine-toothed. Flowers large and showy, in small clusters of 2-5 or sometimes solitary, arising from the grooves between the angles of the stem towards the top.—Dyer in *Journ. Linn. Soc.* xv. 248. *Monothylaceum*, G. Don, *Gen. Syst.* iv. 116. *Scytanthus*, Hook.  *Ic. Pl.* t. 605-606.

Species 6, three of which are natives of South Africa.

Corolla 3½-5 in. in diam., pilose with hairs 1-2 lin. long within . . . . .

1. *H. Currori*.

Corolla about 2½ in. in diam., pilose with hairs ¼-1 lin. long within . . . . .

2. *H. Lugardi*.

Corolla about 1¼ in. in diam., pubescent with hairs ¼-½ lin. long within . . . . .

3. *H. parviflora*.

1. **H. Currori**, *Decne. in DC. Prod.* viii. 665. Stems  $1\frac{1}{2}$ –2 ft. high, 2–2 $\frac{1}{2}$  in. thick, cylindric, many-angled; angles sharply spine-toothed. Pedicels 6–8 lin. long, glabrous. Sepals  $\frac{1}{4}$  in. long, lanceolate, acuminate, glabrous. Corolla  $3\frac{1}{2}$ –5 in. in diam., concave-rotate, slightly 4–5-lobed, glabrous outside, covered with hairs 1–2 lin. long within; lobes  $2\frac{1}{2}$ –4 $\frac{1}{2}$  times as broad as long, very obtuse, abruptly contracted into a subulate point  $\frac{1}{4}$  in. long; outer corona a shortly 5-lobed cup, glabrous; lobes bifid; inner coronal-lobes linear, obtuse, incumbent on the backs of the anthers and not exceeding them, dorsally adnate to the outer corona, glabrous. Follicles 8–10 in. long, divaricate, terete, acuminate.—Hook. Niger Flora, 458; Dyer in Journ. Linn. Soc. xv. 251, t. 5, fig. 2; Lemaire, Pl. Grasses autres que les Cact. 67; N. E. Br. in Hook. Ic. Pl. xx. sub t. 1905, p. 3; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 275. *Scytanthus Currori*, Hook. Ic. Pl. vii. tt. 605, 606; *S. Burkei*, Hook. Ic. Pl. sub t. 625. *S. sp.*, J. C. Brown in Gard. Chron. 1873, 576, fig. 110. *Adenium namaquarium*, Henslow in The Gardener, 1901, 1194, fig. 16.

**Lower Guinea.** Angola: Elephant Bay, *Curror!* Benguela, *Monteiro!* German South-west Africa: Damafaland; Otyimbingwe, *Palgrave!*

Probably to this species should be referred the plant quoted as *H. Gordoni*, Sw., in Engl. Jahrb. x. 244, and xix. 148 from Hereroland; near Salem (*Marloth*, 1453), and at Soris-Soris (*Gürich*, 58).

2. **H. Lugardi**, *N. E. Br.* Stems not seen, “erect, to 2 $\frac{1}{2}$  ft. high, thorny” (*Lugard*). Pedicels  $\frac{1}{4}$ – $\frac{1}{3}$  in. long in the specimens seen, stout, glabrous. Sepals  $2\frac{1}{3}$ –2 $\frac{3}{4}$  lin. long,  $1\frac{1}{3}$ –1 $\frac{1}{2}$  lin. broad, ovate, acuminate, glabrous. Corolla about 2 $\frac{1}{2}$  in. in diam., “brick-red” (*Lugard*), concave-rotate, obsoletely 5-lobed, each lobe very abruptly terminated by a subulate point 4–5 lin. long, glabrous outside, thinly covered with hairs  $\frac{1}{4}$ –1 lin. long within, each hair arising from a minute tubercle and probably erect. Outer corona shortly cupular, 5-lobed; lobes obtusely and deeply bifid, dark purple-brown or blackish, glabrous; inner coronal-lobes  $\frac{1}{2}$  lin. long, linear-oblong, obtuse, incumbent on the backs of the anthers, dark purple-brown or blackish, glabrous.

**Mozamb. Dist.** Bechuanaland: Chukutsa Salt Pan in the Kalahari Desert, 2300 ft., *Lugard*, 303!

3. **H. parviflora**, *N. E. Br. in Kew Bulletin*, 1895, 265. Stems similar to those of *H. Currori*. Pedicels 1–2 lin. long, stout, glabrous. Sepals  $2\frac{1}{2}$  lin. long, ovate-lanceolate, acuminate, glabrous. Corolla about  $1\frac{1}{4}$  in. in diam., probably concave or cup-shaped, pentagonal or very slightly 5-lobed, glabrous outside, pubescent with hairs  $\frac{1}{8}$ – $\frac{1}{4}$  lin. long within; lobes or angles tipped by a subulate point 1 lin. long. Corona glabrous; outer lobes  $\frac{1}{2}$  lin. long, concave, bifid to half-way down; inner lobes linear, obtuse, incumbent on the backs of the anthers and shorter than them, dorsally connected with the outer corona by a short partition.—Hiern in Cat. Afr. Pl. Welw. i. 697.

**Lower Guinea.** Angola: Mossamedes; among elevated rocks near Poman-gala, 1500 ft., dry places in front of Quitibe de Baixo, and at Cavalheiros, *Welwitsch*, 4265!

52. **EDITHCOLEA**, N. E. Br. in *Kew Bulletin*, 1895, 220.

Calyx 5-partite. Corolla large, rotate or saucer-shaped, 5-lobed half-way to the centre; tube hemispherical, exceedingly small in proportion to the limb; lobes valvate in bud. Corona small, double, arising from the staminal-column; outer corona of 5 short ascending or somewhat pouch-like lobes, alternating with the anthers, with their margins shortly adnate to the inner coronal-lobes; inner corona of 5 erect fleshy lobes, dilated at the apical part and inflexed over the anthers, with contiguous margins, densely echinulate or tuberculate on the back. Staminal-column arising near the bottom of the corolla-tube very small; anthers erect or slightly incurved at the tips, oblong, unappendaged. Pollen-masses erect, compressed elongate-ovoid, pellucid at the apex, solitary in each anther-cell, large in proportion to the corona, attached in pairs to the blackish pollen-carriers by very short broad caudicles. Style not exceeding the anthers, somewhat compressed-truncate at the apex, something like the roof of a house, with the two angles very shortly produced or bicorniculate. Follicles not seen.—Succulent perennial leafless herbs, more or less branched; branches fleshy, spine-toothed at the angles. Flowers from near the apex of the branches, pedicellate, very large.

Species 2, the other endemic in Socotra.

1. **E. grandis**, N. E. Br. in *Kew Bulletin*, 1895, 220. Stems succulent, "growing to about a foot in height and 1 in. or more in diam., decumbent at the base" (*Miss Edith Cole*), 5-angled, glabrous; angles armed with hard brown very acute spine-like teeth. Flowers subsolitary at the tips of the branches; pedicels 7-9 lin. long,  $1\frac{1}{4}$ - $1\frac{1}{2}$  lin. thick, glabrous. Sepals 4 lin. long,  $1-1\frac{1}{4}$  lin. broad, ovate-lanceolate, acuminate, probably recurved at the somewhat indurated pungent tips. Corolla 4-5 in. or perhaps more in diam., 5-lobed half-way to the centre, rotate or saucer-shaped, glabrous on the back; tube about  $\frac{1}{4}$  in. in diam. and  $1\frac{1}{2}$ -2 lin. deep, with a slightly elevated acute rim around its mouth, glabrous; disk rugose with concentric ridges and furnished with 5 lines of long clavate purple hairs radiating from the centre to the sinuses, otherwise glabrous, apparently whitish or pale yellowish marked with dark purple-brown spots, which, at the middle (or base?) of each lobe are confluent in an arc; lobes  $1\frac{1}{2}$ -2 in. long,  $1-1\frac{1}{4}$  in. broad, ovate, acute, bordered with long clavate purple hairs to about the middle, where the borders incurve and form a broad hairy arc across each of the lobes, which are otherwise glabrous, and from the inner margin of the hairy arc to the apex are dark purple-brown without markings. Outer coronal-lobes  $\frac{1}{3}$ - $\frac{1}{2}$  lin. long, subquadrate or transversely oblong, acutely bifid, with a broad shallow sinus between the points, concave and hairy within; inner

coronal-lobes  $\frac{3}{4}$ –1 lin. long, erect, fleshy, gibbous at the base, broadly linear at the middle, triangularly dilated at the tips, which are inflexed over the anthers, with contiguous margins and minutely echinulate on the back, keeled on the inner face, glabrous. Pollen-masses nearly  $\frac{1}{4}$  lin. long. Pollen-carrier narrow, rather more than half as long as the pollen-masses.—K. Schum. in Engl. & Prantl, Pflanzenfam. Nachtr. zum ii.–iv. 288, and in Ann. Istit. Bot. Roma, vii. 43.

**Nile Land.** Somaliland: Henweina Valley, about 3000 ft., *Miss Edith Cole!* *Mrs. Lort-Phillips!* in rocky places by the Riva Danar, Riva, 1100, and without precise locality, *Robecchi-Bricchetti*, 318 (ex *Schumann*).

This is one of the handsomest and most distinct of all the Stapelioid group. The dimensions of the corolla are taken from the dried flower, and are probably exceeded when alive.

53. **TAVARESIA**, Welw. in Bol. Cons. Ultramar. Lisb. 1854,  
No. 7, 79.

Calyx 5-partite. Corolla large, tubular-funnel-shaped, 5-lobed; lobes valvate in bud, the sinuses between them forming acute projecting angles. Corona double, arising from the staminal-column; outer corona shortly tubular at the base, then divided into 10 long filiform segments, each terminated by a knob, and usually with a minute tooth between the pair of segments that alternate with the anthers; inner corona of 5 narrow lobes, incumbent on the backs of the anthers and dorsally connected with the basal part of the outer corona by short partitions. Staminal-column arising from the base of the corolla; anthers ovate-oblong, without appendages, incumbent on the top of the style. Pollen-masses solitary in each anther-cell, horizontal, rather large, compressed, pellucid margined on one side, attached in pairs by short caudicles to subulate lateral processes from the pollen-carriers. Style not exceeding the anthers, flat and pentagonal at the apex. Follicles not seen. Seeds rather small, crowned with a tuft of hairs.—Succulent leafless perennials, branching at the base; stems 6–12-angled; angles tuberculate-toothed, each tubercle furnished with three bristles. Flowers large and showy, in sessile cymes at the base of the young stems.—*Decabellone*, Decne. in Ann. Sc. Nat. 5 sér. xiii. 404; Benth. et Hook. f. Gen. Pl. ii. 784.

Species 2, one endemic, the other also in South Africa. The flowers vary very much in size in both species, even on the same plant under different conditions.

- Stems 6–8-angled; lateral bristles of the tubercles  
upcurved . . . . . 1. *T. angolensis*.  
Stems 10–12-angled; lateral bristles of the tubercles  
deflexed . . . . . 2. *T. Barklyi*.

1. **T. angolensis**, Welw. in Bol. Cons. Ultramar. Lisb. 1854,  
No. 7, 79. Glabrous in all parts. Stems  $2\frac{1}{2}$ –5 in. high, fleshy, leafless, 6- (rarely 8-) angled; angles with conical tubercles  $1\frac{1}{2}$ –2 lin. long, terminated by three whitish bristles; central bristle horizontal, two lateral much shorter and curved upwards. Cymes sessile, few-flowered; pedicels  $\frac{1}{2}$  in. long. Sepals  $3\frac{1}{2}$ –4 lin. long, lanceolate, acuminate.

Corolla smooth (or minutely and sparsely scabrid-tuberculate) outside, densely papillate within, pale yellowish, spotted inside and out with purple red; tube  $1\frac{1}{2}$ –3 in. long, 1–2 in. in diam.; lobes  $\frac{1}{2}$ – $\frac{3}{4}$  in. long, spreading, deltoid, acute. Outer corona 7–9 lin. long, shortly tubular at the base, divided into 10 filiform segments, ending in pendulous pear-shaped orange-brown knobs, the other parts similar in colour to the corona of *D. Barklyi*; inner coronal-lobes about  $\frac{3}{4}$  lin. long, linear-attenuate, incumbent on the backs of the anthers and scarcely longer than them, dorsally connected to the outer corona by short partitions, dark purple-brown. Follicles not seen. Seeds 2– $2\frac{1}{2}$  lin. long,  $1\frac{1}{2}$  lin. broad, ovate, plano-convex, with a broad thick border, glabrous, smooth, light brown.—Welw. in Bol. e Ann. Cons. Ultramar. 1856, No. 24, 252; Hiern in Cat. Afr. Pl. Welw. i. 697. *Huernia Tavaresii*, Welw. in Bol. e Ann. Cons. Ultramar. 1856, No. 24, 252. *Decabelone elegans*, Decne. in Ann. Sc. Nat. 5 sér. xiii. 404, t. 2; Bot. Mag. t. 6115; Engl. & Prantl, Pflanzenfam. iv. ii. 275, 276, fig. 83, C–D. *D. grandiflora*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 276. *Stapelia digitaliflora*, Pfersd. ex Decne. in Ann. Sc. Nat. 5 sér. xiii. 405.

**Lower Guinea.** Angola: Loanda; near Loanda, near Alto das Cruzes and Forte de Penedo, *Welwitsch*, 4262! Ambriz, *Monteiro*! and cultivated specimens!

2. **T. Barklyi**, *N. E. Br.* Glabrous in all parts. Stems 3–4 in. high, 8–9 lin. thick, fleshy, leafless, cylindrical, 10–12-angled; angles with very short closely set tubercles, each terminated by 3 white bristles; central bristle horizontal, two lateral rather shorter, deflexed and diverging from each other at nearly a right angle. Cymes sessile, few-flowered; pedicels 4–6 lin. long. Sepals 3– $3\frac{1}{2}$  lin. long, lanceolate, acuminate. Corolla smooth, pale greenish or greenish-white, spotted with purple-red outside; inside densely papillate, pale yellowish, covered with small purple-red spots, except at the base, which is entirely purple-red; tube  $1\frac{1}{2}$ –2 in. long, about 1 in. in diam. at the mouth; lobes  $\frac{1}{2}$ – $\frac{3}{4}$  in. long, deltoid, acuminate, spreading. Outer corona 5 lin. long, shortly tubular at the base, divided into 10 filiform segments terminating in pendulous globose knobs, the filiform parts and knobs purple-brown, the lower part white, with the margins, some stripes alternating with each pair of filaments and a few linear spots or stripes all dark purple-brown; inner coronal-lobes  $\frac{3}{4}$  lin. long, linear, dorsally connected by short partitions to the outer corona, incumbent on the backs of the anthers, which they slightly exceed, purple-brown.—*Decabelone Barklyi*, Dyer in Bot. Mag. t. 6203; and in Journ. Linn. Soc. xv. 249–250, t. 5, fig. 4; *N. E. Br.* in Hook. Ic. Pl. xx. sub t. 1905, p. 3; K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 275; Gard. Chron. 1900, xxvii. 210, fig. 67.

**Lower Guinea.** German South-west Africa: Hereroland; Gobabis, *Schinz*, 150!

Also in South Africa.

In the dried state, the flowers of this species can only be distinguished from those of *T. angolensis*, Welw., by the knob at the ends of the outer coronal-segments being globose instead of pear-shaped.

54. **HUERNIA**, R. Br.; Benth. et Hook. f. Gen. Pl. ii. 784.

Calyx 5-partite. Corolla campanulate or broadly cup-shaped, or with a campanulate tube and spreading lobes, 5-6-lobed, with the base of the sinuses between the lobes produced into small triangular teeth, valvate in bud. Corona double; outer corona of 5 free or connate spreading lobes, arising at the base of the staminal-column and sessile on, or adnate to, the base of the corolla; inner corona of 5 simple lobes arising at the top of the filament part of the staminal-column, incumbent on the backs of the anthers and often produced beyond them into erect horns. Staminal-column arising from the bottom of the corolla; anthers inflexed-ascending or sub-horizontal, not appendaged. Pollen-masses inflexed-ascending or sub-horizontal, pellucid along the upper part of the inner margin, solitary in each anther-cell, attached in pairs to the pollen-carriers by short caudicles; pollen-carriers with a wing-like expansion on each side, varying from dark reddish-brown to black. Follicles narrowly fusiform, smooth. Seeds crowned with a tuft of hairs.—Succulent perennial leafless herbs, branching at the base. Stems 4-6-angled, thick and fleshy, toothed along the angles. Flowers pedicellate, of moderate size, in few- or many-flowered cymes at the base of the young shoots.

Species several, mostly natives of South Africa, 1 in Arabia.

Corolla campanulate without a recurved limb between the tube and lobes.

Stems with very small teeth about  $\frac{1}{2}$  lin. long.

Corolla smooth outside . . . . . 1. *H. similis*.

Corolla very rough with small pointed papillæ outside . . . . . 2. *H. aspera*.

Stems with stout conical-subulate teeth 2-5 lin. long.

Corolla rough with minute papillæ outside and inside, indistinct in the dried state in *H. Penzigii*.

Corolla white at the base within; inner coronal-lobes puberulous . . . . . 3. *H. oculata*.

Corolla entirely blackish-purple within; inner coronal-lobes glabrous . . . . . 4. *H. Penzigii*.

Corolla smooth outside, covered with small bristle-like processes inside . . . . . 5. *H. concinna*.

Corolla with a recurved or convex limb between the tube and lobes; stem with stout conical teeth 3-3 $\frac{1}{2}$  lin. long . . . . . 6. *H. somalica*.

1. **H. similis**, *N. E. Br. in Kew Bulletin*, 1895, 265. Stems elongate, growing to 9 in. long,  $\frac{1}{2}$  in. thick, cylindric, obtusely 5- (6 ?-) angled, glabrous; angles with small spreading teeth  $\frac{1}{2}$  lin. long. Cymes sessile or subsessile near the base of the young shoots, 3-5-flowered; pedicels  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, glabrous. Sepals 2 lin. long, lanceolate, acuminate, very spreading, glabrous. Corolla broadly campanulate, about 7 lin. in diam. and about half as long, outside glabrous, smooth; inside rough with small papillæ; lobes spreading, deltoid, acuminate. Outer coronal-lobes minute, about  $\frac{1}{4}$ - $\frac{1}{3}$  lin. long and  $\frac{1}{3}$  lin. broad, obtuse; inner

coronal-lobes  $\frac{1}{3}$ – $\frac{2}{3}$  lin. long, ascending, linear, obtuse, with a narrow transverse dorsal ridge at their base.—Hiern in Cat. Afr. Pl. Welw. i. 698.

**Lower Guinea.** Angola: Pungo Andongo; in clefts of rocks on the mountain slopes of the Præsidium near Cabondo, Catete, &c., *Welwitsch*, 4264!

2 **H. aspera**, *N. E. Br. in Gard. Chron.* 1887, ii. 364. Stems procumbent and ascending, 3–9 in. long,  $\frac{1}{2}$  in. thick, very obtusely 5–6-angled, glabrous; angles with small rigid spreading teeth (rudimentary leaves)  $\frac{1}{2}$  lin. long, above each of which is a curved transverse impressed line connecting the grooves between the angles. Cymes sessile near the base of the young shoots, 3–5- (or more-?) flowered; pedicels  $\frac{1}{4}$ – $\frac{1}{3}$  in. long, glabrous. Sepals  $\frac{1}{4}$  in. long, lanceolate, acuminate, very spreading, glabrous. Corolla campanulate, about  $\frac{1}{2}$  in. long,  $\frac{3}{4}$ –1 in. in diam., outside dull purple, very rough with numerous small pointed papillæ; inside uniformly blackish-purple, densely covered with pointed papillæ; lobes deltoid, acuminate. Outer coronal-lobes about  $\frac{1}{3}$  lin. long and broad, subtruncate, slightly emarginate, intense blackish-crimson; inner coronal-lobes  $\frac{1}{2}$ – $\frac{2}{3}$  lin. long, lanceolate-subulate or linear, acute or obtuse, yellowish, their tips slightly exceeding the anthers and very slightly upturned, not produced into subulate points.—*Bot. Mag. t. 7000*; K. Schum. in *Engl. & Prantl, Pflanzenfam. iv. ii. 280*.

**Mozamb. Dist.** Probably Zanzibar or German East Africa, precise locality unknown, *Kirk!*

3. **H. oculata**, *Hook. f. in Bot. Mag. t. 6658*. Stems 2–3 $\frac{1}{2}$  in. high, about 5–6 lin. thick (without the teeth), 5-angled, glabrous; angles with stout fleshy spine-like teeth 2–4 $\frac{1}{2}$  lin. long. Cymes few-flowered, sessile near the base of the young stems; pedicels 2–3 lin. long, glabrous. Sepals 3–4 lin. long, lanceolate-subulate, glabrous. Corolla about 10 lin. in diam., minutely papillate-asperate inside and outside, otherwise glabrous and not ciliate, green, more or less tinged with purplish outside, blackish-purple on the lobes and upper part of the tube within, the base of the tube white; tube about  $\frac{1}{4}$  in. long, broadly campanulate; lobes 2 $\frac{1}{2}$  lin. long, deltoid, acuminate, spreading. Outer coronal-lobes about  $\frac{1}{2}$  lin. long and broad, subquadrate, truncate or slightly emarginate (not rounded as represented in the plate), glabrous; inner coronal-lobes  $\frac{3}{4}$  lin. long, elongate-deltoid, with a dorsal transverse ridge at their base, minutely puberulous, connivent, but without erect tips.—K. Schum. in *Engl. & Prantl, Pflanzenfam. iv. ii. 280*.

**Lower Guinea.** German South-west Africa: Damaraland, *Een!* Windhoek, *Dinter!*

4. **H. Penzigii**, *N. E. Br. in Gard. Chron.* 1892, xi. 719. Stems erect, 2–3 in. high, 6–8 lin. thick, excluding the teeth, 5-angled, glabrous; angles with stout conical straight spreading teeth 4–5 lin. long, ending in fine subulate points. Flowers 1–5 in a fascicle at the base of the young stems, developing successively; pedicels  $\frac{1}{4}$  in. long, glabrous. Sepals 4–6 lin. long, lanceolate-subulate, spreading, glabrous.

Corolla campanulate, about  $\frac{1}{2}$  in. long, and  $\frac{3}{4}$  in. in expanse; rough outside and inside with minute wart-like papillæ, which are inconspicuous in the dried state, otherwise glabrous, and not ciliate, entirely blackish-purple within; lobes about  $\frac{1}{4}$  in. long, deltoid, slightly spreading. Outer corona of 5 transversely oblong, obtuse or emarginate lobes  $\frac{1}{3}$  lin. long, purple-black; inner coronal-lobes  $\frac{3}{4}$  lin. long, incurved over the backs of the anthers, then erect, deltoid-subulate, with a transverse ridge behind at their base, glabrous, blackish-purple.—*Huernia macrocarpa*, Dammann, Cat. 1892, 4 and 7, fig. 6; Wiener Ill. Gartenz. 1892, 350, fig. 58. *H. Penzigii*, Baker ex Penzig in Atti Congr. Bot. Internaz. 1892, 349. *H. macrocarpa*, Schweinf. ex K. Schumann, Monatschr. für Kakteenkunde, 1894, iv. 155, with fig.; Engl. & Prantl, Pflanzenfam. iv. ii: 279, fig. 84, F. and 280. *Stapelia macrocarpa*, Martelli, Florul. Bogos, 56.

**Nile Land.** Eritrea: among rocks on Mount Sevan, near Keren, *Penzig* (ex *Penzig*); near Geleb, cultivated specimens, *Penzig* (ex *Cronmeyer*)! Debau Mountain, near Keren, 4500–5000 ft., *Beccari* (ex *Martelli*).

Specimens collected in Eritrea, at Acrur, 6000 ft., *Schweinfurth & Riva*, 1340, may also belong to this species, but those I have seen are without flowers.

According to Schumann, this plant is the same as *Stapelia macrocarpa*, A. Rich., but the stems of that species are described as subquadrangular and the flowers are unknown. See note under *H. macrocarpa*, N. E. Br.

5. **H. concinna**, *N. E. Br.* Stems tufted, 1– $1\frac{1}{2}$  in. long,  $4\frac{1}{2}$ –5 lin. thick, exclusive of the teeth, decumbent, 5-angled, glabrous, light green, scarcely glaucous; angles toothed; teeth 3– $3\frac{1}{2}$  lin. long, straight, spreading, subulate from a stout conical base, without lateral teeth. Flowers 1–2 or more? fascicled on the basal part of the young stems; pedicels  $2\frac{1}{2}$  lin. long, glabrous. Sepals 4 lin. long,  $\frac{2}{3}$  lin. broad at the base, gradually tapering to very fine hair-like points, glabrous. Corolla about 1 in. in diam., outside glabrous, smooth, whitish; inside everywhere covered with little bristle-like processes, pale sulphur-yellow, marked all over with small dark brownish-crimson spots, narrowly margined with dark purple-brown on the lobes, not ciliate; tube about 3 lin. long and 7 lin. in diam., broadly campanulate; lobes 4 lin. long,  $4\frac{1}{2}$  lin. broad, slightly spreading, deltoid, acuminate. Outer corona very shortly 5-lobed, rich velvety purple-brown; lobes  $\frac{1}{4}$  lin. long,  $\frac{2}{3}$ – $\frac{3}{4}$  lin. broad, transversely oblong, emarginate; inner coronal-lobes  $\frac{1}{2}$  lin. long,  $\frac{1}{3}$  lin. broad at the base, gradually tapering to a subobtuse point, connivent in a cone over the tips of the anthers, yellow, margined and speckled with purple-brown.—*H. macrocarpa*, Taubert in Gartenfl. 1895, 353, t. 1416, not of other authors.

**Nile Land.** Eritrea, *Schweinfurth* (ex *Taubert*). Somaliland: cultivated specimen, *Mrs. Lort-Phillips*!

Described from a living plant brought from Somaliland by Mrs. Lort-Phillips, which flowered in Cambridge Botanic Garden in July 1900.

6. **H. somalica**, *N. E. Br.* in *Kew Bulletin*, 1898, 309. Stems 5-angled, light green, glabrous, scarcely glaucous,  $2\frac{1}{2}$ –3 lin. high, 7 lin.

thick, exclusive of the 3-3½ lin. long stout conical very acute teeth at the angles. Flowers from the base of the young stems; pedicels 3-4 lin. long, ¾ lin. thick, glabrous. Sepals 3 lin. long, ¾ lin. broad at the base, subulate-acuminate, glabrous. Corolla 1-1½ in. in diam., smooth and glabrous outside and within the tube, inside papillate on the lobes and the limb just at their base, dull purple or port-wine colour, the lobes and some mottling on the convex part of the limb dull ochreous; tube 3½-4 lin. long, 6 lin. in diam., campanulate; limb convex or recurving, with 5 distant deltoid very acute spreading lobes 3 lin. long, 2-2½ lin. broad, and 5 small teeth alternating with them. Outer coronal-lobes ¾ lin. long, 1 lin. broad, subquadrate, bifid to half-way down, adpressed to the bottom of the corolla, dark blood-red, glabrous; inner coronal-lobes 1 lin. long, subulate, exceeding the anthers, ascending and connivent over the apex of the style, bright yellow, margined with dull purple in their upper part, glabrous.

**Nile Land.** Somaliland: on dry, flat, stony ground, cultivated specimen, *Mrs. Lort-Phillips!*

Described from a living plant sent to the Cambridge Botanic Garden by Mrs. Lort-Phillips. The bright yellow inner coronal-lobes, looking like 5 points of light within the dark corolla-tube, form a very distinctive feature in this species.

*Imperfectly known species.*

7. **H. macrocarpa**, *N. E. Br.* Stems about the length of a finger, fleshy, glaucous, subquadrangular; angles coarsely toothed; teeth fleshy, acute, recurved, spinescent at the apex. Peduncle simple, arising from the sinus at the base of the branches and about equalling them, erect, 1-flowered. Flowers . . . Follicles in pairs, 2-5 in. long, approximate, erect, subparallel, narrow, compressed, acute or hooked at the apex, marked with interrupted purple lines. Seeds ovate, glabrous, marginate, terminated by a setose pappus.—*Stapelia macrocarpa*, *A. Rich.* Tent. Fl. Abyss. ii. 50; *Walp. Ann.* iii. 70.

**Nile Land.** Abyssinia: in the province of Shireh, *Quartin Dillon.*

This plant has been considered by Schweinfurth & Schumann to be the same as *H. Penzigii*, *N. E. Br.*, and by Taubert the same as *H. concinna*, *N. E. Br.*, but as the flowers of *Stapelia macrocarpa*, *A. Rich.*, are undescribed, the stems and follicles of several species are very much alike in the dried state, and the species are often very local in their distribution, as well as for reasons stated below, it appears better to consider them distinct species.

In *A. Richard's* herbarium, now in the possession of *M. Drake del Castillo*, I am informed that there is no specimen now extant bearing the name of *S. macrocarpa*, *A. Rich.* There is, however, a specimen consisting of one branch about 3 in. long and ¾ in. in diam. (including the teeth), and a detached fruiting peduncle with two follicles, which are 5½ in. long; this specimen fairly agrees with *Richard's* description of *S. macrocarpa*, and was collected in Shireh province, at Debra Sina, in Abyssinia, by *Quartin Dillon & Petit*, so that it may be the type. In the Paris Herbarium there are specimens named *S. macrocarpa*, *A. Rich.*, which were collected in the province of Samen, Abyssinia, at the following localities: Sabra, 5000 ft., *Schimper*, 945, and Shoata, 6000-7000 ft., *Schimper*, 946. Of all these I have only seen tracings, and am informed that *Dillon & Petit's* and *Schimper's* specimens appear to

belong to one and the same species. If this opinion is correct (and the propinquity of the localities supports this view), there can be no doubt that it is specifically distinct from *H. Penzigii*, N. E. Br., and from *H. concinna*, N. E. Br., as the corolla of Schimper's plant is marked with concentric zebra-markings on the inner side, which is not the case in *H. Penzigii* or *H. concinna*.

8. **H. Engleri**, *Terracciano in Ann. Istit. Bot. Roma*, v. 105. Stems 4-angled, erect, "geographically" spotted with white and green; angles with acute teeth. Cymes 3-4-flowered; flowers with long peduncles (probably pedicels are intended). Sepals obovate-lanceolate, acute. Corolla blackish-purple and spotted; lobes stellately spreading. Outer corona subentire, angulate.

**Nile Land.** Crulli Island, in the Red Sea, *Terracciano*, 22, iii.

I have not seen this plant. From the description it is impossible to be certain if it belongs to the genus *Huernia*, and I am much inclined to believe that it will prove to be a species of *Caralluma*.

55. **HUERNIOPSIS**, N. E. Br. in *Journ. Linn. Soc.* xvii. 171.

Calyx 5-partite. Corolla campanulate, 5-lobed; lobes valvate in bud. Corona of 5 simple stout lobes arising from the staminal-column and adnate to it for half their length, opposite to the anthers and connivent over them; no outer corona. Anthers slightly ascending, not appendaged. Pollen-masses solitary in each anther-cell, slightly ascending, pellucid along the inner margin, attached in pairs by short caudicles to the oblong lateral processes of the pollen-carriers.—A dwarf succulent perennial. Stems short, decumbent, 4-angled, toothed along the angles. Flowers of moderate size, produced near the middle or towards the top of the young stems.

A monotypic genus, also found in South Africa.

1. **H. decipiens**, N. E. Br. in *Journ. Linn. Soc.* xvii. 171, t. 12, figs. 9-13. Plant tufted. Stems 1-3 in. long, 4-6 lin. thick, exclusive of the teeth, decumbent, often somewhat clavate, 4-angled, toothed along the angles, glabrous, grey-green mottled with darker green or with purplish; teeth at the angles shortly conical, tipped with a horizontally spreading subulate leaf-rudiment 1-1½ lin. long, having a minute tooth on each side at the base. Cymes sessile near the middle or towards the top of the young branches, 2-4-flowered; pedicels 1-2 lin. long, stout, glabrous. Sepals 3-3½ lin. long, 1 lin. broad, lanceolate, very acuminate, glabrous. Corolla about 1 in. in diam., outside pale greyish-green, spotted and streaked with purplish, glabrous; inside brownish-red or rich brownish-crimson, more or less mottled with yellow, varying in intensity of colour, even in flowers of the same cyme, glabrous, fringed at the base of the lobes with vibratile clavate purple hairs; tube 4-4½ lin. long, 5 lin. in diam. outside, campanulate; lobes 4-4½ lin. long, 3 lin. broad at the base, deltoid, very acuminate, varying from ascending to recurved. Coronal-lobes 3 lin. long, 1 lin. broad at the base, arising ½-⅔ lin. above the base of the staminal-

column, very stout and solid, somewhat square in cross-section in the lower part, with slightly concave sides and acute angles, erect, shortly produced and connivent at the apex over the staminal-column, purplish on the back and at the apex, yellowish-green on the sides below the middle. Staminal-column  $2\frac{1}{2}$  lin. long; anthers oblong, obtuse. Apex of the style truncate, not exceeding the anthers.—K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 277.

**Lower Guinea.** German South-west Africa: near Windhoek, cultivated specimens, *Dinter!*

Also in South Africa.

The flowers of this plant, so far as I have observed, remain open for about 40 hours, they usually open towards the latter part of the afternoon and emit their rather nauseous odour most strongly during the evening, the next morning it can scarcely be detected even close to the flower, so that the flower is probably fertilised by a late-flying insect. The coronal-lobes copiously secrete a sweet fluid on their backs and sides. In habit the plant has much resemblance to *Duvalia polita*, N. E. Br., and *Stapelia atrosanguinea*, N. E. Br.

#### 56. STAPELIA, Linn.; Benth. et Hook. f. Gen. Pl. ii. 784.

Calyx 5-partite. Corolla rotate or broadly cup-shaped or with a short broadly campanulate tube, sometimes with a raised rim on the disk around the corona, 5-lobed; lobes valvate in bud. Corona double, arising from the staminal-column; outer corona of 5 lobes free to their base; inner corona of 5 simple, or bifid, or two-horned, or broadly winged lobes. Staminal-column arising from the bottom of the corolla; anthers ascending or inflexed on the top of the style. Pollen-masses subhorizontal or somewhat ascending, pellucid along the upper part of the inner margin, solitary in each anther-cell, attached in pairs to the pollen-carriers by short stout caudicles; pollen-carriers with a wing-like expansion on each side, blackish or dark brown. Follicles narrowly fusiform, smooth. Seeds crowned with a tuft of hairs.—Dwarf, succulent herbs, branching from the base. Stems 4–5-angled, thick and fleshy, toothed along the angles; teeth tipped with very small or rudimentary leaves. Flowers in few- or many-flowered cymes arising from near the base of the young shoots or arranged along the grooves between the angles, pedicellate, large or of moderate size.

Species numerous, all South African except the following.

See note under *Caralluma* concerning generic distinction, &c.

Corolla-lobes 4–5 $\frac{1}{2}$  in. long, hairy on the inner face . . . 1. *S. gigantea*.

Corolla-lobes about 1 in. long in the dried state,  
ciliate with clavate hairs, otherwise glabrous.  
(See also *Caralluma lateritia*, *C. caudata*, and *C.*  
*valida*) . . . . . 2. *S. vaga*.

Corolla-lobes  $\frac{9}{5}$ – $\frac{9}{3}$  in. long, not ciliate with clavate  
hairs, finely pubescent outside and on the apical  
part within . . . . . 3. *S. kwebensis*.

1. **S. gigantea**, *N. E. Br. in Gard. Chron.* 1877, vii. 684 and 693, fig. 112. Stems 4–8 in. high, 1–1 $\frac{1}{4}$  in. thick, erect, shortly decumbent at the base and there branching, somewhat clavate, 4-angled, pubescent, green; angles compressed, toothed. Leaves 1–1 $\frac{1}{2}$  lin. long, erect, acute, pubescent. Cymes near the base of the young stems, few-flowered; pedicels 1–2 in. long, stout, becoming  $\frac{1}{2}$  in. thick when in fruit, pubescent. Sepals 5–6 lin. long, linear-lanceolate, acute or acuminate. Corolla pentagonal and very acuminate in bud, 9–12 in. in diam. when expanded, rotate, nearly flat on the disk, 5-lobed to  $\frac{3}{4}$  the way down, pubescent on the back, rugose on the face, pale yellow, suffused with reddish-purple around the corona, everywhere marked with irregular pale reddish-purple transverse lines, and covered with erect fine pale purple hairs; lobes 4–5 $\frac{1}{2}$  in. long, 1 $\frac{3}{4}$ –2 $\frac{1}{4}$  in. broad, ovate-lanceolate, very acuminate, widely spreading, with recurved margins. Outer coronal-lobes spreading, 2 $\frac{3}{4}$ –3 lin. long, broadly linear-oblong, slightly widened upwards, subtruncate, with a short middle tooth or obscurely 3-toothed, dark purple-brown, glabrous; inner coronal-lobes 2-horned, dark purple-brown, glabrous; outer horn wing-like, 2 $\frac{1}{2}$  lin. long, 1 $\frac{1}{2}$  lin. broad, suberect, deltoid-lanceolate, obtuse, entire; inner horn 2 $\frac{1}{2}$  lin. long, triquetrous-subulate, erect. Follicles about 6 in. long,  $\frac{3}{4}$  in. thick, erect, very slightly diverging, subcylindric, obtusely pointed, pubescent.—*Gard. Chron.* 1888, iv. 728, fig. 101; *Bot. Mag.* t. 7068; *Journ. Hort.* 1890, xxi. 349 and 359, fig. 41; *Gard. & For.* viii. 515; *Cactus Journ.* i. 23.

**Lower Guinea.** Damaraland: Walfish Bay, cultivated specimens, *MacOwan & Bolus Herb. Norm. Aust.-Afr.*, 921!

**Mozamb. Dist.** British Central Africa: Nyasaland; Namasi, *Cameron*, 1!

Also in South Africa:

2. **S. vaga**, *N. E. Br. in Kew Bulletin*, 1895, 265. Stems not seen. Pedicels 1 $\frac{1}{2}$ –2 in. long, glabrous, moderately stout. Sepals 3 $\frac{1}{2}$  lin. long, ovate-lanceolate, acuminate, glabrous. Corolla star-like, 2 $\frac{1}{2}$  in. in diam. or more? apparently dark purple-brown; lobes about 1 in. long in the dried state, about 5 lin. broad, oblong-lanceolate, shortly acuminate, rugulose on the face, ciliate with long clavate vibratile purple hairs, otherwise glabrous. Outer coronal-lobes 1 $\frac{1}{2}$ –1 $\frac{3}{4}$  lin. long, oblong, 4-toothed at the apex; two outer teeth a little lower down than the inner two; inner coronal-lobes two-horned; inner horn 1 $\frac{1}{2}$  lin. long, erect, subulate, recurving at the apex; outer horn similar, but much shorter.

**Lower Guinea.** German South-west Africa: Amboland; Olukonda, *Schinz!*

3. **S. kwebensis**, *N. E. Br.* Plant about 6 in. high, branching at the base. Stems about  $\frac{1}{2}$  in. thick, 4-angled, puberulous; angles shortly toothed. Leaves 1 $\frac{1}{2}$ –2 $\frac{1}{2}$  lin. long,  $\frac{2}{3}$  lin. broad, subulate-lanceolate, acute, erect, puberulous. Cymes from near the base of the younger stems, subsessile, few-flowered; bracts 1 $\frac{1}{2}$  lin. long, lanceolate, acute, puberulous; pedicels 1–1 $\frac{1}{2}$  lin. long, shortly pubescent. Sepals 2 $\frac{1}{2}$  lin. long,  $\frac{3}{4}$ –1 lin. broad, lanceolate, acuminate, shortly pubescent.

Corolla 1-1½ in. in diam., pubescent on the outside and on the apical half of the lobes within, "chocolate-coloured" (*Capt. Lugard*), maroon to ochre (*Mrs. Lugard*); tube rather small, 1½ lin. long, and about 3 lin. in diam.; limb rotate, 5-lobed to  $\frac{4}{5}$  the way down; lobes 5-7 lin. long, 3½-5 lin. broad, ovate, acuminate, transversely rugose, glabrous on the basal half within. Outer coronal-lobes arising  $\frac{1}{2}$  lin. above the base of the staminal-column,  $\frac{1}{3}$  lin. long,  $\frac{3}{4}$  lin. broad, transversely oblong, very obtuse, entire; inner coronal-lobes  $\frac{1}{2}$  lin. long, oblong, acute, incumbent on the backs of the anthers.

**Mozamb. Dist.** British Central Africa: Ngamiland; Kwebe, *Lugard*, 112! Kwebe Hills, 3200 ft., *Mrs. Lugard*, 29!

57. **DUVALIA**, Haw.; Benth. et Hook. f. Gen. Pl. ii. 784.

Calyx 5-partite. Corolla rotate-stellate, deeply 5-lobed; disk raised and forming a ring or spurious tube (often more or less distinctly pentagonal) around the staminal-column; lobes more or less folded lengthwise and often into narrow vertical plates (replicate), usually horizontally spreading, valvate in bud. Corona double, arising from the top of the staminal-column; outer corona in one piece, disk-like, pentagonal, resting on the rim of the raised disk of the corolla and closing the tube formed by it; inner corona of 5 fleshy ovoid lobes, incumbent on the backs of the anthers, with a short dorsal projection, which is more or less curved upwards. Staminal-column arising from the bottom of the corolla; anthers incumbent on the top of the style. Pollen-masses solitary in each anther-cell, horizontal, attached in pairs by short caudicles to lateral expansions of the pollen-carriers. Style not exceeding the anthers, flat and pentagonal at the apex. Follicles narrowly fusiform, acuminate, smooth. Seeds crowned with a tuft of hairs.—Dwarf succulent perennials of tufted habit. Stems thick and fleshy, decumbent or erect, 4-6-angled; angles toothed; teeth terminating in small acute or subulate leaf-rudiments, which are deciduous or persist and wither, and usually have a minute tooth (rudimentary stipule) on each side at their base. Flowers of moderate size, in sessile or subsessile cymes at the middle or base of the young shoots.

Species several, mostly natives of South Africa, 1 in Arabia.

Corolla-lobes ciliate with long clavate hairs at the base . . . . .

1. *D. dentata*.

Corolla-lobes not ciliate . . . . .

2. *D. transvaalensis*.

1. **D. dentata**, *N. E. Br. in Kew Bulletin*, 1895, 265. Stems branching at the base, 3-3½ in. high, 6-angled, glabrous; angles with subulate pointed teeth 3-4 lin. long; apical half of each tooth deciduous (being really a rudimentary leaf having a minute lateral tooth on each side), leaving a prominent conical tubercle. Cymes subsessile, from below the middle or near the base of the young shoots, few-flowered; pedicels  $\frac{2}{3}$ -1 lin. long, glabrous. Sepals  $\frac{1}{4}$  in. long, lanceolate-attenuate, glabrous. Corolla about 1¼ in. in diam., rotate; disk raised, pentagonal,

puberulous ; lobes 6-7 lin. long, 4 lin. broad, elongate-deltoid, very acuminate, replicate, glabrous, ciliate with vibratile clavate purple hairs at the base. Outer corona a subpentagonal flat rim, resting on the elevated disk of the corolla, glabrous ; inner coronal-lobes ovate, acute (probably thick and fleshy in the living state), with a dorsal obtuse projection.

**Lower Guinea.** German South-west Africa : Damaraland, *Een!*

**Mozamb. Dist.** British Central Africa: Ngamiland! 30 miles N.W. of Kobis, *Baines!*

2. **D. transvaalensis**, *Schlechter in Engl. Jahrb. xx. Beibl. 51, 54.* Stems attaining  $2\frac{1}{2}$  in. in height, about 5 lin. thick, erect, 6-angular, glabrous; angles with spreading fleshy spines. Cymes few-flowered, arising near the base of the young shoots; pedicels  $\frac{3}{4}$  in. long, glabrous. Sepals 3 lin. long, linear-lanceolate, very acute, glabrous. Corolla-lobes  $\frac{1}{2}$  in. long, erect, ovate-triangular, acuminate, glabrous on both sides. Outer corona disk-like; inner coronal-lobes rhomboidal.

**Mozamb. Dist.** Transvaal : sandy places near Klipdam, 4600 ft., *Schlechter*, 4198.

This locality is about ten miles south of the Tropic, but the plant will probably be found in the tropical part also, and is therefore included. I have not seen a specimen.

ORDER LXXXVI. LOGANIACEÆ. (By J. G. Baker.)

Flowers usually regular and hermaphrodite. Calyx inferior; tube short; lobes usually 4-5. Corolla gamopetalous; tube various in shape; lobes usually 4 or 5, numerous in *Anthocleista*, imbricate or valvate. Stamens usually as many as the corolla-lobes, reduced to 1 in *Usteria*; filaments short; anther-cells parallel except in *Nuxia*. Ovary superior, usually 2-celled; style simple or once or twice forked; ovules one or many in a cell. Fruit capsular or indehiscent. Seeds various in form, albuminous; embryo usually straight; cotyledons broad or narrow; radicle usually inferior.—Herbs, trees, or shrubs. Leaves opposite, entire; stipules present or reduced to a transverse line upon the branchlet. Inflorescence usually a 2-3-chotomous cyme. Flowers various in size and colour.

Species 400, mostly tropical, several south temperate.

- |   |                  |
|---|------------------|
| Style twice forked . . . . .            | 1. MOSTUEA.      |
| Style simple. Ovules many in a cell.    |                  |
| Fruit capsular.                         |                  |
| Stamens 4-5.                            |                  |
| Anther-cells parallel.                  |                  |
| Inflorescence racemose . . . . .        | 2. GOMPHOSTIGMA. |
| Inflorescence cymose . . . . .          | 4. BUDDLEIA.     |
| Anther-cells divaricate . . . . .       | 3. NUXIA.        |
| Stamen 1 . . . . .                      | 5. USTERIA.      |
| Fruit indehiscent.                      |                  |
| Corolla-lobes 4-5 . . . . .             | 6. STRYCHNOS.    |
| Corolla-lobes 10-15 . . . . .           | 7. ANTHOCLEISTA. |
| Style forked. Ovules solitary . . . . . | 8. GERTNERA.     |

1. **MOSTUEA**, Didr.; Benth. et Hook. f. Gen. Pl. ii. 789.

Calyx small; teeth usually 5, longer or shorter than the campanulate tube. Corolla-tube infundibuliform; lobes usually 5, orbicular, imbricate. Stamens 5, rarely 4, inserted low down in the corolla-tube; filaments filiform; anthers oblong, cells parallel. Ovary globose, 2-celled; style subulate, twice branched; forks recurved, stigmatose on the inner sides; ovules 2 in a cell, collateral, erect. Capsule flattened so as to have a narrow septum, deeply emarginate, dehiscing septically. Seeds 1-2 in a cell, lenticular; albumen fleshy; embryo short, straight.—Small much-branched shrubs. Leaves opposite, entire; stipules small. Cymes few-flowered, shortly-peduncled, axillary or terminal, enveloped in § *Coinochlamys* in a pair of large foliaceous bracts. Corolla white or yellowish.—*Coinochlamys*, T. Anders. ex Benth. et Hook. f. Gen. Pl. ii. 1091.

Three other species, two in Madagascar and one in Surinam.

\***EMOSTUEA**. Bracts small.

- Calyx-lobes obsolete. . . . . 1. *M. microphylla*.  
 Calyx-lobes short, equal, ovate.  
 Leaves obovate.  
 Corolla  $\frac{1}{3}$ – $\frac{1}{2}$  in. long . . . . . 2. *M. penduliflora*.  
 Corolla  $\frac{1}{4}$  in. long . . . . . 3. *M. Brunonis*.  
 Leaves ovate, obtuse . . . . . 4. *M. Thomsoni*.  
 Leaves oblong, acuminate.  
 Cymes few-flowered . . . . . 5. *M. Buchholzii*.  
 Cymes many-flowered . . . . . 6. *M. Lujæi*.  
 Calyx-lobes short, unequal, ovate or lanceolate.  
 Branchlets pubescent . . . . . 7. *M. ulugurensis*.  
 Branchlets densely clothed with thick yellowish hairs . . . . . 8. *M. erythrophylla*.  
 Calyx-lobes long, lanceolate.  
 Calyx hispid,  $\frac{1}{6}$  in. long.  
 Corolla-lobes oblanceolate . . . . . 9. *M. Batesii*.  
 Corolla-lobes as broad as long.  
 Calyx-lobes deltoid, acute,  $\frac{3}{4}$  lin. long . . . . . 10. *M. Zenkeri*.  
 Calyx-lobes lanceolate, acuminate, 1 lin. long . . . . . 11. *M. Walleri*.  
 Calyx pubescent,  $\frac{1}{4}$  in. long . . . . . 12. *M. grandiflora*.  
 Calyx glabrous,  $\frac{1}{2}$  in. long.  
 Pedicels short.  
 Leaves oblong, very obtuse . . . . . 13. *M. fuchsiazifolia*.  
 Leaves ovate-oblong . . . . . 14. *M. schumanniana*.  
 Pedicels long . . . . . 15. *M. rubrinervis*.  
 Calyx-lobes long, linear-lanceolate . . . . . 16. *M. Dinklagei*.  
 Calyx-lobes long, linear-setaceous.  
 Leaves oblong or oblong-lanceolate . . . . . 17. *M. neurocarpa*.  
 Leaves ovate-oblong . . . . . 18. *M. densiflora*.  
 Leaves small, obovate-oblong . . . . . 19. *M. Camporum*.

\*\***COINOCHLAMYS**. Bracts large, enclosing the cymes.

- Calyx-lobes suborbicular . . . . . 20. *M. congolana*.  
 Calyx-lobes ovate . . . . . 21. *M. hirsuta*.  
 Calyx-lobes lanceolate, equal.

Leaves small, strongly ciliate. . . . .	22. <i>M. gabonica</i> .
Leaves large, not ciliate.	
Corolla $\frac{1}{2}$ in. long . . . . .	23. <i>M. Schweinfurthii</i> .
Corolla $\frac{3}{4}$ in. long . . . . .	24. <i>M. angolana</i> .
Calyx-lobes linear, very unequal . . . . .	25. <i>M. poggeana</i> .

1. **M. microphylla**, *Gilg in Engl. Pfl. Ost-Afr. C.* 310. A shrub; young branchlets pubescent. Leaves ovate or ovate-oblong, subacute, petioled, chartaceous, glabrous,  $\frac{1}{2}$  in. long. Cymes 4-7-flowered, terminal; pedicels  $\frac{1}{6}$ - $\frac{1}{5}$  in. long. Calyx campanulate, glabrous,  $\frac{1}{12}$  in. long; lobes acute. Corolla  $\frac{3}{8}$  in. long.

**Mozamb. Dist.** German East Africa: Usaramo; Kiserawe (Kiserawa), 1000 ft., *Stuhlmann*, 6172.

2. **M. penduliflora**, *Gilg in Engl. Jahrb.* xxiii. 198. A shrub; young branchlets hispid. Leaves obovate,  $\frac{1}{2}$ -1 in. long, rounded at the base, narrowed to a petiole  $\frac{1}{12}$ - $\frac{1}{8}$  in. long, membranous, glabrous, opaque. Flowers solitary, axillary, pendulous; pedicels slender, 1 in. or more long. Calyx-segments nearly free, equal, ovate, acute, slightly hispid. Corolla white,  $\frac{1}{3}$ - $\frac{1}{2}$  in. long; lobes broadly ovate. Stamens subequal, nearly as long as the corolla. Capsule pendulous or sub-erect.

**South Central.** Congo Free State: Lunda; in forest by the Lulua River, *Pogge*, 886, 1129.

3. **M. Brunonis**, *Dirr. in Vidensk. Meddel. Nat. Foren. Kjob.* 1853, 87. A shrub; branchlets smooth with very short internodes. Leaves very shortly petioled, obovate, rarely ovate, 1 in. long,  $\frac{1}{2}$  in. broad, narrowly revolute at the edges, pubescent only on the midrib above and principal veins beneath. Peduncle slender; pedicels and flowers glabrous. Calyx  $\frac{1}{10}$  in. long; lobes ovate. Corolla  $\frac{1}{4}$  in. long; lobes orbicular,  $\frac{1}{4}$  the length of the tube. Pericarp parchment-like, brown, subpuberulous. Seeds brown, opaque; testa fragile.

**Lower Guinea.** Lower Congo, *Smith*. Tondoa, *Büttner*, 400, 401.

**Mozamb. Dist.** British Central Africa: Nyasaland; Mount Mlanji, *Whyte*. This species is the type of the genus.

4. **M. Thomsoni**, *Benth. in Hook. Ic. Pl. sub t.* 1196. A shrub; branchlets slender, obscurely pubescent. Leaves ovate, obtuse, about 1 in. long, cuneate at the base, glabrous; petiole very short; stipules very small. Cymes axillary, few-flowered, shortly peduncled; pedicels very short; bracts minute. Calyx  $\frac{1}{12}$  in. long; lobes ovate, acute, as long as the tube. Corolla  $\frac{1}{4}$ - $\frac{1}{3}$  in. long; lobes orbicular. Capsule with two divaricate oblong lobes.—*Leptocladus Thomsoni*, *Oliver in Journ. Linn. Soc.* viii. 160, t. 12, fig. 3.

**Upper Guinea.** Southern Nigeria: Old Calabar, *Thomson*, 44!

5. **M. Buchholzii**, *Engl. in Engl. Jahrb.* vii. 339. A shrub 4-5 ft. high; branchlets very slender, slightly hairy. Leaves oblong,

acuminate, membranous, glabrous, 2-4 in. long, 1-1½ in. broad at the middle, narrowed into a short petiole; stipules very small. Cymes few-flowered, terminal and axillary, shortly peduncled; pedicels short, thickened; bracts minute. Calyx glabrous, ½ lin. long; lobes ovate, acute, as long as the tube. Corolla ¼ in. long; lobes orbicular. Capsule with two oblong divaricate obtuse lobes ⅓ in. long.

**Upper Guinea.** Cameroons: Bipinde, *Zenker*, 849!

**Lower Guinea.** Gaboon: banks of the Gaboon River, *Mann*, 970! Mount John on the River Kongue, *Mann*, 1777!

6. **M. Lujæi**, *De Wild. & Durand in Comptes-rendus Soc. Bot. Belg.* xxxix. 67. A shrub, 3-4 ft. high; young branches pubescent; nodes swollen. Leaves shortly petioled, elliptical, 3-4 in. long, acute, narrowed to the base, glabrous on both surfaces; stipules deltoid, ⅓ in. long. Cymes axillary, many-flowered, shortly peduncled; bracts ciliate; pedicels ⅓ in. long. Calyx-teeth ovate-triangular, ⅓ in. long, slightly pilose, ciliate on the margin. Corolla-tube gradually widened to the throat, ¼ in. long; lobes semi-orbicular, ⅓ in. long. Stamens 5, as long as the corolla-tube; filaments pilose.

**Lower Guinea.** Lower Congo: Sabuka, near Stanley Pool, *Luja*.

7. **M. ulugurensis**, *Gilg in Engl. Jahrb.* xxiii. 198. A very dense shrub, 2-3 ft. high; young branchlets pubescent. Leaves ovate, acute, ½-1 in. long, narrowed to a very short petiole, membranous, glabrous above, slightly pubescent on the ribs beneath. Flowers 2-4 in terminal cymes; pedicels very short. Calyx-lobes very unequal, ovate-deltoid or lanceolate, pilose, ⅓-⅓ the length of the corolla. Corolla ⅓ in. long; tube funnel-shaped; lobes suborbicular. Stamens equal, ⅓ the length of the corolla-tube.

**Mozamb. Dist.** German East Africa: Usagara; at Nglewenu in the Uluguru Mountains, 4900 ft., *Stuhlmann*, 8865.

8. **M. erythrophylla**, *Gilg in Engl. Jahrb.* xxviii. 117. A shrub; young branches densely clothed with thick yellowish hairs. Leaves shortly petioled, ovate, 1 in. long, obtuse, subcuneate at the base, glabrous, opaque, purplish when dried. Cymes lax, terminal, 3-7-flowered; peduncle and pedicels slightly pilose, the latter ⅓ in. long. Calyx-lobes free, ovate-lanceolate, very acute, ⅓ in. long. Corolla 4 times the length of the calyx; tube obconic; lobes roundish. Stamens 5, subequal, half the length of the corolla-tube.

**Mozamb. Dist.** German East Africa: east side of Lake Tanganyika, *Trotha*, 10.

9. **M. Batesii**, *Baker*. A low erect much-branched shrub; branchlets slender, densely clothed with firm white hairs. Leaves shortly petioled, oblong, 1-2 in. long, acute, rounded at the base, membranous, clothed with long hairs on both surfaces. Cymes few-flowered, dense, axillary; bracts lanceolate. Calyx ⅓ in. long; lobes long, lanceolate, densely clothed with long white hairs. Corolla white (*Bates*), ⅓ in. long;

lobes oblanceolate, obtuse. Filaments pubescent, more than half as long as the corolla; anthers small. Fruit not seen.

**Upper Guinea.** Cameroons: Efulen, *Bates*, 352!

10. **M. Zenkeri**, *Gilg in Notizbl. Königl. Bot. Gart. Berlin*, i. 73. A shrub; young branchlets pubescent. Leaves ovate or ovate-oblong, obtuse, narrowed to a short petiole, 1-2 in. long, glabrous above when mature, pilose on the ribs beneath. Cymes terminal and axillary, 3-6-flowered; peduncle and pedicels short. Calyx  $\frac{1}{10}$  in. long, 5-partite; lobes deltoid, acute,  $\frac{3}{4}$  lin. long. Corolla under  $\frac{1}{2}$  in. long; tube funnel-shaped; lobes  $\frac{1}{8}$ - $\frac{1}{6}$  in. long. Stamens equal, more than half as long as the corolla.

**Lower Guinea.** Cameroons: Yaunde, *Zenker*, 211!

*Gilg* describes the total length of the calyx as 2.5 mm., of which the lobes occupy  $\frac{3}{4}$  mm., but in a specimen received from Berlin the calyx is divided nearly to the base. When more material is accessible, this and *M. Walleri*, *Baker*, may have to be united.

11. **M. Walleri**, *Baker in Kew Bulletin*, 1895, 96. A much-branched shrub; branchlets slender, densely pubescent. Leaves oblong, obtuse or subacute, cuneate at the base, at most 1 in. long, hispid on the ribs beneath; petiole very short; stipules small, ovate, acute. Cymes mostly terminal, 2-3-flowered; pedicels hispid, longer than the calyx; bracts minute. Calyx hispid,  $\frac{1}{6}$  in. long; lobes lanceolate, acuminate, 1 lin. long, much longer than the tube. Corolla pure white,  $\frac{1}{3}$  in. long; tube broadly funnel-shaped; lobes  $\frac{1}{6}$  in. long and broad. Capsule not seen.

**Mozamb. Dist.** Portuguese East Africa: summit of Morambala Mountain, 3000 ft., *Waller!*

12. **M. grandiflora**, *Gilg in Engl. Pfl. Ost-Afr. C.* 310. A shrub; young branchlets clothed with brown hairs. Leaves ovate or oblong, rounded at apex, narrowed to a short petiole,  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, glabrous above, slightly hairy on the ribs beneath. Flowers solitary at the end of the branchlets. Calyx pubescent,  $\frac{1}{4}$  in. long; lobes lanceolate, acuminate. Corolla  $\frac{3}{4}$  in. long. Stamens subequal.

**Mozamb. Dist.** German East Africa: Usambara; Lutindi, 4000-5000 ft., *Holst*, 3430!

13. **M. fuchsiaefolia**, *Baker in Kew Bulletin*, 1895, 96. A shrub 1 $\frac{1}{2}$ -2 ft. high; branchlets very slender, finely pubescent. Leaves oblong, membranous, obtuse, slightly pubescent beneath, cuneate at the base, 1-2 in. long; petiole very short; stipules deltoid. Cymes axillary or terminal, few-flowered; peduncles very short; pedicels longer than the calyx; bracts minute. Calyx  $\frac{1}{12}$  in. long; lobes very acute, much longer than the very short tube. Corolla pure white,  $\frac{1}{2}$  in. long; lobes  $\frac{1}{6}$  in. long and broad. Capsule with two suborbicular divaricate lobes  $\frac{1}{4}$  in. long.—*Hiern in Cat. Afr. Pl. Welw.* i. 699.

**Lower Guinea.** Angola: Pungo Andongo; in thickets near Mata de Cabondo, *Welwitsch*, 4759! Quiballa to Bembe, *Monteiro*! 80 miles inland from Ambriz, *Monteiro*!

14. **M. schumanniana**, *Gilg in Engl. Jahrb.* xvii. 560. A much-branched shrub; branchlets slender, glabrous, with the crowded stipules of the old leaves persistent. Leaves ovate or ovate-oblong, glabrous, 1-2 in. long, narrowed to an obtuse point; petiole very short; stipules small, broad ovate, acute. Cymes dense, few-flowered, axillary and terminal; peduncle very short; pedicels at most twice as long as the calyx; bracts minute. Calyx  $\frac{1}{12}$  in. long, glabrous; lobes very acute, much longer than the very short tube. Corolla  $\frac{1}{2}$  in. long; tube widening gradually up to the throat; lobes  $\frac{1}{8}$ - $\frac{1}{6}$  in. long and broad. Capsule not seen.

**Lower Guinea.** Lower Congo: in forest clearings near Mayombe, *Soyaux*, 136!

15. **M. rubrinervis**, *Engl. Jahrb.* vii. 340 (*rubinervis* by error). A small shrub; branchlets slender, glabrous, brown. Leaves ovate-oblong or oblong, narrowed to an obtuse point with a minute mucro, 1-2 $\frac{1}{2}$  in. long, membranous, glabrous; petiole short; stipules ovate, obtuse. Cymes copious, axillary, few-flowered; pedicels much longer than the calyx; bracts minute. Calyx glabrous,  $\frac{1}{12}$  in. long; lobes 5, ovate, acute, longer than the very short tube. Corolla  $\frac{1}{3}$  in. long; tube broadly funnel-shaped; lobes 5,  $\frac{1}{6}$  in. long and broad. Capsule not seen.—*M. orientalis*, Baker in Kew Bulletin, 1895, 96.

**Nile Land.** British East Africa: Mombasa, *Wakefield*!

16. **M. Dinklagei**, *Gilg in Engl. Jahrb.* xxviii. 116. A shrub; young branches densely pilose, blackish or grey. Leaves very shortly petioled, lanceolate or narrowly rhomboid-lanceolate, 1 $\frac{1}{2}$ -2 in. long, quite glabrous, opaque. Cymes 1-7-flowered, lax, terminal, shortly peduncled; pedicels very short, densely pubescent. Calyx pubescent,  $\frac{1}{2}$  in. long; lobes free, linear-lanceolate. Corolla  $\frac{1}{3}$  in. long; tube obconic; lobes round. Stamens 5, short. Capsule  $\frac{1}{4}$  in. long, half as broad again.

**Upper Guinea.** Cameroons: Ebei Falls, *Dinklage*, 180.

17. **M. neurocarpa**, *Gilg in Engl. Jahrb.* xxviii. 116. A low shrub; young branches densely pilose. Leaves shortly petioled, oblong or oblong-lanceolate, 2 $\frac{1}{2}$ -4 in. long, glabrous, opaque. Cymes axillary, sessile, 1-3-flowered; pedicels glabrous. Calyx-lobes 5, linear-setaceous. Corolla unknown. Capsule  $\frac{1}{5}$  in. long, prominently ribbed.

**Upper Guinea.** Cameroons: in forest near Batanga, *Dinklage*, 1462.

18. **M. densiflora**, *Gilg in Engl. Jahrb.* xxiii. 198. A shrub or small tree; branchlets much thickened with papillæ or short hairs. Leaves ovate-oblong, 1 $\frac{1}{2}$ -2 in. long, subacute or rounded at the apex, narrowed gradually to a very short petiole, membranous, glabrous,

opaque. Flowers 6-9 in dense subcapitate terminal cymes. Calyx 5-partite,  $\frac{1}{6}$  in. long; lobes linear-setaceous, papillose. Corolla 2-3 times the length of the calyx; tube funnel-shaped; lobes suborbicular. Stamens 5, subequal.

**Lower Guinea.** Lower Congo: in forest at Mayombe, *Laurent*; Bingila, *Dupuis*.

19. **M. Camporum**, *Gilg in Engl. Jahrb.* xxviii. 117. A shrub, 1-2 ft. high; young branches clothed with thick hairs. Leaves sessile, obovate-oblong, under 1 in. long, acute, cuneate at the base, glabrous, opaque. Flowers axillary or terminal, solitary, pedicel short, glabrous. Calyx-lobes free, linear-setaceous,  $\frac{1}{3}$  in. long, glabrous or ciliate. Corolla 5 times the length of the calyx; tube narrowly obconic; lobes ovate, acute. Stamens twice as long as the calyx. Style twice as long as the stamens, thickened upwards.

**Mozamb. Dist.** German East Africa: Usagara; at the northern edge of the Khutu Steppe near Mgunda, 1000 ft., *Goetze*, 379!

20. **M. congolana**, *Baker*. A shrub; young branchlets pubescent, older glabrous. Leaves sessile, ovate or ovate-oblong,  $1\frac{1}{2}$ -2 in. long, shortly acuminate, rounded at the base, subchartaceous, at first densely clothed on both sides with yellowish pubescence. Peduncle  $\frac{1}{3}$ - $\frac{1}{2}$  in. long, often furnished with a pair of bracteoles. Flowers 2-4 in a cluster; involucre bracts broadly ovate, with pilose margins. Calyx-segments nearly free,  $\frac{1}{2}$  in. long, acute, densely pilose. Corolla  $\frac{3}{4}$  in. long,  $\frac{1}{3}$ - $\frac{1}{2}$  in. in diam. at the throat; lobes suborbicular. Stamens very unequal, the two longest rather shorter than the tube. Style half as long as the tube.—*Coinochlamys congolana*, *Gilg in Engl. Jahrb.* xxiii. 197; *De Wild. & Durand in Bull. Soc. Bot. Belg.* xxxvii. 123, and in *Reliq. Dewevr.* 160.

**Lower Guinea.** Lower Congo: Bangala, *Hens*, C. 167.

**South Central.** Lunda: in shady places by the Luachim River, *Marques*, 247.

21. **M. hirsuta**, *Baill. in Bull. Soc. Linn. Paris*, i. 244. A shrub, 1 ft. high; branchlets slender, densely hairy. Leaves ovate, hairy, sessile,  $\frac{1}{2}$ -1 in. long; stipules minute. Cymes terminal; flowers 3-5, crowded, hidden by the suborbicular hairy bracts; peduncle and pedicels very short. Calyx  $\frac{1}{2}$  in. long; tube very short; lobes ovate. Corolla  $\frac{3}{4}$  in. long; tube narrowly funnel-shaped; lobes suborbicular. Stamens 4, inserted about the middle of the corolla-tube. Ovary hairy. Fruit not seen.—*Coinochlamys hirsuta*, *T. Anders. ex Benth. et Hook. f. Gen. Pl.* ii. 1091; *S. Moore in Journ. Bot.* 1876, 321, t. 182, fig. 2.

**Upper Guinea.** Senegambia: amongst rocks at Karkandy (Kakandy?), *Heudelot*, 800 (ex *Baillon*). Sierra Leone: by the River Bagru, *Mann*, 811! *Kahreni*, *Scott-Elliot*, 5637!

22. **M. gabonica**, *Baill. in Bull. Soc. Linn. Paris*, i. 245. A much-branched shrub; bark blackish; branchlets slender. Leaves

small, ovate, acute, subsessile, reddish beneath, ciliate on the margin with rather bristly hairs. Cymes terminal, usually 4-5-flowered, hidden by the suborbicular ciliate bracts; pedicels very short. Calyx hairy; lobes 5, very unequal, very acute; tube scarcely any. Lobes of the corolla 5. Stamens 5, rather unequal. Disk scarcely visible. Ovary conic. Fruit unknown.

**Lower Guinea.** Gaboon: by the Gaboon River, *Duparquet*.

23. **M. Schweinfurthii**, *Baker*. A much-branched shrub; branchlets slender, very hairy. Leaves oblong, membranous, subsessile, glabrous, 1-2 in. long, narrowed to an obtuse or subacute point; stipules oblong, brown, scarious. Cymes terminal, few-flowered, enclosed in a pair of orbicular cuspidate membranous bracts  $\frac{1}{2}$  in. long; peduncle and pedicels very short. Calyx  $\frac{1}{3}$  in. long; lobes 5, lanceolate; tube scarcely any. Corolla white with 10 yellow streaks in the tube,  $\frac{1}{2}$  in. long. Capsule not seen.—*Coinochlamys Schweinfurthii*, Gilg in Engl. Jahrb. xvii. 560.

**Nile Land.** Nianniam: by the Linduku River, *Schweinfurth*, 3181! by the Nabambisso River, *Schweinfurth*, 3030!

24. **M. angolana**, *Hiern in Cat. Afr. Pl. Welw.* i. 700. A much-branched shrub; branchlets very slender, pubescent. Leaves ovate or oblong, 1-2 $\frac{1}{2}$  in. long, obtuse or subacute, membranous, slightly hairy beneath, nearly sessile; stipules small, suborbicular, hairy. Cymes terminal, 4-5-flowered; peduncle and pedicels very short; bracts pale green, hairy, orbicular-cuspidate,  $\frac{1}{2}$ - $\frac{5}{8}$  in. broad. Calyx-tube very short; lobes lanceolate, unequal. Corolla white,  $\frac{3}{4}$  in. long; tube  $\frac{1}{3}$  in. in diam. at the throat; lobes orbicular, much imbricated. Stamens 5, subequal, much shorter than the corolla-tube. Capsule with two orbicular divaricate lobes  $\frac{1}{4}$  in. long.—*Coinochlamys angolana*, S. Moore in Journ. Bot. 1876, 321, t. 182, fig. 1; 1878, 138; De Wild. & Durand in Bull. Soc. Bot. Belg. xxxvii. 123.

**Lower Guinea.** Loango: near Chinchocho, *Soyaux*, 156! Lower Congo: Bangala, 1000 ft., *Hens*, C. 169! Angola: 30 miles from Ambriz, *Monteiro*! Pungo Andongo; among shrubs along the streams of the Præsidium, near Catete and at Cabondo, *Welwitsch*, 4760!

**South Central.** Congo Free State: Stanley Falls, *Laurent*.

25. **M. poggeana**, *Baker*. Branchlets blackish or dark brown, clothed when young with long yellowish hairs. Leaves shortly petioled, ovate or ovate-oblong, acute, rounded at the base, 1 in. long, densely clothed on both sides with long yellowish hairs. Cymes terminal, 4-6-flowered; pedicels  $\frac{1}{12}$ - $\frac{1}{8}$  in. long; bracts orbicular, apiculate,  $\frac{1}{2}$  in. long and broad, densely hairy. Calyx  $\frac{1}{8}$  in. long; lobes nearly free, linear, very unequal. Corolla white, above  $\frac{1}{2}$  in. long: tube funnel-shaped. Filaments free in the upper sixth.—*Coinochlamys poggeana*, Gilg in Engl. Jahrb. xvii. 559.

**South Central.** Congo Free State: Mukenge, *Pogge*, 1254.

2. **GOMPHOSTIGMA**, Turcz.; Benth. et Hook. f. Gen. Pl. ii. 792.

Calyx-tube campanulate; lobes 4, ovate. Corolla-tube subcampanate; lobes 4, obtuse, imbricate, spreading, as long as the tube. Stamens 4, inserted in the corolla-tube; filaments short, filiform; anthers oblong, with parallel cells. Ovary ovoid, 2-celled; style subulate; stigma of two spreading oblong lobes; ovules many in a cell, attached to a narrow axile placenta. Capsule oblong, splitting down to the base into two rigid bifid valves. Seeds obovoid or angled by pressure; testa lax; albumen sparse; embryo short.—Shrubs with opposite or verticillate leaves; stipules obscure. Flowers small, in a terminal raceme which runs down into the axils of the upper leaves.

One other species in South Africa.

1. **G. scoparioides**, Turcz.; Benth. in DC. Prodr. x. 434. A much-branched erect shrub; branches long, rigid, virgate, whitened by thin tomentum. Leaves opposite, sessile, subrigid, linear, 1-nerved, ascending, lower 1–1½ in. long, upper gradually shorter. Racemes terminal, many-flowered; lower flowers produced from the axils of reduced leaves; pedicels opposite, ascending, bibracteolate. Calyx  $\frac{1}{12}$  in. long. Corolla white, twice as long as the calyx. Capsule  $\frac{1}{4}$ – $\frac{1}{3}$  in. long.—*Buddleia virgata*, Linn. fil. Suppl. 123.

**Lower Guinea.** Angola: Huilla to Humpata, *Johnston!* banks of the River Caculovar, *Newton!*

**Mozamb. Dist.** Matabeleland: banks of the Semokwe or Matengwe River, *Baines!*

Also in South Africa.

3. **NUXIA**, Lam.; Benth. et Hook. f. Gen. Pl. ii. 792.

Calyx-tube subcampanulate; lobes 4, ovate, subvalvate. Corolla-tube subcylindrical, circumscissile above the persistent base; lobes 4, imbricate, spreading, obtuse or acute. Stamens 4, inserted just below the throat of the corolla-tube; filaments filiform; anther-cells divaricate, distinct or confluent at the apex. Ovary 2-celled; style filiform; stigma small, terminal; ovules many in a cell, multiseriate. Capsule ovoid or oblong, septically 2-valved; valves bifid. Seeds numerous, minute, oblong; albumen fleshy; embryo straight.—Trees or shrubs. Leaves opposite or verticillate, entire or dentate; stipules reduced to a mere line. Flowers small, copious, arranged in terminal panicles with cymose branches.

Species about 20, also in South Africa and the Mascarene Isles.

Cymes dense, branches approximate; pedicels 0 or very short.

- |   |                            |
|---|----------------------------|
| Leaves 3 times as long as broad . . . . .     | 1. <i>N. congesta</i> .    |
| Leaves about twice as long as broad . . . . . |                            |
| Branchlets glabrous . . . . .                 | 2. <i>N. Mannii</i> .      |
| Branchlets densely pubescent . . . . .        | 3. <i>N. platyphylla</i> . |

Cymes dense, branches approximate; pedicels shorter than the calyx.

Leaves lanceolate, about 3 times as long as broad.

Calyx  $\frac{1}{10}$  in. long . . . . . 4. *N. polyantha*.

Calyx  $\frac{1}{8}$  in. long . . . . . 5. *N. dentata*.

Leaves oblong-lanceolate, about half as long as broad.

Leaves glabrous on both surfaces.

Main veins 7-10-jugate.

Leaves acute.

Calyx  $\frac{1}{2}$  in. long . . . . . 6. *N. odorata*.

Calyx  $\frac{1}{4}$  in. long . . . . . 7. *N. rupicola*.

Leaves obtuse . . . . . 8. *N. Dekindtii*.

Main veins 10-12-jugate . . . . . 9. *N. goetzeana*.

Leaves pubescent beneath . . . . . 10. *N. sambesiaca*.

Leaves more than half as broad as long . . . . . 11. *N. angolensis*.

Cymes lax, branches divaricate; pedicels as long as the calyx . . . . . 12. *N. Holstii*.

1. ***N. congesta***, *R. Br.*; *Benth. in DC. Prod.* x. 435. A shrub or small tree; branchlets glabrous or slightly pubescent, 4-angled. Leaves 2-3-nate, shortly petioled, oblanceolate-oblong, about 3 in. long by 1 in. broad, obtuse, narrowed to the base, entire or slightly repand, glabrous on both surfaces; main veins 5-6-jugate. Cymes forming a dense terminal panicle; pedicels 0 or very short. Calyx  $\frac{1}{3}$  in. long; tube subcylindrical; lobes small, ovate. Corolla-tube nearly as long as the calyx; lobes  $\frac{1}{3}$  as long as the tube. Stamens about as long as the corolla. Style often much exserted.—A Rich. Tent. Fl. Abyss. ii. 123; Engl. Hochgebirgsfl. Trop. Afr. 335. *Lachnopylis ternifolia*, A. DC. Prod. ix. 23.

**Nile Land.** Eritrea: Mount Oualid, 6900 ft., *Schweinfurth and Riva*, 1868! Abyssinia: Samen Province, *Schimper*, 1159! Ankober, Roth, 462! Shoa and Wojerat Provinces, *Petit* (ex *Richard*.)

**Mozamb. Dist.** German East Africa: Langenburg Distr., *Goetze*, 1159! 1190! British Central Africa: Nyasaland; Mount Zomba, 2500-6000 ft., *Whyte! Johnston!* Zomba Plateau, 4500 ft., *Whyte!* Blantyre, *Buchanan*, 6! and without precise locality, *Buchanan*, 497! 820!

2. ***N. Mannii***, *Gilg in Engl. Jahrb.* xxxii. 140. A tree 30-40 ft. high; branchlets brown, glabrous, 4-angled. Leaves 3-nate, distinctly petioled, oblong or oblanceolate-oblong, 3 in. long, 1-2 in. broad, entire, acute, much narrowed to the base, glabrous on both surfaces. Cymes dense; pedicels 0 or very short. Calyx glabrous,  $\frac{1}{5}$  in. long; lobes ovate. Corolla-lobes oblong,  $\frac{1}{3}$  as long as the tube. Stamens as long as the corolla-lobes.

**Upper Guinea.** Sierra Leone: Mount Gonkwi, 3000 ft.! *Scott-Elliott*, 4824! Cameroons: Cameroon Mountain, 7000-7500 ft., *Mann*, 1206!

3. ***N. platyphylla***, *Gilg in Engl. Jahrb.* xxxii. 141. A tree reaching a height of 30 ft.; branchlets densely pubescent. Leaves distinctly petioled, ternate, oblong, 2-3 in. long by half as broad, obtuse, narrowed to the base, glabrous on both surfaces; main veins

5-7-jugate. Cymes forming a dense terminal panicle; pedicels 0 or very short. Calyx  $\frac{1}{6}$  in. long; tube subcylindrical; lobes ovate, acute. Corolla-tube as long as the calyx-tube; lobes oblanceolate-oblong. Stamens reaching to the top of the corolla-lobes.

**Mozamb. Dist.** German East Africa: Kilimanjaro; Marangu, 6500 ft., *Volkens*, 1499!

4. **N. polyantha**, *Gilg in Engl. Jahrb.* xxx. 376. A shrub, 6-10 ft. high; branchlets angled, greenish. Leaves usually 3-nate, distinctly petioled, lanceolate, 2-3 in. long,  $\frac{1}{2}$ -1 in. broad, acute, distinctly denticulate, glabrous, shining on the upper surface; main veins 8-jugate. Cymes moderately dense; pedicels  $\frac{1}{2}$  lin. long. Calyx  $\frac{1}{10}$  in. long. Petals lanceolate.

**Mozamb. Dist.** German East Africa: Langenburg; Kinga (or Livingstone) Mountains, 8200 ft., *Goetze*, 988, 1282.

5. **N. dentata**, *R. Br.; Benth. in DC. Prod.* x. 435. A tree, reaching a height of 50-70 ft.; branchlets slender, glabrous. Leaves distinctly petioled, lanceolate, 3-4 in. long,  $\frac{1}{2}$ -1 in. broad, usually distinctly toothed, glabrous on both surfaces; main veins slender, 6-9-jugate. Cymes not very dense, corymbose; pedicels shorter than the calyx. Calyx glabrous,  $\frac{1}{3}$  in. long; teeth ovate. Corolla-lobes oblong,  $\frac{1}{10}$  in. long. Style exerted beyond the tip of the corolla-lobes.—*A. Rich.* Tent. Fl. Abyss. ii. 124; *Engl. Hochgebirgsfl. Trop. Afr.* 335; *Hiern* in *Cat. Afr. Pl. Welw.* i. 700. *N. oppositifolia*, *Benth. l.c. Lachnopyllis oppositifolia*, *Hochst.*; *A. DC. Prod.* ix. 23.

**Nile Land.** Eritrea: around Acnur, 6200 ft., *Schweinfurth & Riva*, 1690! Abyssinia: near Mai Zerambde, towards Jelajerame, *Schimper*, 1714! Shireh Province, *Quartin Dillon!* Begemeder, *Schimper*, 710! and without precise locality, *Roth*, 463! British East Africa: Taita; Ndi Mountain, *Hildebrandt*, 2576!

**Lower Guinea.** Angola: Mossamedes; banks of the Rivers Bero and Maiombe, *Welwitsch*, 5766! near Cavalheiros, *Welwitsch*, 5767!

**Mozamb Dist.** German East Africa: Kilimanjaro, 4500-8000 ft., *Meyer*. British Central Africa: Zambesi Valley; Highlands of Batoka, *Kirk!* Nyasaland; Magomero, *Meller!* Shibisa to Tshinmuze, 2000-4000 ft., *Kirk!* Tanganyika Plateau, 3500-4000 ft., *Whyte!* Zomba, *Purves*, 50! Rhodesia; near Odzani River, *Evelyn Cecil*, 235!

Also in Arabia.

6. **N. odorata**, *Gilg in Engl. Jahrb.* xxx. 376. A tree, 30-50 ft. high; branchlets blackish, acutely angled. Leaves 3-nate, shortly petioled, oblong-lanceolate, 2-3 in. long,  $\frac{3}{4}$ -1 $\frac{1}{2}$  in. broad, subacute, entire, glabrous and opaque on both surfaces; main veins 7-10-jugate. Cymes dense; pedicels  $\frac{1}{2}$ -1 lin. long. Calyx  $\frac{1}{3}$  in. long; teeth triangular, acute, ciliate. Petals lanceolate, acute, silky on the back. Stamens and style much exerted.

**Mozamb. Dist.** German East Africa: Langenburg; Rungwe Mountains, 8200 ft., *Goetze*, 1159.

7. **N. rupicola**, *Gilg in Engl. Jahrb.* xxxii. 142. A shrub, 6 ft. high; young branchlets glabrous or very slightly pubescent. Leaves 3-nate, distinctly petioled, oblong or oblong-lanceolate,  $1\frac{1}{2}$ – $2\frac{1}{2}$  in. long,  $\frac{2}{3}$ – $1\frac{1}{3}$  in. broad, acute, narrowed to the base, entire, glabrous on both surfaces, shining on the upper; main veins 8–10-jugate. Cymes laxly corymbose; pedicels short. Calyx  $\frac{1}{4}$  in. long; lobes broadly ovate, acute.

**Lower Guinea.** Angola: Huilla; by the River Nene, 5000–6000 ft., *Dekindt*, 204.

8. **N. Dekindtii**, *Gilg in Engl. Jahrb.* xxxii. 141. A small tree; young branchlets pubescent. Leaves ternate, distinctly petioled, obovate or obovate-oblong, 2–4 in. long, 1–2 in. broad, usually obtuse, entire, narrowed to the base, glabrous; main veins 7–10-jugate. Cymes laxly paniced; pedicels short. Calyx  $\frac{1}{3}$ – $\frac{1}{4}$  in. long; tube distinctly dilated upwards, densely dotted outside with globose hairs; lobes broadly ovate, acute.

**Lower Guinea.** Angola: Huilla; in gorges of the Muchu River, 5000–6008 ft., *Dekindt*, 205.

9. **N. goetzeana**, *Gilg in Engl. Jahrb.* xxx. 375. A tree, 50–60 ft. high; branchlets angled, brown. Leaves 3-nate, shortly petioled, obovate,  $1\frac{1}{2}$ –2 in. long,  $\frac{3}{4}$ – $1\frac{1}{3}$  in. broad, obtuse or shortly apiculate, entire, subcoriaceous, glabrous; main veins 10–12-jugate. Cymes dense; pedicels  $\frac{1}{4}$ – $\frac{1}{5}$  in. long. Calyx glabrous,  $\frac{1}{3}$ – $\frac{1}{4}$  in. long; lobes triangular, acute. Stamens and style much exerted.

**Mozamb. Dist.** German East Africa: Langenburg; Kinga Mountains, 5500 ft., *Goetze*, 1190.

10. **N. sambesina**, *Gilg in Engl. Pfl. Ost-Afr.* C. 312. A shrub or small tree; branchlets pubescent. Leaves opposite, shortly petioled, obovate, 2–3 in. long,  $1-1\frac{1}{2}$  in. broad, obtuse, entire, pubescent beneath; main veins 5–6-jugate. Cymes dense, corymbose; pedicels short. Calyx pubescent,  $\frac{1}{6}$  in. long; teeth small, ovate. Corolla white; lobes oblong,  $\frac{1}{3}$  in. long. Styles exerted beyond the tip of the corolla-lobes.

**Mozamb. Dist.** British Central Africa: Nyasaland; Mount Zomba, 4000–6000 ft., *Buchanan*, 131! *Whyte!* Zomba Plateau, 4500 ft. *Whyte!* Tuchia Plateau, 6000 ft., *Purves*, 63!

Very near the South African *N. tomentosa*, Sonder.

11. **N. angolensis**, *Gilg in Notizbl. Königl. Bot. Gart. Berlin*, 1895, 74. A shrub or small tree; branchlets glabrous, angled upwards. Leaves distinctly petioled, oblong, 2–3 in. long,  $1\frac{1}{2}$ –2 in. broad, acute, entire, much narrowed to the base, glabrous on both surfaces; main veins 6–8-jugate. Cymes dense; pedicels short. Calyx  $\frac{1}{6}$  in. long; teeth ovate. Corolla-lobes oblong,  $\frac{1}{8}$  in. long. Styles overtopping the corolla-lobes.—Hiern in *Cat. Afr. Pl. Welw.* i. 700.

**Lower Guinea.** Angola: Golungo Alto; on the drier slopes of Alto Queta and Quilombo Mountains, *Welwitsch*, 5670! 6689! by the River Luinha at

Catomba, *Welwitsch*, 5660, 4624! Pungo Andongo; by the River Tangué, *Welwitsch*, 5678!

12. **N. Holstii**, Gilg in *Engl. Pfl. Ost-Afr.* C. 312. A tree; branchlets slender, glabrous, acutely angled. Leaves distinctly petioled, lanceolate, 3-4 in. long,  $\frac{3}{4}$ -1 in. broad, acute, entire, thin, glabrous on both surfaces; main veins 10-12-jugate. Cymes lax, forming a broad panicle; pedicels as long as the calyx. Calyx funnel-shaped, glabrous,  $\frac{1}{8}$  in. long; teeth minute, ovate. Corolla-lobes  $\frac{1}{2}$  in. long.—*N. floribunda*, var. *Holstii*, Gilg in *Engl. Glied. Veg. Usambara*, 54. *N. usambarensis* and *N. Volkensii*, Gilg in *Engl. Pfl. Ost-Afr.* C. 312.

**Mozamb. Dist.** German East Africa: Usambara; Kwa Mshuza, 4500-5000 ft., *Holst*, 9070! 9138! Kilimanjaro; Kilema, 4500 ft., *Volkens*, 1686! British Central Africa: Nyasaland; between Kondowe and Karonga, 2000-6000 ft., *Whyte*, 372!

Very near the South African *N. floribunda*, Benth.

#### 4. BUDDLEIA, Linn.; Benth. et Hook. f. *Gen. Pl.* ii. 793.

Calyx campanulate, 4-lobed. Corolla-tube cylindrical or campanulate; lobes 4, short, broad, imbricate, spreading when expanded. Stamens 4, inserted at or near the throat of the corolla-tube; anthers nearly sessile, ovate or oblong; cells parallel. Ovary 2-celled; style filiform, clavate or capitate at the stigmatose tip; ovules many in a cell, multiseriate. Capsule septicidally 2-valved; valves bifid or entire. Seeds numerous, minute; testa adpressed or laxly reticulate, often expanded into a wing; albumen fleshy; embryo straight.—Trees or shrubs, usually tomentose. Leaves opposite, entire or toothed; stipules reduced to a mere line. Cymes usually forming a terminal panicle.

Species about 70; also in South Africa and the Mascarene Isles, numerous in Tropical Asia and America.

Leaves distinctly petioled, not rugose.

Panicle long and lax . . . . . 1. *B. polystachya*.

Panicle very short and dense.

Calyx-teeth orbicular . . . . . 2. *B. usambarensis*.

Calyx-teeth ovate . . . . . 3. *B. oreophila*.

Leaves subsessile, rugose . . . . . 4. *B. salvifolia*.

Leaves shortly petioled, rugose . . . . . 5. *B. aurantiaco-maculata*.

1. **B. polystachya**, *Fresen.*; *Benth. in DC. Prod.* x. 446. A shrub, 8-10 ft. high; branchlets thinly clothed with pale brown tomentum. Leaves oblong-lanceolate, acute, subcoriaceous, entire or obscurely serrate, 2-3 in. long, dull green and thinly tomentose above, densely clothed with bright brown tomentum beneath; main veins raised; petiole  $\frac{1}{4}$ - $\frac{1}{2}$  in. long. Cymes many, arranged in a long subspicate panicle with spaces between them, the lowest subtended by small leaves; pedicels 0 or very short; bracts minute, linear. Calyx  $\frac{1}{8}$  in. long, clothed with brown tomentum; tube oblong. Corolla-tube cylindrical, twice as long as the

calyx; lobes yellow, orbicular; expanded limb  $\frac{1}{6}$  in. in diam. Style not exerted from the corolla-tube.—A. Rich. Tent. Fl. Abyss. ii. 124; Schweinf. Beitr. Fl. Aethiop. 133; Engl. Hochgebirgsfl. Trop. Afr. 335. *B. rufa*, Fresen. in Flora, 1838, 606. *B. acuminata* & *B. foliata*, A. Br. in Salt, Abyss. Append. lxiii.

**Nile Land.** Eritrea: Ainsaba, *Beccari*, 69! around Acrur, 6200 ft., *Schweinfurth* and *Riva*, 779! Abyssinia: Adowa, *Steudner*, 851! *Schimper*, 1905! near Gemina, *Schimper*, 266! Ankober, *Roth*, 464! and without precise locality, *Schimper*, 171! *Plowden*! *Quartin Dillon* and *Petit*!

Also in Arabia.

*Beccari's* plant is less tomentose than the other specimens quoted.

2. ***B. usambarensis***, *Gilg* in *Engl. Pfl. Ost-Afr. C.* 313. A climbing shrub; young branchlets densely clothed with drab tomentum. Leaves shortly petioled, ovate, subacute, rounded at the base, 1–3 in. long, not rugose, green and slightly tomentose above when mature, densely coated with drab tomentum beneath. Panicles very short and dense, terminal and axillary; peduncle and pedicels short, densely tomentose. Calyx campanulate, very hairy,  $\frac{1}{6}$  in. long; teeth orbicular. Corolla-tube cylindrical, pubescent,  $\frac{1}{4}$  in. long; lobes orbicular. Stamens not exerted.

**Mozamb. Dist.** German East Africa: Usambara; Kwa Mshuza, *Holst*, 8967!

3. ***B. oreophila***, *Gilg* in *Engl. Jahrb.* xxiii. 202. A shrub, 6–9 ft. high; branchlets tetragonal, clothed when young with yellowish woolly hairs. Leaves distinctly petioled, lanceolate,  $1\frac{1}{2}$ –3 in. long,  $\frac{1}{2}$ –1 in. broad, clothed when young with cinnamon-brown hairs. Panicles short, thyrsoid, leafy to the top, terminal on short branchlets. Calyx campanulate, tomentose,  $\frac{1}{6}$  in. long; lobes ovate, acute. Corolla pubescent,  $\frac{1}{3}$ – $\frac{1}{2}$  in. long; lobes orbicular,  $\frac{1}{3}$  the length of the tube.

**Mozamb. Dist.** German East Africa: Usagara, 6000 ft., *Stuhlmann*, 9101.

4. ***B. salvifolia***, *Lam.*; *Benth.* in *DC. Prod.* x. 444. A shrub; branchlets, leaves, and calyx densely clothed with brown woolly tomentum. Leaves subsessile, thick, lanceolate, obscurely crenate, 3–4 in. long, rugose on the upper surface. Cymes crowded in a dense subspicate terminal panicle, with large leaves from the lower nodes; pedicels very short; bracts small, oblong. Calyx very small, campanulate. Corolla  $\frac{1}{4}$  in. long, hairy outside; tube cylindrical; lobes orbicular.—*Jacq.* Hort. Schönbr. i. t. 28. *Lantana salvifolia*, *Linn.* Syst. ed. 10, 1116, not of Sp. Pl.

**Mozamb. Dist.** British Central Africa: Nyasaland; Zomba, 6000–7000 ft., *Kirk*! Zomba Plateau, 5000 ft., *Whyte*! Kondowe to Karonga, 2000–6000 ft., *Whyte*, 365! Nyika Plateau, 6000–7000 ft., *Whyte*! and without precise locality, *Buchanan*, 654!

Also in South Africa.

5. **B. aurantiaco-maculata**, *Gilg in Engl. Jahrb.* xxx. 377. A shrub, 6-7 ft. high; branchlets tetragonal, clothed with grey hairs when young. Leaves shortly petioled, lanceolate, 2-5 in. long,  $\frac{1}{2}$  in. broad, acute, crenulate, conspicuously and persistently auricled at the base, glabrous and densely bullate on the upper surface, densely clothed with grey tomentum and prominently reticulated beneath. Panicle thyrsoïd, 6-10 in. in diam., sparsely leafy; cymes capitate; pedicels very short. Calyx villous,  $\frac{1}{10}$  in. long. Corolla 4-5 times as long as the calyx, orange-yellow, clothed inside with grey tomentum.

**Mozamb. Dist.** German East Africa: Langenburg; on the Ngosi or Poroto Mountains, in Usafa country, 8200 ft., *Goetze*, 1129.

In Durand & Schinz's *Études Fl. Congo*, i. 196, the widely cultivated *B. madagascariensis*, Lam., is given as a plant of the Lower Congo, collected by Pechuel-Loesche.

### 5. USTERIA, Willd.; Benth. & Hook. f. Gen. Pl. ii. 796.

Calyx-tube very short; lobes 4, 3 very small, one large and foliaceous. Corolla salver-shaped; tube long, cylindrical; lobes 4, ovate, valvate. Stamens inserted at the corolla-throat opposite the large lobe of the calyx; filament short, filiform; anther ovate, with parallel cells. Ovary globose, 2-celled; style filiform; stigma subcapitate; ovules axile, many in a cell. Capsule oblong, coriaceous, septically 2-valved; valves bifid. Seeds minute, flattened, winged; albumen sparse, fleshy; embryo straight.—Habit, leaves and flowers of *Strychnos*.

Monotypic, endemic.

1. **U. guineensis**, *Willd.; A. DC. Prod.* ix. 22. A climbing shrub; stems 8-10 ft. long; branchlets glabrous. Leaves ovate, entire, coriaceous, glabrous, penninerved; lower 3-4 in. long; petiole short; stipule reduced to a mere line. Cymes arranged in copious simple broad axillary and terminal panicles; pedicels short; bracts ovate, minute. Produced lobe of calyx linear-oblong,  $\frac{1}{6}$ - $\frac{1}{4}$  in. long. Corolla white; tube  $\frac{1}{4}$  in. long; lobes  $\frac{1}{8}$ - $\frac{1}{12}$  in. long. Stamens as long as the corolla-lobes. Style exserted.—*Konig & Sims, Ann. Bot.* i. 363, t. 7, fig. 3; *Hook. Niger Fl.*, 459, t. 45; *l.c. Pl. t.* 795. *U. volubilis*, *Afzel. Gen. Pl. Guin.* 27 with fig.

**Upper Guinea.** Senegambia: *Heudelot*, 597! *Leprieur, Perottet.* Gambia, Brown-Lester, 837! Sierra Leone: Bunce Island, *Kirk!* Sugarloaf Mountain, 1000 ft., *Scott-Elliot*, 4025! Samu Comut y, *Scott-Elliot*, 4243! near Kitchon, *Scott-Elliot*, 4317! near Kafogo, *Scott-Elliot*, 5497! and without precise locality, *Don!* *Afzelius.* Lagos: near Lagos, *Rowland!* Yewa Mata, *Punch*, 75 partly! Ebute Metta, *Millen*, 23! Iton, *Rowland!* Southern Nigeria: Nun River, *Mann*, 460!

### 6. STRYCHNOS, Linn.; Benth. et Hook. f. Gen. Pl. ii. 797.

Calyx 4-5-partite; segments broad and obtuse or narrow and acute. Corolla campanulate or salver-shaped; lobes 4-5, valvate. Stamens 4-5, inserted at the throat of the corolla-tube; filaments short, filiform;

anthers ovate, with distinct parallel cells. Ovary 2-celled; style filiform; stigma capitate or obscurely 2-lobed; ovules few or many in a cell. Fruit baccate, indehiscent, sometimes 1-celled. Seeds many or reduced to one or two, often immersed in pulp, compressed or if solitary globose; albumen usually copious; embryo short, with foliaceous cotyledons and a short radicle.—Trees or shrubs, rarely spinous at the nodes, sometimes climbers with hooked cirrhi. Leaves opposite, entire, 3–5-nerved from the base or a little above it. Cymes compound, axillary or terminal; bracts minute. Flowers small, usually white.

Species above 100, spread through the tropical and subtropical regions of both hemispheres.

\*Climbing shrubs, with tendrils, without spines.

- |  |                              |
|--|------------------------------|
| Internodes prickly . . . . .                             | 1. <i>S. aculeata</i> .      |
| Internodes not prickly.                                  |                              |
| Leaves oblong-lanceolate or lanceolate.                  |                              |
| Leaves triplinerved from the base . . . . .              | 2. <i>S. Dinklagei</i> .     |
| Leaves triplinerved from above the base . . . . .        | 3. <i>S. congolana</i> .     |
| Leaves ovate-oblong, acuminate.                          |                              |
| Leaves nearly 1 ft. long . . . . .                       | 4. <i>S. Kipapa</i> .        |
| Leaves 3–6 in. long.                                     |                              |
| Leaves triplinerved from the base . . . . .              | 5. <i>S. Dewevrei</i> .      |
| Leaves triplinerved from the above base . . . . .        | 6. <i>S. chlorocarpa</i> .   |
| Leaves ovate, acuminate . . . . .                        | 7. <i>S. guerckeana</i> .    |
| Leaves obovate or obovate-oblong.                        |                              |
| Inflorescence thyrsoid . . . . .                         | 8. <i>S. angolensis</i> .    |
| Inflorescence dense.                                     |                              |
| Leaves 1–1½ in. long . . . . .                           | 9. <i>S. zizyphoides</i> .   |
| Leaves 1½–3 in. long.                                    |                              |
| Leaves 3-nerved . . . . .                                | 10. <i>S. Afzelii</i> .      |
| Leaves 5-nerved . . . . .                                | 11. <i>S. erythrocarpa</i> . |
| Leaves oblong.   |                              |
| Cymes sessile . . . . .                                  | 12. <i>S. Barteri</i> .      |
| Cymes peduncled.   |                              |
| Flowers comparatively large . . . . .                    | 13. <i>S. nigrilana</i> .    |
| Flowers small.   |                              |
| Tendrils simple.   |                              |
| Branchlets glabrous . . . . .                            | 14. <i>S. loandensis</i> .   |
| Branchlets densely pubescent . . . . .                   | 15. <i>S. malacoclados</i> . |
| Tendrils forked.   |                              |
| Fruit large, pomiform . . . . .                          | 16. <i>S. Vogelii</i> .      |
| Fruit small, 1-seeded.                                   |                              |
| Leaves 5-nerved from the base . . . . .                  | 17. <i>S. acutissima</i> .   |
| Leaves obscurely 3-nerved . . . . .                      | 18. <i>S. lucens</i> .       |
| Leaves distinctly 3-nerved from the base . . . . .       | 19. <i>S. splendens</i> .    |
| Leaves distinctly 3-nerved from above the base . . . . . | 20. <i>S. Welwitschii</i> .  |

\*\*Erect shrubs with acute leaves, without spines or tendrils.

Leaves ovate.

- |                        |                              |
|------------------------|------------------------------|
| Leaves large . . . . . | 21. <i>S. chrysophylla</i> . |
| Leaves smaller.        |                              |

- Leaves 3-nerved . . . . . 22. *S. distichophylla*.  
 Leaves 5-nerved.  
 Leaves cuneate at the base.  
 Seeds above 1 in. long . . . . . 23. *S. Schweinfurthii*.  
 Seeds under 1 in. long . . . . . 24. *S. omphalocarpa*.  
 Leaves rounded at the base.  
 Corolla-tube  $\frac{1}{2}$  lin. long . . . . . 25. *S. malifolia*.  
 Corolla-tube  $\frac{1}{8}$  in. long . . . . . 26. *S. panganensis*.  
 Leaves ovate or ovate-orbicular.  
 Fruit small, 3-seeded . . . . . 27. *S. xylophylla*.  
 Fruit  $2\frac{1}{2}$ –3 in. in diam., many-seeded . . . . . 28. *S. euryphylla*.  
 Fruit 4 in. in diam., many-seeded. . . . . 29. *S. megalocarpa*.  
 Leaves ovate-oblong.  
 Fruit small, 1–2-seeded.  
 Leaves 3-nerved . . . . . 30. *S. usambarensis*.  
 Leaves 5-nerved . . . . . 31. *S. melastomatoides*.  
 Fruit large, many-seeded . . . . . 32. *S. Tonga*.  
 Leaves oblong.  
 Petiole  $\frac{1}{4}$ – $\frac{1}{3}$  in. long.  
 Leaves cuspidate.  
 Leaves 3-nerved from the base . . . . . 33. *S. floribunda*.  
 Leaves 3-nerved from above the base . . . . . 34. *S. longicaudata*.  
 Leaves narrowed gradually to the point . . . . . 35. *S. Moloneyi*.  
 Petiole very short.  
 Cymes sessile.  
 Leaves shining . . . . . 36. *S. henriquesiana*.  
 Leaves opaque.  
 Leaves shortly acuminate, 3-nerved  
 from above the base.  
 Corolla-tube glabrous inside . . . . . 37. *S. densiflora*.  
 Corolla-tube densely hairy inside  
 about the middle . . . . . 38. *S. Staudtii*.  
 Leaves long acuminate, 3-nerved from  
 the base . . . . . 39. *S. Zenkeri*.  
 Cymes peduncled.  
 Leaves triplinerved from the base.  
 Cymes axillary.  
 Flowers 3–5 in a cyme . . . . . 40. *S. Holstii*.  
 Flowers many in a cyme . . . . . 41. *S. sennensis*.  
 Cymes axillary and terminal . . . . . 42. *S. chrysocarpa*.  
 Leaves triplinerved from above the base.  
 Leaves rounded at the base . . . . . 43. *S. Stuhlmanni*.  
 Leaves cuneate at the base . . . . . 44. *S. heterodoxa*.  
 Leaves oblong-lanceolate.  
 Cymes lateral.  
 Corolla-tube subcylindrical . . . . . 45. *S. Marquesii*.  
 Corolla-tube campanulate . . . . . 46. *S. pungens*.  
 Cymes terminal . . . . . 47. *S. cerasifera*.

\*\*\*Erect shrubs with obtuse or obscurely cuspidate  
 leaves, without tendrils or spines.

- Leaves oblong-lanceolate.  
 Flowers few or solitary . . . . . 48. *S. Quagua*.  
 Flowers many in pendulous cymes . . . . . 49. *S. penduliflora*.  
 Leaves oblong.

- Leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in. long . . . . . 50. *S. myrtilloides*.  
 Leaves 2-3 in. long . . . . . 51. *S. behrensiana*.  
 Leaves obovate or obovate-oblong cuneate at the base.  
 Leaves small and very rigid.  
 Leaves shining . . . . . 52. *S. Wakefieldii*.  
 Leaves opaque . . . . . 53. *S. Engleri*.  
 Leaves larger.  
 Leaves glabrous beneath.  
 Cymes many-flowered . . . . . 54. *S. alvifolia*.  
 Cymes few-flowered . . . . . 55. *S. innocua*.  
 Leaves slightly hairy beneath . . . . . 56. *S. Burtoni*.  
 Leaves very hairy beneath.  
 Cymes sessile . . . . . 57. *S. dysophylla*.  
 Cymes shortly peduncled . . . . . 58. *S. trichisioides*.  
 Leaves obovate, rounded at the base.  
 Calyx-lobes ovate . . . . . 59. *S. cocculoides*.  
 Calyx-lobes suborbicular.  
 Leaves 1-1 $\frac{1}{2}$  in. broad . . . . . 60. *S. Unguacha*.  
 Leaves 2-3 in. broad . . . . . 61. *S. xerophila*.  
 Leaves ovate.  
 Fruit 1-seeded . . . . . 62. *S. brachyura*.  
 Fruit many-seeded . . . . . 63. *S. Gatztei*.  
 Leaves suborbicular.  
 Leaves glabrous . . . . . 64. *S. Buettneri*.  
 Leaves tomentose . . . . . 65. *S. Fischeri*.
- \*\*\*\*Erect spinous shrubs without tendrils.  
 Leaves acute or cuspidate.  
 Sepals linear.  
 Branchlets glabrous . . . . . 66. *S. sansibarensis*.  
 Branchlets pubescent . . . . . 67. *S. Curralhoi*.  
 Sepals lanceolate . . . . . 68. *S. gracillima*.  
 Sepals ovate . . . . . 69. *S. Volkensii*.  
 Leaves obtuse.  
 Leaves small . . . . . 70. *S. Minningasamba*.  
 Leaves larger . . . . . 71. *S. spinosa*.  
 Leaves emarginate with a small mucro . . . . . 72. *S. emarginata*.

1. **S. aculeata**, *Solered. in Engl. Jahrb.* xvii. 556. A climbing shrub, glabrous in all its parts; stems 15-20 ft. long, armed with many minute prickles on the long internodes, glabrous, furnished with peduncled binate stout tendrils. Leaves oblong, acute, subcoriaceous, glabrous, 3-6 in. long, triplinerved from the base to above the middle; petiole very short. Flowers many, in copiously compound axillary cymes, on short ascending peduncles; pedicels very short, glabrous. Calyx  $\frac{1}{8}$  in. long; segments 4, suborbicular. Corolla  $\frac{1}{6}$  in. long; segments longer than the tube. Fruit unknown.

**Upper Guinea.** Fernando Po, *Mann*, 175! Sierra Leone: Bagru River, *Mann*, 853!

2. **S. Dinklagei**, *Gily in Engl. Jahrb.* xxviii. 121. A sarmentose shrub; tendrils not seen; branchlets black, acutely tetragonal. Leaves

shortly petioled, oblong or oblong-lanceolate, 2-5 in. long, acute, cuneate or rounded at the base, rigidly coriaceous, shining, triplinerved from the base. Inflorescence a terminal panicle, with densely flowered branches; pedicels short. Sepals round,  $\frac{1}{2}$  lin. long. Corolla-tube rather larger than the calyx, with a ring of hairs inside at the throat; lobes lanceolate, acute, half as long again as the tube. Stamens scarcely exerted. Fruit unknown.

**Upper Guinea.** Liberia: Grand Bassa, *Dinklage*, 1690.

3. **S. congolana**, *Gily in Engl. Jahrb.* xxviii. 120. A sarmentose shrub; tendrils spiral, slender, slightly hairy; branchlets subterete, pubescent. Leaves shortly petioled, oblong-lanceolate or lanceolate, 2-4 in. long, 1-1 $\frac{1}{2}$  in. broad, cuneate at the base, acuminate at the apex, subcoriaceous, shining, glabrous, triplinerved from above the base. Fruit large, with a thick pericarp, copious pulp and several seeds.—*De Wild. & Durand, Reliq. Dewevr.* 161.

**South Central.** Congo Free State: near Kasongo, *Dewèvre*, 931.

4. **S. Kipapa**, *Gily in Notizbl. Königl. Bot. Gart. Berlin*, ii. 256. Probably a sarmentose shrub; internodes long; branchlets subterete, glabrous. Leaves distinctly petioled, ovate-oblong, nearly 1 ft. long, 3-4 in. broad, very acuminate, but obtuse at the tip, narrowed to the base, shining, glabrous, triplinerved from a little above the base. Flowers and fruit unknown.—*Gilg in Engl. Jahrb.* xxviii. 119.

**South Central.** Congo Free State: Lunda; in woods by streams, near Mukenge, *Pogge*, 539.

5. **S. Dewevrei**, *Gily in Engl. Jahrb.* xxviii. 119. A sarmentose shrub; tendrils woody, spiral; internodes long; branchlets glabrous. Leaves distinctly petioled, ovate-oblong, 4-6 in. long, 2-3 in. broad, acuminate at the apex, rounded at the base, glabrous, subopaque, triplinerved from above the base. Flowers and fruit unknown.—*De Wild. & Durand, Reliq. Dewevr.* 161.

**South Central.** Congo Free State: Lukolela, *Dewèvre*, 845.

6. **S. chlorocarpa**, *Gily in Engl. Jahrb.* xxviii. 120. A sarmentose shrub; tendrils thick, spiral; branchlets terete, glabrous, lenticellate. Leaves shortly and stoutly petioled, ovate-oblong or oblong, 3-4 in. long, cuneate at the base, acuminate at the apex, glabrous, shining, triplinerved from above the base. Cymes few-flowered, apparently terminal. Fruit globose, middle-sized, hard, green, apparently few-seeded.

**Upper Guinea.** Sierra Leone, *Afzelius*.

7. **S. guerckeana**, *Gilg in Engl. Pfl. Ost-Afr. C.* 311. A climbing shrub; tendrils forked. Leaves ovate, about 1 in. long,  $\frac{3}{8}$ - $\frac{3}{4}$  in. broad, rounded or subcordate at the base, acuminate at the apex, glabrous, triplinerved from a little above the base. Cymes few-flowered,

terminal. Corolla unknown. Berry globose, the size of a large pea,  $\frac{1}{4}$ – $\frac{1}{3}$  in. diam., 1-seeded.

**Mozamb. Dist.** German East Africa: Bagamoyo District; Udoe, Rossako, *Stuhlmann*, 8053.

8. **S. angolensis**, *Gilg in Engl. Jahrb.* xvii. 571. A climbing shrub; branchlets pubescent; tendrils single, hooked, stout, spiral. Leaves obovate, oblong or suborbicular, obtuse, very coriaceous, 1– $1\frac{1}{2}$  in. long, distinctly 5-nerved from the base to above the middle, glabrous; petiole  $\frac{1}{4}$  in. long. Flowers in copious axillary thyrsoïd panicles about 1 in. long. Calyx very small; segments broad, obtuse. Corolla globose in bud, with a very short tube. Style very short. Fruit not seen.—Hiern in *Cat. Afr. Pl. Welw.* i. 703.

**Lower Guinea.** Angola: Pungo Andongo; in shady places by streams in Barranco de Songue, *Welwitsch*, 4776, by the River Tangue, *Welwitsch*, 4777, and without precise locality, *Welwitsch*, 6020!

9. **S. zizyphoides**, *Baker in Kew Bulletin*, 1895, 96. A much-branched climbing shrub; branchlets glabrous; tendrils simple, slender. Leaves obovate, subacute, subcoriaceous, glabrous, 1– $1\frac{1}{4}$  in. long, distinctly triplinerved from near the base to above the middle; petiole very short. Flowers in copious compound axillary cymes with short ascending peduncles. Calyx very small; segments broad, obtuse. Bud globose. Style very short. Fruit globose,  $\frac{1}{3}$  in. in diam., 1-seeded; pericarp crustaceous.

**Upper Guinea.** Gold Coast: without precise locality, *Burton & Cameron*!

10. **S. Afzelii**, *Gilg in Engl. Jahrb.* xvii. 572. A climbing shrub; branchlets glabrous; tendrils slender, forked. Leaves shortly petioled, obovate or obovate-oblong, 2–3 in. long, acute, cuneate at the base, quite glabrous, smooth, shining, triplinerved from near the base. Cymes axillary, many-flowered. Flowers 5-merous. Berry very small, 2-seeded, yellowish when dried; pericarp thin, hard.

**Upper Guinea.** Sierra Leone; near the top of Sugarloaf Mountain, *Scott-Elliot*, 4015! by the River Scarcies at Moria, *Scott-Elliot*, 4480! and without precise locality, *Afzelius*!

11. **S. erythrocarpa**, *Gilg in Engl. Jahrb.* xxiii. 199. A wide-climbing shrub; tendrils simple; branchlets unarmed, terete, clothed with yellowish hairs. Leaves shortly petioled, obovate or obovate-oblong, 5-nerved,  $1\frac{1}{2}$ –3 in. long by half as broad, very acute, gradually narrowed to the base, shining, glabrous, chartaceous, finally coriaceous. Flowers in axillary many-flowered compound cymes; peduncles  $1\frac{1}{2}$ –2 in. long; pedicels very short. Sepals 5, nearly free, ovate, acute,  $\frac{1}{2}$  lin. long. Corolla yellowish,  $\frac{1}{8}$  in. long; tube very short, obconic; lobes ovate, acute, hairy inside. Stamens much longer than the corolla-tube. Berry red, fleshy, laterally compressed,  $\frac{1}{2}$ – $\frac{2}{3}$  in. long. Seeds much compressed, orange-yellow,  $\frac{1}{4}$ – $\frac{1}{3}$  in. thick.

**Upper Guinea.** Togo, *Baumann*, 558.

12. **S. Barteri**, *Solered. in Enyl. Jahrb.* xvii. 556. A climbing shrub, glabrous in all its parts; tendrils in pairs on a long peduncle. Leaves oblong, subobtusate, 2-3 in. long, rigidly coriaceous, with the lowest pair of main veins springing from the midrib some distance above the base; petiole very short. Cymes many-flowered, globose, axillary, sessile. Calyx very small; segments suborbicular. Corolla white, fragrant,  $\frac{1}{4}$  in. long; segments linear-oblong, longer than the tube. Filaments longer than the anthers. Fruit globose, 1 in. in diam.—Oliv. in Hook. Ic. Pl. t. 2284.

**Upper Guinea.** Sierra Leone: near Madina in Limba country, *Scott-Elliot*, 5569! 5559! Southern Nigeria: Onitsa; *Barter*, 1247! 1759!

13. **S. nigritana**, *Baker in Kew Bulletin*, 1895, 97. A climbing shrub; branchlets slender, glabrous; tendrils in peduncled pairs. Leaves oblong, acute, glossy, coriaceous, glabrous, 3-4 in. long, triplinerved from the base to above the middle; petiole  $\frac{1}{3}$ - $\frac{1}{2}$  in. long. Flowers few, in axillary shortly-peduncled cymes; pedicels short, glabrous. Calyx  $\frac{1}{6}$  in. long; segments 4, ovate, obtuse, much imbricated. Corolla-tube twice as long as the calyx, very hairy at the throat; lobes ovate, spreading, shorter than the tube. Style long. Fruit not seen.

**Upper Guinea.** Dahomey: Little Popo, cultivated specimen, *Cole!* Lagos: Eppah, *Barter*, 3249! Lagos Island, *Barter*, 2232! Nupe, *Barter!*

14. **S. loandensis**, *Baker in Kew Bulletin*, 1895, 97. A climbing shrub; branchlets glabrous; tendrils simple, lateral. Leaves oblong, acute, obscurely triplinerved, 1 in. long; petiole very short. Cymes axillary, few-flowered, sessile; pedicels very short. Calyx  $\frac{1}{2}$  in. long; segments broad, obtuse. Corolla globose in bud; tube very short. Fruit not seen.—*S. Welwitschii*, Hiern in Cat. Afr. Pl. Welw. i. 703 partly.

**Lower Guinea.** Angola: Loanda, *Welwitsch*, 6016!

15. **S. malacoclados**, *C. H. Wright*. A climbing shrub; branchlets densely pubescent; tendrils simple, thickened in the upper part. Leaves oblong, acuminate, rounded at the base, up to 3 by  $1\frac{1}{4}$  in., pubescent on the underside of the chief nerves, glabrous elsewhere; lateral nerves 2 arising near the base, faint, 2 from 2 lin. above the base, strong and continued nearly to the apex of the leaf; petiole 2 lin. long, pubescent. Cymes axillary, 10-20-flowered. Calyx small; lobes 4, ovate, acute, ciliate. Corolla 1 lin. long, divided nearly to the base; lobes 4, ovate, subacute, sparingly hairy outside, more densely so in the upper half inside. Stamens inserted near the base of and  $\frac{3}{4}$  as long as the corolla; anthers half as long as the filaments. Fruit unknown.

**Lower Guinea.** Gaboon: in wet bush, Como River, 60 miles from Gaboon, *Bates*, 502!

16. **S. Vogelii**, *Baker in Kew Bulletin*, 1895, 96. A climbing shrub; branchlets slender, glabrous; tendrils in peduncled pairs.

Leaves oblong, acute or subacute, subcoriaceous, glabrous, 3-4 in. long, triplinerved from near the base to above the middle; petiole very short. Flowers in axillary cymes on short thick peduncles. Calyx minute; segments suborbicular. Corolla not seen. "Fruit fusiform, glaucescent (*Vogel*)."  
*Strychnos* sp., Benth. in Hook. Niger Fl. 458.

**Upper Guinea.** Nigeria: Attab on the River Quorra (Niger), *Vogel*, 49!

17. **S. acutissima**, *Gily in Engl. Jahrb.* xxiii. 200. A climbing shrub, glabrous in all its parts, except the inflorescence; tendrils forked; branchlets unarmed, subtetragonal, blackish. Leaves shortly petioled, ovate or oblong,  $1\frac{1}{2}$ -3 in. long, acuminate, rounded at the base, subcoriaceous, shining, 5-nerved from the base. Cymes short, axillary; peduncles short, slightly pilose. Flowers unknown. Berry globose,  $\frac{3}{8}$  in. in diam., 1-seeded.

**Upper Guinea.** Sierra Leone, *Afzelius*.

18. **S. lucens**, *Baker in Kew Bulletin*, 1895, 97. A climbing shrub, glabrous in all its parts; tendrils binate at the end of leafy branchlets. Leaves oblong, shiny, coriaceous, obscurely triplinerved,  $1\frac{1}{2}$ -2 in. long, rounded at the base, narrowed to an obtuse point; petiole very short. Cymes lateral, shortly peduncled, few-flowered. Calyx very small; segments broad, obtuse. Corolla not seen. Fruit orbicular, 1-seeded, the size of a pea.—*S. Welwitschii*, Hiern in Cat. Afr. Pl. Welw. i. 703, partly.

**Lower Guinea.** Angola: Loanda; by thickets in dry hilly places, *Welwitsch*, 6015!

19. **S. splendens**, *Gily in Engl. Jahrb.* xvii. 571. A climbing shrub, with tendrils; branchlets terete, blackish. Leaves shortly petioled, ovate or ovate-oblong, rounded or subcuneate at the base, 3-4 in. long,  $1\frac{1}{2}$ -2 in. broad, subcoriaceous, glabrous, shining on the upper surface. Cymes axillary, distinctly peduncled, many-flowered. Flowers 5-merous. Berry small, 1-seeded, greenish-yellow when dried. Seed-much compressed,  $\frac{1}{2}$  in. long.

**Upper Guinea.** Sierra Leone: near Bayabaya, on the River Scarcies, *Scott-Elliott*, 4292! and without precise locality, *Afzelius*!

20. **S. Welwitschii**, *Gily in Engl. Jahrb.* xvii. 573. A climbing shrub, glabrous in all its parts; branchlets leafy, ending in forked tendrils. Leaves oblong, acute, glabrous, obscurely triplinerved, 1-2 in. long; petiole very short. Cymes lateral, few-flowered. Calyx campanulate,  $\frac{1}{12}$  in. in diam.; segments broad, obtuse. Corolla  $\frac{1}{4}$  in. long; tube cylindrical, twice as long as the calyx; segments ovate, half as long as the tube. Style long. Fruit globose,  $\frac{1}{3}$ - $\frac{1}{2}$  in. in diam., 1-seeded.—Hiern in Cat. Afr. Pl. Welw. i. 703, partly. *S. subscandens*, Baker in Kew Bulletin, 1895, 96.

**Lower Guinea.** Angola: Loanda; at Loanda, *Welwitsch*, 6017! hilly rocky places near Quicuxe, *Welwitsch*, 6018!

*S. microcarpa*, Baker (l.c. 97), appears to be a form of the same species without tendrils; it was collected in the province of Loanda by Welwitsch (4765).

21. **S. chrysophylla**, Gilg in *Engl. Jahrb.* xxviii. 119. A shrub without tendrils; branches yellowish, glabrous, unequally tetragonal. Leaves shortly and stoutly petioled, ovate or ovate-oblong, 6–8 in. long, narrowed to the base, conspicuously acuminate at the apex, glabrous, shining, triplinerved from the base. Flowers and fruit unknown.

**Upper Guinea.** Cameroons: Ebea Falls, *Dinklage*, 221.

22. **S. distichophylla**, Gilg in *Engl. Pfl. Ost-Afr. C.* 310. A small tree; young branchlets pubescent. Leaves ovate, subcoriaceous, distichous, 1–1½ in. long,  $\frac{5}{8}$ – $\frac{7}{8}$  in. broad, rounded at the base, gradually narrowed to an acute point, triplinerved. Flowers in very compound cymes at the end of the branchlets. Calyx and corolla unknown. Berry oblong, orange-yellow,  $\frac{1}{2}$  in. long, 1-seeded.

**Mozamb. Dist.** German East Africa: Uzinja; Kimoani Plateau, *Stuhlmann*, 3397.

23. **S. Schweinfurthii**, Gilg in *Engl. Jahrb.* xvii. 568. Leaves distichous, ovate, acute, cuneate at the base, 3 in. long, 2 in. broad, subcoriaceous, glabrous, greenish-yellow when dried, 5-nerved from the base; petiole  $\frac{1}{3}$ – $\frac{1}{2}$  in. long. Flowers apparently in terminal cymes. Fruit large, subglobose; pericarp woody, green, with greenish-yellow blotches. Seeds much compressed, above 1 in. long.

**South Central.** Congo Free State: Monbuttu; near Munza's village, *Schweinfurth*, 3509.

24. **S. omphalocarpa**, Gilg & Busse in *Engl. Jahrb.* xxxii. 181. A tree, 25–30 ft. high; branchlets pendulous, greyish-white, glabrous. Leaves shortly petioled, ovate or ovate-oblong or obovate-oblong, 1½–2½ in. long, shortly and broadly acuminate, narrowed to the base, 5-nerved, coriaceous, glabrous, shining on the upper surface. Flowers unknown. Fruit globose, 4 in. in diam., narrowed to a short stout stipe; pericarp very thick, bony; pulp bitter. Seeds 10–20, orbicular, much compressed, under 1 in. long.

**Mozamb. Dist.** German East Africa: Useguha; near Kwa Mdoö, *Busse*, 322.

25. **S. malifolia**, Baker. An erect shrub; branchlets slender, glabrous. Leaves thin but firm, ovate, acute, glabrous, 1½–2 in. long, finely 5-nerved from the base to above the middle, broadly rounded at the base; petiole short, very slender. Cymes copious, spreading, few-flowered, produced from leafless nodes; peduncles very short; pedicels as long as the calyx. Calyx-segments ovate, obtuse,  $\frac{1}{2}$  lin. long. Corolla-tube funnel-shaped,  $\frac{1}{8}$  in. long; throat very hairy; segments small, ovate. Style long, exserted. Fruit not seen.

**Lower Guinea.** Angola: Ambriz, *Monteiro*!

26. **S. panganensis**, *Gilg in Engl. Pfl. Ost-Afr. C.* 311. An erect shrub or small tree; branchlets persistently grey-velvety. Leaves ovate, very acute, rounded at the base,  $1-1\frac{1}{2}$  in. long,  $\frac{5}{8}-\frac{7}{8}$  in. broad, subcoriaceous, shining and glabrous above, velvety on the ribs beneath, 5-nerved from the base; petiole  $\frac{1}{2}$  in. long. Flowers many, in crowded terminal cymes; pedicels  $\frac{1}{8}-\frac{1}{6}$  in. long. Calyx-segments ovate. Corolla-tube very short ( $\frac{1}{2}$  lin. long); lobes ovate,  $\frac{1}{8}-\frac{1}{6}$  in. long, with long hairs at the base. Fruit unknown.

**Mozamb. Dist.** German East Africa: Pangani, Muhango, *Stuhlmann*, i. 596.

27. **S. xylophylla**, *Gilg in Engl. Jahrb.* xxviii. 122. An erect shrub; branchlets yellowish, acutely tetragonal. Leaves shortly petioled, ovate or round-ovate, 2-4 in. long,  $1\frac{1}{2}$ -3 in. broad, usually cuneate (rarely rounded) at the base, cuspidate at the apex, very rigid, shining, 5-nerved from the base. Inflorescence an axillary panicle with long branches; pedicels short. Sepals 5, round, very small. Corolla unknown. Fruit small, 3-seeded: pericarp thin; pulp scanty.

**Mozamb. Dist.** German East Africa: Usaramo; Kikulu, *Stuhlmann*, 6853.

28. **S. euryphylla**, *Gilg & Busse in Engl. Jahrb.* xxxii. 179. A small tree, 25 ft. high; branchlets yellowish, glabrous. Leaves distinctly petioled, broadly ovate or ovate-orbicular, 2-4 in. long by nearly as broad, shortly acuminate, 7-nerved, shining on the upper surface, obscurely pilose on the ribs beneath. Flowers unknown. Fruit subpyriform,  $2\frac{1}{2}$ - $3\frac{1}{2}$  in. in diam.; pericarp thick. Seeds numerous, ovoid, compressed, above  $\frac{1}{2}$  in. long.

**Mozamb. Dist.** German East Africa: Uluguru; near Kiroka, and Usagara; near Kilossa, *Busse*, 146, 174, 1263.

29. **S. megalocarpa**, *Gilg & Busse in Engl. Jahrb.* xxxii. 180. A small tree, 20ft. high; bark brownish-yellow; branchlets glabrous, yellowish-white. Leaves ovate, acuminate, 2 in. long by half as broad before they are fully developed, cuneate at the base, glabrous on both surfaces, 5-nerved. Flowers unknown. Fruit globose, 4-5 in. in diam.; pericarp thick, woody; pulp copious. Seeds 50-100, oblong, much compressed, 1 in. long.

**Mozamb. Dist.** German East Africa: Useguha; near Kwa Sulanga, *Busse*, 323.

30. **S. usambarensis**, *Gilg in Engl. Pfl. Ost-Afr. C.* 311. A shrub, 7-8 yards high; branchlets glabrous, with neither spines nor tendrils. Leaves oblong or ovate-oblong, acute, glabrous, rigidly coriaceous,  $1\frac{1}{2}$ -2 in. long by half as broad, triplinerved from above the base; petiole very short. Cymes axillary, shortly peduncled; bracts minute, ovate. Flowers unknown. Berry small, oblong, 1-seeded, shortly stipitate.

**Mozamb. Dist.** German East Africa: Usambara; Masheua, 1600 ft., Holst, 3582!

31. **S. melastomatoides**, *Gily in Engl. Jahrb.* xxiii. 201. A shrub without tendrils, quite glabrous in all its parts. Leaves distinctly petioled, oblong or ovate-oblong, 4-7 in. long,  $1\frac{1}{2}$ -3 in. broad, acuminate, rounded at the base, coriaceous, shining on the upper surface, opaque beneath, 5-nerved. Cymes short, axillary; peduncle  $\frac{1}{2}$ - $\frac{3}{4}$  in. long. Flowers unknown. Berry subglobose, about 1 in. long. Seeds 1 or perhaps 2, orange-yellow, much compressed,  $\frac{2}{3}$ - $\frac{3}{4}$  in. long, convex on one side, concave on the other.

**Upper Guinea.** Sierra Leone, *Afzelius*.

32. **S. Tonga**, *Gily in Engl. Jahrb.* xvii. 575. An erect tree, with branchlets clothed with brown tomentum. Leaves ovate or ovate-oblong, acute,  $2\frac{1}{2}$ -3 in. long, narrowed to the base, rigidly coriaceous, brown-tomentose on both sides, triplinerved from above the base; petiole  $\frac{1}{2}$ - $\frac{1}{8}$  in. long. Flowers apparently in terminal cymes. Fruit globose, many-seeded,  $3\frac{1}{2}$ -4 in. diam., with a thick bony pericarp. Seeds oblique ovoid,  $\frac{3}{4}$  in. long, imbedded in copious pulp.—Notizbl. Königl. Bot. Gart. Berlin, ii. 255.

**Mozamb. Dist.** German East Africa: Pangani, *Stuhlmann*. Portuguese East Africa: Quillimane, *Stuhlmann*, 1039.

33. **S. floribunda**, *Gily in Engl. Jahrb.* xvii. 566. An erect shrub, glabrous in all its parts. Leaves oblong, subcoriaceous, distinctly cuspidate, 2-3 in. long, distinctly triplinerved from the base to above the middle; petiole  $\frac{1}{4}$  in. long. Cymes copious, axillary, many-flowered, subsessile or shortly peduncled; pedicels 2-3 times the length of the calyx. Calyx  $\frac{1}{2}$  lin. long; segments ovate, much imbricate. Corolla  $\frac{1}{6}$  in. long; segments oblong, as long as the tube. Fruit not seen.

**South Central.** Congo Free State: Monbuttu: by the Kapili (Kappily) River, *Schweinfurth*, 3558!

The inflorescence much resembles that of *S. malifolia*, Baker.

34. **S. longecaudata**, *Gily in Engl. Jahrb.* xvii. 570. A shrub, glabrous in all its parts; branchlets slender. Leaves oblong, acute, subcoriaceous, 3-4 in. long, distinctly triplinerved from near the base to above the middle; petiole  $\frac{1}{4}$ - $\frac{1}{3}$  in. long. Cymes axillary, very compound, distinctly peduncled; pedicels short. Calyx small, broadly campanulate; segments orbicular. Corolla-bud globose; tube very short. Style very short. Fruit not seen.

**South Central.** Congo Free State: Monbuttu; in woods by a stream near Bongwa's village, *Schweinfurth*.

35. **S. Moloneyi**, *Baker in Kew Bulletin*, 1895, 97. A shrub, glabrous in all its parts; branchlets slender. Leaves oblong, acute, rigidly coriaceous, glabrous, 3-4 in. long, triplinerved from near the

base to above the middle; petiole  $\frac{1}{3}$  in. long. Cymes many, lateral, shortly peduncled. Calyx-lobes short, broad. Corolla not seen. Fruit globose, 1-seeded,  $\frac{1}{3}$ – $\frac{1}{2}$  in. in diam.

**Upper Guinea.** Sierra Leone: near Berria, *Scott-Elliot*, 5431! Gold Coast: Acera, *Moloney*! Southern Nigeria: Onitsa, *Barter*, 1813!

36. **S. henriquesiana**, *Baker in Bolet. Soc. Brot.* xi. 86. A small tree; branchlets pubescent. Leaves oblong, nearly sessile, glabrous and glossy on both sides, subcoriaceous, triplinerved from above the base, cuneate at the base, rounded and minutely mucronate at the apex. Cymes dense, sessile, axillary, many-flowered; pedicels very short, pubescent. Calyx  $\frac{1}{8}$  in. long; lobes suborbicular, glabrous, ciliate on the margin. Corolla-tube a little longer than the calyx; lobes lanceolate, nearly as long as the tube. Style  $\frac{1}{8}$  in. long. Fruit not seen.

**Lower Guinea.** Angola: Malange, *Marques*, 13!

37. **S. densiflora**, *Baill. Adans.* xii. 369. A shrub; branchlets glabrous. Leaves oblong, acuminate, subcoriaceous, glabrous, 4–6 in. long, distinctly triplinerved from near the base to above the middle; petiole very short. Cymes dense, many-flowered, sessile in the axils of the leaves; pedicels short, glabrous. Calyx  $\frac{1}{12}$  in. long; segments orbicular, much imbricated. Corolla yellowish, fragrant,  $\frac{1}{4}$  in. long, hairy in the throat; tube glabrous inside; segments ovate, half as long as the cylindrical tube. Style long. Fruit not seen.—*S. suaveolens*, Gilg in *Engl. Jahrb.* xvii. 566.

**Upper Guinea.** Senegambia, *Heudelot*, 861!

**South Central.** Congo Free State: Monbuttu; banks of the Gadda River, *Schweinfurth*, 3597!

The Ordeal tree of the Gaboon, mentioned in Du Chaillu's *Travels*, ed. 2, 256 *S. Icaja*, *Baill.* in *Adans.* xii. 368 (Native name *Mboundon*), judging from a specimen given by the late D. Hanbury, F.R.S., to the Pharmaceutical Society, which was received by him from Mr. R. B. Walker in October, 1865, does not differ from this materially in habit and leaf. Its flowers and fruit are unknown.

38. **S. Staudtii**, *Gilg in Notizbl. Königl. Bot. Gart. Berlin*, i. 182. An erect unarmed shrub; branches glabrous. Leaves oblong, acuminate, subacute at the base, coriaceous, glabrous, 3-nerved from above the base, 5 in. long,  $2\frac{1}{2}$  in. broad; petiole 3 lin. long. Cymes axillary,  $1\frac{1}{4}$  in. long, many-flowered; branches and pedicels puberulous; bracts boat-shaped, acute; bracteoles 2, a short distance below the calyx, suborbicular. Calyx 5-partite, pubescent outside, 1 lin. long; lobes rotundate. Corolla thick, glabrous outside, with a hairy ring in the throat and another in the middle of the tube; tube narrowly campanulate, 3 lin. long; lobes 5, 2 lin. long, oblong-lanceolate, acute, slightly hooded at the apex. Stamens inserted in the corolla-throat; filaments very short; anthers oblong, 1 lin. long. Ovary ovoid, glabrous; style subulate, slightly exerted; stigma subcapitate.

**Upper Guinea.** Camerouns: Johann-Albrechtshöhe, *Staudt*, 616!

39. **S. Zenkeri**, *Gilg MSS.* An erect shrub; branches glabrous; bark yellowish. Leaves oblong, up to  $4\frac{1}{2}$  by  $1\frac{3}{4}$  in., acuminate into a point 6-9 lin. long, cuneate at the base, quite glabrous on both surfaces, 3-nerved from the base nearly to the apex, also with a more slender nerve near each margin; petiole 1 lin. long, rugulose. Cymes axillary, sessile, about 15-flowered. Calyx 1 lin. long; lobes rounded, ciliate. Corolla glabrous outside, densely bearded in the throat; tube  $1\frac{1}{2}$  lin. long, cylindrical; lobes 5, slightly shorter than the tube, oblong-ovate. Stamens inserted in the corolla-throat; filaments very short; anthers oblong, nearly 1 lin. long. Ovary globose, glabrous; style cylindrical, pilose; stigma truncate.

**Upper Guinea.** Cameroons: Bipinde, *Zenker*, 2436!

40. **S. Holstii**, *Gilg in Engl. Pfl. Ost-Afr. C.* 310. A shrub or small tree; branchlets sub-quadrangular, whitish, glabrous. Leaves oblong, 1-2 in. long by about half as broad, quite glabrous, acute, narrowed to the base, coriaceous or subcoriaceous, triplinerved from the base, shortly petioled. Cymes short, axillary, 3-5-flowered. Calyx-segments 5, ovate. Corolla unknown. Berry globose, the size of a small cherry, 1-seeded, orange-yellow when dry.

**Mozamb. Dist.** German East Africa: Usambara; Masheua, *Holst*, S833A.

41. **S. sennensis**, *Baker in Kew Bulletin*, 1895, 97. A much-branched shrub, glabrous in all its parts; branchlets slender, tetragonal. Leaves ovate-oblong, subcoriaceous, acute, 2-3 in. long, narrowed gradually from the middle to both ends and distinctly triplinerved from near the base to above the middle, nearly sessile. Cymes axillary, many-flowered, on short ascending peduncles. Calyx very small; segments broad, obtuse. Corolla and fruit not seen.

**Mozamb. Dist.** Portuguese East Africa: Lower Zambesi; opposite Senna, *Kirk*!

42. **S. chrysocarpa**, *Baker in Kew Bulletin*, 1895, 98. A shrub, glabrous in all its parts; branchlets slender. Leaves oblong, acute, rigidly coriaceous, 2-3 in. long, distinctly triplinerved from near the base to above the middle; petiole very short. Cymes terminal and axillary; peduncle very short. Calyx-segments short, broad. Corolla not seen. Fruit globose, orange-yellow,  $1\frac{1}{2}$ -2 in. in diam., many-seeded.

**Upper Guinea.** Sierra Leone: by a stream near Willberforce, 200 ft., *Johnston*! Gold Coast, *Burton & Cameron*!

43. **S. Stuhlmanni**, *Gilg in Engl. Jahrb.* xvii. 570. An erect shrub, glabrous in all its parts. Leaves oblong, acute, moderately firm, 4-5 in. long, 3-nerved from above the base, with the 2 main side nerves springing from the midrib some distance above the base; petiole very short. Peduncles short, lateral. Calyx-segments 5, very small, obtuse. Corolla not seen. Fruit globose, 1-seeded,  $\frac{3}{4}$  in. diam., blackish-purple when ripe.

**Mozamb. Dist.** German East Africa: Muansa (Mwanza), on Lake Victoria at Smith Sound, *Stuhlmann*, 4178. Portuguese East Africa: Lower Zambesi; opposite Shiramba, *Kirk!* Shupanga, *Kirk!*

44. **S. heterodoxa**, *Gilg in Engl. Jahrb.* xxviii. 118. A shrub, 3-4 yards high, without spines or tendrils. Leaves shortly petioled, oblong or obovate-oblong, 3-4 in. long, very acute, narrowed to the base, triplinerved from above the base, glabrous. Cymes axillary, peduncled, 7-15-flowered; pedicels  $\frac{1}{10}$ - $\frac{1}{10}$  in. long. Sepals under 1 in. long. Corolla  $\frac{1}{4}$  in. long; tube cylindrical, twice as long as the ovate subacute lobes, green inside, with a crown of dense hairs above the throat. Anthers subsessile at the throat of the corolla-tube. Fruit unknown.—*Merker in Notizbl. Königl. Bot. Gart. Berlin*, iii. 196.

**Mozamb. Dist.** German East Africa: Uhehe; Mukinde Steppe, 4900 ft., *Goetze*, 519!

45. **S. Marquesii**, *Baker*. A shrub, perhaps a climber, glabrous in all its parts. Leaves oblong or oblong-lanceolate, gradually narrowed to a short petiole, very acuminate,  $2\frac{1}{2}$ -3 in. long, subcoriaceous, rather shining on both sides, triplinerved from a little above the base. Flowers in solitary or fascicled axillary cymes. Calyx very small (scarcely  $\frac{1}{2}$  in. long); segments deltoid, acute. Corolla-tube subcylindrical,  $\frac{1}{3}$  in. long, bearded at the throat; lobes ovate,  $\frac{1}{3}$  the length of the tube. Fruit unknown.—*S. henriquesiana*, *Gilg in Notizbl. Königl. Bot. Gart. Berlin*, i. 75, not of *Baker*.

**Lower Guinea.** Congo Free State: Lunda; in valleys along the River Luachim, *Marques*, 273.

46. **S. pungens**, *Solered. in Engl. & Prantl, Pflanzenfam.* iv. ii. 40. A shrub, glabrous in all its parts; branchlets stout; internodes short. Leaves oblanceolate-oblong, very thick and rigid, 2-3 in. long, tipped with a pungent mucro, distinctly triplinerved from the base to apex; petiole very short. Cymes copious, sessile from the nodes below the leaves, dense; pedicels very short. Calyx  $\frac{1}{3}$  in. long; lobes ovate. Corolla twice as long as the calyx; tube campanulate; segments ovate. Style very short. Fruit globose, 4 in. in diam.—*Engl. Jahrb.* xvii. 554; *Hiern in Cat. Afr. Pl. Welw.* i. 704; *Busse, Gilg & Pilger in Engl. Jahrb.* xxxii. 176. *S. occidentalis*, *Solered. in Engl. & Prantl, Pflanzenfam.* iv. ii. 40.

**Mozamb Dist.** German East Africa: Salanda, *Fischer*, 374! Gonda, *Böhm*, 143, Tabora, *Stuhlmann*, 583, and Uyui, *Stuhlmann (ex Solereder)*, East Ungoni, *Busse*, 733.

**Lower Guinea.** Angola: Huilla; Monino forests, *Welwitsch*, 4778! Malange, *Buchner*, 29 (*ex Solereder*).

**South Central.** Congo Free State: Lunda; Mussumba, *Pogge*, 375 (*ex Solereder*).

Also in South Africa.

47. **S. cerasifera**, *Gilg in Engl. Pfl. Ost-Afr. C.* 311. An erect shrub or small tree; young branchlets tomentose. Leaves decussate, oblong-lanceolate, opaque, narrowed from the middle equally to the base and apex,  $1\frac{1}{2}$ -2 in. long,  $\frac{1}{2}$ - $\frac{2}{3}$  in. broad, quite glabrous, 3-5-nerved from the base; petiole  $\frac{1}{8}$  in. long. Cymes terminal, 3-5-flowered. Berries reddish-brown, globose, the size of a large cherry, 1-seeded.

**Mozamb. Dist.** German East Africa, *Stuhlmann*, 6089.

48. **S. Quaqua**, *Gilg in Engl. Jahrb.* xvii. 567. An erect shrub, 25 ft. high; branchlets clothed with dense yellowish pubescence. Leaves obovate-lanceolate or oblong-lanceolate, rounded at the apex, gradually narrowed to the base, 4-5 in. long,  $1\frac{1}{2}$ -2 in. broad, coriaceous, shining and glabrous above, slightly pubescent on the ribs, densely velvety beneath, 5-nerved; petiole  $\frac{1}{5}$ - $\frac{1}{4}$  in. long. Flowers solitary or few, fasciated in the axils of the leaves; pedicels  $\frac{1}{6}$ - $\frac{1}{5}$  in. long. Fruit large, globose. Seeds nearly 1 in. long, imbedded in pulp.—*Busse, Gilg & Pilger in Engl. Jahrb.* xxxii. 176.

**Mozamb. Dist.** German East Africa: Unguru (Nguru); near Kwediboma, *Busse*, 313 (ex *Busse & Gilg*). Portuguese East Africa: Quilimane, *Stuhlmann*, i. 1041 (ex *Gilg*).

49. **S. penduliflora**, *Baker*. An erect shrub; branchlets pubescent. Leaves oblong-lanceolate, obtuse or subacute, about 2 in. long,  $\frac{1}{2}$ - $\frac{3}{4}$  in. broad at the middle, subcoriaceous, narrowed to the base, triplinerved from the base; petiole  $\frac{1}{6}$  in. long. Cymes many-flowered, lateral, pendulous, distinctly peduncled; bracts ovate; pedicels pubescent, as long as the calyx. Calyx  $\frac{1}{12}$  in. long; segments orbicular. Corolla-tube longer than the calyx, funnel-shaped; segments oblong, half as long as the tube. Fruit unknown.

**Nile Land.** Jur: Wau, *Schweinfurth*, 1072!

50. **S. myrtoides**, *Gilg & Busse in Engl. Jahrb.* xxxii. 178, with *woodcut*. A densely-branched erect shrub, 15-20 ft. high; branchlets clothed with yellowish-white hairs. Leaves sessile, oblong,  $\frac{1}{4}$ - $\frac{1}{2}$  in. long, obtuse, cuneate at the base, triplinerved from the base, shining, pilose on the margin and ribs of both surfaces. Cymes terminal, 1-3-flowered; peduncles and pedicels very short. Calyx  $\frac{1}{2}$  lin. long; lobes broadly ovate, subacute, ciliate. Corolla scarcely twice as long as the calyx, hairy at the throat inside; lobes ovate, acute, as long as the tube. Fruit unknown.

**Mozamb. Dist.** German East Africa: Usagara? near Nyangao, on the northern edge of the Mpatila Plateau, *Busse*, 1108.

51. **S. behrensiana**, *Gilg & Busse in Engl. Jahrb.* xxxii. 175. An erect unarmed shrub, 15-25 ft. high; branchlets glabrous. Leaves shortly petioled, oblong or ovate-oblong, 2-3 in. long, about 1 in. broad, rigidly coriaceous, glabrous on both surfaces, 5-nerved. Cymes axillary; pedicels  $\frac{1}{12}$  in. long; peduncles twice as long as the pedicels. Corolla

$\frac{1}{6}$  in. long. Fruit globose, glabrous, 3-4 in. in diam. Seeds 25-30.—*S. Unguacha*, var. *micrantha*, Gilg in Engl. Jahrb. xvii. 563.

**Mozamb. Dist.** German East Africa: Usaramo; between Msengi and Mafisi, *Busse*, 114, Dar-es-Salaam, *Stuhlmann*, 35, *Busse*, 15; Usambara; Pangani, *Stuhlmann*, 76; Usagara; Kilossa, *Bruchhausen*, 19.

52. **S. Wakefieldii**, *Baker in Kew Bulletin*, 1895, 98. A much-branched erect shrub; branchlets glabrous. Leaves obovate-oblong, very rigid, glabrous, obtuse, 1-1 $\frac{1}{2}$  in. long, cuneate at the base, triplinerved from above the base to above the middle; petiole very short. Cymes lateral, few-flowered; peduncles and pedicels very short. Calyx campanulate,  $\frac{1}{8}$  in. long; segments 4, suborbicular. Corolla and fruit not seen. Style short.

**Nile Land.** British East Africa: Mombasa, *Wakefield*!

53. **S. Engleri**, *Gilg in Engl. Jahrb.* xvii. 568. An erect tree, 20-30 ft. high; branchlets glabrous, unarmed. Leaves oblong or obovate-oblong, subacute or subobtuse, 2 in. long, about 1 in. broad, cuneate at the base, coriaceous, glabrous, 5-nerved from above the base; petiole  $\frac{1}{6}$ - $\frac{1}{4}$  in. long. Flowers 4-merous, solitary or few together in the axils of the leaves. Calyx  $\frac{1}{2}$  in. long; segments suborbicular. Fruit globose, 1 in. in diam. Seeds 5-10, oblong, yellow,  $\frac{1}{2}$  in. long.—*Busse*, *Gilg & Pilger in Engl. Jahrb.* xxxii. 177.

**Mozamb. Dist.** German East Africa: Usambara; Nyika Steppe, *Holst*, 2420, Amboni, *Holst*, 2711! Usaramo; Bagamoyo, *Stuhlmann*, 8, 209. Useguha; near Kwa Mdoe, *Busse*, 321.

54. **S. alnifolia**, *Baker in Kew Bulletin*, 1895, 150. An erect shrub, without spines or tendrils; young branchlets hairy. Leaves very shortly petioled, obovate-oblong, obtuse, subcoriaceous, glabrous, narrowed to the base, triplinerved from the base, 2-2 $\frac{1}{2}$  in. long, about 1 in. broad. Cymes copious, axillary, many-flowered; pedicels hairy, sometimes longer than the calyx. Calyx campanulate,  $\frac{1}{12}$  in. long; tube very short; lobes orbicular, much imbricate, conspicuously ciliate. Corolla three times the length of the calyx; tube not longer than the calyx; lobes oblong, twice as long as the tube. Anthers linear,  $\frac{1}{2}$  in. long. Fruit unknown. Style long.

**Upper Guinea.** Interior of Western Lagos, *Rowland*!

**Mozamb. Dist.** Portuguese East Africa: Zambesi Delta; Kongoni River, *Kirk*!

55. **S. innocua**, *Delile; A. DC. Prod.* ix. 17. An erect tree; branchlets pallid, glabrous. Leaves oblong or obovate-oblong, obtuse or subacute, subcoriaceous, 2-4 in. long, narrowed to the base, glabrous, or slightly pubescent beneath, with 3 nerves from the base and two strong ones arising from the midrib a short space above it; petiole very short. Cymes few-flowered, lateral, shortly peduncled; pedicels very short. Calyx campanulate,  $\frac{1}{12}$  in. long;

lobes suborbicular. Corolla  $\frac{1}{4}$  in. long; tube longer than the calyx, hairy at the throat; lobes ovate. Style long. Fruit globose, 1 in. in diam.; pericarp very thick, rigid.—*Schweinf. Beitr. Fl. Aethiop.* 133. *S. Unguacha*, var. *Staudneri*, Gilg in Engl. Jahrb. xvii. 563.

**Nile Land.** Nubia, *Caillaud*. Galabat: region of Matamma, *Schweinfurth*, 1660! Bongo: Gir, *Schweinfurth*, 1412! near Addai, *Schweinfurth*, 1432!

56. **S. Burtoni**, *Baker in Kew Bulletin*, 1895, 98. An erect shrub; branchlets pubescent. Leaves ovate, obtuse, subcoriaceous, glabrous, 3–4 in. long, narrowed gradually from the middle to the base, triplinerved above the middle; petiole very short. Cymes many-flowered, dense, lateral, nearly or quite sessile; pedicels very short. Calyx  $\frac{1}{16}$  in. long; lobes orbicular. Corolla seen only in an immature state. Fruit globose,  $2\frac{1}{2}$ –3 in. in diam., with edible pulp and large orbicular flattened seeds that are roasted and eaten.

**Mozamb. Dist.** German East Africa: Zanguebar, 300 ft., *Kirk*, 96! Portuguese East Africa: Lower Zambesi; Shupanga, *Kirk*, 368! Valley of the River Shire, *Waller*!

57. **S. dysophylla**, *Benth. in Journ. Linn. Soc.* i. 103. An erect shrub; branchlets thick, woody. Leaves obovate, obtuse, rigidly coriaceous,  $1\frac{1}{2}$ – $2\frac{1}{2}$  in. long, pubescent, all over beneath, 5-nerved; petiole very short. Cymes dense, lateral, sessile; pedicels very short. Calyx campanulate,  $\frac{1}{12}$  in. long; lobes broad, obtuse. Corolla  $\frac{1}{4}$  in. long; tube cylindrical, twice as long as the calyx; segments oblong. Fruit black, edible.—*S. randiaeformis*, *Baill. in Bull. Soc. Linn. Paris*, i. 246. *S. Unguacha*, var. *dysophylla*, Gilg in Engl. Jahrb. xvii. 564.

**Mozamb. Dist.** Portuguese East Africa: Tete, *Kirk*! British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 478! and without precise locality, *Buchanan*, 93!

58. **S. triclisioides**, *Baker in Kew Bulletin*, 1895, 98. An erect shrub, 8–14 ft. high; branchlets pallid, pubescent. Leaves obovate-oblong, obtuse, rigidly coriaceous, 2–3 in. long, deltoid at the base, pubescent beneath, with 3 ribs arising from the base, and two strong ones from the midrib a little above it; petiole very short. Cymes lateral, few-flowered, shortly peduncled; pedicels very short. Calyx campanulate,  $\frac{1}{16}$  in. long; lobes orbicular. Corolla yellow,  $\frac{1}{4}$  in. long; tube cylindrical, longer than the calyx; lobes ovate. Style long. Fruit  $1\frac{1}{2}$  in. in diam.; pericarp very thick, rigid. Seeds poisonous,  $\frac{1}{2}$  in. in diam.—*S. innocua*, var. *pubescens*, *Solered. in Engl. Jahrb.* xvii. 556.

**Upper Guinea.** Niger Territory: Nupe, on hill sides, *Barter*, 1160! Lukuja, near the confluence of the Niger and Benue Rivers, *Dalton*!

59. **S. cocculoides**, *Baker in Kew Bulletin*, 1895, 98. An erect shrub or low tree 10–15 ft. high; branchlets pubescent. Leaves suborbicular or oblong, obtuse, 2–3 in. long, distinctly 5-nerved from

the base to above the middle, pubescent on the back; petiole very short. Cymes lateral. Calyx-lobes ovate, acute, hairy. Corolla not seen. Fruit globose,  $\frac{1}{4}$  in. diam.—Hiern in *Cat. Afr. Pl. Welw.* i. 704.

**Lower Guinea.** Angola: Huilla; in forest about Lopollo, towards the River Monino, *Welwitsch*, 4779! 4780, and fruit, 744.

*S. dekindtiana*, Gilg in *Notizbl. Königl. Bot. Gart. Berlin*, ii. 258, is stated to be very closely allied to *S. cocculoides*. It is described thus: a tree 10–19 ft. high; bark black, thin, slightly papillose-rugose; fruit nearly destitute of pulp, very poisonous; seeds numerous, densely packed. Angola: Huilla, in woods at 5500–5900 ft., *Dekindt*. 1032.

60. **S. Unguacha**, *A. Rich. Tent. Fl. Abyss.* ii. 52, t. 73. An erect tree; branchlets pallid, glabrous. Leaves oblong, obtuse, subcoriaceous, 2–3 in. long, distinctly triplinerved from above the base to above the middle, glabrous; petiole very short. Cymes many-flowered, lateral, sessile; pedicels sometimes as long as the calyx, pubescent. Calyx  $\frac{1}{1\frac{1}{2}}$  in. long; segments orbicular, much imbricate. Corolla  $\frac{1}{4}$  in. long; tube longer than the calyx; segments orbicular. Style longer than the ovary. Fruit globose, 2–2 $\frac{1}{2}$  in. in diam. Seeds 15–20,  $\frac{3}{4}$  in. long.—Benth. in *Journ. Linn. Soc.* i. 103. *Unguacha Simiarum*, Hochst. in *Flora*, 1844, 103.

**Nile Land.** Abyssinia: in low-laying places towards the River Tacazze; near Jelajeraume, *Schimper*, 1817!

Gilg, in *Engl. Jahrb.* xvii. 564–5, describes three varieties (*microcarpa*, *grandifolia*, and *dshurica*) of which we have no authenticated specimens, and in *Engl. Jahrb.* xxx. 374, var. *polyantha*, from near Kanada village, Unyika, German East Africa, 4900 ft., *Goetze*, 1436.

61. **S. xerophila**, *Baker in Kew Bulletin*, 1895, 98. An erect shrub; branchlets pallid, pubescent. Leaves ovate or oblong, coriaceous, pubescent beneath, 3–4 in. long, obtuse or emarginate, strongly 5-nerved from near the base. Cymes lateral, sessile, few-flowered; pedicels very short. Calyx  $\frac{1}{8}$  in. long; lobes orbicular. Corolla  $\frac{1}{3}$  in. long; tube cylindrical, longer than the calyx; lobes oblong, half as long as the tube. Fruit as large as an orange, edible, full of pulp.—*S. Unguacha*, var. *grandifolia*, Gilg in *Engl. Jahrb.* xvii. 564.

**Nile Land.** Jur: Kurshook Ali's Seriba, *Schweinfurth*, 1719! Madi, *Speke & Grant*!

62. **S. brachyura**, *Gilg in Engl. Jahrb.* xxviii. 119. An erect shrub, without tendrils. Leaves shortly petioled, ovate or ovate-oblong, 4–8 in. long, rounded at the base, rounded to a cuspidate apex, glabrous, shining, triplinerved from the base. Inflorescence short, axillary, apparently many-flowered. Fruit small, globose, 1-seeded.

**Upper Guinea.** Cameroons: in bush-forest near Batanga, *Dinkluge*, 1133.

63. **S. Götzei**, *Gilg in Engl. Jahrb.* xxviii. 123. An erect shrub, 2–3 yards high; branchlets thick, whitish, subtetragonal, glabrous.

Leaves shortly petioled, broadly ovate,  $1\frac{1}{2}$ –3 in. long,  $1\frac{1}{4}$ –2 in. broad, rounded or subcordate at the base, rounded or very shortly cuspidate at the apex, coriaceous, 7-nerved. Fruit globose, smooth, 2–3 in. in diam., green; pericarp thick; pulp copious; seeds many.—Busse, Gilg & Pilger in Engl. Jahrb. xxxii. 179.

**Mozamb. Dist.** German East Africa; Uhehe; Uchungwe Mountains, 5000–6000 ft., Goetze, 643. East Ungoni, Busse, 735.

64. **S. Buettneri**, Gilg in Engl. Jahrb. xvii. 574. An erect shrub; branchlets unarmed, glabrous. Leaves suborbicular or orbicular-ovate, 3–4 in. long, nearly as broad, shortly cuspidate, glabrous on both sides, cuneate at the base, triplinerved from above the base; petiole very short. Flowers 5-merous, in many-flowered cymes from the end of the branchlets; peduncle 1 in. long; pedicels  $\frac{1}{3}$ – $\frac{1}{3}$  in. long. Calyx-lobes lanceolate or linear-lanceolate,  $\frac{1}{8}$ – $\frac{1}{6}$  in. long. Corolla-tube as long as the calyx; lobes ovate, as long as the tube. Fruit globose, 3 in. in diam.; pericarp thick; seeds many.

**Upper Guinea.** Togo: near Bismarckburg, by Ketschenke brook, Buettner, 370, and by Jegge brook, Buettner.

65. **S. Fischeri**, Gilg in Engl. Jahrb. xvii. 565. An erect tree; branchlets unarmed, clothed with yellowish tomentum. Leaves ovate or orbicular-ovate,  $1\frac{1}{2}$ –2 in. long, rigidly membranous, 5-nerved from the base, clothed with yellowish tomentum on both sides; petiole  $\frac{1}{2}$ – $\frac{1}{2}$  in. long. Flowers sessile, densely crowded in the axils of the leaves. Calyx  $\frac{1}{2}$  in. long, densely tomentose; sepals orbicular-ovate. Corolla-tube  $\frac{1}{4}$  in. long, hairy at the throat; lobes half as long as the tube. Fruit and seeds unknown.

**Mozamb. Dist.** German East Africa: Usula-Usiha, Fischer, 300.

66. **S. sansibariensis**, Gilg in Engl. Jahrb. xxviii. 124. An erect shrub; branches terete, glabrous, brown-black, armed with slender axillary slightly recurved spines. Leaves oblong or ovate-oblong,  $1\frac{1}{2}$ –2 in. long, cuneate or rather rounded at the base, cuspidate at the apex, 5-nerved. Cymes 7–18-flowered, terminal on the young branches; pedicels short, clothed with short yellowish hairs. Sepals linear, very acute,  $\frac{1}{10}$ – $\frac{1}{8}$  in. long. Corolla as long as the calyx; tube urceolate; lobes deltoid,  $\frac{1}{4}$  as long as the tube. Fruit large, many-seeded.

**Mozamb. Dist.** Zanzibar, Stuhlmann, i, 1011. German East Africa: Pangani, Stuhlmann, i, 161.

67. **S. Carvalhoi**, Gilg in Engl. Jahrb. xxxviii. 123. An erect shrub; branchlets dull yellowish, pubescent when young, armed with slender straight axillary spines. Leaves shortly petioled, obovate-oblong or oblong,  $1\frac{1}{2}$ –2 in. long, acute, cuneate at the base, shining, 5-nerved. Flowers in lax terminal cymes; peduncles and pedicels pubescent. Sepals 5, linear, acute,  $\frac{1}{4}$  in. long. Corolla not longer than the calyx; tube urceolate; lobes deltoid,  $\frac{1}{3}$  as long as the tube. Fruit unknown.

**Mozamb. Dist.** Portuguese East Africa: Mozambique; between Mussoril and Cabeceira, *Carvalho*.

68. **S. gracillima**, *Gilg in Engl. Jahrb.* xvii. 573. An erect shrub, with slender branchlets and copious hooked spines from the nodes. Leaves ovate or oblong, acute, cuneate at the base, glabrous, 1 in. long, triplinerved from the base; lateral veins short; petiole very short. Cymes dense, compressed, terminal; peduncle and pedicels short. Calyx  $\frac{1}{8}$  in. long; tube very short; lobes 5, lanceolate. Bud greenish, globose; corolla-tube very short; segments ovate. Fruit globose, 2 in. in diam.; pericarp woody. Seeds many,  $\frac{1}{2}$  in. long.

**Nile Land.** Jur: near Jur Ghattas, *Schweinfurth*, 1344; between Dimo and Axem, *Schweinfurth*, 1573!

69. **S. Volkensii**, *Gilg in Engl. Pfl. Ost-Afr.* C. 311. A tree 30-40 ft. high; branchlets armed with curved pungent spines at the nodes. Leaves oblong or oblong-ovate,  $1\frac{1}{2}$ -2 in. long by half as broad, glabrous, narrowed gradually to the base, subacute, 5-nerved; petiole  $\frac{1}{8}$ - $\frac{1}{6}$  as long as the blade. Cymes lax, many-flowered, from the tip of the branchlets; bracts minute, triangular, acute. Sepals ovate, acuminate, less than half as long as the corolla. Corolla  $\frac{1}{8}$  in. long; lobes ovate, rather longer than the campanulate tube. Fruit shaped like an orange, with edible pulp.—*Gilg in Notizbl. Königl. Bot. Gart. Berlin*, i. 76; *Hiern in Cat. Afr. Pl. Welw.* i. 702.

**Lower Guinea.** Angola: Golungo Alto; forests at the base of Alto Queta, *Welwitsch*, 4769, and at Dalatanda, *Welwitsch*, 4775.

**Mozamb. Dist.** German East Africa: Usambara; Tanga, *Holst*, 2095! *Folkens*, 103, *Amboni*, *Holst*, 2670!

70. **S. Miniungansamba**, *Gilg in Notizbl. Königl. Bot. Gart. Berlin*, i. 77. An erect shrub, with recurved axillary spines. Leaves obovate, about 1 in. long, rounded at the apex, narrowed to the base, glabrous, 5-nerved from the base; petiole  $\frac{1}{4}$  in. long. Flowers in racemes at the apex of the branchlets. Sepals linear, ciliolate,  $\frac{1}{8}$ - $\frac{1}{6}$  in. long. Corolla scarcely longer than the calyx; tube urceolate; lobes 5, ovate, less than half as long as the tube. Fruit unknown.

**Lower Guinea.** Angola: Kahingula, *Buchner*, 617.

71. **S. spinosa**, *Lam. Ill.* ii. 38. A low tree; branchlets horizontal, slender, virgate, armed with pungent spines from the nodes. Leaves obovate or suborbicular, obtuse or subacute, cuneate at the base, 2-3 in. long, subcoriaceous, 5-nerved from near the base, glabrous; petiole very short. Cymes short, dense, terminal, very compound; peduncles and short pedicels pubescent. Calyx  $\frac{1}{6}$  in. long; tube very short; segments linear. Corolla greenish, not longer than the calyx; tube short, campanulate; lobes usually 5, ovate. Fruit the size and colour of an orange; pericarp coriaceous; pulp abundant, edible; seeds large.—*Hiern in Cat. Afr. Pl. Welw.* i. 702. *S. Vuntac*, *Bojer, Hort. Maur.* 205. *S. Lokua*, *A. Rich. Tent. Fl. Abyss.* ii. 53. *S. lava*,

Solered. in Engl. Jahrb. xvii. 554. *Brehmia spinosa*, Harv. ; A. DC. Prod. ix. 18 ; Baker, Fl. Maurit. 235.

**Upper Guinea.** Senegambia, *Heudelot*, 813 ! French Guinea : banks of the River Niger at Farana, 3200 ft., *Scott-Elliott*, 5384 ! Lagos : Ado Ischu, *Rowland*, 5 ! Niger Territory : Nupe, *Barter*, 1140 !

**Nile Land.** Fazokl, *Cienkowsky*.

**Lower Guinea.** Angola : Loanda, *Welwitsch*, 4763 ! 4764, 4767, 6019 ! Golungo Alto, *Welwitsch*, 4768 ! 4770, 4771 ! 4772 ; Anabaca, *Welwitsch*, 4773.

**Mozamb. Dist.** German East Africa : Rovuma Bay, *Kirk* ! Portuguese East Africa : Zambesi Delta ; Kongone River, *Kirk* ! bank of the River Luabo, *Kirk*, 44 ! British Central Africa : Nyasaland ; Mbame Village, *Kirk* ! Blantyre, *Buchanan*, 34 ! Zomba and vicinity, 2800-3500 ft., *Whyte* ! and without precise locality, *Buchanan*, 214 !

Also in South Africa, Madagascar and the Seychelles.

Var. *pubescens*, Baker. Leaves pubescent, especially beneath.

**Upper Guinea.** French Guinea : near Moria on the River Scarcies, *Scott-Elliott*, 4801 ! Niger Territory : Nupe, *Barter*, 1705 !

**Mozamb. Dist.** British Central Africa : Nyasaland ; Mount Sochi, 3500 ft., *Kirk*, 129 ! Shire Highlands, *Buchanan*, 47 !

This variety much resembles *S. cocculoides*, Baker.

72. **S. emarginata**, *Baker*. An erect shrub ; branchlets very slender, pubescent, with pungent hooked spines from the nodes. Leaves obovate, emarginate, with a small mucro from the sinus, glossy, subcoriaceous, glabrous, 1-2 in. long, strongly 5-nerved from the base. Cymes dense, terminal, very compound ; peduncle and very short pedicels pubescent. Calyx  $\frac{1}{6}$  in. long ; tube very short ; segments 5, lanceolate. Corolla not seen. Fruit globose, 2 in. in diam. ; pericarp thick, rigid ; pulp copious ; seeds large.

**Nile Land.** Jur : Jur Ghattas, *Schweinfurth*, 1396 !

*Imperfectly known species.*

73. **S. Scheffleri**, *Gily in Notizbl. Königl. Bot. Gart. Berlin*, iii. 84 (*name only*).

**Mozamb. Dist.** German East Africa : Eastern Usambara, *Scheffler*.

## 7. ANTHOCLEISTA, Afzel. ; Benth. et Hook. f. Gen. Pl. ii. 795.

Calyx 4-partite ; lobes coriaceous, much imbricate, decussate. Corolla-tube funnel-shaped ; lobes 12-16, linear-oblong or oblong, much imbricate, contorted. Stamens as many as the corolla-lobes ; filaments united into a short cup ; anthers linear-erect. Ovary inserted on a fleshy disk, spuriously 4-celled ; style filiform, usually curved ; stigma capitate, oblong ; ovules very numerous. Berry globose or oblong ; pericarp becoming coriaceous. Seeds numerous, minute, embedded in the pulpy placentas ; testa thin ; albumen cartilaginous ; embryo straight.—Erect trees or scandent shrubs. Leaves obovate-

cuneate; petiole dilated at the base. Cymes terminal, trichotomous, usually compound; bracts small, connate. Flowers large, white or dull yellow.

Three other species in Madagascar and one in the Comoro Isles.

Erect trees with spinous branches.

Calyx  $\frac{1}{2}$  in. long.

Corolla 2 in. long . . . . . 1. *A. kamerunensis*.

Corolla about 1 in. long . . . . .

Fruit 1 in. long . . . . . 2. *A. nobilis*.

Fruit  $1\frac{1}{2}$  in. long . . . . . 3. *A. lanceolata*.

Calyx  $\frac{3}{4}$  in. long . . . . . 4. *A. Zenkeri*.

Calyx  $\frac{1}{4}$  in. long . . . . . 5. *A. parviflora*.

Erect trees with unarmed branches.

Petiole obsolete.

Leaves auricled at the base . . . . . 6. *A. orientalis*.

Leaves not auricled at the base . . . . . 7. *A. pulcherrima*.

Petiole short.

Calyx  $\frac{1}{4}$  in. long.

Corolla-tube scarcely longer than the calyx . . . . . 8. *A. Kalbreyeri*.

Corolla-tube much longer than the calyx . . . . . 9. *A. zambesiaca*.

Calyx  $\frac{1}{3}$  in. long . . . . . 10. *A. stuhlmanniana*.

Petiole  $1\frac{1}{2}$ –3 in. long.

Upper leaves 1 ft. or more long.

Auricles of opposite leaves free . . . . . 11. *A. liebrechtsiana*.

Auricles of opposite leaves connate.

Fruit globose . . . . . 12. *A. inermis*.

Fruit obovate-oblong . . . . . 13. *A. Schweinfurthii*.

Upper leaves 5–6 in. long . . . . . 14. *A. magnifica*.

Climbing shrubs.

Cymes simple . . . . . 15. *A. scandens*.

Cymes compound . . . . . 16. *A. laxiflora*.

1. ***A. kamerunensis***, Gilg in *Engl. Jahrb.* xxviii. 125. A tall tree; bark grey, fissured; branches armed with a few small spines. Leaves crowded, long-petioled, oblong or obovate-oblong,  $\frac{1}{2}$ –1 ft. long, rounded at the apex, narrowed gradually to the base, glabrous. Inflorescence lax, few-flowered; peduncle long; bracts minute; pedicels very short, articulated. Sepals broader than long, entire,  $\frac{1}{2}$  in. broad. Corolla 2 in. long; tube cylindrical, longer than the lobes; lobes 10–12, lanceolate.

**Upper Guinea.** Cameroons: Batanga, *Dinklage*, 1361.

2. ***A. nobilis***, G. Don; *A. DC. in DC. Prod.* ix. 36. An erect tree, reaching a height of 50–60 ft. Leaves crowded at the tips of the branchlets, with pungent spines between them; upper leaves of branches 9–12 in. long, 3–4 in. broad; petiole very short; leaves in the young plant reaching a length of 4–5 ft. Cymes compound, shorter than the leaves. Calyx  $\frac{1}{2}$  in. long; outer lobes suborbicular. Corolla-tube half as long again as the calyx; lobes about 16,  $\frac{1}{2}$  in. long. Tube of filaments short; anthers  $\frac{1}{4}$  in. long. Fruit globose, 1 in. in diam.—Benth. in *Journ. Linn. Soc.* i. 100. *A. macrophylla*, G. Don, l. c. *A. Vogelii*,

Planch. in Hook. Ic. Pl. t. 793-794; Niger Fl. 459, tt. 43-44. *A. Buchneri*, Gilg, *A. nianniamensis*, Gilg, and *A. macrantha*, Gilg in Engl. Jahrb. xvii. 576-580.

**Upper Guinea.** Senegal, *Leprieur!* Sierra Leone: Sugarloaf Mountain, *Barter!* Regent, *Scott-Elliott*, 4145! Southern Nigeria: Ibu (Abo), *Fogel*, 51! Niger Delta, *Barter*, 20104! Bank of the River Nun, *Mann*, 471! Cameroons: Ambas Bay, *Mann*, xvi!

**Nile Land.** Nianniam: by the Rivers Nabambisso and Boddo, *Schweinfurth*, 3037!

**Lower Guinea.** Lower Congo, *Smith!* Angola: Golungo Alto; forests of Quilombo, Bumba and Queta, *Welwitsch*, 6021! Pungo Andougo; forests by the River Lombe, *Welwitsch*, 6022!

**South Central.** Congo Free State: Nianniam; by the River Mbrwole, *Schweinfurth*, 3726! Lunda: banks of the River Luachim, *Buchner*, 618 (ex *Gilg*).

**Mozamb. Dist.** British Central Africa: Nyasaland; banks of the Nelungusi River, 3000 ft., *Whyte*, 5!

3. *A. lanceolata*, *Gilg in Engl. Jahrb.* xxviii. 125. A tall tree; bark whitish-grey; branches spinous. Leaves sessile, obovate-lanceolate, 3-4½ ft. long, 6-8 in. broad, acute, broadly auricled at the base, glabrous. Sepals suborbicular, entire, ½ in. long. Corolla above 1 in. long; tube ½ in. long and ½ in. in diam.; lobes linear-lanceolate, acute, rather longer than the tube. Fruit 1½ in. long.

**Upper Guinea.** Cameroons: Batanga, *Dinklage*, 1114.

4. *A. Zenkeri*, *Gilg in Engl. Jahrb.* xxviii. 124. A tree, 20-25 yards high; branches grey or brown, the upper very spinous. Leaves sessile, obovate-oblong, 16-30 in. long, 6-8 in. broad, rounded at the apex, furnished with recurved round auricles at the base, chartaceous, glabrous. Panicle large, terminal, thyrsoïd; bracts scale-like; pedicels ⅓-¼ in. long. Calyx-lobes orbicular, emarginate, ⅓ in. long. Corolla 3 times the length of the calyx; tube subcylindrical; lobes 10-12, narrow oblong, much shorter than the tube.

**Upper Guinea.** Cameroons: Bipinde, *Zenker*, 1965! Victoria, *Deistel*, 181.

5. *A. parviflora*, *Baker in Kew Bulletin*, 1895, 99. An erect tree; branches ½ in. in diam., armed with strong spines; final internodes very short. Upper leaves about 1 ft. long, 4-5 in. broad; petiole very short, with a narrow reflexed border to the dilated base. Cymes very compound, 1 ft. long. Calyx ¼ in. long; outer lobes orbicular. Corolla in bud oblong-cylindrical, 3-4 times the length of the calyx; lobes about 12. Anthers ⅙ in. long. Fruit not seen.

**Upper Guinea.** Sierra Leone: by the Bagru River, *Mann!* valleys of Talla Hill plateau, 3500 ft., *Scott-Elliott*, 5053! Kahreni, *Scott-Elliott*, 5872!

*A. procera*, *Leprieur* ex Bureau, Logan. 74-77, figs. 60-62, is a doubtful species, differing from this in the absence of spines and in the æstivation of the corolla.

6. *A. orientalis*, *Gilg in Engl. Pf. Ost-Afr. C.* 312. Branchlets unarmed. Leaves quite sessile, obovate-cuneate, 16-20 in. long, 5-6 in.

broad, subcoriaceous, with main ribs very prominent on both surfaces and orbicular revolute auricles at the base. Sepals suborbicular, the inner above  $\frac{1}{2}$  in. long. Corolla unknown.

**Mozamb. Dist.** German East Africa: Usaramo; Vikindo, *Stuhlmann*, 6092.

7. **A. pulcherrima**, *Gilg in Engl. Jahrb.* xxx. 374, t. 17. An erect tree, 30–40 ft. high; branchlets unarmed. Leaves sessile, oblanceolate-oblong or obovate-oblong, reaching more than 3 ft. in length and 1 ft. in breadth, rounded at the apex, narrowed gradually to the base, not auricled; main veins 12–15 pairs. Panicle large, terminal; branches dichotomously cymose; peduncles long; bracts small, ovate. Sepals suborbicular,  $\frac{1}{3}$  in. long; two outer broader than the two inner. Corolla whitish, fragrant, 2 in. long; tube funnel-shaped; lobes 12, oblong, acute, reflexing, rather shorter than the tube. Anthers  $\frac{1}{3}$ – $\frac{1}{2}$  in. long.

**Mozamb. Dist.** German East Africa: Langenburg distr.; Umuamba, in gorges and brooksides and by Lake Yungururu, 4500 ft., *Goetze*, 1313.

8. **A. Kalbreyeri**, *Baker in Kew Bulletin*, 1895, 99. A tree, 28–30 ft. high; stems unbranched, slender, without spines. Leaves obovate-oblong, 2 ft. long,  $\frac{1}{2}$  ft. broad; petiole very short. Cymes compressed, much shorter than the leaves. Calyx  $\frac{1}{4}$  in. long; lobes orbicular. Corolla yellowish; tube scarcely longer than the calyx; lobes 16, oblong,  $\frac{1}{2}$  in. long. Tube of filaments very short; anthers linear,  $\frac{1}{4}$  in. long. Fruit not seen.

**Upper Guinea.** Southern Nigeria: banks of the River Bonny, *Kalbreyer*, 61!

9. **A. zambesiaca**, *Baker in Kew Bulletin*, 1895, 99. A tall tree; branchlets unarmed,  $\frac{1}{3}$ – $\frac{1}{2}$  in. in diam.; final internodes short. Upper leaves 6–9 in. long, 3–4 in. broad; lower  $1\frac{1}{2}$  ft. long, 8–9 in. broad; petioles very short. Cymes compound, shorter than the leaves. Calyx  $\frac{1}{4}$  in. long; outer lobes orbicular. Corolla-tube narrowly funnel-shaped,  $\frac{1}{4}$  in. long; lobes about 12, linear-oblong,  $\frac{3}{4}$  in. long, pubescent on the outside. Tube of filaments very short; anthers  $\frac{1}{4}$  in. long. Bud oblong. Fruit not seen.

**Mozamb. Dist.** British Central Africa: Nyasaland; Shire Highlands, *Buchanan*, 84! Mandala, *Scott-Elliot*, 8531!

10. **A. stuhlmanniana**, *Gilg in Engl. Jahrb.* xvii. 580. Branchlets without any spines. Leaves shortly petioled, obovate-oblong, subcoriaceous, glabrous, 1 ft. long by half as broad; auricles semi-orbicular, revolute, connate. Cymes dense; pedicels  $\frac{1}{5}$ – $\frac{1}{2}$  in. long. Sepals suborbicular, subequal,  $\frac{1}{3}$  in. long, crenulate. Corolla-tube obconic, 2–3 times the length of the calyx; lobes 12–14, linear, subacute, about as long as the tube. Tube of filaments very short.

**Mozamb. Dist.** German East Africa: Karagwe; Bukoba, *Stuhlmann*, 3727.

11. **A. liebrechtsiana**, *De Wild. & Durand in Comptes-rendus Soc. Bot. Belg.* xxxviii. 96. A large tree. Leaves obovate-oblong

or lanceolate, rounded at the apex, gradually tapering at the base, 24–30 in. long, 4–4 $\frac{3}{4}$  in. long, coriaceous, rigid, glabrous, quite entire; nerves 17–19 on each side; auricles beneath prominent, nearly semi-orbicular, revolute, not connate between the bases of the petioles; petiole 2 $\frac{1}{2}$  in. long, somewhat trigonous. Cymes dichotomous in a terminal panicle; branches irregularly compressed; pedicels 2 lin. long, articulate. Sepals suborbicular, coriaceous, with papery margins, outer 4 lin. long, inner slightly shorter. Corolla fleshy, white; tube cylindrical, 13 lin. long; lobes 10–12, narrowly oblong, strongly contorted, about 6 lin. long, 2 lin. wide. Stamens 10; filaments connate into a ring about 1 $\frac{1}{2}$  lin. high; anthers about 3 $\frac{1}{2}$  lin. long. Ovary ovoid or ovoid-oblong; style thick, 7 $\frac{1}{2}$  lin. long; stigma ovoid-oblong, 2 lin. long, 1 $\frac{1}{2}$  lin. thick.—Reliq. Dewevr. 160.

**South Central.** Congo Free State: around Lukolela, *Dewèvre*.

This species is very closely allied to *A. inermis*, Engl.

12. ***A. inermis***, Engl. in *Engl. Jahrb.* viii. 63. An erect tree, 25–30 ft. high; branchlets unarmed,  $\frac{1}{4}$ – $\frac{1}{3}$  in. in diam.; internodes very short. Upper leaves 1 ft. or more long by about 4 in. broad, membranous, lanceolate or elongate-lanceolate, obtuse, cuneately narrowed below, shortly and obtusely auricled at the base; auricles of opposite leaves connate; nerves about 13 on each side; petiole sulcate above, 1 $\frac{1}{4}$ –1 $\frac{1}{2}$  in. long. Cymes sparingly compound, much shorter than the leaves; bracts widely triangular, cartilaginous; pedicels short. Calyx  $\frac{1}{4}$  in. long; outer lobes orbicular. Corolla not seen. Fruit subglobose,  $\frac{2}{3}$  in. in diam. Seeds  $\frac{3}{4}$  lin. in diam.

**Lower Guinea.** Lower Congo, *Smith!* on an island near Ponta da Lenha, *Naumann*.

13. ***A. Schweinfurthii***, Gilg in *Engl. Jahrb.* xvii. 579. An erect tree; trunk 20–30 ft. long; branches unarmed,  $\frac{1}{2}$  in. in diam., with very short internodes. Leaves oval-oblong, oblong or obovate-lanceolate, acute, 6–20 in. long, 2–6 in. wide, coriaceous, quite glabrous, entire or very minutely toothed; primary nerves 10–13 on each side; petiole 2–3 in. long, with a recurved narrow auricle. Cymes compound, 1 ft. long. Calyx  $\frac{1}{2}$  in. long; outer lobes suborbicular. Corolla in bud twice as long as the calyx; lobes 9–11. Anthers linear,  $\frac{1}{4}$  in. long. Dried fruit obovoid-oblong, 1 $\frac{1}{2}$  in. long.

**Nile Land.** Niamniam: woods by the River Mbrwole, *Schweinfurth*, 3723!

**Mozamb. Dist.** German East Africa: Karagwe; near Bukoba, *Stuhlmann*, 3751, and Maissome Island, in Lake Victoria, *Stuhlmann*, 4133 (ex *Gilg*).

14. ***A. magnifica***, Gilg in *Engl. Jahrb.* xvii. 581. A forest tree, 40 ft. high; branchlets unarmed,  $\frac{1}{4}$  in. in diam. with very short internodes. Upper leaves 5–6 in. long, 2–3 in. broad; petiole slender, half as long as the blade, without any border to the dilated base. Cymes sparsely compound. Calyx  $\frac{1}{4}$  in. long; outer lobes orbicular. Corolla-tube 1 in. long, gradually dilated from the base to the throat; lobes about

12, linear, more than half as long as the tube. Cup of filaments very short; anthers  $\frac{1}{4}$  in. long. Fruit not seen.

**Lower Guinea.** Gaboon: Munda; Sibange Farm, *Soyaux*, 49!

15. **A. scandens**, *Hook. f. in Journ. Linn. Soc.* vi. 16. A woody climber; stems unarmed, 30–50 ft. long; final internodes  $\frac{1}{2}$  in. long. Leaves obovate-cuneate, 3–4 in. long, narrowed into a short petiole without any auricle. Cymes simple, 3–4-flowered, shortly peduncled or sessile in the axil of the upper pair of leaves. Calyx  $\frac{3}{4}$  in. long; outer lobes ovate, obtuse. Corolla-tube 1 in. long, widened at the middle; lobes about 12, oblong, more than half as long as the tube. Cup of filaments very short; anthers  $\frac{1}{4}$  in. long. Dried fruit oblong,  $1\frac{1}{2}$  in. long.

**Upper Guinea.** Fernando Po, 5000 ft., *Mann*, 623!

**Lower Guinea.** Island of St. Thomas: summit of St. Thomas Peak, *Mann*, 1067!

16. **A. laxiflora**, *Baker in Kew Bulletin*, 1895, 99. A climbing shrub; stems unarmed, terete, 15 ft. long; final internodes 1–1 $\frac{1}{2}$  in. long. Leaves oblong, cuneate at the base, acute, 5–6 in. long, 2 in. broad; petiole very short, not auricled. Cymes short, compound, lower branches subtended by large leaves. Calyx  $\frac{3}{4}$  in. long; outer lobes ovate. Corolla and stamens not seen. Dry fruit globose,  $\frac{3}{4}$  in. in diam., apiculate with the persistent base of the style.

**Lower Guinea.** Spanish Gaboon: Mount John, by the River Kongui, *Mann*, 1802!

*Imperfectly known species.*

17. **A. Scheffleri**, *Gilg ex Scheffler in Notizbl. Königl. Bot. Gart. Berlin*, iii. 143 (*name only*).

**Mozamb. Dist.** German East Africa: Usambara, *Scheffler*.

8. **GÆRTNERA**, Lam.; "Benth. et Hook. f. Gen. Pl. ii. 798.

Calyx campanulate; teeth 5, usually very short. Corolla-tube funnel-shaped; lobes 5, oblong, valvate; stamens 5, inserted below the throat of the corolla-tube; filaments filiform; anther-cells parallel. Ovary 2-celled; style filiform, with two linear stigmatose branches; ovules solitary, erect. Fruit small, globose, indehiscent, 2-celled; pericarp thin, fleshy. Seeds solitary, copiously albuminous; embryo minute, straight.—Trees or shrubs. Leaves entire, feather-veined, conspicuously stipulate. Inflorescence a terminal panicle with cymose branches.

Species about 30, mostly East Indian and Mascarene.

Corolla  $\frac{1}{6}$  in. long.

Panicle large, lax . . . . .	1. <i>G. paniculata</i> .
Panicle moderately large, lax . . . . .	2. <i>G. Dinklagei</i> .

Panicle small, lax . . . . .	3. <i>G. salicifolia</i> .
Panicle short, dense . . . . .	4. <i>G. rhodantha</i> .
Corolla $\frac{1}{3}$ - $\frac{1}{2}$ in. long . . . . .	5. <i>G. occidentalis</i> .

*G. morindoides*, Baker in Kew Bulletin, 1892, 83, is *Morinda longiflora*, G. Don.

1. **G. paniculata**, Benth. in Hook. Niger Fl. 459. An erect shrub, 10-15 ft. high; branchlets glabrous or pubescent. Leaves oblong, acuminate or cuspidate, 4-6 in. long, moderately firm, glabrous beneath when mature; petiole short; stipules large, collar-like, conspicuously ciliate. Panicle pyramidal, 6-8 in. long, with ascending very compound lower branches; bracts small, ovate or lanceolate. Calyx campanulate, very small; lobes very short. Corolla greenish-white,  $\frac{1}{6}$  in. long; lobes oblong, shorter than the funnel-shaped tube. Fruit not larger than a pea.

**Upper Guinea.** Sierra Leone: near the top of Lester Peak, *Scott-Elliott*, 3860! Scarcies River, *Scott-Elliott*! French Guinea: woods by the River Niger, at Farana, *Scott-Elliott*, 5326! Liberia: Bassa, *Vogel*, 20! 71! Ashanti: Assin-Yan-Kumassi, *Cummins*, 194! Togo, *Baumann*, 494! Lagos: near Lagos, *Rowland*! Southern Nigeria: mouth of the River Niger, *Mann*, 461! Brass, *Barter*, 1877! Onitsa, *Barter*, 1256! and without precise locality, *Barter*, 1811!

**Lower Guinea.** Corisco Bay: by the Muni (Danger) River, *Mann*, 1745!

2. **G. Dinklagei**, K. Schum. in Engl. Jahrb. xxviii. 88. A shrub; branchlets slender, woody, glabrous. Leaves distant, shortly petioled, oblong-lanceolate or oblong, 4-8 in. long, 2-2 $\frac{1}{2}$  in. broad, acute, narrowed to the base, glabrous, subcoriaceous, penninerved; stipules triangular. Flowers in a moderately large lax thyrsoid terminal panicle, with pubescent branches; pedicels very short; bracts lanceolate. Calyx obconic, pubescent,  $\frac{3}{4}$  lin. in diam.; teeth very small. Corolla  $\frac{1}{6}$  in. long; lobes linear, longer than the tube. Fruit globose, glabrous, the size of a small pea.

**Upper Guinea.** Cameroons: Bipinde, *Zenker*, 1763! 1838! 2034! 2393!

3. **G. salicifolia**, C. H. Wright. A shrub, 6 ft. high; branchlets slender, glabrous. Leaves distant, shortly petioled, lanceolate or oblong-lanceolate, 4-5 in. long,  $\frac{3}{4}$ -1 $\frac{1}{2}$  in. broad, acuminate, narrowed to the base, subcoriaceous, glabrous, penninerved; stipules rather large, triangular. Flowers in lax small terminal panicles with glabrous branches; pedicels short; bracts minute. Calyx obconic,  $\frac{3}{4}$  lin. in diam., not toothed. Corolla  $\frac{1}{6}$  in. long; tube funnel-shaped; lobes ovate-oblong, as long as the tube. Anthers linear, reaching nearly to the top of the corolla-lobes. Fruit unknown.

**Lower Guinea.** Gaboon: on a rocky river bank at Mfoa, 85 miles east of the Gaboon, *Bates*, 516!

4. **G. rhodantha**, Baker. An erect shrub, 9-12 ft. high; branchlets stout, glabrous. Leaves oblanceolate-oblong, shortly cuspidate, nearly 1 ft. long, 3 in. broad above the middle, moderately firm, glabrous on both sides; petiole nearly 1 in. long; stipules large, deeply lacerated.

Panicle dense,  $1\frac{1}{2}$ –2 in. long; bracts minute. Calyx campanulate,  $\frac{1}{16}$  in. long; teeth very short. Corolla bright red,  $\frac{1}{6}$  in. long; lobes shorter than the tube. Fruit unknown.

**Lower Guinea.** Gaboon: Munda; Sibange Farm, *Soyaux*, 24!

5. **G. occidentalis**, *Baill. in Bull. Soc. Linn. Paris*, i. 235. An erect shrub, about 10 yards high, glabrous in all its parts. Leaves petioled, lanceolate, acuminate; stipules united into a sheath half as long as the internodes. Inflorescence terminal, very compound. Calyx campanulate, entire or faintly toothed. Corolla  $\frac{1}{3}$ – $\frac{1}{2}$  in. long, with a ring of hairs in the tube below the insertion of the included stamens. Fruit ovoid-oblong, 1-seeded.

**Upper Guinea.** Senegambia: by the Rio Pongos, *Heudelot*, 888.

**Lower Guinea.** Gaboon, *Duparquet & Griffon de Bellay*, 232.

ORDER LXXXVII. **GENTIANEÆ**. (By J. G. Baker, with additions by N. E. Brown.)

Flowers usually regular and hermaphrodite. Calyx inferior, 4–5-lobed or partite; lobes usually imbricate. Corolla gamopetalous; tube campanulate, funnel-shaped or cylindrical; lobes usually 4–5, contorted, imbricate or induplicate-valvate. Stamens as many as the corolla-lobes, inserted in the corolla-tube or at its mouth; filaments filiform or dilated at the base; anthers dorsifixed or basifixed, dehiscent longitudinally, rarely by 2 apical pores or short slits, sometimes spirally twisted. Disk 0 or annular or of 5 glands. Ovary superior, bicarpellary, 1–2-celled; ovules usually many in a cell; style simple; stigma entire or 2-lobed. Fruit usually capsular and dehiscent, septicidally 2-valved. Seeds usually sessile, copiously albuminous, sometimes winged; testa membranous or crustaceous; embryo small.—Annual or perennial herbs, rarely shrubs, nearly always glabrous. Leaves opposite except in *Menyantheæ*, exstipulate. Flowers in terminal cymes or clusters, or axillary and clustered or solitary. Inflorescence normally blue, yellow, red or white.

Species 500–600, most abundant in the temperate regions of both hemispheres, in the tropics principally found on the mountains.

*Meristostylus*, described as a new genus under *Gentianeæ* by Klotzsch in Peters, *Reise Mosamb.* Bot. 267, with three species, appears to be identical with *Kalanchoë* in *Crassulaceæ*.

TRIBE I. **Exaceæ**.—*Leaves opposite. Corolla-lobes contorted. Ovary 2-celled.*

Anthers exerted beyond the mouth of the corolla-tube.

Stamens inserted below the corolla-sinuses; anthers coriaceous . . . . .

1. EXACUM.

Stamens inserted at the corolla-sinuses; anthers submembranous . . . . .

2. SEB.EA.

Anthers included in the corolla-tube or only reaching to its mouth . . . . .

3. BELMONTIA.

TRIBE II. **Chironiææ**.—*Leaves opposite. Corolla-lobes contorted, without nectaries. Ovary 1-celled, with parietal or much intruded, but not connate, placentas.*

Leaves well developed, green.

Flowers in terminal simple or paniced lax or rarely fastigate cymes; anthers exerted beyond the corolla-sinuse.

Calyx-lobes 4-5 times as long as the tube, or tube none.

Corolla large, its lobes 5-9 lin. long . . . 4. CHIRONIA.

Corolla small, its lobes not more than 2 lin. long . . . 5. ERYTHRÆA.

Calyx-lobes shorter than the tube.

Corolla-tube shorter than the lobes . . . 6. SCHINZIELLA.

Corolla-tube longer than the lobes.

Corolla-lobes  $\frac{2}{3}$ -3 lin. long,  $\frac{1}{2}$ -1 lin. broad; anthers usually only 1 (or in *C. Kirkii* all) fertile . . . 7. CANSORA.

Corolla-lobes 4 lin. long and broad; anthers all fertile . . . 8. SCHULTESIA.

Flowers solitary in both axils of the leaf-pairs all along the stems . . . 9. NEUROTHECA.

Flowers in dense axillary clusters all along the stems or in dense terminal clusters or heads.

Stamens inserted at the middle of the corolla-tube, included . . . 10. ENICOSTEMA.

Stamens inserted at the mouth of the corolla-tube, exerted.

Flowers 3-merous; sepals very unequal . . . 11. PYCNOSPHERA.

Flowers 4-merous; sepals equal . . . 12. FAROA.

Leaves very small or rudimentary, not green; stamens included . . . 13. VOYRIA.

TRIBE III. **Swertiææ**.—*Leaves opposite. Corolla-lobes contorted, with 1-2 fringed nectaries near their base. Ovary 1-celled, with parietal placentas.*

The only Tropical African genus . . . 14. SWERTIA.

TRIBE IV. **Menyanthææ**.—*Leaves all radical or alternate. Corolla lobes induplicate-valvate. Ovary 1-celled, with parietal placentas.*

The only Tropical African genus, aquatics . . . 15. LIMNANTHEMUM.

1. **EXACUM**, Linn.; Benth. et Hook. f. Gen. Pl. ii. 803.

Calyx 4-5-lobed to the middle or nearly to the base. Corolla-tube campanulate; segments 4-5, ovate or oblong, contorted in aestivation. Stamens 4-5, exerted from the corolla-tube, inserted below the sinuses of the corolla; filaments short; anthers oblong, dehiscing by terminal-pores or longitudinal slits. Ovary globose, 2-celled; stylus subulate; stigma capitate; placentas axile; ovules many in a cell. Capsule globose, septically 2-valved. Seeds many, minute.—Annual or very rarely perennial herbs. Leaves entire. Flowers various in colour, arranged in terminal dichotomous cymes.

Species 20-25, chiefly natives of India, China and the Malay Archipelago, extending into Socotra and Madagascar.

- Leaves  $\frac{3}{4}$ - $2\frac{1}{4}$  in. long; calyx lobed to more than half-way down . . . . . 1. *E. quinquenervium*.  
 Leaves  $\frac{1}{4}$ - $\frac{1}{2}$  in. long; calyx lobed to nearly half-way down . . . . . 2. *E. zombensis*.

1. ***E. quinquenervium***, *Griseb. in DC. Prod.* ix. 46. A slender erect annual  $\frac{1}{2}$ -2 ft. high, glabrous in all its parts. Stems simple or branched. Leaves linear, lanceolate or ovate, acute, the lower sometimes elliptic and obtuse, 3-5-nerved, narrowed into a short petiole at the base,  $\frac{3}{4}$ - $2\frac{1}{4}$  in. long. Flowers in terminal dichotomous or trichotomous cymes; pedicels  $\frac{1}{6}$ - $\frac{1}{2}$  in. long. Sepals ovate,  $1\frac{1}{2}$ -2 lin. long, very broadly winged on the keel. Corolla-tube campanulate,  $\frac{1}{8}$  in. long; segments oblong, shorter than the tube. Anthers small, oblong. Style as long as the ovary. Capsule pallid, globose,  $1\frac{1}{2}$ -2 lin. in diam.

**Upper Guinea.** Lagos: near Lagos, *Rowland*! Southern Nigeria: Aboh, *Barter*, 140! Onitsa, *Barter*, 1750!

**Nile Land.** British East Africa: Nzaoi, Iveti Mountains, *Gregory*.

**Mozamb. Dist.** Zanzibar, *Kirk*! *Hildebrandt*, 1131! German East Africa: Zanguebar, *Kirk*, 7! Portuguese East Africa: Quilimane, *Scott*! Zambesi Delta; mouth of the west Luabo River, *Kirk*! Lower Zambesi; Shupanga, *Kirk*!

Also in the Mascarene Islands.

The flowers are stated to be pale pink by *Kirk*, and violet by *Barter*, and by *Hildebrandt* on the label with a specimen from Madagascar; in the dried state they are dull yellow.

2. ***E. zombensis***, *N. E. Br.* A slender erect annual 1-6 in. high, 1-5-flowered, glabrous. Stem simple or once or twice branched, 4-angled. Leaves in 3-4 distant pairs; lowest pair minute, the others  $\frac{1}{4}$ - $\frac{1}{2}$  in. long,  $\frac{1}{6}$ - $\frac{1}{2}$  in. broad, very broadly ovate, obtuse or very minutely apiculate, rounded at the base. Pedicels of terminal flowers  $\frac{1}{3}$ -4 lin. long, of lower flowers sometimes up to 1 in. long, very slender. Calyx very broadly 5-winged, subglobose in outline, 5-lobed to nearly half-way down; lobes broadly ovate, acutely cuspidate or abruptly acuminate; wings reticulately veined. Corolla-tube  $2\frac{1}{3}$ - $3\frac{1}{2}$  lin. long; lobes 5, oblong, obtuse, minutely apiculate, 2- $2\frac{1}{4}$  lin. long,  $1\frac{1}{4}$ - $1\frac{1}{2}$  lin. broad. Stamens 5, exserted; filaments  $\frac{3}{4}$ -1 lin. long, filiform, inserted in the throat of the corolla-tube; anthers  $\frac{3}{4}$  lin. long, oblong, obtuse.

**Mozamb. Dist.** British Central Africa: Nyasaland; on a wet rock on the top of Mount Zomba, *Buchanan*, 449! Zomba, *Sharpe*, 192!

## 2. **SEBÆA**, R. Br.; Benth. et Hook. f. *Gen. Pl.* ii. 804.

Calyx divided almost or quite to the base into 4-5 or rarely 6 keeled or winged segments. Corolla-tube as long as or shorter than the calyx; segments 4-5, oblong, spreading, contorted in æstivation. Stamens 4-5, exserted, inserted at the sinuses of the corolla; filaments exserted; anthers small, apiculate or with or without a gland at the apex and sometimes also 2 at the base. Ovary globose, 2-celled; placentas axile; ovules many in a cell; style filiform, often with a tubercular thickening; stigma oblong, ovoid, capitate or subsimple. Capsule globose or ovoid, membranous, septically 2-valved. Seeds many,

minute.—Annual or rarely perennial herbs, with erect or rarely procumbent branched or simple stems. Leaves opposite, sessile or amplexicaul. Flowers small or of moderate size, yellow, arranged in terminal dichotomous cymes.

Species about 60, chiefly in South Africa, a few in Madagascar, India, Australia, and New Zealand.

Leaves cordate-orbicular, as broad as or broader than long.

Stigma twice as long as broad, oblong or ovoid.

Corolla 6–8 lin. long . . . . . 1. *S. crassulæfolia*.

Corolla  $4\frac{1}{2}$ – $5\frac{1}{4}$  lin. long . . . . . 3. *S. leiostyla*.

Corolla 3– $3\frac{1}{2}$  lin. long . . . . . 5. *S. multinodis*.

Stigma much shorter than broad.

Corolla 5–6 lin. long; stigma minute, bilobed . . . . . 2. *S. oreophila*.

Corolla about  $3\frac{1}{2}$  lin. long; stigma capitate, truncate-based . . . . . 4. *S. schimperiana*.

Leaves not cordate-orbicular, longer than broad.

Basal leaves more or less crowded or subrosulate, elliptic or oblong.

Anthers tipped with a waxy yellow gland . . . . . 6. *S. affinis*.

Anthers minutely apiculate and minutely tailed . . . . . 7. *S. barbeyana*.

None of the leaves subrosulate.

Leaves linear, 4–9 lin. long . . . . . 8. *S. chironioides*.

Leaves ovate or lanceolate, 2–3 lin. long . . . . . 9. *S. pratensis*.

Leaves subulate, 1– $1\frac{1}{2}$  lin. long . . . . . 10. *S. Welwitschii*.

1. **S. crassulæfolia**, *Cham. & Schlecht. in Linnaea*, i. 193.

Annual, erect,  $\frac{1}{2}$ – $1\frac{1}{2}$  ft. high, glabrous. Stems simple or sparingly branched from near the base, narrowly 4-winged. Leaves orbicular-cordate, obtuse, apiculate. Cymes often in an elongate panicle, sometimes flat-topped, many-flowered. Flowers 5-merous. Sepals  $\frac{1}{4}$ – $\frac{1}{3}$  in. long, 1– $1\frac{3}{4}$  lin. broad, oblong or oblong-lanceolate, acute, very narrowly winged on the keel. Corolla-tube 3 lin. long; lobes 4–5 lin. long, 2– $2\frac{3}{4}$  lin. broad, spatulate-oblong, obtuse. Staminal-filaments 1– $1\frac{1}{2}$  lin. long; anthers 1 lin. long, tipped with a minute gland. Style  $3\frac{1}{2}$ –4 lin. long, with or without a tubercular thickening near the base; stigma oblong, twice as long as broad.—Griseb. *Gen. et Sp. Gent.* 168, and in DC. *Prod.* ix. 53; Schinz in *Viertelj. Naturf. Ges. Zürich*, xxxvii. 323.

**Mozamb. Dist.** Portuguese East Africa: Lukinga Hills, *Johnson!* British Central Africa: Nyasaland; Zomba Plateau, 5000 ft., *Whyte!* top of Mount Zomba, *Buchanan*, 290! Tutchila Plateau, 6000 ft., *Purves*, 103!

Also in South Africa.

2. **S. oreophila**, *Gilg in Engl. Jahrb.* xxx. 377, 378, *figs. G–Q*.

An erect annual up to  $1\frac{1}{2}$  ft. high; stems acutely quadrangular, branched above. Leaves distant, amplexicaul, cordate-orbicular,  $\frac{1}{3}$ – $\frac{1}{2}$  in. long and equally broad, minutely apiculate. Inflorescence a very compound panicle, with cymose branches; cymes 3–10-flowered, rather dense; pedicels short; bracts minute, oblong or lanceolate. Sepals 5, ovate-lanceolate, very acute,  $\frac{1}{4}$  in. long, narrowly wing-keeled. Corolla-tube as long as the calyx; lobes 5, oblanceolate, obtuse, as long as the

tube. Stamens half as long as the corolla-lobes; filaments longer than the anthers, which are tipped with a gland. Style 3 lin. long, slender, with a tubercular thickening; stigma minute, subcapitate, bilobed.

**Mozamb. Dist.** German East Africa: in shady meadows on the borders of the forest, Kinyika Mountains, Kinga (Livingstone) Range, 8500 ft., *Goetze*, 945!

3. ***S. leiostyla***, *Gilg in Engl. Jahrb.* xxvi. 97. An erect annual 1-2 ft. high, branching from about the middle; branches erect. Leaves distant, cordate-orbicular, minutely apiculate. Flowers 5-merous, in dense terminal cymes. Sepals  $2\frac{1}{2}$ -3 lin. long,  $\frac{1}{2}$ -1 lin. broad, oblong and mucronate, or narrowly oblong-lanceolate and acuminate, narrowly wing-keeled. Corolla-tube  $2-2\frac{1}{2}$  lin. long; lobes  $2\frac{1}{2}$ - $2\frac{3}{4}$  lin. long, obovate-oblong, obtuse. Staminal-filaments  $\frac{1}{2}$ -1 lin. long; anthers linear, tipped with a gland. Style  $2\frac{1}{2}$ -3 lin. long, with or without a tubercular thickening near its base; stigma oblong, laterally compressed.

**Mozamb. Dist.** British Central Africa: Nyasaland; North Nyasa, *Whyte!* Shire Highlands, *Buchanan*, 208! near Blantyre, *Last!* and without precise locality, *Buchanan*, 200! 270.

The styles are either smooth or with tubercles in different flowers from the same cyme.

4. ***S. schimperiana***, *Buching. ex Schweinf. Beitr. Fl. Aethiop.* 127. Annual, erect, 3-12 in. high, glabrous; stem simple or branching at the base, narrowly 4-winged; internodes  $\frac{1}{3}$ - $\frac{7}{8}$  in. long. Leaves  $1\frac{1}{2}$ -3 lin. long,  $2-3\frac{1}{2}$  lin. broad, sessile, reniform or cordate-orbicular, obtuse, apiculate. Cyme terminal, moderately compact, its main branches  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, several-flowered. Flowers 5-merous; pedicels 0-1 lin. long; sepals  $2-2\frac{1}{2}$  lin. long, 1 lin. broad, oblong, acute, very thin and membranous; keel narrowly winged; corolla-tube about 2 lin. long; lobes  $1\frac{1}{2}$  lin. long,  $\frac{2}{3}$ - $\frac{3}{4}$  lin. broad, oblong, obtuse, apparently slightly concave; stamens exserted; filaments  $\frac{1}{4}$ - $\frac{1}{3}$  lin. long; anthers  $\frac{1}{3}$  lin. long, oblong, tipped with a minute gland at the apex, becoming recurved; style  $\frac{2}{3}$ -1 lin. long, with a tubercular thickening below the middle; stigma capitate, hemispherical, truncate at the base, slightly bilobed, much shorter than broad.—*S. crassulifolia*, var. *breviflora*, *Schweinf. Beitr. Fl. Aethiop.* 127. *S. brachyphylla*, *Engl. Hochgebirgsfl. Trop. Afr.* 335, partly; *Schinz in Viertelj. Naturforsch. Ges. Zürich*, xxxvii. 326, partly; *Gilg in Engl. Jahrb.* xxvi. 100, partly, not of Grisebach.

**Nile Land.** Abyssinia: Samen; Mount Bacht, 11,000 ft., *Schimper*, 151 (ex *Schweinfurth*); Begemeder; Mount Guna, 10,800 ft., *Schimper*, 1459!

This plant differs from *S. multinodis*, N. E. Br., and *S. brachyphylla*, Griseb., with which it has hitherto been confused, in its more membranous and broader sepals, recurved anthers, more slender style and truncate-based stigma.

5. ***S. multinodis***, N. E. Br. An erect glabrous annual  $\frac{1}{2}$ -2 ft. high, usually branching at or near the base; stems with numerous

internodes  $\frac{1}{4}$ – $1\frac{1}{2}$  in. long, narrowly 4-winged. Leaves sessile,  $\frac{1}{6}$ – $\frac{1}{2}$  in. long and broad, orbicular-cordate, obtuse or minutely apiculate. Inflorescence of each main stem elongate; branches not all reaching to the same level; cymes dense, compact, subcapitate, many-flowered, their main branches  $\frac{1}{4}$ – $\frac{2}{3}$  in. long; pedicels  $\frac{1}{3}$ – $1\frac{1}{3}$  lin. long. Flowers 5-merous. Sepals green, 2– $2\frac{1}{2}$  lin. long,  $\frac{1}{2}$ – $\frac{2}{3}$  lin. broad, lanceolate or oblong, acute; keel narrowly winged; corolla yellow; tube  $1\frac{3}{4}$ –2 lin. long; lobes  $1\frac{1}{4}$ – $1\frac{1}{2}$  lin. long,  $\frac{2}{3}$ – $\frac{3}{4}$  lin. broad, elliptic-oblong or spatulate-obovate, obtuse, minutely apiculate, erect at the basal part, spreading above the middle; stamens exerted; filaments  $\frac{1}{3}$ – $\frac{1}{2}$  lin. long; anthers  $\frac{1}{3}$  lin. long, straight, oblong, tipped with a minute gland. Style  $\frac{3}{4}$ –1 lin. long, with or without a slight tubercular thickening; stigma compressed-ovoid, narrowed into the style, twice as long as broad.—*S. brachyphylla*, Hook. fil. in Journ. Linn. Soc. vi. 16, and vii. 206; Engl. Hochgebirgsfl. Trop. Afr. 335, partly; Schinz in Viertelj. Naturforsch. Ges. Zürich, xxxvii. 326, partly; Gilg in Engl. Jahrb. xxvi. 100, partly; Hiern in Cat. Afr. Pl. Welw. i. 705, not of Grisebach.

**Upper Guinea.** Cameroons: Cameroon Mountain, 7000–8500 ft., *Mann*, 1239! 1983! *Johnston*, 8! *Preuss*, 633A, 633B (ex *Gilg*)! Fernando Po: Clarence Peak, 8500–10,000 ft., *Mann*, 320! 598!

**Nile Land.** Uganda: Ruwenzori, 5000–6000 ft., *Scott-Elliot*, 7685! British East Africa; Mbaruk Stream, above 6000 ft., Lake Elmeteita, *Scott-Elliot*, 6758! Ukamba, 5000–6000 ft., *Scott-Elliot*, 6444!

**Lower Guinea.** Angola: Huilla; near Lopollo, 4500–5500 ft., *Welwitsch*, 1520!

**Mozamb. Dist.** German East Africa: Kilimanjaro; Marangu, 8800 ft., *Volken*, 1114! 861 (ex *Gilg*), Schneequelle, 12,900 ft., *Meyer*, 102 (ex *Gilg*).

This conspicuously differs from *S. brachyphylla*, Griseb., in having more numerous and much shorter internodes, much denser cymes, with very much shorter branches and more numerous flowers.

6. ***S. affinis***, *Welw. ex Hiern in Cat. Afr. Pl. Welw.* i. 706. An erect annual 8–12 in. high; stems slender, narrowly 4-winged. Radical leaves rosulate, broadly elliptic, obtuse; stem leaves sessile, ovate or lanceolate, acute or acuminate, somewhat narrowed at the base. Panicle laxly corymbose; pedicels short, unequal. Flowers 5-merous. Sepals  $\frac{1}{6}$ – $\frac{1}{4}$  in. long, acutely keeled, obtusely acuminate, with broad white membranous edges. Corolla  $\frac{1}{4}$ – $\frac{2}{3}$  in. long; tube rather inflated; lobes ovate-acuminate. Stamens exerted; filaments very short; anthers obtusely sagittate at the base, tipped with a gland. Style short; stigma longer than the style, subprismatic-clavate.

**Lower Guinea.** Angola: Mossamedes; by the River Bero, near Cavalheiros, only one specimen seen, *Welwitsch*, 1519.

7. ***S. barbeyiana***, *Schinz in Viertelj. Naturf. Gesell. Zürich*, xxxvii. 326. An erect annual 3–7 in. high, glabrous in all its parts;

usually much branched at the base; branches very slender. Leaves membranous, sessile,  $\frac{1}{2}$ – $\frac{3}{4}$  in. long,  $2\frac{1}{2}$ –4 lin. broad, ovate-oblong, obtuse, 5-nerved, the lower more or less subrosulate. Cymes lax, elongated, few or several-flowered; pedicels 1–7 lin. long, very slender, erect. Flowers 5-merous. Sepals  $\frac{1}{8}$ – $\frac{1}{6}$  in. long, ovate-lanceolate, acute, much imbricate, pallid, with a green wingless keel. Corolla-tube as long as the calyx; segments  $1\frac{1}{2}$  lin. long, oblong, obtuse. Anthers subsessile at the mouth of the corolla-tube, linear, very minutely apiculate at the apex and tailed at the base. Style  $\frac{3}{4}$ –1 lin. long, with a linear tubercular thickening  $\frac{1}{3}$  of its length at the middle; stigma compressed, ovoid-oblong, sometimes bifid.

**Lower Guinea.** German South-west Africa: in the bed of the White Nosob River, *Schinz*, 485.

**Mozamb. Dist.** Zambesi: on an island at the Victoria Falls, *Kirk*!

8. **S. chironioides**, *Gilg in Engl. Jahrb.* xxvi. 101. An erect slender annual, 10–12 in. high, simple or sparingly branched above. Leaves sessile, linear, acute,  $\frac{1}{3}$ – $\frac{4}{5}$  in. long, uppermost setaceous. Cymes lax, 3–10-flowered. Sepals  $\frac{1}{6}$  in. long, ovate-lanceolate, very acute; keel not very conspicuous. Corolla reddish or purple when dried; tube broadly cylindrical,  $\frac{1}{6}$  in. long; lobes ovate, acute,  $\frac{1}{4}$  in. long,  $1\frac{1}{2}$  lin. broad. Staminal-filaments 1 lin. long; anthers linear-oblong, tipped with a minute gland. Ovary large, ovoid-oblong; style very short, up to  $\frac{3}{4}$  lin. long; stigma clavate, 2-lobed.

**Lower Guinea.** Angola: Huilla, *Antunes*, 60.

9. **S. pratensis**, *Gilg in Engl. Jahrb.* xxx. 377, 378, *figs. A–F*. An erect annual; stems simple, glabrous, filiform, 3–4 in. long. Leaves in 3–4 distant pairs, 1–3 lin. long, sessile, ovate, oblong-ovate or ovate-cordate and half-clasping the stem (but figured as lanceolate), acute. Cymes lax, terminal, 3–5-flowered, or flowers solitary; pedicels 2–6 lin. long. Sepals 5, oblong, acute,  $2\frac{1}{2}$ – $3\frac{1}{2}$  lin. long, wing-keeled. Corolla-tube cylindrical,  $2\frac{1}{2}$  lin. long; lobes 5, oblong, twice as long as the tube. Filaments short, subulate; anthers linear, basifixed, without apical glands. Style elongate, without tubercles; stigma oblong, compressed.

**Mozamb. Dist.** German East Africa: in dry meadows on the Ukwama Mountains, Kinga (Livingstone) Range, 8200 ft., *Goetze*, 916!

10. **S. Welwitschii**, *Schinz in Viertelj. Naturforsch. Ges. Zürich*, xxxvii. (1891) 321. Stems very slender, erect,  $\frac{1}{2}$  ft. long, simple or slightly branched. Leaves few, minute, 1– $1\frac{1}{2}$  lin. long, subulate, sessile, ascending. Cymes very lax, few-flowered; pedicels  $\frac{1}{6}$ – $\frac{2}{3}$  in. long, erect; bracts green, ovate-lanceolate, minute. Flowers 4–6-merous. Sepals oblong-lanceolate,  $\frac{1}{6}$  in. long, imbricate, pallid, with a strong green keel. Corolla-tube as long as the calyx; lobes oblong, as long as the tube.—*Bull. Herb. Boiss.* iv. 443; *Hiern in Cat. Afr. Pl. Welw.* i. 705.

**Lower Guinea.** Angola: Huilla; parasitical on grasses and *Cyperaceæ*, in swampy places along the River Monino, *Welwitsch*, 1521, and along the River Humpata, *Welwitsch*, 1522!

Very near the Himalayan *S. khasiana*, C. B. Clarke in Journ. Linn. Soc. xiv. 428.

3. **BELMONTIA**, E. Meyer; Benth. et Hook. f. Gen. Pl. ii. 804.

Calyx cleft nearly or quite to the base; segments 4-5, ovate or lanceolate, more or less winged on the keel. Corolla-tube longer than the calyx, funnel-shaped or cylindrical; segments 4-5, spreading. Stamens 4-5, included in the corolla-tube; filaments short; anthers oblong or linear, with a gland at the tip and often also two at the base. Ovary globose, 2-celled; placentas axile; ovules many in a cell; style subulate; stigma oblong. Capsule globose, membranous, septically 2-valved. Seeds many, minute.—Annual or rarely perennial erect herbs. Leaves opposite, sessile. Flowers solitary or in terminal dichotomous cymes.

Species about 20, of which 2 are natives of Madagascar, the others in South Africa.

A slightly-earlier name for the genus is *Parasia*, Rafin. Fl. Tellur. iii. 78 (1836).

Corolla-lobes  $\frac{1}{2}$ – $\frac{1}{6}$  in. long.

Keel of sepals narrowly winged.

Leaves linear . . . . . 1. *B. gracilis*.

Leaves lanceolate or linear-lanceolate.

Leaves  $\frac{1}{2}$ – $1\frac{1}{4}$  lin. long . . . . . 2. *B. oligantha*.

Leaves  $1\frac{1}{2}$ –3 lin. long . . . . . 3. *B. debilis*.

Leaves  $\frac{1}{2}$  in. long . . . . . 4. *B. zambesiaca*.

Leaves ovate . . . . . 5. *B. pumila*.

Keel of sepals broadly winged . . . . . 6. *B. platyptera*.

Corolla-lobes  $\frac{1}{4}$ – $\frac{1}{2}$  in. long.

Corolla-tube funnel-shaped in the upper half.

Plant 1–3 in. high . . . . . 7. *B. primulaeflora*.

Plant 3–15 in. high . . . . . 8. *E. grandis*.

Corolla-tube cylindrical, very slender.

Calyx  $\frac{1}{4}$ – $\frac{2}{5}$  in. long . . . . . 9. *B. mechowiana*.

Calyx  $\frac{1}{2}$ – $\frac{3}{4}$  in. long . . . . . 10. *B. Teusii*.

1. **B. gracilis**, *Welw. in Trans. Linn. Soc. xxvii. 47.* Stems very slender, erect, 4–6 in. long, simple or once forked, 4-angled. Leaves in 2–4 pairs, linear, ascending,  $\frac{1}{3}$ – $\frac{1}{2}$  in. long. Flowers solitary, erect or nodding; pedicels  $\frac{3}{4}$ –3 in. long. Sepals 5, lanceolate, acuminate,  $\frac{1}{4}$ – $\frac{1}{3}$  in. long, pallid, with a narrowly-winged green keel. Corolla-tube not longer than the calyx, narrowly funnel-shaped in the upper half; lobes 5, oblong,  $\frac{1}{2}$  in. long. Stamens inserted at the middle of the tube.—*Schinz in Viertelj. Naturforsch. Ges. Zürich, xxxvii. (1891) 333; Engl. Hochgebirgssfl. Trop. Afr. 336. Parasia gracilis, Hiern in Cat. Afr. Pl. Welw. i. 708.*

**Lower Guinea.** Angola: Huilla; subparasitic, in spongy places in wood of parts of the northern region of the River Monino, *Welwitsch*, 1524!

2. **B. oligantha**, *Gily in Engl. Jahrb.* xxvi. 102. Stem filiform, erect,  $\frac{3}{4}$ – $1\frac{1}{2}$  in. long. Leaves few, sessile, lanceolate, acute,  $\frac{1}{2}$ – $1\frac{1}{4}$  lin. long. Flowers 1–3; pedicels  $\frac{1}{3}$  in. long. Sepals 5, lanceolate, very acute,  $\frac{1}{8}$ – $\frac{1}{6}$  in. long, slightly keeled. Corolla  $\frac{1}{4}$  in. long; tube sub-cylindrical; lobes  $1$ – $1\frac{1}{4}$  lin. long, oblong, obtuse. Stamens inserted in the upper half of the corolla-tube; anthers oblong, tipped with a large gland. Style short; stigma cylindrical.

**Lower Guinea.** Gaboon: Munda; Sibange Farm, *Soyaux*.

3. **B. debilis**, *Schinz in Viertelj. Naturforsch. Ges. Zürich*, xxxvii. (1891) 332. Plant very small,  $\frac{1}{2}$ –2 in. high, simple or branched, apparently perennial, glabrous. Leaves in few pairs, lanceolate, ascending,  $\frac{1}{6}$  in. long. Pedicels  $1\frac{1}{2}$ –4 lin. long, erect. Sepals 5, linear-lanceolate, acuminate,  $\frac{1}{6}$  in. long, narrowly-winged on the green keel. Corolla-tube  $2\frac{1}{2}$ – $2\frac{3}{4}$  lin. long, narrowly funnel-shaped in the upper half; lobes 5, obovate,  $1\frac{1}{2}$  lin. long. Stamens inserted at the middle of the corolla-tube.—*Ecochaenium debile*, Welw. in *Trans. Linn. Soc.* xxvii. 48. *Parasia debilis*, Hiern in *Cat. Afr. Pl.* Welw. i. 708.

**Lower Guinea.** Angola: Pungo Andongo; muddy places at Lake Quibinda on the right bank of the River Cuije, *Welwitsch*, 1511!

4. **B. zambesiaca**, *Baker in Kew Bulletin*, 1894, 25. Plant  $3\frac{1}{2}$  in. high in the only specimen seen. Stem slender, erect, simple, 4-angled. Leaves in 3 pairs, lanceolate, or oblong-lanceolate, ascending, at most  $\frac{1}{2}$  in. long. Flowers solitary; pedicel 10 lin. long. Sepals ovate-lanceolate,  $\frac{1}{3}$  in. long, with a narrow wing to the green keel. Corolla-tube 5 lin. long, narrowly funnel-shaped in the upper half; lobes obovate-cuneate,  $\frac{1}{6}$  in. long. Stamens inserted at about the middle of the corolla-tube.

**Mozamb. Dist.** Rhodesia: Leshumo Valley, south of the Zambesi, *Holub*!

5. **B. pumila**, *Baker in Kew Bulletin*, 1894, 25. Stems slender, erect,  $1\frac{1}{2}$ –2 in. long, 1–4-flowered, 4-angled. Leaves in 3–5 pairs, ovate or oblong, subacute,  $\frac{1}{8}$ – $\frac{1}{3}$  in. long, spreading or the lowest deflexed. Pedicels very short, erect. Sepals ovate-lanceolate,  $\frac{1}{8}$  in. long, pallid, with a narrowly-winged green keel. Corolla-tube half as long again as the calyx, narrowly funnel-shaped in the upper half; lobes obovate, 1 lin. long. Stamens inserted below the middle of the corolla-tube. Capsule  $\frac{1}{12}$ – $\frac{1}{8}$  in. in diam.

**Upper Guinea.** Niger Territory: Nupe; in a swamp at Löm, *Barter*, 1680!

6. **B. platyptera**, *Baker in Kew Bulletin*, 1894, 25. Stem very slender,  $1\frac{1}{2}$ –2 in. long, 4-winged, simple or branched, 1–5-flowered. Leaves in few pairs, ovate, acute, spreading, cuneate at the base,  $\frac{1}{4}$ – $\frac{1}{3}$  in. long. Pedicels  $\frac{1}{8}$ – $\frac{1}{4}$  in. long, recurving. Sepals 5, ovate,  $\frac{1}{4}$  in. long; keel green, conspicuously winged. Corolla-tube cylindrical, about  $3\frac{1}{2}$  lin. long lobes 5, obovate,  $1$ – $1\frac{1}{4}$  lin. long.

Stamens inserted above the middle of the corolla-tube.—*Parasia platyptera*, Hiern in Cat. Afr. Pl. Welw. i. 706.

**Lower Guinea.** Angola: Pungo Andongo; in moist sandy places between Lombe and Quibinda, *Welwitsch*, 1512! and by the River Cuanza, near Muta Lucala, *Welwitsch*, 1512A.

7. **B. primulæflora**, *Schinz in Viertelj. Naturforsch. Ges. Zürich*, xxxvii. (1891) 332. Plant 1–3 in. high, branching from the base or with 1 simple stem, erect, glabrous, 1–15-flowered. Leaves in few pairs, lanceolate, ascending,  $\frac{1}{2}$ – $\frac{3}{4}$  in. long. Pedicels  $\frac{1}{2}$ –9 lin. long, erect. Sepals 5, lanceolate,  $\frac{1}{4}$ – $\frac{1}{3}$  in. long; keel winged. Corolla-tube  $\frac{1}{3}$ – $\frac{1}{2}$  in. long, funnel-shaped in the upper half; lobes suborbicular,  $\frac{1}{4}$ – $\frac{1}{3}$  in. long. Stamens inserted below the middle of the corolla-tube.—Engl. Hochgebirgsh. Trop. Afr. 336. *Parasia primuliflora*, Hiern in Cat. Afr. Pl. Welw. i. 707. *Exochænum primulæflorum*, Welw. in Trans. Linn. Soc. xxvii. 47.

**Lower Guinea.** Angola: Huilla; by the River Palanca, near Humpata, *Newton*! spongy pastures in Morro de Lopollo, towards Humpata, above 5300 ft., *Welwitsch*, 1513! swampy places by the River Monino, *Welwitsch*, 1513B, and on lofty mountain slopes between Lopollo and Gambos, *Welwitsch*, 1514! by the River Cunene, *Johnston*!

8. **B. grandis**, *E. Meyer, Comm.* ii. 183. Plant 3–15 in. high, 1–15-flowered. Stem simple or branched, erect, 4-angled. Leaves in few pairs, distant, linear or lanceolate, ascending,  $\frac{1}{3}$ – $1\frac{1}{2}$  in. long, 1–5 lin. broad. Pedicels 1– $2\frac{1}{2}$  in. long. Flowers erect or horizontal. Sepals 5, ovate-lanceolate, 5–11 lin. long; keel winged, green. Corolla-tube 7–10 lin. long, broadly funnel-shaped in the upper half; lobes 5, suborbicular,  $\frac{1}{3}$ – $\frac{1}{2}$  in. long, acute. Stamens inserted below the middle of the corolla-tube.—*Schinz in Viertelj. Naturforsch. Ges. Zürich*, xxxvii. (1891) 330; Engl. Hochgebirgsh. Trop. Afr. 336. *Parasia grandis*, Hiern in Cat. Afr. Pl. Welw. i. 707. *Exochænum grande*, *Griseb.* in DC. Prod. ix. 55; Welw. in Trans. Linn. Soc. xxvii. 49.

**Nile Land.** Uganda: Ankole, *Doggett*!

**Lower Guinea.** Angola: Huilla; near Lopollo, *Welwitsch*, 1516!

**Mozamb. Dist.** German East Africa: Usagara, ex *Engler*; Kondeland; mountains near Langenburg, *Goetze*, 856. Portuguese East Africa: Medo country, between Lujenda River and Ibo, *Last*!

Also in South Africa.

9. **B. mechowiana**, *Vatke ex Schinz in Viertelj. Naturforsch. Ges. Zürich*, xxxvii. (1891) 333. Stem very slender, simple, 10–20 in. long, usually 1-flowered. Leaves in 4–8 pairs, linear-lanceolate, ascending, at most  $\frac{1}{2}$  in. long,  $\frac{1}{2}$ – $1\frac{1}{2}$  lin. broad. Pedicels  $2\frac{1}{4}$ – $3\frac{1}{4}$  in. long, naked, erect. Sepals 5, narrowly lanceolate, acuminate, 3–5 lin. long; keel prominent, acute or narrowly winged, green. Corolla-tube very slender, cylindric,  $\frac{3}{4}$ –1 in. long; lobes 5, elliptic, acute, 5–6 lin. long. Stamens inserted at  $\frac{2}{3}$  of the length of the corolla-tube.

**Lower Guinea.** Angola: by the River Hamba, *Teusz*, 503!

10. **B. Teuszii**, *Schinz in Viertelj. Naturforsch. Ges. Zürich*, xxxvii. (1891) 335. Stems slender, erect, 9-16 in. long, simple or forked, 4-angled. Leaves in 4-6 pairs, oblong-lanceolate, ascending,  $\frac{1}{2}$ - $\frac{3}{4}$  in. long. Flowers 1-4 to a stem. Pedicels  $1\frac{1}{2}$ -4 in. long, naked, erect. Sepals 5, lanceolate, acuminate,  $\frac{1}{2}$ - $\frac{3}{4}$  in. long; keel green, very prominent, acute, scarcely winged. Corolla-tube slender, cylindrical,  $1-1\frac{1}{8}$  in. long; lobes 5, spreading, lanceolate, acute, 10-13 lin. long,  $4\frac{1}{2}$ -6 lin. broad. Stamens inserted at about the middle of the corolla-tube.—*Engl. Hochgebirgsfl. Trop. Afr.* 336. *Tachadenus continentalis*, Baker in *Kew Bulletin*, 1895, 70.

**Lower Guinea.** Angola: damp meadows at Malange, *Teusz*, 387!

**South Central.** Congo Free State: basin of the River Lualaba below Nzibi, *riart*.

**Mozamb. Dist.** British Central Africa: Urungu, Fwambo, *Carson*, 33!

#### 4. **CHIRONIA**, Linn.; Benth. et Hook. f. *Gen. Pl.* ii. 805.

Calyx 5-cleft to  $\frac{4}{5}$  or nearly to the base; lobes lanceolate. Corolla-tube short; lobes 5, spreading, contorted. Stamens 5, inserted at the throat of the corolla, much exerted; filaments short; anthers linear-oblong, straight or spirally twisted. Ovary ovoid or globose, 1-celled; placentas little intruded, bifid; ovules numerous; style subulate, curved; stigma entire or shortly 2-lobed. Fruit usually capsular, rarely baccate, septicidally 2-valved, rarely subacute. Seeds many, globose, foveolate.—Much-branched glabrous herbs. Leaves sessile, broad or narrow. Inflorescence cymose or cymose-paniculate.

Species about 30, the others in South Africa and Madagascar.

Cyme densely many-flowered; flowers erect, fastigiate . . . . . 1. *C. Krebsii*.

Cyme or panicle lax; flowers not fastigiate.

Cyme-branches erect or ascending.

Anthers much twisted, 1-2 lin. long.

Stem-leaves oblong or lanceolate . . . . . 2. *C. erythræodes*.

Stem-leaves linear . . . . . 3. *C. humilis*.

Anthers straight or slightly twisted, 2-3 $\frac{1}{2}$  lin. long . . . . . 4. *C. transvaalensis*.

Cyme-branches widely spreading.

Leaves linear or lanceolate, 2-3 in. long . . . . . 5. *C. angolensis*.

Leaves broadly ovate,  $\frac{1}{2}$ -1 in. long . . . . . 6. *C. laxiflora*.

1. **C. Krebsii**, *Griseb. Gen. et Sp. Gent.* 98. Stem 2-3 ft. long, terete, scape-like, stiffly erect, bearing only 2-3 pairs of reduced leaves. Basal leaves densely tufted, spatulate- or linear-oblong, obtuse, subcoriaceous, glabrous, 4-9 in. long,  $\frac{1}{2}$  in. broad above the middle, tapering gradually to a long narrow base. Cyme elongate, densely many-flowered; branches erect, close together, with fastigiate flowers. Calyx  $\frac{1}{4}$  in. long; segments 5, lanceolate, acute. Corolla bright pink; tube rather longer than the calyx; lobes lanceolate, acute, as long as

the tube. Anthers  $1-1\frac{1}{3}$  lin. long, twisted. Style overtopping the anthers.—*C. densiflora*, Scott-Elliot in Journ. Bot. 1891, 69.

**Mozamb. Dist.** British Central Africa: Nyasaland; Mount Zomba, 4000-6000 ft., *Whyte!* and without precise locality, *Buchanan*, 271!

2. **C. erythræodes**, *Hiern in Cat. Afr. Pl. Welw.* i. 709. An erect glaucous-green annual, about 1 ft. high, rather fleshy. Stems several, narrowly 4-winged. Root-leaves rosulate, sessile,  $\frac{3}{4}-1\frac{1}{2}$  in. long,  $\frac{1}{4}-\frac{1}{2}$  in. broad, obovate-spathulate, obtuse. Stem-leaves suberect, oblong or lanceolate, shorter than the internodes, 1 in. or less long, semi-amplexicaul. Panicle ovoid, rather lax; pedicels slender. Calyx campanulate, deeply 5-lobed; segments lanceolate, acuminate,  $\frac{1}{4}$  in. long. Corolla deep rosy-red, about  $\frac{2}{3}$  in. long; tube very short, campanulate; lobes ovate,  $\frac{1}{2}$  in. long. Staminal-filaments  $\frac{1}{10}$  in. long, linear-lanceolate; anthers  $\frac{1}{6}$  in. long, oblong, spirally twisted.

**Lower Guinea.** Angola: Huilla; by swamps near Lopollo, 5000 ft., rare, *Welwitsch*, 1525.

3. **C. humilis**, *Gily in Engl. Jahrb.* xxvi. 105. Plant 4-14 in. high, glabrous, apparently perennial or biennial. Rootstock slender, producing 1-7 erect stems cymosely branched above. Radical leaves rosulate,  $\frac{1}{3}-2$  in. long,  $1-2\frac{1}{2}$  lin. broad, spatulate, linear, or linear-oblancheolate, obtuse; stem leaves in 4-8 pairs,  $\frac{1}{2}-1\frac{1}{2}$  in. long, linear, subacute. Cymes rather lax, somewhat flat-topped or subpaniculate, 3- to many-flowered; all or ultimate branches assuming the character of pedicels, but bibracteate close under the calyx, ascending. Sepals 5, narrowly ovate-lanceolate, acuminate, 3-4 lin. long,  $\frac{3}{4}-1$  lin. broad at the base. Corolla bright pink; tube  $2-2\frac{1}{2}$  lin. long; lobes 5-6 lin. long, 2-3 lin. broad, oblanceolate or obovate-acute. Anthers  $1-1\frac{1}{3}$  lin. long, very much twisted. Style  $2\frac{1}{2}-3$  lin. long; stigma ovoid.—*C. Wilmsii*, *Gily in Engl. Jahrb.* xxvi. 105. *C. purpurascens*, *Rolfe in Oates, Matabeleland*, ed. 2, 404, not of *Berth. & Hook.* f.

**Mozamb. Dist.** Rhodesia: Inganga Mountains, 6000-7000 ft., *Evelyn Cecil*, 190! Matabeleland, *Oates!*

Also in South Africa.

4. **C. transvaalensis**, *Gily in Engl. Jahrb.* xxvi. 106. Plant  $1-2\frac{1}{2}$  ft. high, glabrous, perennial or biennial? Stems terete, cymosely branched above. Radical leaves rosulate,  $\frac{1}{2}-1\frac{1}{2}$  in. long,  $\frac{1}{6}-\frac{1}{3}$  in. broad, spatulate-obovate or oblong-oblancheolate, obtuse or acute; stem-leaves up to the inflorescence in 4-8 distant pairs, erect or ascending,  $1-3\frac{1}{3}$  in. long,  $1-3\frac{1}{2}$  lin. broad, linear or linear-lanceolate, acute. Cyme lax, elongate or flat-topped, 5-18-flowered, with ascending branches. Pedicels  $\frac{1}{2}-2\frac{1}{2}$  in. long, ascending. Sepals  $2\frac{1}{2}-3$  lin. long,  $\frac{3}{4}-1$  lin. broad, ovate-lanceolate, tapering to a very acute point, rather stoutly and rigidly keeled. Corolla bright pink; tube 3 lin. long; lobes 6-8 lin. long,  $2\frac{1}{2}-3\frac{1}{2}$  lin. broad, lanceolate, acute. Anthers  $2-3\frac{1}{2}$  lin. long, straight or slightly twisted. Style  $\frac{1}{4}-\frac{1}{3}$  in. long; stigma compressed-ovoid, shortly bilobed.

**Mozamb. Dist.** Rhodesia: Umtali, in marshy ground, *Hon. Mrs. Evelyn Cecil*, 162! Leshumo Valley, south of the Zambesi, *Holub*!

Also in South Africa.

5. **C. angolensis**, *Gilg in Engl. Jahrb.* xxvi. 104. A glabrous perennial. Rootstock woody, producing 2-5 stems 2-4½ ft. high, simple below, branched above, narrowly 4-winged. Leaves 2-3 in. long, ½-1 in. broad, lanceolate to linear, acute or acuminate, 3-nerved, spreading, bright green. Panicle about 1 ft. long and 9-10 in. broad, lax; branches widely spreading, trichotomously 3-9-flowered; pedicels ⅔-1¼ in. long. Sepals 5, narrowly lanceolate, subulate-acuminate, ⅓-½ in. long, 1-1¼ lin. broad at the base, glaucescent-green. Corolla bright rose-pink; tube ⅓ in. long; lobes ⅔-¾ in. long, ¼-⅓ in. broad, lanceolate, very acute. Stamens 5; filaments 2 lin. long, slightly dilated at the base, inserted about 1 lin. below the corolla-sinuses; anthers 3½ lin. long, oblong, spirally twisted, rugose, yellow. Style 4½-5 lin. long; stigma 1-1⅔ lin. long, oblong, shortly bilobed at the apex.—*Hiern* in *Cat. Afr. Pl. Welw.* i. 709.

**Lower Guinea.** Angola: Huilla; rocky slopes of the Chella Mountains, 4000 ft., not far from Mumpulla, *Welwitsch*, 1526! Chella Mountains, *Johnston*!

6. **C. laxiflora**, *Baker in Kew Bulletin*, 1894, 25. Stem long, slender, 4-angled. Leaves distant, ovate, acute, ½-1 in. long. Inflorescence a very lax panicle; branches widely spreading, cymosely 2-7-flowered; pedicels ⅓-1⅓ in. long. Calyx ¼-½ in. long; segments 5, lanceolate, acuminate. Corolla pale pink; tube shorter than the calyx; lobes 5, lanceolate, 5-7 lin. long. Anthers much twisted, ⅓-¼ in. long. Style curved. Fruit capsular, as long as the calyx.—*C. rubrocœrulea*, *Gilg* in *Engl. Jahrb.* xxx. 379.

**Mozamb. Dist.** German East Africa: Usufua; banks of streams on the lower slopes of the Poroto Mountains, 5900 ft., *Goetze*, 1049 (ex *Gilg*). British Central Africa: Nyasaland; Manganja Hills, 3000 ft. *Meller*! near Sochi Hill, *Kirk*! between Kondowe and Karonga, 2000-6000 ft., *Whyte*! Nyika Plateau, 6000-7000 ft., *Whyte*, 141! Urunga; Fwambo, 5200 ft., *Nutt*!

5. **ERYTHRÆA**, L. C. Rich.; Benth. et Hook. f. *Gen. Pl.* ii. 809.

Calyx tubular, shortly 5-cleft. Corolla-tube long or short; lobes 5, rarely 4, spreading, contorted. Stamens inserted in the corolla-tube; filaments filiform; anthers twisted. Ovary 1-celled; placentas much inflexed; style subulate; stigma 2-lobed. Capsule oblong, septicidally 2-valved. Seeds numerous, minute, foveolate.—Annual or perennial herbs. Leaves sessile or amplexicaul. Flowers in terminal dichotomous cymes, usually red.

Species numerous, principally inhabiting the north temperate zone, but extending to Australia and Chili.

1. **E. ramosissima**, *Pers.; Griseb. in DC. Prod.* ix. 57. Stems erect, usually much branched, ½-1½ ft. long. Leaves in many pairs, oblong or lanceolate, ½-1 in. long. Cymes few- or many-flowered, with single

flowers in the forks; pedicels short. Calyx cylindric,  $\frac{1}{4}$ – $\frac{1}{3}$  in. long; teeth linear, 4–5-times as long as the tube. Corolla-tube cylindrical, longer than the calyx; limb bright red,  $\frac{1}{6}$  in. long; segments ovate. Stamens inserted at the throat of the tube, shorter than the segments.—A. Rich. Tent. Fl. Abyss. ii. 54; Engl. Hochgebirgfl. Trop. Afr. 336. *E. pulchella*, Hornem. in Fl. Dan. t. 1637.

**Nile Land.** Eritrea: Haichello Kokab, north of Acrur, 5200 ft., *Schweinfurth & Riva*, 1101! Abyssinia: near Adowa, *Schimper*, 1100, and near Addi Selgenne, *Schimper*, 507 (ex *Engler*); Shireh Province, *Quartin Dillon*!

Widely spread in the temperate zone of the Old World.

## 6. SCHINZIELLA, Gilg in Engl. & Prantl, Pflanzenfam. iv. ii. 74.

Calyx 4-lobed. Corolla equally 4-lobed; tube very much shorter than the lobes. Stamens 4, unequal, 3 sterile, 1 larger, fertile. Ovary 1-celled, with parietal placentas; stigma 2-lobed.—Herb with small green leaves. Flowers crowded in large terminal cymes.

Species 1, endemic.

1. *S. tetragona*, *Gilg, l.c.* Stem above 1 ft. long, narrowly 4-winged. Leaves sessile, oblong-ovate, obtuse or apiculate, subcoriaceous,  $\frac{1}{4}$ – $\frac{1}{3}$  in. long by half as broad. Flowers many, sessile or shortly stalked. Calyx  $\frac{1}{4}$  in. long; lobes 1 lin. long, broadly deltoid, apiculate, 3-nerved. Corolla  $\frac{1}{3}$  in. long, yellow; lobes  $\frac{1}{4}$  in. long, 1 lin. broad, much longer than the tube. Style nearly 2 lin. long; stigma shortly 2-lobed.—*Canscora tetragona*, *Schinz* in Viertelj. Naturforsch. Ges. Zürich, xxxvii. (1871) 338.

**Lower Guinea.** Angola: Malange, *Mechow*, 418.

## 7. CANSCORA, Lam.; Benth. et Hook. f. Gen. Pl. ii. 811.

Calyx-tube terete or winged; teeth usually 4. Corolla-tube cylindric; lobes 4, much shorter than the tube. Stamens 4, inserted at different heights in the corolla-tube, usually only one perfect; filaments short; anthers ovate or oblong. Ovary 1-celled; placentas slightly intruded; ovules many; style filiform; stigma 2-lobed. Capsule cylindrical, membranous, 2-lobed. Seeds many, minute, rugose.—Much branched erect annuals. Upper leaves sometimes connate. Cymes lax, terminal. Flowers small, pink or white.

Species 12, chiefly natives of Tropical Asia.

Calyx 4–5 lin. long . . . . . 1. *C. decussata*.

Calyx not more than  $2\frac{1}{2}$  lin. long.

Panicle rather diffuse; pedicels 3–7 lin. long . . . 2. *C. diffusa*.

Panicle contracted; pedicels 1–3 lin. long . . . 3. *C. Kirkii*.

1. *C. decussata*, *Roem. et Schultes; Griseb. in DC. Prod.* ix. 64. More robust than *C. diffusa*; stems conspicuously 4-winged. Leaves lanceolate, acute,  $\frac{1}{2}$ –1 in. long. Flowers laxly cymose; pedicels stout,

4-winged. Calyx 4–5 lin. long; tube ventricose; teeth ovate-lanceolate. Corolla white or pale pink; lobes much shorter than the tube, obovate,  $2\frac{1}{2}$  lin. long. Perfect stamen 1. Capsule shorter than the calyx.

**Upper Guinea.** Southern Nigeria: Ogurude, *Holland*, 266! Onitsa, *Barter*, 1755!

**Nile Land.** Bongo: Duggudu, *Schweinfurth*, 2695! Sabbi, *Schweinfurth*, 2614!

**Lower Guinea.** Lower Congo: Stanley Pool, *Callewaert*!

**South Central.** Congo Free State: Mtowa, on Lake Tanganyika, *Descamps*.

**Mozamb. Dist.** Pemba Island, *Bojer*! British Central Africa: Nyasaland; Kondowe to Karonga, *Whyte*, 81!

Also in Madagascar and Tropical Asia.

2. **C. diffusa**, *R. Br.*; *Griseb. in DC. Prod.* ix. 64. A much-branched erect annual; stems slender, 4-angled,  $\frac{1}{2}$ –2 ft. long. Leaves membranous; upper ovate, acute, short; lower narrowed to the base,  $\frac{1}{3}$ – $1\frac{1}{2}$  in. long. Flowers very numerous, in a lax rather diffuse cymose panicle; pedicels 3–7 lin. long. Calyx  $\frac{1}{6}$  in. long, not winged; teeth 4, subulate, erect,  $\frac{1}{3}$ – $\frac{1}{2}$  lin. long. Corolla pink; tube as long as the calyx; lobes unequal, much shorter than the tube, ovate. Stamens unequal. Capsule shorter than the calyx.—Benth. in *Hook Niger Fl.* 460.—*Orthostemon erectum*, *R. Br. Prod. Fl. Nov. Holl.* 451.

**Upper Guinea.** Senegal, *Heudelot*, 170! Sierra Leone: Kofu Mountain, *Scott-Elliott*, 4505, and without precise locality, *Don*. Niger Territory: Nupe, *Barter*, 806!

**Nile Land.** Nubia, *Kotschy*, 488! Mittu: Kuddu, *Schweinfurth*, 2814.

**Mozamb. Dist.** British Central Africa: Nyasaland; Mpata and commencement of the Tanganyika Plateau, *Whyte*! Fort Hill, 3509–4000 ft., *Whyte*!

Also in Madagascar, Tropical Asia and Australia.

3. **C. Kirkii**, *N. E. Br.* Plant 6–9 in. high, branching from the base upwards, glabrous; branches ascending or nearly erect, 4-angled, trichotomous, several-flowered, the whole plant forming an elongate contracted panicle of cymes. Leaves spreading,  $\frac{1}{4}$ –1 in. long,  $1\frac{1}{2}$ –5 lin. broad, lanceolate or elliptic, acute. Pedicels 1–3 lin. long. Calyx-tube  $1-1\frac{1}{6}$  lin. long, cylindrical, not winged; lobes  $\frac{1}{2}$  lin. long, deltoid, acute. Corolla-tube  $1\frac{1}{2}$ – $1\frac{3}{4}$  lin. long; lobes subequal,  $\frac{2}{3}$ – $\frac{3}{4}$  lin. long,  $\frac{1}{2}$  lin. broad, elliptic-oblong, emarginate or bifid at the apex. Stamens 4, equal; filaments  $\frac{1}{4}$  lin. long, filiform, all inserted  $\frac{1}{4}$  lin. below the corolla-sinuses; anthers all alike and fertile,  $\frac{1}{4}$  lin. long and about as broad, roundish-cordate. Style very short; stigma deeply divided into 2 large obovate lobes.

**Mozamb. Dist.** British Central Africa: on an island in the Zambesi at Victoria Falls, *Kirk*!

*Orthostemon*, *R. Br.*, should, perhaps, be retained as distinct from *Canscora*, *Lam.*, and this be referred to it as *O. Kirkii*, *N. E. Br.*

**C. ramosissima**, *Baker in Kew Bulletin*, 1898, 158, is *Torenia spicata*, *Engl.*, in *Scrophulariaceæ*.

8. **SCHULTESIA**, Mart.; Benth. et Hook. f. Gen. Pl. ii. 811.

Calyx tubular, 4-winged, 4-toothed. Corolla funnel-shaped; segments 4, broad, contorted. Stamens 4, inserted in the corolla-tube; filaments filiform, sometimes winged towards the base; anthers oblong, not twisted. Ovary 1-celled; placentas little or much intruded; ovules many; style filiform; stigma 2-lobed. Capsule 2-valved. Seeds small, foveolate.—Erect simple or branched annuals. Leaves sessile. Flowers in terminal cymes.

Species 15, natives of Tropical America.

1. **S. stenophylla**, var. **latifolia**, Mart. ex Progel in Mart. Fl. Bras. vi. i. 207. An erect annual 3–18 in. high, 3–18-flowered. Stems simple or branched above, 4-angled in the upper part. Leaves in 4–6 pairs, sessile, ovate-lanceolate or narrowly oblong, ascending, membranous,  $\frac{1}{2}$ – $1\frac{1}{2}$  in. long. Flowers cymose, on short erect pedicels. Calyx 6–7 lin. long, scarious, strongly winged and veined; segments narrowly lanceolate-subulate. Corolla-tube as long as the calyx; segments obovate,  $\frac{1}{3}$  in. long and about as broad.—*S. senegalensis*, Baker in Kew Bulletin, 1894, 26.

**Upper Guinea.** Senegambia, Heudelot, 551! Gambia: by the River Gambia, Brown-Lester, 39!

Probably introduced from Brazil.

9. **NEUROTHECA**, Salisb. ex Benth. et Hook. f. Gen. Pl. ii. 812.

Calyx tubular, 8–12-ribbed; lobes 4. Corolla-tube narrowly funnel-shaped or cylindrical; lobes 4, ovate, contorted. Stamens 4, inserted below the middle of the corolla-tube and reaching to its mouth or exerted, slightly unequal; filaments filiform; anthers shortly oblong, erect, not twisted. Ovary oblong, 1-celled; placentas very slightly intruded; ovules many; style filiform; stigma 2-lobed. Capsule membranous, 2-valved. Seeds minute, reticulated.—Dwarf herbs. Leaves opposite. Flowers solitary (very rarely 2) in each axil, forming long or short racemes or crowded in terminal corymb-like clusters.

Species 7, 1 also in Brazil and Guiana.

Calyx-tube unequally 12-ribbed, equalling or shorter than the teeth. . . . . 1. *N. longidens*.

Calyx-tube equally and prominently 8-ribbed, longer than the teeth.

Inflorescence occupying the greater part of the stems.

Lower leaves  $\frac{1}{6}$ –1 in. long; corolla 3–4 lin. long. 2. *N. laxselioides*.

Lower leaves up to  $2\frac{1}{3}$  in. long; corolla 5 lin. long . . . . . 3. *N. robusta*.

Inflorescence occupying only the terminal part of the stems.

Flowering stems often crowned with a tuft of leaves . . . . . 4. *N. rupicola*.

Flowering stems not crowned with a tuft of leaves.

Flower-pairs shortly racemose.

Internodes between the flower-pairs 6-10 lin.

long; pedicels  $1\frac{1}{2}$ -6 lin. long . . . 5. *N. Schlechteri*.

Internodes between the flower-pairs  $1\frac{1}{2}$ -2 lin.

long; pedicels  $\frac{1}{2}$ -1 lin. long . . . 6. *N. congolana*.

Flower-pairs congested into small corymb-like

clusters . . . . . 7. *N. corymbosa*.

1. **N. longidens**, *N. E. Br.* Plant 4-12 in. high, much branched, glabrous; branches slender, 4-angled. Leaves 2-8 lin. long,  $\frac{1}{3}$ -3 lin. broad; lower lanceolate or ovate-lanceolate, sessile or narrowed into a petiole; upper gradually smaller. Pedicels 0- $\frac{1}{2}$  lin. long. Calyx-tube  $\frac{1}{2}$ - $\frac{3}{4}$  lin. long, with 4 prominent and 8 rather inconspicuous ribs; lobes longer than or equalling the tube,  $1-1\frac{1}{4}$  lin. long, lanceolate-subulate, tapering to a very fine arista-like point, membranous-margined at the base. Corolla very pale lilac; tube  $1\frac{1}{3}$ -2 lin. long; lobes  $\frac{3}{4}$ -1 lin. long,  $\frac{2}{3}$  lin. broad, ovate, acute. Stamens slightly unequal, at first reaching to about the middle of the corolla-lobes, at length, by elongation of the filiform filaments reaching to their tips; anthers  $\frac{1}{3}$  lin. long, cordate-ovate, very obtuse, minutely apiculate, quickly falling off. Style  $\frac{3}{4}$ -1 lin. long, filiform, deciduous; stigmatic-lobes large, obovate, obtuse. Capsule about as long as the calyx, narrowly oblong.

**Upper Guinea.** Lagos, *Moloney!*

**South Central.** Congo Free State: Bangala, on the Cougo, in moist sandy places in Manihot fields, 1000 ft., *Hens, C, 103!*

**Mozamb. Dist.** German East Africa: Karagwe; Bukoba, *Stuhlmann, 3984!*

2. **N. loeselioides**, *Oliver ex Ind. Kew. i. 311.* Annual, 3-12 in. high, simple or branched, erect. Stems slender, 4-angled; flowering part longer than the flowerless part, racemose. Leaves membranous; lower  $\frac{1}{3}$ - $\frac{3}{4}$  in. long, lanceolate or ovate-lanceolate; upper lanceolate or linear, smaller. Pedicels  $\frac{1}{2}$ - $2\frac{1}{2}$  lin. long. Calyx 2- $2\frac{1}{2}$  lin. long, conspicuously and equally 8-ribbed; lobes much shorter than the tube, elongate-deltoid, very acute, rigid. Corolla-tube  $2\frac{1}{4}$ - $3\frac{1}{4}$  lin. long; lobes about  $\frac{3}{4}$  lin. long, ovate, pale blue. Stamens slightly unequal, about reaching to the base of the corolla-lobes. Capsule much shorter than the calyx.—*Octopleura laeselioides*, Spruce ex Progel in Mart. Fl. Bras. vi. i. 212, t. 58, fig. 1; and var. *compacta*, Oliver in Trans. Linn. Soc. xxix. 113, t. 78, fig. B.

**Upper Guinea.** Senegambia: inundated places by the River Casamanze River, *Heudelot, 582!* Nyayes, Sinedone, Koulaye and Koulikoro, *Chevalier (ex Hua)*. Sierra Leone: in forest on the way to Lester Peak, *Scott-Elliot, 3853!* French Guinea: Konakry, *Maclaud (ex Hua)*. Southern Nigeria: Onitsa, *Barter, 1761!* Fernando Po and vicinity, *Milne!*

**Nile Land.** Madi: in swamps, *Speke & Grant!*

**Lower Guinea.** French Congo: Brazzaville, moist sands of Mpila, *Brazza, 121, Thollon, 123, 4058, Dybowski*; Nioumoux, *Lecomte, 108*; Gaboon, *Duparquet (all ex Hua)*.

Also in Guiana and Brazil, where it is probably introduced.

*Octopleura leselioides*, var. *grandiflora*, Knobl. in Bot. Centrbl. ix. (1894). 362, according to Gilg in Kunene-Sambesi Exped. 334, is a mixture of 2 species, one of which, collected by Afzelius in Sierra Leone, may be a var. of *N. leselioides*; the other is said to be identical with *N. Baumii*, Gilg, which appears indistinguishable from *N. congolana*, De Wild. & Durand.

3. **N. robusta**, *Hua in Bull. Soc. Bot. France*, xlviii. 261 and 265. Plant more robust than *N. leselioides*. Benth., 10-12 in. high, branching at the base. Leaves up to  $2\frac{1}{3}$  in. long,  $2-3\frac{1}{2}$  lin. broad, very shortly connate, lanceolate-linear, obtuse, slightly constricted at the base; lower in rosettes followed by a very small number of sterile leaves; upper bract-like, mostly longer than the calyx. Inflorescence occupying nearly the whole plant, racemose. Flowers subsessile. Calyx equally and prominently 8-ribbed; teeth half as long as the tube, acute. Corolla about 5 lin. long, longer than the calyx; tube slender, slightly enlarged at the throat; lobes ovate, acute. Stamens included, 1 shorter than the others; anthers oblong, very shortly apiculate. Style filiform; stigmatic lobes slightly revolute.

**Upper Guinea.** French Guinea: between Manea and Frigniabié, *Pobéguin*, 13.

4. **N. rupicola**, *Hua in Bull. Soc. Bot. France*, xlviii. 262 and 266. Perennial, simple or branched. Leaves opposite or ternate: lower forming a grass-like tuft, linear,  $1-1\frac{1}{2}$  lin. broad, 1-nerved, with thickened margins, falling away after the elongation of the stem, leaving annular scars; stem-leaves much shorter and mostly flower-bearing, equalling or shorter than the calyx. Flowering-stems often crowned with a tuft of leaves. Calyx as in *N. robusta*, Hua. Corolla  $\frac{1}{2}$  in. long, twice as long as the calyx-tube. Anthers oblong, scarcely apiculate. Style almost exserted; stigma 3-lobed, revolute. Ovules about 20.

**Upper Guinea.** French Guinea: Bramaya, on grit-stone rocks, *Paroisse*, 194.

5. **N. Schlechteri**, *Gilg ined.* Plant, in the only specimen seen, 16 in. high, glabrous, annual? Stem slender, with one branch near the top. Leaves in about 12 distant pairs below the inflorescence, 3-6 lin. long,  $\frac{1}{2}-2\frac{1}{2}$  lin. broad; lower elliptic-ovate, obtuse, more or less narrowed into a petiole; upper sessile, erect, linear or linear-lanceolate, obtuse. Inflorescence about  $3\frac{1}{2}$  in. long, consisting of 5 distant pairs of flowers and a lateral erect branch with 3 flowers. Pedicels  $1\frac{1}{2}-6$  lin. long. Calyx-tube  $2\frac{1}{3}-3$  lin. long, equally and prominently 8-ribbed; lobes 1 lin. long, deltoid, very acute. Corolla whitish in the dried state; tube 3 lin. long, narrowly funnel-shaped; lobes  $1\frac{1}{4}$  lin. long,  $\frac{3}{4}$  lin. broad, ovate, acute. Style filiform, not exserted; stigmatic-lobes linear, suberect, slightly exserted.

**Mozamb. Dist.** Portuguese East Africa: Inhambane, *Schlechter*, 12087!

6. ***N. congolana***, *De Wild. & Durand in Comptes-rendus Soc. Bot. Belg.* xxxviii. 98. A glabrous annual, 6–16 in. high. Stem slender, usually simple, with long internodes, flowering only at the apical part. Leaves 3–9 lin. long,  $\frac{1}{2}$ – $2\frac{1}{2}$  lin. broad; lower more or less crowded, broadly oblanceolate or subelliptic, obtuse; upper in distant pairs, suberect, linear or linear-lanceolate, subacute; flowering leaves or bracts 1– $1\frac{1}{2}$  lin. long, linear-subulate. Flowers crowded into short racemes terminating the stem and its few branches. Pedicels  $\frac{1}{2}$ –1 lin. long. Calyx-tube 2–3 lin. long, equally and prominently 8-ribbed; lobes  $\frac{3}{4}$ –1 lin. long, narrowly deltoid, very acute. Corolla blue or white; tube about 3 lin. long, funnel-shaped; lobes  $1\frac{1}{2}$  lin. long,  $1\frac{1}{4}$  lin. broad, broadly ovate, acute. Style filiform, exserted; stigmatic lobes linear, suberect or recurving.—*Reliq. Dewevr.* 162; *Hua* in *Bull. Soc. Bot. France*, xlviii. 262 and 265. *N. Baumii*, *Gilg* in *Kunene-Sambesi Exped.* 333. *Octopleura leselioides*, var. *grandiflora*, *Knobl.* in *Bot. Centralbl.* lx. (1894) 362, partly.

**Lower Guinea.** French Congo: Diélé, by the River Alima Leketé, *Brazza*, 134, and prairies of Batékés, *Thollon*, 122 (ex *Hua*). Angola: Amboella; by the River Longa above Napalanka, in sandy places on the borders of swamps, 3700 ft. *Baum*, 604!

**South Central.** Congo Free State: Oukounou, *Dewèvre*, 1084. Middle Congo; between Lukolela and the Equator, *Büttner*, 575 (ex *Gilg*).

I have not seen a specimen of *N. congolana*, but according to the description it does not differ from *N. Baumii*, except in the colour of the flowers; the former is described as having white flowers, whilst in *N. Baumii* they are blue. *Hua* also notes that the flowers of *Brazza* and *Thollon*'s specimens are blue, whilst those of *Dewèvre* are white, but are otherwise identical.

7. ***N. corymbosa***, *Hua* in *Bull. Soc. Bot. France*, xlviii. 262 and 267. Perennial, 4–5 in. high, with several stems from the base. Radical leaves rosulate,  $\frac{1}{2}$ –1 in. long, 2– $2\frac{1}{2}$  lin. broad, spatulate-oblong or oblanceolate, narrowed into a petiole; stem leaves in 2–4 distant pairs,  $\frac{3}{4}$ – $1\frac{1}{2}$  in. long, 1– $2\frac{1}{2}$  lin. broad, oblanceolate to linear, narrowed at the base. Flowers 4–12 or more crowded in corymb-like clusters at the top of the stems and branches. Calyx equally and prominently 8-ribbed; tube 2 lin. long; lobes  $1\frac{2}{3}$  lin. long,  $\frac{3}{4}$  lin. broad, deltoid-ovate, acute, spreading. Corolla-tube 4– $4\frac{1}{4}$  lin. long; lobes 3 lin. long, 2 lin. broad, elliptic, acute. Stamens reaching to the mouth of the corolla-tube; anthers oblong, not apiculate. Style exserted; stigma with 2 linear recurved lobes.—*N. evacoides*, *Gilg* in *Schlechter*, *Westafr. Kautschuk-Exped.* 304, name only.

**Lower Guinea.** French Congo: Cape Lopez, sands near the sea, *Thollon*, ser. ii. 43, *Schlechter*, 12814! sandy plain of Dayor, *Griffon du Bellay*, 104; desert plain at Fernand Vaz, *Leroy*; Mayumba, *Dybowski*, 38; Ngore, moist sandy prairies, *Dybowski*, 112.

10. **ENICOSTEMA**, *Blume*; *Benth. et Hook. f. Gen. Pl.* ii. 807.

Calyx-tube campanulate; teeth 5, lanceolate. Corolla-tube long, cylindrical in the lower half, narrowly funnel-shaped in the upper half;

lobes 5, small, lanceolate. Stamens 5, inserted at the middle of the corolla-tube; filaments filiform, with a small double-hooded scale at the base; anthers erect, not twisted, acute. Ovary 1-celled; placentas little intruded; ovules many; style short, subulate; stigma capitate. Capsule oblong, septicidally 2-valved. Seeds many, globose, foveolate.—Erect herbs, with numerous opposite leaves and many axillary clusters of minute flowers.—*Slevogtia*, Reichb. Consp. 133.

Species 4; 1 in Madagascar, 1 in Tropical America, and the 2 following.

*Hippion*, F. W. Schmidt, is of much earlier date than *Enicostema*, Bl., but being founded upon plants belonging to 7 different genera (most of them being species of *Gentiana*), and *Hippion*, Sprengel, also of an earlier date, upon plants belonging to 2 distinct genera, cannot be maintained.

- |   |                          |
|---|--------------------------|
| Calyx-lobes narrowly ovate-lanceolate or linear-lanceolate, acute | 1. <i>E. littorale</i> . |
| Calyx-lobes very broadly ovate or suborbicular, obtuse, apiculate | 2. <i>E. latiloba</i> .  |

1. ***E. littorale***, Blume, *Bijdrag.* 848. A perennial glabrous herb, 4–18 in. high, branching at the base. Leaves in many pairs,  $\frac{3}{4}$ –3 in. long, sessile, linear, lanceolate or narrowly oblong, acute or obtuse. Flowers in axillary clusters all along the stem, sessile. Calyx-tube about  $\frac{1}{2}$  lin. long; lobes  $\frac{2}{3}$ –1 lin. long,  $\frac{1}{3}$  lin. broad, ovate-lanceolate or linear-lanceolate, acuminate or acute, slightly recurved-spreading at the tips, slightly or not at all imbricating at the base, with rather narrow submembranous margins. Corolla-tube  $2\frac{1}{2}$  lin. long; lobes 1– $1\frac{1}{4}$  lin. long. Style slightly thickened upwards.—Griseb. in DC. Prod. ix. 66; Hook. fil. Fl. Brit. Ind. iv. 101; Klotzsch in Peters, Reise Mossamb. Bot. 271. *E. verticillare*, Baill. Hist. Pl. x. 131, partly. *E. verticillatum*, Engl. Pf. Ost-Afr. C. 313 partly; Knobl. in Bot. Centralb. lx. (1894), 333. *Gentiana verticillata*, Linn. fil. Suppl. 174 (not of Linn). *G. verticillaris*, Retz. Obs. ii. 15. *Slevogtia orientalis*, Griseb. in DC. Prod. ix. 65. *Hippion hyssopifolium*, Spreng. Syst. i. 589; Griseb. Gen. et Sp. Gent. 134. *H. verticillatum*, O. Kuntze, Rev. Gen. Pl. 428, and Hiern in Cat. Afr. Pl. Welw. 711, partly (of F. W. Schmidt?). *Centaurium angustifolium, floribus ex alis sessilibus*, Burm. Rar. Afr. Pl. 206, t. 74, f. 3.

**Upper Guinea.** Gambia: swamps on the north side of the River Gambia. *Brown Lester!*

**Nile Land.** Kordofan: towards Tekele, *Kotschy*, 224!

**Lower Guinea.** Angola: near the sea, south of the city of Benguella. *Welwitsch*, 1517! Mossamedes: near the mouth of the River Bero, *Welwitsch*, 1518.

**Mozamb. Dist.** German East Africa: Kilimanjaro; below Marangu, 3200 ft., *Volkens*, 2138! Pare Mountains, *Höhnel*. Portuguese East Africa: mouth of River Kongone, *Kirk*, 333! Lower Zaibesi; opposite Sena, *Kirk!* British Central Africa: Ngamiland; Kwebe, *Lugard*, 87! Kalahari Desert; near Bachakuru, *Lugard*, 235!

Also in South Africa, India and Malay Archipelago.

The mixture of this plant and *E. latiloba*, N. E. Br., with the American species,

has led to much confusion in the nomenclature; they are all perfectly distinct. The name *E. verticillatum* should be restricted to the American plant (*Gentiana verticillata*, Linn. Syst. ed. 10, ii. 952).

2. ***E. latiloba***, *N. E. Br.* Plant 1–2 ft. high, glabrous. Stems simple or branching towards the base, slightly 4-angled. Leaves  $1\frac{1}{2}$ – $2\frac{1}{2}$  in. long,  $1\frac{1}{2}$ –8 lin. broad, linear to elongate-oblong, acute or obtuse, spreading. Clusters many-flowered. Flowers sessile, 5-merous. Bracteoles 1– $1\frac{1}{2}$  lin. long,  $\frac{3}{4}$ –1 lin. broad, broadly obovate or rhomboid-obovate, acute or obtuse and apiculate, with broad submembranous margins. Calyx  $1\frac{1}{2}$ –2 lin. long, obconic-campanulate, 5-lobed to half way down; lobes broadly imbricating,  $\frac{2}{3}$ –1 lin. broad, very broadly ovate or suborbicular, obtuse, minutely apiculate, with broad submembranous margins. Corolla-tube 2– $2\frac{1}{2}$  lin. long, cylindric; lobes  $\frac{3}{4}$ –1 lin. long,  $\frac{1}{3}$ – $\frac{2}{5}$  lin. broad, oblong, obtuse or subacute, with inrolled margins in the dried state. Stamens inserted about  $\frac{2}{3}$  the way up the corolla-tube, included; filaments with a membranous two-tiered or founced hood at their base; anthers  $\frac{1}{2}$  lin. long, acute. Style  $\frac{2}{3}$ – $\frac{3}{4}$  lin. long, filiform, not thickened upwards; stigma capitate. Capsule 2 lin. long, 1– $1\frac{1}{4}$  lin. broad, ellipsoid, rather obtuse.—*E. verticillatum*, Gilg in Engl. & Prantl, Pflanzenfam. iv. ii. 68, fig. 31, B–E (fig. 31, A, from its small size, probably belongs to *E. littorale*, Bl.).

**Nile Land.** British East Africa: Mombasa, Wakefield!

**Mozamb. Dist.** German East Africa: Rovuma Bay, Kirk! Usambara; Doda, Holst, 2930! and without precise locality, Hannington!

## 10. PYCNOSPHERA, Gilg in Kunene-Sambesi Exped. 333.

Calyx 3-partite; sepals unequal, the dorsal minute, the two lateral narrow, complicate, keeled. Corolla 3-lobed; tube cylindric; lobes-spreading. Stamens 3, inserted at the sinuses of the corolla; filaments filiform, dilated into a small hood at their base; anthers versatile, oblong. Ovary 1-celled, with 2 parietal or slightly intruded placentas; style filiform; stigmas 2, long, linear.—Erect herbs. Leaves opposite. Flowers in dense bracteate heads, corymbosely arranged at the ends of the stem and branches.

Species 2, endemic.

Gilg describes the outer sepal as very large and bract-like, embracing the base of the corolla. He has evidently mistaken the large bract embracing each flower for the dorsal sepal, which latter, being very small, he appears to have overlooked. The ovary is also described as 2-celled; I find it as described above.—N. E. Br.

Inflorescence a corymb . . . . . 1. *P. trimer*a.

Inflorescence an elongated panicle . . . . . 2. *P. Buchanani*.

1. ***P. trimer*a**, Gilg in *Kunene-Sambesi Exped.* 333. Annual, 20–28 in. high, glabrous. Stem erect, corymbosely branching at the top only. Basal leaves crowded, 1– $1\frac{1}{2}$  in. long, 2–3 lin. broad, oblong, or oblong-lanceolate, obtuse or subacute, narrowed to the base; stem-

leaves in several distant pairs,  $\frac{1}{3}$ –1 in. long,  $\frac{1}{2}$ –1 lin. broad, linear, acute, erect. Corymb of 3 (or more ?) branches, each terminated by a head  $\frac{1}{3}$ – $\frac{1}{2}$  in. in diam., composed of 3 crowded smaller heads. Bracts 2–2 $\frac{1}{2}$  lin. long,  $1\frac{1}{3}$  lin. broad, cuneate-oblong or obovate-oblong, obtuse, abruptly apiculate, keeled, embracing the flowers. Lateral sepals  $1\frac{1}{2}$ – $1\frac{3}{4}$  lin. long,  $\frac{1}{3}$  lin. broad, narrowly boat-shaped, acute, keeled; dorsal sepal  $\frac{1}{2}$ – $\frac{2}{3}$  lin. long,  $\frac{1}{4}$ – $\frac{1}{3}$  lin. broad, flat, rigidly membranous, oblong or oblong-obovate, obtuse or obscurely 3-lobulate. Corolla blue; tube 1–1 $\frac{2}{3}$  lin. long; lobes  $1\frac{1}{3}$  lin. long, about  $\frac{2}{3}$  lin. broad, ovate-oblong, obtuse, suberect, not spreading. Stamens finally longer than the corolla-lobes,  $1\frac{1}{2}$ – $1\frac{2}{3}$  lin. long; anthers minutely apiculate. Ovary oblong; style 1 lin. long; stigmas  $\frac{2}{3}$  lin. long, erect.

**Lower Guinea.** Angola: Amboella; by the River Kuito, below the River Kutue, 3900 ft., *Baum*, 752!

2. **P. Buchanani**, *N. E. Br.* Plant probably 2 ft. or more high, glabrous. Stem terete, with 2 closely placed slightly elevated lines decurrent from the base of the leaf-pairs on each side, apparently simple below, branching in the flowering part only; branches erect,  $1\frac{1}{2}$ –5 in. long, forming an elongate paniculate inflorescence 6–12 in. or more long and 2–3 in. broad. Lower leaves not seen; stem leaves in distant pairs,  $\frac{2}{3}$ –2 in. long,  $\frac{1}{2}$ –1 lin. broad, linear, acute, erect or ascending. Flowers sessile or subsessile in small dense ovoid heads, 3 of which are crowded together in larger heads about  $\frac{1}{2}$  in. in diam. at the end of each of the short corymbosely arranged branches. Bracts 2 lin. long, 1– $1\frac{1}{3}$  lin. broad, cuneate-obovate, obtuse, abruptly apiculate, complicate and embracing the flowers. Lateral sepals  $1\frac{3}{4}$  lin. long,  $\frac{1}{3}$  lin. broad, narrowly boat-shaped, acute, keeled; dorsal sepal  $\frac{1}{2}$ – $\frac{2}{3}$  lin. long,  $\frac{1}{3}$ – $\frac{1}{2}$  lin. broad, flat, membranous, oblong, very obtusely and unequally subbilobulate or obliquely emarginate at the apex. Corolla-tube  $1\frac{1}{2}$  lin. long; lobes  $1\frac{1}{4}$  lin. long,  $\frac{1}{2}$  lin. broad, ovate-lanceolate, acute, spreading. Stamens finally about as long as the corolla-lobes; anthers very minutely apiculate. Ovary oblong; style  $1\frac{1}{3}$  lin. long; stigmas  $\frac{1}{2}$  lin. long, linear, suberect.—*Faroea Buchanani*, Baker in *Kew Bulletin*, 1894, 26.

**Mozamb. Dist.** British Central Africa: Nyasaland, *Buchanan*, 1135!

## 11. FAROEA, Welw.; Benth. et Hook. f. Gen. Pl. ii. 806.

Calyx-tube short, campanulate; lobes 4, acute or obtuse. Corolla-tube about as long as or shorter than the calyx, with 4 small scales at the mouth; lobes 4, spreading. Stamens 4, inserted at the mouth of the corolla-tube; filaments filiform; anthers oblong, minute. Ovary 1-celled; placentas slightly intruded; ovules numerous; style straight, subulate; stigma simple or 2-lobed. Capsule subglobose, septically 2-valved. Seeds minute, subglobose, foveolate.—Annual or rarely perennial branched herbs. Leaves sessile, broad or narrow. Flowers minute, arranged in dense terminal or axillary clusters.

Species 9, endemic to Tropical and South Africa.

- Flowering-leaves dilated at the base, more or less forming an involucre.
- Calyx-lobes mucronate, tips spreading or squarrose. 1. *F. involucrata*.
- Calyx-lobes not mucronate, tips erect.
- Flowering-leaves lanceolate or narrowly oblong; calyx-lobes not gibbous-keeled at the apex. 2. *F. axillaris*.
- Flowering-leaves linear; calyx-lobes gibbous-keeled at the apex. 3. *F. graveolens*.
- Flowering-leaves not dilated (usually narrowed) at the base.
- Stamens shorter than or about equalling the corolla-lobes; small plants 1-2 in. high.
- Calyx-lobes 1 lin. long, with erect tips. 5. *F. amara*.
- Calyx-lobes  $\frac{2}{3}$  lin. long, with spreading tips. 6. *F. pusilla*.
- Stamens much longer than the corolla-lobes.
- Plant 4-8 in. high; flower-clusters 3-6 to a stem, crowded into a terminal oblong inflorescence. 4. *F. affinis*.
- Plant  $1\frac{1}{2}$ -4 in. high; flower-clusters 1-2 to a stem, the lower contiguous or distant.
- Calyx-lobes obovate, obtuse, cuspidate-apiculate. 7. *F. nyasica*.
- Calyx-lobes ovate, acute, not cuspidate-apiculate.
- Corolla scarcely 2 lin. long; style hair-like. 8. *F. Bœhmii*.
- Corolla  $2\frac{1}{4}$  lin. long; style filiform. 9. *F. salutaris*.

1. ***F. involucrata***, *Knobl. in Bot. Centralbl.* lx. (1894) 331. A dwarf annual 3-4 in. high, much branched, glabrous. Stems narrowly 4-winged; wings with jagged or scabrous edges. Leaves 10-18 lin. long; lower 5 lin. broad, oblong-spathulate, obtusely attenuate at the apex, long-attenuate at the base, connate; flowering leaves with scarious veiny broadly cordate overlapping bases 4-5 lin. broad, forming an involucre to the flowers, then narrowed to a lanceolate or linear-lanceolate acute blade about 2 lin. broad, widely spreading. Flower-clusters axillary and terminal, all distant, 4-5 lin. in diam., dense, many-flowered; pedicels  $\frac{1}{2}$  lin. long. Calyx-lobes about 1 lin. long,  $\frac{2}{3}$ -1 lin. broad, oblong-obovate or spatulate-obovate, obtuse, mucronate, with recurved-spreading or squarrose tips, keeled down the back, with numerous rather crowded subparallel veins. Corolla-tube  $1\frac{1}{3}$  lin. long; lobes nearly 1 lin. long,  $\frac{2}{3}$ - $\frac{3}{4}$  lin. broad, elliptic, acute. Stamens about as long as the corolla-lobes. Style 1 lin. long; stigma minutely 2-lobed. Capsule  $1\frac{1}{4}$  lin. long, oblong, obtuse, scarcely narrowed at the base.—*Sebæa involucrata*, Klotzsch in Peters, Reise Mossamb. Bot. 271; Welw. in Trans. Linn. Soc. xxvii. 47.

**Mozamb. Dist.** Portuguese East Africa: Lower Zambesi, Boror, *Peters!*

2. ***F. axillaris***, *Baker in Kew Bulletin*, 1898, 158. Plant 6-7 in. high, branched, glabrous. Stems narrowly 4-winged. Leaves 1- $1\frac{1}{2}$  in. long,  $\frac{1}{6}$ - $\frac{1}{2}$  in. broad; lower oblong-spathulate or elliptic-lanceolate, narrowed to the base; upper oblong or lanceolate, acute or subobtuse,

very broadly dilated at the cordate scarious veiny base, forming an involucre to the flowers, widely spreading. Flower-clusters axillary and terminal, distant,  $3-5\frac{1}{2}$  lin. in diam., dense, many-flowered; pedicels  $\frac{1}{4}-\frac{1}{2}$  lin. long. Calyx-lobes  $1-1\frac{1}{3}$  lin. long,  $\frac{1}{3}-\frac{1}{2}$  lin. broad, narrowly obovate-oblong, acute, erect, not contiguous nor spreading nor gibbous-keeled at the tips. Corolla-tube about  $\frac{3}{4}$  lin. long; lobes  $\frac{1}{2}-\frac{2}{3}$  lin. long, ovate, acute. Stamens about as long as the corolla-lobes. Style as long as the stamens; stigma of 2 filiform recurved lobes. Capsule 1 lin. long, obovate-oblong, obtuse, distinctly narrowed at the base.

**Mozamb. Dist.** British Central Africa: Nyasaland; Masuka Plateau, 6500-7000 ft., *Whyte!*

Like *F. involucrata*, Knobl., in appearance, but totally different in its calyx.

3. **F. graveolens**, *Baker in Kew Bulletin*, 1894, 26. Stem erect, 6-9 in. long, with several long erect branches in the upper two-thirds. Leaves linear or linear-lanceolate, 1-2 in. long, ascending; lower  $1\frac{1}{2}-3$  lin. broad; upper  $\frac{1}{2}-2$  lin. broad. Clusters of flowers axillary and terminal, distant, 5-8 lin. in diam., very dense, globose, subtended by a pair of broad-based linear leaves; pedicels short. Calyx  $1\frac{1}{3}$  lin. long; lobes oblong, obtuse, with a gibbous-winged keel at the apex. Corolla lilac, twice as long as the calyx; lobes oblong. Stamens as long as or longer than the corolla-lobes.—*F. gomphrenoides*, Engl. Pf. Ost-Afr. C. 313.

**Nile Land.** Uganda, in sandy places, *Wilson*, 32!

**Mozamb. Dist.** German East Africa: Uziba; Usongona, ex *Wilson*. Karagwe; Bukoba, *Stuhlmann*, 3935! 4062! (4162 ex *Engler*); Kayosa, near Bukoba, *Stuhlmann*, 1479 (ex *Engler*).

According to the Rev. C. T. Wilson the whole plant smells like Asafœtida, and a decoction of it is used in malarial ague.

4. **F. affinis**, *De Wild. in Étud. Fl. Katanga*, 99, t. 11, fig. 14-21. Plant 4-8 in. high, simple or slightly branched, glabrous. Stems narrowly 4-winged, with 3-4 rather long internodes below the inflorescence. Leaves  $\frac{1}{3}-1$  in. long,  $\frac{1}{2}-2$  lin. broad, linear lanceolate or the uppermost linear, narrowed at the base; lower all in distant pairs. Flower-clusters 3-6 to a stem, axillary and terminal, dense, many-flowered, all crowded and more or less contiguous, or the lower one distant. Pedicels  $1-2\frac{1}{2}$  lin. long. Calyx  $\frac{3}{4}$  lin. long, 4-lobed  $\frac{2}{3}-\frac{3}{4}$  the way down; lobes elliptic, apiculate (lanceolate, acute, in the figure). Corolla blue; tube 1 lin. long; lobes 1 lin. long, elliptic, acute (lanceolate, acute, in the figure). Stamens at length much longer than the corolla-lobes.

**South Central.** Congo Free State: Katanga; Lukafu, *Verdick*, 536.

5. **F. amara**, *Gily ined.* A small glabrous annual, 1-2 in. high, much branched at the base. Radical leaves  $\frac{1}{2}-\frac{3}{4}$  in. long, 3-4 lin. broad, spathulate-obovate or -oblanceolate, obtuse or subacute, narrowed into the petiole; stem-leaves in 2-4 pairs,  $2\frac{1}{2}-5$  lin. long,  $1\frac{1}{2}-2\frac{1}{2}$  lin. broad, spathulate-ovate or lanceolate, obtuse or acute, narrowed to the base, spreading, all with axillary clusters of flowers

which are contiguous and form a dense oblong terminal inflorescence. Pedicels 1-1½ lin. long. Calyx-lobes 1 lin. long,  $\frac{1}{3}$ - $\frac{2}{5}$  lin. broad, narrowly oblong, acute, with erect tips, submembranous, 1-nerved, prominently keeled at the apex; sinal angles scarcely prominent. Corolla-tube about 1 lin. long; lobes ½ lin. long, about ¼ lin. broad, oblong-ovate, acute, very concave, keeled on the back, erect. Stamens shorter than the corolla-lobes, scarcely  $\frac{1}{3}$  lin. long; filaments with a minute rounded scale at their base. Style  $\frac{1}{3}$  lin. long; stigmatic-lobes minute, linear, revolute.

**Lower Guinea.** Angola: Otyimkiri, *Dekindt*, 1145!

6. **F. pusilla**, *Baker in Kew Bulletin*, 1894, 26. Stems simple or branched from the base, 1-1½ in. long. Leaves elliptic to lanceolate, membranous, those of the basal rosette  $\frac{3}{4}$ -1 in. long, the others smaller, narrowed to the base. Flower-clusters 2-3 to a stem, axillary and terminal, not contiguous, subtended by leaves; pedicels short. Calyx-lobes  $\frac{2}{3}$  lin. long, ovate, acute, spreading at the tips, with their sinal angles very projecting. Corolla whitish; lobes  $\frac{2}{5}$  lin. long, ovate, acute. Stamens as long as the corolla-lobes. Style  $\frac{1}{3}$ -½ lin. long; stigma subsimple, scarcely or but very minutely 2-lobed. Capsule as long as the calyx.—*F. Schweinfurthii*, Engl. & Knobl. in Bot. Centralb. lx. (1894), 330.

**Upper Guinea.** Niger Territory: Nupe; in moist places on the margins of swamps, *Barter*, 1008! 1710!

**Nile Land.** Bongo: Gir, *Schweinfurth*, 2513!

7. **F. nyasica**, *N. E. Br.* A dwarf biennial or perennial, 2½-3 in. high, with numerous branches from the base, glabrous. Radical leaves numerous,  $\frac{3}{4}$ -2 in. long, 1¼-3 lin. broad, linear, lanceolate or oblanceolate, obtuse; stem-leaves in 3-4 pairs, 4-9 lin. long, 1¼-3 lin. broad, spatulate-oblanceolate, obtuse. Flower-clusters solitary, terminal or sometimes a second cluster lower down the stem, many-flowered; pedicels 1½-4 lin. long. Calyx 1½ lin. long, very membranous; lobes obovate or oblong-obovate, very obtuse, cuspidate-apiculate by the prolonged  $\frac{1}{4}$ - $\frac{1}{3}$  lin. long slightly gibbous midrib. Corolla-tube 1¼ lin. long; lobes 1¼-1½ lin. long, lanceolate, acute or subacute. Stamens longer than the corolla-lobes. Style 2¼-2½ lin. long, filiform; stigma very minutely 2-lobed.

**Mozamb. Dist.** British Central Africa: Nyasaland; Mountains west of Lake Nyasa, 3000-4000 ft., *Kirk*! *Livingstone*!

Differs from *F. salutaris*, Welw., in its larger foliage and much more membranous calyx with cuspidate (not simply acute) lobes.

8. **F. Boehmii**, *Engl. Pfl. Ost-Afr. C.* 313. Stems 1½-2½ in. long; branches short, springing from the axils of the lower leaves. Leaves oblong; basal crowded. Flower-clusters solitary, terminal, or 2 to a stem, contiguous; pedicels 2-4 lin. long, slender. Calyx 1 lin. long; lobes ovate, acute, rather longer than the funnel-shaped tube. Corolla violet; tube 1 lin. long; lobes  $\frac{5}{8}$  lin. long,  $\frac{1}{3}$ - $\frac{2}{5}$  lin. broad, lanceolate,

acute. Stamens longer than the corolla-lobes. Style far exerted, 2 lin. long, exceedingly slender, hair-like; stigma very minutely 2-lobed.

**Mozamb. Dist.** German East Africa: Unyamwezi, Gouda, *Boehm*, 283!

This is only to be distinguished from *F. salutaris*, Welw., by its smaller flowers and the much more slender style.

9. **F. salutaris**, *Welw. in Trans. Linn. Soc.* xxvii. 45, t. 17. A glabrous biennial or perennial, 2-3 in. high, much branched at the base; stems slender. Leaves crowded in a basal tuft and each stem with 2-3 pairs, the upper lanceolate, 2-6 lin. long, the lower oblanceolate, obtuse, narrowed to the base,  $\frac{1}{2}$ - $\frac{3}{4}$  in. long. Flowers in a dense terminal cluster and sometimes also 1 axillary cluster, subtended by 1-2 pairs of leaves; pedicels 1-2 lin. long. Calyx 1-1 $\frac{1}{4}$  lin. long; lobes erect, ovate, acute, submembranous, with a green mid-rib which is keeled, slightly gibbous and slightly prolonged at the apex, but not cuspidate. Corolla-tube 1 $\frac{1}{4}$  lin. long; lobes 1 lin. long, lanceolate, acute. Stamens exceeding the corolla-lobes. Style nearly 2 lin. long, filiform; stigma very minutely 2-lobed.—*Engl. Hochgebirgsfl. Trop. Afr.* 336; *Hiern in Cat. Afr. Pl.* Welw. i. 710; *Knobl. in Bot. Centralbl.* lx. (1894), 330; *Gilg in Kunene-Sambesi Exped.* 333.

**Lower Guinea.** Angola: in damp sandy pastures throughout the plateau of Huilla, between Nene and Humpata, 4200-5500 ft., *Welwitsch*, 1523! bank of the River Chitanda, 3700 ft., *Baum*, 141 (ex *Gilg*).

Also in South Africa.

The specific name refers to the usefulness of the plant as a bitter tonic in fevers.

## 12. VOYRIA, *Aubl.; Benth. et Hook. f. Gen. Pl.* ii. 806.

Calyx-tube campanulate; lobes 4-5. Corolla salver-shaped; tube cylindrical; lobes 4-5, patent, contorted. Stamens 4-5, included in the corolla-tube; filaments very short; anthers sometimes prolonged into setæ at the base. Ovary ovoid, 1-celled; placentas shortly intruded; ovules many; style long, filiform, not exerted from the corolla-tube; stigma capitate. Capsule linear or oblong, membranous, 2-valved. Seeds oblong, sometimes winged.—Saprophytes, with the leaves reduced to membranous scales. Flowers solitary or cymose, yellow or blue.

Species 30 or more, the others all Tropical American.

Corolla $\frac{3}{4}$ -1 in. in diam.	. . . . .	1. <i>V. primuloides</i> .
Corolla 4-5 lin. in diam.	. . . . .	2. <i>V. platypetala</i> .

1. **V. primuloides**, *Baker in Kew Bulletin*, 1894, 25. Stem flexuous, 1-flowered, 2-3 in. long, with about 3 pairs of adpressed rudimentary leaves. Calyx  $\frac{1}{3}$  in. long; segments oblong-lanceolate, acuminate, much longer than the campanulate tube. Corolla-tube cylindrical, swollen around the anthers, 8-11 lin. long; expanded limb  $\frac{3}{4}$ -1 in. in diam.; segments 5, elliptic, subacute. Anthers inserted  $\frac{3}{4}$  of the way up the corolla-tube.

**Lower Guinea.** Gaboon: Munda; Sibange Farm, in woods, very scarce, *Soyaux*, 166!

2. **V. platypetala**, Baker in *Kew Bulletin*, 1894, 26. Stem flexuous, 1-flowered, 2-3 in. long, bearing about 3 pairs of adpressed rudimentary leaves. Calyx  $\frac{1}{4}$  in. long; lobes as long as the tube, linear-lanceolate, tapering to a setaceous point. Corolla-tube cylindrical, swollen around the anthers, 8-10 lin. long; expanded limb 4-5 lin. in diam.; lobes 5, shortly spathulate-orbicular. Anthers inserted  $\frac{3}{4}$  of the way up the corolla-tube.

**Upper Guinea.** Niger Delta: by the River Nun, *Mann*, 514!

12. **SWERTIA**, Linn.; Benth. et Hook. f. Gen. Pl. ii. 816.

(*Sweetia*, Gilg).

Calyx-tube 0 or very short; segments 4-5, acute or obtuse. Corolla subrotate; tube very short, broad; segments 4-5, acute or obtuse, with one or a pair of glandular nectaries at the base. Stamens inserted in the corolla-sinuses, shorter than the segments; filaments subulate or flattened; anthers oblong or ovate, versatile. Ovary 1-celled; placentas slightly intruded; ovules many; style 0 or short; stigma 2-lobed. Capsule oblong or lanceolate, 2-valved. Seeds many, minute, compressed, often winged.—Annual or perennial herbs. Stem-leaves sessile or very shortly petiolate, radical narrowed into a petiole. Cymes terminal, corymbose or paniced. Flowers blue, yellow, or white.

Species about 90, the others chiefly Asiatic, with a few in South Africa, Madagascar and Europe.

Corolla-lobes with 1 circular fringed nectary near the base; plants probably all perennial.

Stem-leaves lanceolate or linear-lanceolate, 2-4 lin. broad.

Corolla-lobes  $\frac{1}{2}$  in. long, acute . . . . . 1. *S. Johnsoni*.

Corolla-lobes about  $\frac{1}{3}$  in. long, very obtuse . . . . . 2. *S. erosula*.

Stem-leaves cordate-ovate to ovate-lanceolate, 4-12 lin. broad.

Stem-leaves mostly  $1\frac{1}{2}$ - $2\frac{1}{2}$  in. long; capsule 10-11 lin. long . . . . . 3. *S. kilimandscharica*.

Stem-leaves mostly  $\frac{2}{3}$ -1 in. long; capsule 5-6 lin. long . . . . . 4. *S. Schimperii*.

Corolla-lobes with 2 fringed nectaries near the base, sometimes wanting in *S. Volkensii*, Gilg.

\*Flowers 5-merous.

†Perennials (See also 19, *S. subalpina*).

Sepals reflexed, leaf-like, subpetiolate . . . . . 5. *S. calycina*.

Sepals erect or ascending, not leaf-like.

Plant 12-16 in. high; inflorescence a flat-topped corymb 6-8 in. broad . . . . . 6. *S. fwambensis*.

Plant less than 10 in. high; inflorescence  $\frac{3}{4}$ -3 in. broad.

Flowers solitary on each stem; plant about 1 in. high . . . . . 10. *S. Richardi*.

Flowers in 3 to several-flowered cymes.

Stems 1-3, filiform; plant about 1 in. high 11. *S. minima*.

Stems not filiform,  $\frac{1}{2}$ - $1\frac{3}{4}$  lin. thick.

- Corolla-lobes with a dark dorsal stripe  
in the dried state.
- Plant 6-8 in. high; rootstock with  
several stems . . . . . 8. *S. Engleri*.
- Plant  $1\frac{1}{2}$ -3 in. high; rootstock appa-  
rently with only 1 stem . . . . . 9. *S. pumila*.
- Corolla-lobes without a dorsal stripe in  
the dried state.
- Leaves mostly radical, crowded or  
rosulate, spatulate; stem-  
leaves 1-2 pairs; stems usually  
several to a plant.
- Sepals obovate or obovate-oblong,  
obtuse . . . . . 12. *S. crassiuscula*.
- Sepals lanceolate, acute . . . . . 13. *S. Volkensii*.
- Leaves in 2-4 distant pairs on the  
stem, not crowded nor rosulate  
at the base, broadly ovate; stem  
solitary.
- Stem  $1-1\frac{3}{4}$  lin. thick; corolla-lobes  
5-6 lin. long,  $2\frac{1}{2}$  lin. broad . . . . . 7. *S. quartiniana*.
- Stem  $\frac{3}{4}-\frac{3}{2}$  lin. thick.
- Corolla-lobes 4-5 lin. long,  $3-3\frac{1}{4}$   
lin. broad . . . . . 14. *S. petitiana*.
- Corolla-lobes  $2\frac{1}{2}-4$  lin. long,  
 $1\frac{1}{4}-1\frac{3}{4}$  lin. broad . . . . . 15. *S. wojeratensis*.

## ††Annuals.

‡Middle and upper leaves not more than twice as  
long as broad, usually less, oblong, ovate or  
orbicular, flat.

- Flowers solitary; leaves ovate-orbicular . . . . . 16. *S. filicaulis*.
- Cymes umbellately or trichotomously 2 to  
several-flowered.
- Plant 3-6 in. high; stem-leaves  $1\frac{1}{2}$ -3 lin. broad.
- Pedicels  $\frac{1}{2}-\frac{3}{4}$  in. long, slender (Nile Land).
- Basal leaves in 1-2 subdistant pairs . . . . . 17. *S. Wellbyi*.
- Basal leaves several, rosulate . . . . . 18. *S. brevipedicellata*
- Pedicels  $\frac{3}{4}-1\frac{1}{2}$  in. long, rather stout and  
stiff; basal leaves crowded (Cameroons) . . . . . 19. *S. subalpina*.
- Plant 6-9 in. high, 4-6-noded; branches  
divergent; stem-leaves 3-7 lin. broad,  
cordate-ovate . . . . . 20. *S. abyssinica*.
- Plant 6-12 in. high, 6-12-noded; branches  
erect or ascending.
- Stem and pedicels conspicuously scabrid-  
denticulate on the angles; branches  
 $\frac{1}{2}-1$  lin. thick . . . . . 21. *S. clarenceana*.
- Stems and pedicels not scabrid-denticu-  
late; branches  $\frac{1}{4}-\frac{1}{2}$  lin. thick.
- Inflorescence a narrow elongated  
panicle (Cameroons) . . . . . 22. *S. dissimilis*.
- Inflorescence broadly corymbose  
(Eastern) . . . . . 23. *S. Lastii*.

‡‡Middle and upper stem-leaves more than twice as  
long as broad.

- Leaves flat, distinctly or abruptly narrowed at the base into a very short petiole; plants 9-18 in. high.
- Leaves oblong or ovate-oblong, about  $2\frac{1}{2}$  times as long as broad . . . . . 24. *S. Whytei*.
- Leaves lanceolate, 4-6 times as long as broad.
- Corolla-lobes  $3\frac{1}{2}$ -5 lin. long,  $1\frac{2}{3}$ - $2\frac{1}{2}$  lin. broad . . . . . 25. *S. usambarensis*.
- Corolla-lobes 2- $2\frac{1}{2}$  lin. long, 1- $1\frac{1}{4}$  lin. broad . . . . . 26. *S. Emini*.
- Leaves longitudinally folded, 2-6 lin. long sessile, but distinctly rounded in at the base, narrowly ovate-lanceolate or linear-lanceolate.
- Plant  $2\frac{1}{2}$ -5 in. high; corolla-lobes  $1\frac{1}{3}$ -2 lin. broad, elliptic to obovate-oblong . . . . . 27. *S. curtioides*.
- Plant 4-9 in. high; corolla-lobes 1 lin. broad, narrowly oblong . . . . . 28. *S. Mannii*.
- Leaves flat or longitudinally folded,  $\frac{1}{3}$ -2 in. long, sessile, linear, scarcely or not at all narrowed at the base.
- Inflorescence corymbose or corymbose-paniculate, branches not parallel with the stem.
- Plant  $\frac{1}{2}$ -1 ft. high; corolla-lobes not complicate-acute at the apex . . . . . 29. *S. stellarioides*.
- Plant  $1\frac{1}{4}$ -2 ft. high; corolla-lobes with complicate-acute spreading tips . . . . . 30. *S. Sharpei*.
- Inflorescence long and narrow, with branches parallel to the stem or with axillary flowers along a simple stem . . . . . 31. *S. pleurogynoides*.
- \*\*Flowers 4-merous; plants  $1\frac{1}{2}$ -3 in. high. (See also 26, *S. Emini*).
- Sepals very acute . . . . . 32. *S. tetrandra*.
- Sepals obtuse or subobtuse . . . . . 33. *S. intermixta*.

1. **S. Johnsoni**, *N. E. Br.* Plant probably perennial, perhaps attaining to 2 ft. in height. Leaves in several distant pairs, not crowded at the base,  $\frac{3}{4}$ -1 in. long, 2-3 lin. broad, lanceolate or linear-lanceolate, acute, sessile. Inflorescence a narrow panicle 3-7 in. long, about  $1\frac{1}{2}$  in. broad with 3-4 distant pairs of many-flowered erect branches 1-2 in. long, including the clustered 5-merous flowers; pedicels 3-6 lin. long. Sepals  $3\frac{1}{2}$ -5 lin. long, 1- $1\frac{1}{2}$  lin. broad, lanceolate or ovate-lanceolate, tapering to an acute point. Corolla-lobes  $\frac{1}{2}$  in. long,  $\frac{1}{4}$  in. broad, elliptic-lanceolate, acute, with 1 large circular fringed nectary near the base. Stamens  $\frac{1}{4}$  in. long; anthers apiculate. Ovary lanceolate or ovate-lanceolate, acutely tapering to the stigma, but scarcely with a distinct style; stigmatic lobes small, about  $\frac{1}{4}$  lin. broad, ovate, subobtuse.

**Mozamb. Dist.** Portuguese East Africa? on mountains east of Lake Nyasa, *Johnson!*

2. **S. erosula**, *N. E. Br.* Plant 1-2 ft. high; stems rather stout, branching only at the uppermost 2-3 nodes. Radical leaves not seen; stem-leaves  $\frac{3}{4}$ - $1\frac{1}{2}$  in. long, 2-4 lin. broad, suberect, linear-lanceolate, acute, sessile. Inflorescence a narrow 12-24-flowered panicle about 4-8 in. long, 1- $1\frac{1}{2}$  in. broad, with 2-3 distant pairs of erect

branches  $\frac{3}{4}$ – $1\frac{1}{4}$  in. long, each 1–3-flowered and sometimes with an axillary flower besides; pedicels  $\frac{1}{4}$ – $\frac{3}{4}$  in. long; flowers 5-merous. Sepals 2–3 lin. long,  $\frac{2}{3}$ –1 lin. broad at the base, ovate-lanceolate, tapering to a long acuminate very acute point. Corolla-lobes 4– $4\frac{1}{2}$  lin. long,  $2\frac{1}{2}$  lin. broad, elliptic, obtusely rounded at the apex, minutely erose-denticulate around the margins, with 1 large circular densely fringed nectary near the base. Stamens 3 lin. long. Ovary ovate-lanceolate, narrowed into a style about  $\frac{1}{3}$  lin. long; stigmatic lobes small, transversely oblong. Capsule 6–8 lin. long, much longer than the corolla, lanceolate, acute.

**Mozamb. Dist.** German East Africa: Kilimanjaro; above Marangu, 9100 ft., *Folkens*, 1870!

3. **S. kilimandscharica**, *Engl. Hochgebirgsfl. Trop. Afr.* 339. A tall herb, probably up to 2 ft. or more high. Stems  $\frac{1}{2}$ – $\frac{1}{3}$  in. thick, slightly 4-angled, with internodes 2–5 in. long. Stem-leaves  $\frac{3}{4}$ – $2\frac{1}{2}$  in. long,  $\frac{1}{3}$ – $1\frac{1}{3}$  in. broad, sessile, broadly ovate, gradually tapering from near the base to a very acute point, broadly rounded or subcordate and overlapping the opposite leaf at the base. Panicle rather narrow, elongate, many-flowered,  $\frac{1}{2}$ –1 ft. or more long, 3–7 in. broad; branches erect or ascending, trichotomously or subumbellately 3–10-flowered; flowers 5-merous; pedicels  $\frac{1}{3}$ –1 in. long. Sepals 4–5 lin. long,  $\frac{3}{4}$ –1 lin. broad, lanceolate, attenuate to a fine point. Corolla-lobes 5–6 lin. long,  $2\frac{1}{2}$ –3 lin. broad, elliptic, obtuse, white, with one round fringed nectary near the base. Stamens 3– $3\frac{1}{2}$  lin. long; anthers green. Ovary narrowly ovate-lanceolate, acute, but scarcely with a style; stigma subsessile, small,  $\frac{1}{3}$  lin. broad; lobes much broader than long, subtruncate, not decurrent. Capsule 10–11 lin. long, 3–4 lin. broad, lanceolate; valves acute.—*S. Schimper*, Oliv. in *Trans. Linn. Soc. ser. 2, ii.* 342, not of Griseb.

**Mozamb. Dist.** German East Africa: Kilimanjaro, 8000–11,000 ft., *Johnston*, 27! *Thomson*! *Meyer*, 227 (ex *Engler*).

4. **S. Schimper**, *Griseb. in DC. Prod.* ix. 563. Perennial; stems one or many from the root,  $\frac{1}{3}$ – $1\frac{1}{2}$  ft. long, simple or branched, faintly 4-angled. Root-leaves lanceolate, acute, narrowed into a short petiole; stem-leaves ovate or ovate-lanceolate, sessile, acute or subobtusely,  $\frac{1}{3}$ –1 in. long,  $\frac{1}{3}$ – $\frac{3}{4}$  in. broad. Cymes few-flowered, often laxly paniced; pedicels moderately long. Flowers pentamerous. Calyx  $\frac{1}{4}$ – $\frac{1}{3}$  in. long; tube very short; segments ovate-lanceolate, very acute. Corolla purplish (ex *Richard*), whitish or yellow in the dried state, 5–6 lin. long; lobes ovate-oblong, acute with a single ciliate nectary near the base. Stamens 3– $3\frac{1}{2}$  lin. long. Style  $\frac{1}{4}$ – $\frac{1}{2}$  lin. long; stigma minute, simple. Capsule  $\frac{1}{2}$  in. long, linear-oblong, acute, terminated by the slender style.—A. Rich. *Tent. Fl. Abyss.* ii. 56; Schweinf. *Beitr. Fl. Aethiop.* 128; *Engl. Hochgebirgsfl. Trop. Afr.* 339. *Ophelia fimbriata*, *Hochst.* and *Monobothrium Schimper*, *Hochst.* in *Flora*, 1844, 28.

**Nile Land.** Abyssinia: Samen; on Mount Bachit, near Demerki, *Schimper*, 1241! Begemedar; Mount Guna, *Schimper*, 1543, partly! and without precise locality, *Schimper*, 1047!

5. **S. calycina**, *N. E. Br.* Plant probably perennial, 1 ft. (or more?) high; stem corymbosely branched, with its angles and those of the pedicels here and there scabrid-denticulate. Leaves in many pairs along the stem, 6–10 lin. long, 4–9 lin. broad, orbicular-ovate, very obtuse or slightly notched at the apex, very broadly rounded or subcordate at the base, spreading, apparently thin, 5–7-nerved. Inflorescence rather lax, few-flowered, each branch with about 3 pentamerous flowers; pedicels 3–8 lin. long. Sepals leaf-like, 3–4 lin. long,  $1\frac{1}{2}$ –2 lin. broad, ovate or ovate-oblong, obtuse, narrowed at the base into a very short petiole, reflexed or very spreading. Corolla-lobes 4– $4\frac{1}{2}$  lin. long,  $1\frac{1}{2}$ – $2\frac{1}{4}$  lin. broad, elliptic-oblong, obtusely rounded at the apex, apparently concave, with 2 oblong fringed glands near the base. Stamens about 2 lin. long. Ovary ellipsoid, obtuse; stigma sessile, with rounded erect lobes about as broad as long.

**East Tropical Africa.** Ruwenzori Expedition, without precise locality, *Scott-Elliot!*

This species has the appearance of a *Hypericum*, and differs from all the other African *Swertias* in its leaf-like reflexed calyx-lobes.

6. **S. fwambensis**, *N. E. Br.* Perennial, 12–16 in. high; stems simple and branching upwards or several and branched at the top; branches and stems long and straight, all ascending and forming a nearly flat-topped corymbose inflorescence of many-flowered cymes. Leaves in 4–6 distant pairs,  $\frac{1}{3}$ – $1\frac{3}{4}$  in. long, 2–5 lin. broad, lanceolate or linear-lanceolate, acute, sessile, those at the base of the branches largest, usually longitudinally folded, very spreading or deflexed, those below smaller, almost passing into scales at the base, erect or ascending. Pedicels  $\frac{1}{2}$ – $1\frac{3}{4}$  lin. long. Sepals 2–3 lin. long,  $\frac{2}{3}$ – $\frac{3}{4}$  lin. broad, lanceolate, acute. Corolla-lobes  $4\frac{1}{2}$  lin. long,  $1\frac{1}{2}$ – $1\frac{3}{4}$  lin. broad, oblong, subobtuse, with 2 oblong glands near the base. Stamens  $2\frac{1}{2}$ –3 lin. long. Ovary oblong; stigma sessile; lobes broader than long, broadly rounded.

**Mozamb. Dist.** British Central Africa: Urungu; Fwambo, south of Lake Tanganyika, *Carson, 13! Nutt!*

7. **S. quartiniana**, *A. Rich. Tent. Fl. Abyss. ii. 56.* Perennial; stem solitary, stout, 1– $1\frac{3}{4}$  lin. thick,  $\frac{1}{2}$ –1 ft. long, simple or branched above, faintly 4-angled. Root-leaves oblong, narrowed to a short petiole; upper stem-leaves ovate or elliptic-lanceolate, sessile. Cymes corymbose or often simple; pedicels 2–6 lin. long; flowers pentamerous. Sepals unequal, 2–4 lin. long, linear-oblong or oblong-lanceolate, acute or subobtuse. Corolla purplish (ex *Richard*), yellowish or whitish in the dried state; lobes 5–6 lin. long,  $2\frac{1}{2}$  lin. broad, obovate-oblong, very obtuse with 2 oblong ciliate nectaries near the base. Stamens  $3\frac{1}{2}$  lin. long. Ovary oblong; stigma sessile, its lobes rather broader than long, obtuse.—*Engl. Hochgebirgsfl. Trop. Afr. 338.*

**Nile Land.** Abyssinia: Wojerat, *Quartin Dillon!* Shireh Province, in damp places near Mai Tonaro, *Quartin Dillon* (ex *Richard*).

8. **S. Engleri**, *Gilg in Engl. Jahrb.* xxvi. 108. Perennial, 6-8 in. high; stems many to a root, curved at the base. Radical and lower stem-leaves oblong-lanceolate or subspathulate, obtuse or subacute, narrowed into a long petiole; upper stem-leaves sessile,  $\frac{1}{3}$ - $\frac{1}{2}$  in. long,  $1\frac{1}{2}$ -3 lin. broad, oblong, obtuse or subacute. Cymes few-flowered, terminal and also from the axils of the upper leaves; flowers 5-merous. Calyx  $2\frac{1}{2}$ -3 lin. long; lobes narrowly oblong, obtuse or subacute. Corolla-lobes about 5-6 lin. long,  $1\frac{1}{2}$ -2 lin. broad, lanceolate, acute, with a pair of fimbriate nectaries near the base, yellow, with a dark bluish-green stripe down the back. Stamens  $\frac{1}{4}$  in. long. Ovary ovate-lanceolate, tapering up to the sessile 2-lobed stigma.—*S. pumila*, Engl. Hochgebirgssfl. Trop. Afr. 338, partly. *S. multicaulis*, Engl. ex Gilg in Engl. & Prantl, Pflanzenfam. iv. ii. 88, not of Don.

**Nile Land.** Abyssinia: Begemeder; Mount Guna, 4200 ft., *Schimper*, 1543!

9. **S. pumila**, *Hochst. in Flora*, 1844, 28. Perennial  $1\frac{1}{2}$ -3 in. high. Stem solitary. Radical leaves rosulate, 3-7 lin. long,  $1\frac{1}{2}$ -2 lin. broad, petiolate or spathulate, with an oblong or ovate-obtuse blade; stem-leaves 1-2 pairs at the top of the stem, 2-3 lin. long,  $1-1\frac{1}{2}$  lin. broad, sessile, ovate or oblong, obtuse. Cyme simple and 3-flowered or with 1 or a pair of short 1-3-flowered branches; flowers 5-merous; pedicels 1-6 lin. long. Sepals about  $\frac{1}{3}$  in. long, linear to narrowly spathulate-oblong, obtuse. Corolla white with a dark (bluish ex *Hochstetter*) median stripe; lobes  $2\frac{1}{2}$ -3 lin. long,  $1\frac{1}{4}$ - $1\frac{1}{2}$  lin. broad, elliptic-oblong, obtuse, with 2 small nearly circular fringed nectaries near the base. Stamens 2 lin. long. Ovary ovoid; stigma sessile, its lobes longer than broad, ovate, obtuse.—A. Rich. Tent. Fl. Abyss. ii. 55; Schweinf. Beitr. Fl. Aethiop. 128; Engl. Hochgebirgssfl. Trop. Afr. 338, partly.

**Nile Land.** Abyssinia: alpine meadows on Mount Bacht, near Demerki, 10,000-12,500 ft., *Schimper*, 1240!

10. **S. Richardi**, *Engl. Hochgebirgssfl. Trop. Afr.* 338. Plant about 1 in. high, branching at the base, perennial; stems several, decumbent at the base, then ascending, 1-flowered. Leaves oblong-elliptic, obtuse, sessile,  $\frac{1}{3}$ - $\frac{1}{2}$  in. long,  $1\frac{1}{2}$ -2 lin. broad. Flowers solitary, 5-merous. Sepals oblong, subobtuse,  $3\frac{1}{2}$  lin. long, 1 lin. broad. Corolla whitish; lobes 5 lin. long,  $1\frac{1}{2}$  lin. broad, oblong, with a pair of fimbriate nectaries above the base. Stamens about  $2\frac{1}{2}$  lin. long. Capsule  $\frac{1}{2}$  in. long,  $2\frac{1}{2}$  lin. thick.

**Nile Land.** Abyssinia: Samea; below the summit of Mount Dashan (Dedschen), 14,700 ft., *Schimper*.

11. **S. minima**, *Gilg in Engl. Jahrb.* xxvi. 108. Perennial; stems 1-3, filiform, about 1 in. long. Radical leaves in a dense rosette, 5-6 lin. long, 2- $2\frac{1}{2}$  lin. broad, obovate, obtuse, narrowed to the base, but not petiolate; cauline leaves few, 2- $2\frac{1}{2}$  lin. long,  $1-1\frac{1}{2}$  lin. broad, ovate, subacute, subamplexicaul. Cymes terminal, 3-flowered, and sometimes

with solitary flowers in the axils of the leaves; flowers 5-merous; pedicels 2-3 lin. long. Calyx-lobes 2 lin. long,  $\frac{1}{2}$ - $\frac{3}{4}$  lin. broad, narrowly oblong, obtuse. Corolla-lobes  $\frac{1}{3}$  in. long,  $1\frac{1}{2}$  lin. broad, obovate, obtuse, with a pair of fimbriate nectaries near the base. Stamens  $\frac{4}{5}$  the length of the corolla.

**Nile Land.** Abyssinia: Samen; Ghaba, near Gondar, *Steudner*.

According to description this only differs from *S. pumila*, Hochst., in its more numerous and filiform stems, which in *S. pumila* are  $\frac{1}{2}$  lin. thick.

12. ***S. crassiuscula***, *Gilg in Engl. Jahrb.* xxvi. 107. A perennial herb, 2-5 in. high; stems many, glabrous, erect or decumbent at the base, root-leaves and lower stem-leaves with a thick elliptic-oblong obovate blade  $\frac{1}{3}$ - $\frac{3}{4}$  in. long,  $2\frac{1}{2}$ -4 lin. broad, narrowed gradually into a petiole  $\frac{1}{3}$ -1 in. long; upper leaves smaller, spatulate or obovate-cuneate. Cymes 1-3-flowered, corymbose; flowers 5-merous. Calyx  $\frac{1}{4}$  in. long; lobes obovate or obovate-oblong, obtuse. Corolla pale blue (*Johnston*), yellowish in the dried state; lobes 4-5 lin. long, oblong, with a pair of ciliate nectaries near the base. Stamens much shorter than the corolla-lobes. Ovary elliptic-lanceolate, slightly narrowed to the very obtuse sessile 2-lobed stigma.—*S. pumila*, *Engl. Hochgebirgsfl. Trop. Afr.* 338, partly.

**Mozamb. Dist.** German East Africa: Kilimanjaro, at 9000-10,000 ft., *Thomson!* *Johnston*, 116! Kifinika Volcano, 10100 ft., *Volkens*, 943! Mawenzi Peak, 7800 ft., *Volkens*, 787.

Sir Harry Johnston states that the flowers are pale blue, but in the dried state they are yellowish, with some of those that are faded dull lilac.

13. ***S. Volkensii***, *Gilg in Engl. Jahrb.* xxvi. 108. A dwarf glabrous perennial, 2-4 in. high, with a thick many-headed rootstock. Radical leaves crowded or rosulate,  $\frac{3}{4}$ - $1\frac{1}{3}$  in. long,  $1\frac{1}{2}$ -5 lin. broad, ascending, lanceolate, obtusely pointed, tapering into a long petiole below; stem-leaves in about 2-3 distant pairs, 5-8 lin. long,  $1$ - $2\frac{1}{2}$  lin. broad, sessile, narrowly lanceolate or ovate-lanceolate, obtuse (very acute, ex *Gilg*), all apparently somewhat fleshy or subcoriaceous, not membranous as originally described. Flowers about 3 in a terminal cyme, 5-merous; pedicels  $1\frac{1}{2}$ -6 lin. long. Sepals 2-5 lin. long,  $\frac{3}{4}$ -1 lin. broad, lanceolate, acute, about as long as the corolla. Corolla-lobes rather thick,  $3\frac{1}{2}$ - $5\frac{1}{2}$  lin. long,  $1\frac{1}{3}$ -2 lin. broad, lanceolate, acute, or rarely oblong, obtuse, without nectaries (with 2 nectaries, ex *Gilg*) at the base. Stamens 2- $2\frac{1}{4}$  lin. long; anthers apiculate, somewhat acutely sagittate at the base. Capsule  $3\frac{1}{2}$ -4 lin. long, about  $1\frac{1}{2}$  lin. broad, elongate-ovate, acute; valves tipped with the very short (about  $\frac{1}{5}$  lin. long) style; stigma small, about  $\frac{1}{4}$  lin. broad, very obtuse.

**Mozamb. Dist.** German East Africa: Kilimanjaro, on the lava-field of the western slope of Mawenzi Peak, 14400 ft., *Volkens*, 1357!

A remarkable species, very like *S. crassiuscula*, *Gilg*, in appearance, but with acute sepals, and much thicker petals than in any other species. In a portion of the type specimen, kindly lent by Professor Engler, I could find no trace of the fringed nectaries which are described by *Gilg* as present near the base of the petals, so they may perhaps be present or absent in this species. N. E. Br.

14. **S. petitiana**, *A. Rich. Tent. Fl. Abyss.* ii. 55. Root perennial; stems 4-5 in. high, 4-angled, simple or branched above. Root-leaves  $\frac{1}{3}$ - $\frac{1}{2}$  in. long, 2-2 $\frac{1}{2}$  lin. broad, obovate, with a short petiole; stem-leaves in 3-4 pairs, 4-8 lin. long, 3-8 lin. broad, broadly ovate, sessile. Cymes few-flowered, simple or sparsely paniced; flowers pentamerous; pedicels short. Sepals 2 $\frac{1}{3}$ -3 lin. long, spatulate-obovate to ovate, obtuse. Corolla-lobes 4-5 lin. long, 3-3 $\frac{1}{4}$  lin. broad, very obtuse, with a pair of nectaries at the base. Stamens  $\frac{1}{4}$  in. long.—Engl. Hochgebirgsfl. Trop. Afr. 338.

**Nile Land.** Abyssinia: Wojerat Province, *Petit!*

15. **S. wojeratensis**, *N. E. Br.* Perennial, 3-6 in. high; stem apparently solitary, simple or branched; branches sub-erect or ascending, corymbose. Leaves in 1-2 pairs at the base and on the stem,  $\frac{1}{4}$ - $\frac{3}{4}$  in. long, 2-4 $\frac{1}{2}$  lin. broad, broadly ovate, obtuse or subacute, sessile. Cymes 3-5-flowered, somewhat clustered; pedicels 1-12 lin. long; flowers 5-merous. Sepals 2-2 $\frac{1}{4}$  lin. long,  $\frac{1}{2}$ -1 $\frac{1}{4}$  lin. broad, oblanceolate to broadly obovate, obtuse. Corolla-lobes 3-4 lin. long, 1 $\frac{1}{2}$ -2 lin. broad, elliptic or elliptic-oblong, subacute or obtuse but not rounded at the apex, with two oblong fringed glands near the base. Stamens 1 $\frac{3}{4}$ -2 lin. long. Ovary oblong, obtuse; stigma sessile; lobes broader than long, obtusely rounded.

**Nile Land.** Abyssinia: Wojerat Province, *Petit!*

16. **S. filicaulis**, *Gilg in Engl. Jahrb.* xxvi. 109. Probably annual; stem filiform, 4 in. long, slightly branched. Leaves distant, sessile, orbicular or ovate-orbicular, 2 $\frac{1}{2}$ -3 $\frac{1}{2}$  lin. long and broad, obtuse. Flowers solitary, 5-merous. Calyx-lobes  $\frac{1}{8}$ - $\frac{1}{6}$  in. long,  $\frac{3}{4}$  lin. broad; obovate, obtuse. Corolla-lobes 4 lin. long, 2 lin. broad, obovate-oblong, obtuse, with a pair of minute fimbriate nectaries near the base.

**Nile Land.** Abyssinia: Samen; Ghaba, near Gondar, *Stuedner.*

17. **S. Wellbyi**, *N. E. Br.* Annual, 6 in. high in the only specimen seen; stem slender with 1 branch. Leaves in about 4 distant pairs, 3-4 lin. long, 2 $\frac{1}{2}$  lin. broad, ovate, subobtuse, very broadly rounded or almost subcordate at the sessile base, scarcely petiolate. Cymes terminal, umbellately 3-9-flowered; pedicels 3-8 lin. long; flowers 5-merous. Sepals 1 $\frac{3}{4}$ -2 $\frac{1}{2}$  lin. long,  $\frac{1}{2}$ - $\frac{3}{4}$  lin. broad, lanceolate, acute, slightly narrowed to the base. Corolla apparently white; lobes 3-3 $\frac{1}{2}$  lin. long, 2 $\frac{1}{2}$  lin. broad, elliptic or suborbicular, very obtuse, with 2 closely placed nearly circular nectaries near the base. Stamens 2 lin. long. Ovary oblong, not tapering at the top; stigma sessile, its lobes rather more than  $\frac{1}{2}$  lin. broad, orbicular-oblong, very obtuse.

**Nile Land.** Abyssinia: between Harrar and Addi Abbaba, *Wellby!*

18. **S. brevipedicellata**, *Gilg ined.* Plant 6 in. high in the only specimen seen, slightly branched, annual, glabrous, comparatively few-flowered. Radical leaves rosulate,  $\frac{1}{2}$ - $\frac{3}{4}$  in. long, 3-4 lin. broad, elliptic or elliptic-ovate, obtuse, narrowed into a short petiole; stem-

leaves in 3-4 distant pairs, sessile, 3-4 lin. long,  $1\frac{1}{4}$ -3 lin. broad, obtuse, rounded or subcordate at the base. Flowers 3-4, umbellate at the ends of the stem and branches, 5-merous; pedicels unequal,  $\frac{1}{3}$ - $\frac{2}{3}$  in. long. Sepals 2-2 $\frac{1}{2}$  lin. long,  $\frac{2}{3}$ - $\frac{3}{4}$  lin. broad, linear-oblong, acute. Corolla-lobes 4-5 lin. long, 2-2 $\frac{1}{2}$  lin. broad, elliptic-oblong, obtuse, with 2 long-fringed nectaries near the base. Stamens 2 $\frac{1}{2}$ -3 lin. long. Ovary oblong-fusiform; stigma sessile, its lobes orbicular-ovate, obtuse.

**Nile Land.** Eritrea: Ambelaco, *Schweinfurth*, 462!

19. **S. subalpina**, *N. E. Br.* Annual? 3-6 in. high, usually branching at the base; stems usually 1-3-flowered, in large specimens with a terminal umbel-like cyme of 3-5 flowers and 2-4 from the node below. Basal leaves crowded or rosulate, elliptic or orbicular, shortly petiolate,  $\frac{1}{4}$ - $\frac{1}{2}$  in. long,  $1\frac{1}{2}$ -5 lin. broad; stem-leaves 1-2 pairs,  $1\frac{1}{2}$ -4 lin. long,  $\frac{3}{4}$ -1 $\frac{3}{4}$  lin. broad, ovate, obtuse or subacute, all rather thick and coriaceous. Flowers 5-merous; pedicels  $\frac{1}{3}$ -1 $\frac{3}{4}$  in. long, not very slender, rather stiffly erect or ascending. Sepals  $1\frac{2}{3}$ -3 $\frac{1}{2}$  lin. long,  $\frac{1}{2}$ -1 $\frac{3}{4}$  lin. broad, narrowly oblong to elliptic-ovate, obtuse. Corolla light yellow (*Mann*); lobes 3 $\frac{1}{2}$ -5 lin. long,  $1\frac{2}{3}$ -2 lin. broad, elliptic, obtusely rounded at the apex, with 2 oblong, scantily fringed nectaries near the base. Stamens 2-2 $\frac{1}{2}$  lin. long. Ovary narrowly oblong, scarcely narrowed at the top; stigma sessile, with transversely oblong lobes  $\frac{1}{4}$  lin. long,  $\frac{1}{2}$  lin. broad. Capsule 3 $\frac{1}{2}$ -5 lin. long, narrowly oblong-lanceolate, equalling or exceeding the corolla.

**Upper Guinea.** Cameroons: Cameroon Mountain, 8000-10,000 ft., *Mann*, 1216!

20. **S. abyssinica**, *Hochst. in Flora*, 1844, 28. Annual; stems weak, slender, 6-9 in. long, 4-angled, simple or branched. Leaves in 3-5 distant pairs, ovate, cordate-amplexicaul, obtuse or acute,  $\frac{1}{2}$ -1 in. long. Cymes simple or paniced, few-flowered; pedicels  $\frac{1}{4}$ -1 $\frac{1}{3}$  in. long. Flowers whitish, pentamerous. Calyx-lobes  $1\frac{1}{2}$ -3 lin. long, oblong-obovate or linear-oblong, obtuse. Corolla  $\frac{1}{4}$ - $\frac{1}{3}$  in. long; lobes oblong, with a pair of short oblong nectaries near the base, fringed with long hairs. Stamens  $\frac{2}{3}$  the length of the corolla. Stigma sessile, 2-lobed.—*Griseb.* in DC. Prod. ix. 134; *A. Rich.* Tent. Fl. Abyss. ii. 54; *Engl.* Hochgebirgsfl. Trop. Afr. 337.

**Nile Land.** Abyssinia: Mount Sholoda, *Schimper*, 22! Shireh Province. *Petit*, 177! and without precise locality, *Schimper*, 677! *Parkyns*!

21. **S. clarenceana**, *Hook. f. in Journ. Linn. Soc.* vi. 16, vii. 207. Annual, much branched; stems erect, 1-1 $\frac{1}{2}$  ft. long, narrowly 4-winged; wings scabrid-denticulate. Stem-leaves many, sessile, broadly ovate, obtuse or acute, broadly rounded or subcordate at the base,  $\frac{1}{3}$ -1 in. long, 3-8 lin. broad. Cymes copiously paniced; pedicels  $\frac{1}{6}$ -1 $\frac{1}{4}$  in. long. Flowers pentamerous. Calyx-lobes 2-2 $\frac{1}{2}$  lin. long,  $\frac{1}{2}$ - $\frac{4}{5}$  lin. broad, oblong, acute or subobtuse. Corolla-lobes 3 $\frac{1}{2}$ -5 lin. long,  $1\frac{2}{3}$ -3 lin. broad, obovate-oblong, with a pair of oblong fringed

nectaries near the base. Stamens 2-2½ lin. long. Ovary oblong, subobtusate; stigma sessile, not decurrent, obtuse, slightly 2-lobed.—Engl. Hochgebirgsfl. Trop. Afr. 338.

**Upper Guinea.** Fernando Po: Clarence peak, 8500-10,700 ft., *Mann*, 596

22. **S. dissimilis**, *N. E. Br.* Annual, 8-16 in. high, branching from the base upwards; branches erect, forming an elongated panicle 4-10 in. long, 1½-4 in. broad; angles of the stem and pedicels not scabridenticulate. Leaves in several distant pairs, none crowded at the base, 1½-7 lin. long, 1-4½ lin. broad, ovate, obtuse or subacute, spreading. Cymes 2-5-flowered; flowers 5-merous; pedicels ¼-¾ in. long, erect. Sepals 1-2¼ lin. long, ½-¾ lin. broad, narrowly or broadly spatulate, with acute recurving tips. Corolla white, with occasionally blue lines (*Johnston*); lobes 2½-4 lin. long, 1-1¾ lin. broad, obtuse or rounded at the apex, with 2 oblong fringed nectaries near the base. Stamens 1¾-3 lin. long. Ovary oblong or oblong-lanceolate, slightly tapering at the top; stigma small, sessile, scarcely ¼ lin. broad; lobes subquadrate. Capsule 3-5 lin. long, narrowly oblong-lanceolate, narrowed to the subobtusate apex, slightly exceeding the corolla.

**Upper Guinea.** Cameroons: Cameroon Mountain, 6000-9000 ft., *Mann*, 1994! *Johnston*, 89!

23. **S. Lastii**, *Engl. Hochgebirgsfl. Trop. Afr.* 337. Annual, erect, ½-2 ft. high, branching from the base or middle, slightly 4-angled. Leaves in several distant pairs, ⅓-¾ in. long, 1½-5 lin. broad, ovate, subacute, rarely cordate-orbicular and obtuse. Cymes broadly corymbose, umbellately 3-8-flowered; flowers 5-merous; pedicels ½-1¾ in. long. Sepals 1½-3 lin. long, ⅔-1¾ lin. broad, obovate-oblong to elliptic-ovate, obtuse or acute. Corolla-lobes 3½-5 lin. long, 2-2½ lin. broad, elliptic-oblong or oblong-obovate, obtuse, with 2 nectaries near the base, white or more less deeply tinted with purple, especially on the half that is uncovered in bud. Stamens 2½ lin. long. Ovary oblong, subobtusate; stigma sessile; lobes broad, obtusely rounded. Capsule 4-6 lin. long, oblong; valves obtuse.—*S. porphyrantha*, Baker in Kew Bulletin, 1898, 159.

**Mozamb. Dist.** Portuguese East Africa: Makui; Numuli, *Last!* Nyika Plateau, 6000-7000 ft., *Whyte*, 147! Masuku Plateau, 6500-7000 ft., *Whyte!*

24. **S. Whytei**, *N. E. Br.* Annual, about 9-10 in. high, very much branched, with short internodes; branches erect or ascending, leafy, ending in compact several-flowered cymes, rather crowded into a subcorymbose inflorescence. Leaves in many pairs, none crowded at the base, spreading, ½-1¼ in. long, 2-6 lin. broad, oblong or ovate-oblong, subacute. Flowers 5-merous; pedicels 2-9 lin. long. Sepals 2-2½ lin. long, ⅔-1½ lin. broad, obovate-oblong to broadly ovate, not recurved at the obtuse tips. Corolla apparently white; lobes 3½-4 lin. long, 2-2½ lin. broad, elliptic or elliptic-oblong, obtusely rounded at the apex, with 2 rather large oblong fringed nectaries near the base. Stamens 2½

lin. long. Ovary oblong; stigma sessile; lobes roundish-oblong,  $\frac{1}{3}$  lin. broad and rather longer.

**Nile Land.** Uganda: second day's march from Eldoma Ravine, *Whyte!*  
Allied to *S. Eminii*, Engl., but with much larger flowers.

25. **S. usambarensis**, *Engl. Pfl. Ost-Afr. C.* 314. Annual, 1–1½ ft. high; stems simple or branched from the base; branches ascending, corymbose-paniculate. Leaves  $\frac{1}{3}$ –1 in. long, 1–3 lin. broad, apparently somewhat fleshy or rather thick; lower oblong-lanceolate or linear-lanceolate, narrowed at the base or very shortly petioled; upper lanceolate, acute or subobtuse, narrowed at the base. Flower-branches paniced, umbellately 3–10-flowered; flowers 5-merous; pedicels  $\frac{1}{3}$ –1½ in. long. Calyx-segments 1½–3 lin. long,  $\frac{1}{3}$ –1 lin. broad, usually linear-oblong or oblong-lanceolate, occasionally broadly ovate, acute or subobtuse. Corolla pale blue (ex *Engler*), whitish in the dried state; lobes 3½–5 lin. long, 1½–2½ lin. broad, oblong or elliptic-oblong, obtuse, with 2 oblong densely long-ciliate nectaries near the base. Stamens 2½–3 lin. long. Ovary oblong; stigma sessile, broad, obtuse, 2-lobed.—*S. polyantha*, Gilg in *Engl. Jahrb.* xxvi. 109.

**Nile Land.** British East Africa: Lykipia, 8000 ft., *Thomson!* Somaliland: Galla Highlands, between Oi and Jaribule, *Riva*, 1228! Coromme, *Riva*, 1405!

**Mozamb. Dist.** German East Africa: Usambara; Mlalo, 5200 ft., *Holst*, 622! British Central Africa: Nyasaland; Nyika Plateau, 6000–7000 ft., *Whyte*, 124! between Mzata and the commencement of Tanganyika Plateau, 2000–3000 ft., *Whyte!*

26. **S. Eminii**, *Engl. Pfl. Ost-Afr. C.* 314. Stems tall, erect, much branched; branches ascending. Leaves narrowly oblong or lanceolate, obtuse; lower shortly petioled; upper 5–7 lin. long, 1–2 lin. broad, narrowed into a very short petiole. Inflorescence cymose-corymbose; flowers very small, 4–5 umbellate at the ends of the branches, 5-merous; pedicels about 4 lin. long. Calyx-segments very unequal, 1½–2½ lin. long,  $\frac{1}{2}$ – $\frac{2}{3}$  lin. broad, linear-oblong, obtuse, with recurved-spreading tips. Corolla-lobes 1½–2 lin. long, 1–1¼ lin. broad, oblong, obtuse, with a pair of minute ciliate nectaries near the base. Stamens 1–1½ lin. long. Ovary distinctly narrowed into a stout style about  $\frac{1}{3}$  lin. long; stigmatic lobes longer than broad, ovate, obtuse.

**Nile Land.** Uganda: on the Lendu Plateau, west of the Albert Nyanza, *Stuhlmann*, 2708, 2758!

Perhaps to this species should also be referred the following Uganda specimens:—Ruwenzori, *Scott-Elliott*, 7569! and second day's march from Nandi, *Whyte!* But they differ from the small branch of the type which I have seen, in being more floriferous with the sepals but slightly or not at all recurved at the tips, corolla-lobes 2½ lin. long, and the stigma more sessile. Both are very much branched and very leafy specimens 10–14 in. high, with exceedingly numerous rather crowded small cymes; the flowers are frequently 4-merous.—*N. E. Br.*

27. **S. curtioides**, *Gilg in Engl. Jahrb.* xxx. 379. A glabrous annual, 2½–5 in. high; stems slender, simple, or with about 1 branch.

Leaves 2-5 lin. long,  $\frac{3}{4}$ -2 lin. broad; basal much smaller than the rest, ovate or obovate-oblong, obtuse, subpetiolate; upper sessile, distant, ovate-lanceolate, tapering to an acute point, more or less folded lengthwise, spreading. Flowers in terminal 4-11-flowered umbels, 5-merous; pedicels  $\frac{1}{3}$ -1 in. long. Sepals 1-2 $\frac{1}{2}$  lin. long,  $\frac{1}{3}$ - $\frac{3}{4}$  lin. broad, lanceolate or ovate-lanceolate, acute. Corolla-lobes 3 $\frac{1}{2}$ -4 $\frac{1}{2}$  lin. long, 1 $\frac{1}{3}$ -2 lin. broad, elliptic to obovate-oblong, acute or obtuse, with 2 fimbriate nectaries near the base. Stamens 1 $\frac{3}{4}$ -2 lin. long. Ovary ovoid-oblong, scarcely narrowed to the large sessile stigma; stigmatic lobes broader than long, obtuse.

**Mozamb. Dist.** German East Africa: Ukwama Mountains, Kinga (Livingstone) Range, 8200 ft., *Goetze*, 913!

28. **S. Mannii**, *Hook. f. in Journ. Linn. Soc.* vii. 206. Annual; stems slender, erect, 4-9 in. long, 4-angled. Stem-leaves distant, sessile, linear-lanceolate, acute, spreading,  $\frac{1}{6}$ - $\frac{1}{2}$  in. long,  $\frac{1}{2}$ -1 $\frac{1}{2}$  lin. broad. Cymes simple or copiously paniced; pedicels 2 $\frac{1}{2}$ -7 lin. long, erect. Flowers pentamerous, white. Calyx  $\frac{1}{8}$  in. long; segments narrowly lanceolate, acute. Corolla white; lobes 3-3 $\frac{1}{4}$  lin. long, 1 lin. broad, narrowly oblong, very obtuse, with a pair of small oblong fimbriated nectaries near the base. Stamens 2 lin. long; anthers orbicular-oblong. Ovary narrowly lanceolate, tapering to the stigma, but not forming a distinct style; stigmatic lobes longer than broad, oblong, obtuse. Capsule 3-4 lin. long, narrowly lanceolate, acute.—Engl. Hochgebirgsfl. Trop. Afr. 339.

**Upper Guinea.** Cameroons: Cameroon Mountain, 7000-10,000 ft., *Mann*, 2000! *Johnston*, 90!

29. **S. stellarioides**, *Ficalho, Pl. Uteis*, 225. Plant  $\frac{1}{2}$ -1 ft. high, annual. Stem simple or branched above; branches ascending, corymbose. Radical leaves  $\frac{1}{3}$ - $\frac{3}{4}$  in. long, 1 $\frac{1}{2}$ -2 lin. broad, lanceolate, obtuse, narrowed into a short petiole at the base; stem-leaves  $\frac{1}{3}$ -1 in. long,  $\frac{2}{3}$ -2 lin. broad, linear-lanceolate to linear, obtuse, ascending, the uppermost spreading. Cymes simple or paniced, subumbellately 3-8-flowered. Flowers 5-merous. Pedicels  $\frac{1}{4}$ -1 in. long. Sepals unequal, 1 $\frac{1}{3}$ -3 $\frac{1}{3}$  lin. long,  $\frac{1}{2}$ - $\frac{2}{3}$  lin. broad, lanceolate or oblong-lanceolate, acute. Corolla-lobes 3 $\frac{1}{2}$ -5 lin. long, 1 $\frac{1}{2}$ -1 $\frac{2}{3}$  lin. broad, oblong-obovate, obtuse, white, with purple lines inside, with 2 oblong ciliate nectaries near the base. Stamens 2 lin. long. Ovary oblong, scarcely narrowed to the very broad obtuse sessile 2-lobed stigma, which is broader than long. Capsule-valves obtuse.—Hiern, *Cat. Afr. Pl. Welw.* i. 711. *S. Welwitschii*, Engl. Hochgebirgsfl. Trop. Afr. 339. *Adenopogon stellarioides*, Welw. Syn. Explic. 27.

**Lower Guinea.** Angola: Huilla; in damp pastures in Morro de Lopollo, 5200-5600 ft., *Welwitsch*, 1515! banks of the River Palanca, near Humpata, *Newton*, 160! Cunene, *Johnston*!

30. **S. Sharpei**, *N. E. Br.* Annual, 1 $\frac{1}{4}$ -2 ft. high, erect, branched above; branches ascending or somewhat spreading, forming a

corymbose or rounded panicle of several-flowered cymes. Leaves in many distant pairs, erect or ascending,  $\frac{1}{2}$ –2 in. long, 1–2 $\frac{1}{2}$  lin. broad, linear, acute, sessile, scarcely or not at all narrowed at the base. Flowers 5-merous; pedicels  $\frac{1}{4}$ – $\frac{3}{4}$  in. long. Sepals 2–3 lin. long,  $\frac{2}{3}$ – $\frac{3}{4}$  lin. broad, lanceolate or linear-lanceolate, acute. Corolla-lobes 3 $\frac{1}{2}$ –4 $\frac{1}{4}$  lin. long, 1 $\frac{1}{2}$ –2 $\frac{1}{2}$  lin. broad, oblong-lanceolate to elliptic with acute complicate slightly spreading tips and 2 oblong fringed nectaries near the base. Stamens 2 $\frac{1}{2}$  lin. long. Ovary oblong, scarcely narrowed at the top; stigma sessile; lobes usually longer than broad, obtuse.

**Mozamb. Dist.** British Central Africa: Nyasaland; Mount Zomba, *Sharpe*, 157! Namasi, *Cameron*, 13! south of Lake Shirwa, *Meller*! foot of Mount Sochi, *Kirk*! Manginja Highlands, 3000 ft., in damp places, *Kirk*! Shire Highlands, abundant in marshes, *Buchanan*, 461!

A specimen collected in swamps on hills between Unangu and Lake Shire in Portuguese East Africa by Archdeacon Johnson (10), appears to belong to this species, but the corolla-lobes are rather less acute.

31. **S. pleurogynoides**, *Baker in Kew Bulletin*, 1898, 158. A glabrous annual. Stems slender, erect, 1 ft. or more long, branched upwards; branches very erect, parallel with the stem. Leaves in distant pairs, sessile, linear,  $\frac{2}{3}$ –1 $\frac{1}{2}$  in. long,  $\frac{1}{2}$ –1 lin. broad. Cymes many, few-flowered, terminal and axillary, forming a long very narrow panicle. Flowers 5-merous; pedicels 1–8 lin. long. Sepals linear, acute, 2 $\frac{1}{2}$ –6 lin. long,  $\frac{1}{2}$  lin. broad. Corolla-lobes 3 $\frac{1}{2}$ –4 lin. long, 1 $\frac{1}{4}$ –1 $\frac{3}{4}$  lin. broad, oblong or oblong-lanceolate, acute, furnished with a pair of nectaries at the base, yellow in the dried state. Stamens 1 $\frac{1}{2}$ –1 $\frac{3}{4}$  lin. long. Anthers small, oblong or subquadrate. Ovary compressed, elliptic; stigma sessile and decurrent to nearly half-way down the ovary, obtuse. Capsule 3 $\frac{1}{2}$ –4 $\frac{1}{2}$  lin. long, 2 lin. broad, compressed, elliptic; valves obtuse.

**Mozamb. Dist.** British Central Africa: Nyasaland; between Kondowe and Karonga, 2000–6000 ft., *Whyte*! Shire Highlands, *Buchanan*!

32. **S. tetrandra**, *Hochst. in Flora*, 1844, 28. A very small annual, 1 $\frac{1}{2}$ –3 in. high; stem slender, branching upwards. Leaves very small, 2 $\frac{1}{2}$ –3 $\frac{1}{2}$  lin. long; lower about 1 lin. broad, subspathulate or ovate, obtuse, abruptly narrowed into a short petiole; upper  $\frac{1}{2}$ – $\frac{2}{3}$  lin. broad, linear-lanceolate, acute. Flowers in umbellate clusters of 3–5 at the ends of the stem and branches, tetramerous. Calyx-segments 1 $\frac{1}{2}$ –2 $\frac{1}{2}$  lin. long,  $\frac{1}{4}$ – $\frac{2}{5}$  lin. broad, linear-lanceolate, very acute, unequal, as long as or longer than the corolla. Corolla white; lobes 1 $\frac{1}{2}$ –1 $\frac{3}{4}$  lin. long,  $\frac{1}{2}$  lin. broad, oblong, unequally 2–5-toothed at the apex, with a pair of minute ciliate nectaries at the base. Stamens 1 lin. long. Ovary ellipsoid-oblong; stigma sessile; lobes obtuse. Valves of the capsule obtuse.—A. Rich. Tent. Fl. Abyss. ii. 57; Griseb. in DC. Prod. ix. 563.

**Nile Land.** Abyssinia, near Adowa, *Schimper*! Shire Province, *Quartin Dillon* (ex *Richard*), and without precise locality, *Schimper* (ex *Hochstetter*).

33. **S. intermixta**, *A. Rich. Tent. Fl. Abyss. ii. 57.* A very small annual; stems slender, simple, 2-3 in. long, faintly 4-angled. Lower leaves oblong-elliptic, obtuse, scarcely petiolate; upper ovate, obtuse. Flowers tetramerous. Sepals elliptic-subspathulate, sub-obtuse, shorter than the corolla. Corolla-lobes elliptic, obtuse, with two densely ciliate nectaries at the base. Ovary subattenuate at the apex.

**Nile Land.** Abyssinia: Shireh Province, *Quartin-Dillon.*

13. **LIMNANTHEMUM**, S. G. Gmel.; Benth. et Hook. f. Gen. Pl. ii. 819.

Calyx-tube very short; segments 5-6, lanceolate or oblong. Corolla-tube campanulate or shortly funnel-shaped, with 5-6 peltate tufts of hairs above the middle; lobes 5-6, oblong, valvate, the broad induplicate edges fimbriate or entire. Stamens 5-6, inserted at or below the corolla-sinuses; filaments short; anthers versatile. Hypogynous glands minute. Ovary 1-celled; placentas parietal. Style short or long; stigmas 2-lobed. Capsule globose, ovoid or oblong, indehiscent or bursting irregularly. Seeds few or many, smooth or tuberculate, sometimes subcarinate.—Aquatic herbs. Stems erect or runner-like with alternate or subopposite leaves, or resembling petioles, and described below as false petioles. Leaves orbicular, elliptic or ovate, deeply notched or rarely entire at the base, entire, crenate or toothed at the margin. Flowers solitary, in pairs or clusters at the nodes, or on the apparent petiole close to or at a little distance below the leaf-blade. Pedicels fascicled or single. Flowers yellow or white, heterostyled.

Species several, widely spread through the tropical and temperate regions of both hemispheres.

Many of the species of this genus, being much alike, require revision from carefully prepared descriptions or notes made from living specimens. The characters afforded by the corolla are exceedingly difficult to observe in the dried state. The seeds, however, of the various species are very distinct when compared side by side, although it is somewhat difficult to state the differences in words. Other characters may be found in the pedicels and number of flowers in a cluster.—*N. E. Br.*

Seeds smooth.

Leaves coriaceous; seeds slightly shining, grey, mottled with darker . . . . . 1. *L. thunbergianum.*

Leaves thin; seeds opaque, light ochreous . . . . . 2. *L. abyssinicum.*

Seeds tuberculate or papillate-tuberculate.

Leaves up to  $4\frac{1}{4}$  in. broad; pedicels  $\frac{1}{4}$ – $\frac{1}{2}$  lin. thick.

Seeds almost globose, whitish, densely covered with small tubercles; corolla-lobes ciliate and with numerous hairs on the disk . . . . . 3. *L. Whytei.*

Seeds slightly compressed-globose, ochreous, densely and minutely papillate-tuberculate; corolla-lobes ciliate and with numerous hairs on the disk . . . . . 4. *L. Kirku.*

- Seeds compressed - globose, subcarinate, thinly covered with small tubercles.
- Corolla-lobes ciliate, but without hairs on the disk . . . . . 5. *L. niloticum*.
- Corolla-lobes thinly ciliate, with 3 or more thinly hairy lines on the disk . . . . . 6. *L. Rautaneni*.
- Leaves up to 7 in. broad; pedicels  $\frac{3}{4}$  lin. thick; seeds much compressed, sublenticular, minutely papillate-tuberculate . . . . . 7. *L. senegalense*.

1. ***L. thunbergianum***, Griseb. *Gen. & Sp. Gent.* 345. Leaves 1-5 in. in diam., orbicular, with a deep acute sinus at the base, coriaceous. False petioles  $\frac{3}{4}$ -2 lin. thick, bearing 10-25 flowers in a cluster, close to or from  $\frac{1}{4}$ -1 in. below the leaf-blade. Pedicels  $\frac{3}{4}$ -2 in. long,  $\frac{1}{2}$ - $\frac{2}{3}$  lin. thick. Sepals 2-3 lin. long, lanceolate or oblong, acute or obtuse. Corolla white; tube with 5 tufts of hairs above the middle; lobes oblong-lanceolate, acute, ciliate, and with long hairs on the inner face. Hypogynous glands subquadrate, very minutely ciliate. Fruit ellipsoid, 6-18-seeded, equalling or shorter than the calyx. Seeds  $\frac{3}{4}$  lin. in diam.,  $\frac{1}{2}$  lin. thick, compressed globose, subcarinate, smooth, slightly shining, greyish, mottled with darker.—DC. *Prod.* ix. 139; Gilg in Baum, Kunene-Sambesi Exped. 335; Wood & Evans, *Natal Pl.* i. 29, t. 34. *L. forbesianum*, Griseb. *Gen. & Sp. Gent.* 345 and in DC. *Prod.* ix. 139, partly. *L. ecklonianum*, Griseb. *Gen. & Sp. Gent.* 346, and in DC. *Prod.* ix. 140. *Menyanthes indica*, Thunb. *Fl. Cap. ed. Schultes*, 167, not of Linn.

**Lower Guinea.** Angola: Amboella; Mashonge stream, near Napalanka, Baum, 592, and in a swamp by the River Kubango, Baum, 397 (ex Gilg).

**Mozamb. Dist.** Portuguese East Africa: Mozambique, *Forbes!* Quilimane, *Scott!*

Also in South Africa.

*L. forbesianum*, Griseb., according to the type specimens at Kew, was founded upon the above-quoted specimen collected by Forbes (which has two leaves, respectively 1 and  $2\frac{1}{2}$  in. in diam., with pedicels as described above), and an utterly different plant collected in Ceylon by Macrae, in which the leaves are  $\frac{1}{3}$ - $1\frac{1}{4}$  in. in diam., and the flowers in pairs at the nodes of an elongated stem, or, in small plants grown in very shallow water, among the axils of the leaves. Macrae's dried specimens (No. 87) do not differ in any way from those of *L. aurantiacum*, Dalz., although the flowers are stated to be white on the label. See Hook. fil. *Fl. Brit. Ind.* iv. 132. Two very different plants having thus been combined by Grisebach under one description, which agrees with neither of them, it appears better to discard the name *L. forbesianum* altogether.—*N. E. Br.*

2. ***L. abyssinicum***, *N. E. Br.* Leaves  $1\frac{1}{2}$ -4 in. in diam., orbicular, with a deep acute sinus at the base, very thin and membranous. False petioles  $\frac{3}{4}$ - $1\frac{1}{3}$  lin. thick, bearing 10-12 or more flowers in a cluster, close to the leaf-blade. Pedicels  $\frac{1}{2}$ -1 in. long,  $\frac{1}{3}$ - $\frac{1}{2}$  lin. thick. Sepals  $1\frac{1}{2}$ -2 lin. long, oblong-lanceolate, subacute or obtuse. Corolla not seen. Fruit globose, exceeding the sepals, 10-20-seeded. Seeds

$\frac{3}{4}$  lin. in diam.,  $\frac{1}{2}$  lin. thick, compressed-globose, subcarinate, apiculate at the basal end, smooth, opaque, light ochreous.

**Nile Land.** Abyssinia : without precise locality, *Schimper*, 1358!

3. **L. Whytei**, *N. E. Br.* Leaves  $2\frac{3}{4}$ – $4\frac{1}{4}$  in. in diam., otherwise as in *L. Rautaneni*. False petioles 1– $1\frac{1}{3}$  lin. thick, with 15–30 flowers in a cluster, 1–3 lin. below the leaf-blade. Pedicels  $1\frac{1}{4}$ – $2\frac{1}{4}$  in. long,  $\frac{1}{4}$ – $\frac{1}{3}$  lin. thick. Sepals  $2\frac{1}{2}$ –3 lin. long, oblong-lanceolate, subobtuse. Corolla yellow; lobes ciliate and covered with long hairs. Fruit globose, shorter than the sepals, about 5–9-seeded. Seeds almost globose,  $\frac{3}{4}$  lin. in diam. and almost as thick, rather densely covered with very numerous small tubercles, whitish.

**Nile Land.** British East Africa : north of Mombasa, to Lamu and Witu, *Whyte*, 40!

4. **L. Kirkii**, *N. E. Br.* Leaves  $1\frac{1}{4}$ –2 in. long,  $1\frac{1}{4}$ – $2\frac{3}{4}$  in. broad, orbicular or reniform, with a deep acute or very broad obtuse sinus at the base. False petioles  $\frac{1}{2}$ –1 lin. thick, bearing 4–18 flowers in a cluster 1–3 lin. below the leaf-blade. Pedicels  $\frac{1}{2}$ – $1\frac{1}{4}$  in. long,  $\frac{1}{4}$ – $\frac{1}{2}$  lin. thick. Sepals 2– $2\frac{1}{2}$  lin. long, oblong-lanceolate, acute or obtuse. Corolla-tube with 5 tufts of hairs above the middle; lobes oblong, acute, with numerous hairs on their inner face. Hypogynous glands subquadrate, very minutely ciliate. Fruit ellipsoid or globose, as long as the calyx, 6–10-seeded. Seeds  $\frac{3}{4}$  lin. in diam., rather more than  $\frac{1}{2}$  lin. thick, slightly compressed-globose, densely covered with minute papilla-like tubercles.

**Mozamb. Dist.** Zanzibar, *Kirk*, 2! *Hildebrandt*, 1995!

5. **L. niloticum**, *Kotschy & Peyr. Pl. Tinn.* 28, t. 9, A. Leaves 1– $4\frac{1}{4}$  in. in diam., orbicular, with a deep acute sinus at the base, thin, membranous. False petioles  $\frac{1}{2}$ –1 lin. thick, bearing 4–8 flowers in a cluster, 1–2 lin. below the leaf-blade. Pedicels 1– $2\frac{1}{4}$  in. long,  $\frac{1}{4}$ – $\frac{1}{3}$  lin. thick. Sepals 2– $2\frac{1}{2}$  lin. long, lanceolate or oblong-lanceolate, acute or obtuse. Corolla yellow; tube with 5 tufts of hairs at the middle; lobes ciliate with long hairs, but without hairs on the disk. Hypogynous glands subquadrate, ciliate. Fruit subglobose, about equalling the calyx, 7–10-seeded. Seeds compressed-globose, subcarinate,  $\frac{5}{8}$ –1 lin. in diam.,  $\frac{1}{2}$ – $\frac{5}{8}$  lin. thick, thinly covered with small tubercles.

**Upper Guinea.** Niger Territory : Nupe; in small lakes, *Barter*, 1329!

**Nile Land.** Bongo : Gurfala, *Schweinfurth*, 2270! in the River Jur, *Heuglin*, 35.

In *Barter's* specimen the corolla-lobes appear to be fringed only along one margin, and the flowers are 10–14 in a cluster, but otherwise it appears to be the same as the Bongo plant.—*N. E. Br.*

6. **L. Rautaneni**, *N. E. Br.* Leaves 1–3 in. in diam., orbicular, with a deep acute, but rather open, sinus at the base, thin, membranous. False petioles  $\frac{1}{2}$ – $\frac{5}{8}$  lin. thick, bearing 8–18 flowers in a cluster, 1–3 lin.

below the leaf-blade. Pedicels  $\frac{1}{2}$ – $1\frac{1}{4}$  in. long,  $\frac{1}{3}$ – $\frac{2}{5}$  lin. thick. Sepals  $1\frac{1}{4}$ – $1\frac{1}{2}$  lin. long, oblong to deltoid-ovate, acute or subobtusely. Corolla-lobes very sparingly ciliate, with a median ciliate crest and 1 or more lines of a few hairs on each side. Fruit globose, equalling or shorter than the sepals, 2–10-seeded. Seeds compressed-globose,  $\frac{3}{4}$  lin. in diam.,  $\frac{1}{2}$  lin. thick, subcarinate, thinly covered with small and very prominent tubercles, which are sometimes absent from the centre, ochreous.

**Lower Guinea.** Angola: Huilla to Humpata, *Johnston!* German South-west Africa: Amboland; Olukonda, *Rautanen*, 6!

Probably to this species should be referred *L. niloticum*, Gilg in Baum, Kunene-Sambesi Exped., 335, collected in Angola, in swamps on the banks of the River Kubango, above the Quatiri River, *Baum*, 400, and in muddy places on the River Cunene, above Humbe, *Baum*, 103. "Flowers white."

7. ***L. senegalense***, *N. E. Br.* Leaves 1–8 in. long,  $1-7\frac{1}{4}$  in. broad, orbicular or orbicular-oblong, broadly cordate, with a very open sinus at the base, very obtuse, entire or repand at the margin, subcoriaceous. False petioles often runner-like and bearing 2 or more distant leaves, with 12–30 flowers in a cluster,  $\frac{1}{2}$ – $1\frac{1}{2}$  in. below the leaf-blade, stout, 1–3 lin. thick. Pedicels  $1-2\frac{1}{2}$  in. long, stout,  $\frac{3}{4}$  lin. thick. Sepals  $2\frac{1}{2}$ –3 lin. long, oblong-lanceolate, acute. Corolla white, ciliate, with a fringed corona at the base of the lobes (*Grisebach*). Fruit ellipsoid, equalling or shorter than the calyx, 6–15-seeded. Seeds  $\frac{5}{8}$ –1 lin. long and slightly narrower,  $\frac{1}{3}$  lin. thick, orbicular-oblong, much compressed, sublenticular, rather thickly covered with minute papilla-like tubercles.—*L. orbiculatum*, *Griseb. Gen. & Sp. Gent.* 348, and in DC. Prod. ix. 140, partly. *Menyanthes indica*, var.  $\beta$ , *Lam. Encycl.* iv. 91. *Villarsia senegalensis*, *G. Don, Gen. Syst.* iv. 169.

**Upper Guinea.** Senegambia: Richard Toll, *Roger!* and without precise locality, *Leprieur! Beschault and Perrottet (ex Grisebach):* Senegal, *Roussillon (ex Lamarck)*.

Very distinct from all the other African species in its stouter stems or false petioles and pedicels, and the much more compressed seeds, on which (with the exception of those of *L. Kirkii*, *N. E. Br.*), the tubercles are more numerous and only half as large as those on the seeds of the other species. The flowers, too, appear to be larger, but those on the specimens seen are too decayed to permit of examination. See note under *L. orbiculatum*, *Griseb.*

*Imperfectly known species..*

8. ***L. orbiculatum***, *Griseb. Gen. & Sp. Gent.* 348. "Corolla scarcely overtopping the calyx, fimbriate on the margin, seeds numerous, compressed, granulate-asperate.—*Lam. Ill. nr.* 1966, et *Men. indica*,  $\beta$ , *Enc. iv.*, p. 91."

The above name and description apparently refer to two distinct plants, neither of which was seen by *Grisebach*. The name *L. orbiculatum* is transferred from *Menyanthes orbiculata*, *Lam. Ill. i.* 438, no. 1966, and the description is extracted from that given by *Lamarck* under *M. indica*, var.  $\beta$ , whilst the description of *M. orbiculata* is not given at all; it runs as follows: "*M. orbiculata*, leaves

orbicular, crenate, peltate, floriferous at the centre, flowers congested, subsessile." It was collected in the "interior of Africa" by Vaillant. This description evidently refers to a totally different plant from *M. indica*, var.  $\beta$ , and to it belongs the synonym, *Villarsia orbiculata*, G. Don, Gen. Syst. iv. 169. Therefore, since the name *L. orbiculatum*, Griseb., belongs to one plant and the description under it to another, and as G. Don clearly perceived the difference between the two and gave the name *Villarsia senegalensis* to one of them, it appears advisable to discard the name *L. orbiculatum* and retain that of *L. senegalense* for the preceding species.—*N. E. Br.*

9. **L. indicum**, *Durand & De Wild. in Bull. Soc. Bot. Belg.* xxxvii. 123, and *Reliq. Dewevr.* 162, not of *Griseb.* Flowers yellow.

**South Central.** Congo Free State: Kipilie, *Laurent*, and near Lukolela, *Dewevre*, 831, 862a.

This may be the same as one of the species above described, but it is certainly not *L. indicum*, Griseb., which according to the type specimen at Kew is identical with *L. cristatum*, Griseb., and has white flowers. I have not found a single instance in which the African and Indian plants of this genus belong to the same species.—*N. E. Br.*

## ADDENDA.

33. **Jasminum mauritianum**, Bojer. Add: *J. angulare*, Gilg in Baum, Kunene-Samb. Exped. 330. not of Vahl.

**DEKINDTIA**, Gilg in Engl. Jahrb. xxxii. 139.

Flowers hermaphrodite, 4-merous. Sepals 4, free; 2 opposite, ovate; 2 smaller, lanceolate. Corolla-tube short; lobes lanceolate, with a large involute apical lobe. Stamens usually 2, rarely 3, inserted in the corolla-tube; filaments very short; anthers ovate-orbicular, basifixed, hardly longer than the corolla-tube, with a broad dorsal connective. Ovary 2-celled; ovules 2 in a cell, pendulous from its apex, anatropous; style very short; stigmas sessile, subcapitate, shortly 2-lobed. Fruit unknown.

*Distrib.* Endemic.

1. **D. africana**, Gilg, l. c. A shrub, 6-12 ft. high, glabrous in all its parts, with lenticellate greyish-yellow branchlets. Leaves opposite, shortly petioled, oblong or oblong-lanceolate, 2-5 in. long, entire, shortly and broadly acuminate, rather shining on the upper surface, opaque beneath; main veins 5-8 on either side. Flowers in dense cymes in the axils of the leaves; pedicels 0; bracts at the base of the calyx 2, small, opposite. Sepals under 1 lin. long. Corolla 3 lin. long; lobes much longer than the tube.

**Lower Guinea.** Angola; Benguela, 3000 ft., *De Kendt*, 73.

**Mozamb. Dist.** British Central Africa: Nyasaland; Blantyre, *Buchanan*, 283 (6814 in *Herb. Schlechter*)!

**EPITABERNA**, K. Schum. in Engl. Jahrb. xxxiii. 316.

This was described as a new genus of *Apocynaceae*, allied to *Tabernaemontana*, but differing in the perfectly inferior ovary and the declinism of the flowers. It belongs to *Rubiaceae*. The structure of the flower is essentially that of *Heinsia*, from which it differs only in the bracteate, obconic receptacle, the externally glabrous corolla-tube, the declinism of the flowers and to some extent in the habit.

The only species is *E. myrmecea*, K. Schum., l. c. 317, collected in the Cameroons, near Bipinde, *Zenker*, 2339!

1. **Vahadenia**, *Stapf*. The genus was rejected by De Wildeman (Not. Apocyn. Latic. Congo, 61 *et seq.*) on the ground that the differential characters "as summarised in the key" were insufficient. The key, which is merely intended to facilitate naming, contains only a selection of more or less salient characters. A more comprehensive statement of the generic differences of *Vahadenia* and *Landolphia* may be found in the note on p. 29.

1. **Vahadenia Laurentii**, *Stapf*. Add: Syn. *Landolphia Laurentii*, De Wild. l.c. 60; De Wild. & Gentil, Lian. Caoutch. Congo, 94, t. xv.—Var. *grandiflora*, De Wild. in Rev. Cult. Colon. xi. (1902) 76 and Not. Apocyn. Laticif. Congo, i. 64; De Wild. & Gentil, l.c. 96, differs merely in having corolla-lobes attaining 16 lin. in length. De Wildeman and Gentil describe the fruit as hard as a billiard ball. Additional localities—Congo Free State; Lualaba-Kasai District at Galikoko-Luebo, *Gentil*, and near Basenga, *Gentil*.

1a. **Landolphia (Jasminochila) ugandensis**, *Stapf*. A climbing shrub with long slender branched tendrils from the branch-forks, branches of the tendrils slightly recurved, subpungent, the whole plant glabrous or the younger parts and inflorescences more or less pubescent; young branches slender, dark reddish-brown, dotted with minute lenticels. Leaves oblong to ovate-oblong, shortly and obtusely acuminate, almost rounded at the base,  $2\frac{1}{2}$ –3 in. (rarely 4 in.) long,  $1-1\frac{1}{4}$  (rarely  $1\frac{1}{2}$ ) in. broad, chartaceous, slightly glossy above; midrib slender, channelled above, slightly raised below; secondary nerves very slender, 12–13 on each side, spreading, connected rather close to the margins by equally slender arches; network of veins faintly impressed above, slightly raised delicate beneath; petiole about 2 lin. long. Corymbs subsessile or on peduncles up to over  $\frac{1}{2}$  in. long, 12–16-flowered, dense, at last lengthening out into a short raceme; bracts ovate to lanceolate, up to 1 lin. long; pedicels 1–2 lin. long, bracteolate. Calyx  $1-1\frac{1}{2}$  lin. long, usually ciliate, sometimes sparingly pubescent on the back, rarely eciliate and quite glabrous; sepals broad, ovate, obtuse, margins thin. Corolla up to 8 lin. long in bud; tubes  $3\frac{1}{2}$ –4 lin. long, slightly widened below the middle, rather slender, hairy within above the stamens, otherwise glabrous; lobes linear-oblong, obtuse,  $3\frac{1}{2}$ –4 lin. long,  $1-1\frac{1}{4}$  lin. broad, silky at the very base. Stamens inserted  $1\frac{1}{4}$ – $1\frac{1}{2}$  lin. above the base of the corolla-tube; anthers lanceolate-oblong, scarcely  $\frac{1}{2}$  lin. long. Ovary ovoid, quite glabrous; style and stigma  $\frac{1}{2}$ – $\frac{3}{4}$  lin. long. Fruit globose (*Dawe*) with light brown lenticels.

**Nile Land.** Uganda: Buddu; Dumu Forest, 4000 ft., *Dawe*, 23!

Very similar to *L. watsoniana* and *L. kilimandjarica*, but differing from the former in the very short style and the corresponding low position of the anthers; from the latter in the hairiness of the inner side of the corolla-tube, the comparatively low insertion of the stamens and the somewhat different venation of the leaves. *L. Buchananii* and *L. Cameronis* have corolla-lobes distinctly longer than the tube.

6. **Landolphia senegalensis**, *Kotschy & Peyr.* Add: Chevalier in Bull. Mus. Hist. Nat. Par. vi. (1900) 306, 421 and vii. (1901) 425, 427; Hua in Rev. Cult. Colon. xi. 322-323.

7. **Landolphia florida**, *Benth.* The stem of this liane sometimes attains a diameter of more than 1 foot, according to De Wildeman and Gentil. Add: Chevalier in Bull. Mus. Hist. Nat. Par. vi. (1900) 423; Lecomte in Bull. Mus. Hist. Nat. Par. vii. (1901) 196; Hua, in Bull. Mus. Hist. Nat. Par. viii. (1902) 65, 66; Busse in Engl. Jahrb. xxxii. 172; De Wild. in Études Fl. Bas et Moyen Congo, i. 67; De Wild. & Gentil, Lian. Caoutch. Congo, 87, tab. xi., xii.

**Nile Land.** Add: at Aboushendi, on the Blue Nile, *Muriel*, 49!

Var. **leiantha**, *Oliv.* Add: De Wild. and Gentil, l.c. 89.

Busse and De Wildeman and Gentil confirm Schlechter's statement as to the worthlessness of the latex of *L. florida* for the production of caoutchouc.

13. **Landolphia scandens**, *Didr.* Add: Hua in Bull. Mus. Hist. Nat. Par. viii. (1902), 66; De Wild. in Études Fl. Bas Congo, i. 67.

**Upper Guinea.** Togo: near Lome, *Warnecke*, 252!

**South Central.** Congo Free State: Kasai District, Lubue, *Gentil*

16. **Landolphia amœna**, *Hua.* Add: *Ancylobotrys amœna*, Cheval. in Bull. Mus. Hist. Nat. Par. vi. (1900) 422.

18. **Landolphia petersiana**, *Dyer.* Add: Dyer in Hook. Ic. Pl. t. 2756. *L. scandens*, Busse in Engl. Jahrb. xxxii. 169-172 (incl. vars. *rotundifolia*, *petersiana*, and *Tubeufii*). According to Busse, all the varieties enumerated by him yield some sort of caoutchouc, whilst the fruits are edible.

19. **Landolphia owariensis**, *Beauv.* Add: Cheval. in Bull. Mus. Hist. Nat. Par. vi. (1900) 424; Hua in Bull. Mus. Hist. Nat. Par. viii. (1902) 62-68 and in Rev. Cult. Colon. xi. 322-328; Busse in Engl. Jahrb. xxxii. 169; De Wild. & Gentil, Lian. Caoutch. Congo, 51-58, t. i. (not t. ii.). *L. Gentilii*, De Wild. ex De Wild. & Gentil, l.c. 61, t. iv.

**Upper Guinea.** Liberia: Greenville, *Sim*, 3! 6! 8! 12! 15! 17!

**Nile Land.** Uganda: Dumu Forest, *Dawe*, 13 partly!

**Mozamb. Dist.** German East Africa: Kondeland, *Stolz*, 94a (ex *Busse*).

According to Johnson (label to No. 811), *L. owariensis* is the source of the "white rubber" of the Gold Coast.

Var. **tomentella** *Stapf.* Add under Nile Land, Bahr el Ghasal District: between Pongo River and Bisihi, *Brown*!

19a. **Landolphia (Eu-Landolphia) Dawei**, *Stapf.* A scandent shrub, quite glabrous with the exception of the finely rusty-tomentose leaf-buds and inflorescences; tendrils unknown; branches brown, with numerous pale lenticels. Leaves oblong, shortly acuminate, subacute or obtuse at the base, 4-8 in. long,  $1\frac{3}{4}$ - $2\frac{1}{4}$  in. broad, thinly coriaceous, glossy above; midrib channelled above, prominent

below; secondary nerves about 13 on each side, oblique, slender, connected by gently curved arches,  $1-1\frac{1}{2}$  lin. distant from the margin, like the loosely reticulating veins faintly raised; petiole  $4-5\frac{1}{2}$  lin. long. Flowers in dense subsessile corymbs, at the end of the branches and from the axils of the uppermost leaf pairs, the terminal up to 12-flowered, minutely rusty tomentose all over; bracts ovate, more or less obtuse, 1 lin. long; pedicels stout, up to  $1\frac{1}{2}$  lin. long, bracteolate. Calyx  $1\frac{1}{4}-1\frac{1}{2}$  lin. long, segments very broad, ovate, obtuse. Corolla-bud up to 6 lin. long; tube 2 lin. long, widest between the middle and the mouth, finely pubescent without above the glabrous base, very sparingly within; lobes linear-oblong, up to 4 lin. long, sparingly pubescent near the base without. Stamens inserted at the middle or just above it; anthers lanceolate, almost 1 lin. long. Ovary ovoid, with a densely white-silky top. Style and stigma 1 lin. long, the latter cylindrical, deeply bifid.

**Nile Land.** Uganda: Dumu, 4000 ft., *Dawe*, 13 partly! 47 partly!

Evidently nearly allied to *L. owariensis* and *L. Klainei*, but easily recognised by the much larger flowers. This yields, according to *Dawe*, excellent rubber.

19b. **Landolphia Pierrei**, *Hua in Compt. Rend. Acad. Paris.* cxxxv. (1902) 868. Flowering branches robust, covered when young with long reddish-brown hairs, at length glabrescent. Leaves more or less elliptic, long acuminate, rounded or almost sinuate at the base, 4-6 in. long,  $2-1\frac{1}{3}$  in. broad, midrib hairy; secondary nerves about 12 on each side, rather conspicuous. Panicle corymbose, almost sessile at the end of the branches or in branch-forks, dense, hairy; bracts subacute, persistent; pedicels extremely short. Sepals oblong or ovate. Corolla-tube fusiform, finely pubescent in the exerted part; limb 3-4 lin. in diam.; lobes falciform, subacute, about half as long as the exerted part of the corolla-tube. Stamens inserted at the middle of the tube; filaments hairy at the base; anthers emarginate at the apex. Ovary tubinate, glabrous below, velvety above; stigma as in *L. owariensis*. Fruit subglobose, almost  $2\frac{1}{2}$  in. long, 2 in. wide, deep yellow, turning black when dry and covering itself with a blueish bloom, smooth. Seeds about 12, irregular, angular,  $7\frac{1}{2}-10$  lin. long.—*L. owariensis*, Hallier f. Kautschuklianen in Jahrb. Hamburg. Wissensch. Anstalt, vii. (1899) 3. Beih. (in part) 78.

**Lower Guinea.** Gaboon: Mount Bouet, near Libreville, *Klaine*, 286, 454, 544, 926, 1357, 1390, 1934bis, 1972; Sibange forest, *Büttner*, 497.

*Büttner's* specimens were on Hallier's authority quoted on p. 50 under *L. owariensis*. *Klaine* states that caoutchouc is produced from the latex of *L. Pierrei*.

20. **Landolphia Klainei**, *Pierre*. Add: *Lecomte* in Bull. Mus. Hist. Nat. Par. vii. (1901) 196; *Cheval.* in Bull. Mus. Hist. Nat. Par. vii. (1901), 426; *Hua* in Rev. Cult. Colon. xi. 322-328; *De Wild.* Not. Apoc. Laticif. Congo, 67, t. iii.; *De Wild. & Gentil*, Lian. Caoutch. Congo, 67, tt. v., vi., vii. According to *De Wildeman* and *Gentil*, the area of this species extends as far as the Ubangi River, and

the Districts of Eastern Kwango and Lualaba-Kasai, in the Congo Free State.

21. **Landolphia Dewevrei**, *Stapf*. Add: De Wild. Not. Apoc. Laticif. Congo, 73.

22. **Landolphia humilis**, *K. Schum.* Add: Hua in Rev. Cult. Colon. xi. 322-328; Cheval. in Compt. Rend. Acad. Paris, cxxxv. 514 (var *umbrosa*); De Wild. Not. Apocyn. Latic. Congo, 52 et seq.; De Wild. & Gentil, Lian. Caoutch. Congo, 124.

23. **Landolphia Heudelotii**, *A. DC.* Add: Hua in Bull. Mus. Hist. Nat. Par. vii. (1901) 79 and in Rev. Cult. Colon. xi. 322-328; Cheval. in Bull. Mus. Hist. Nat. Par. vi. (1900) 424-430; l.c. vii. (1901) 424, 427; Arnaud in Bull. Mus. Hist. Nat. Par. viii. (1902) 69, 70.

23a. **Landolphia Stolzii**, *Busse in Engl. Jahrb.* xxxii. 168, t. 6. A shrub climbing with long hook-branched tendrils; branches yellowish-brown, at length glabrous, lenticellate, dark greyish. Leaves very close on the young branches, ovate to ovate-oblong, obscurely acuminate, rounded, subtruncate or subcordate (with a wide shallow sinus) at the base,  $1\frac{1}{2}$ -3 in. long,  $1+1\frac{1}{2}$  in. broad, chartaceous to coriaceous, sparingly hairy below on the midrib when young, otherwise glabrous; secondary nerves 8-12 on each side, strong, channelled above, very prominent below, rather spreading, reticulation of veins close, prominent; petiole  $2\frac{1}{2}$  lin. long, fulvo-tomentose. Cymes dense, usually gathered in terminal panicles up to almost 3 in. long, densely rusty-tomentose; peduncle short; pedicels very short. Calyx  $1\frac{1}{4}$ - $1\frac{1}{3}$  lin. long; sepals 5, rotundate, densely rusty tomentose. Corolla white, sweet-scented,  $2\frac{3}{4}$ -3 lin. long, slightly widened above the middle, densely villous between the mouth and the base of the stamens; lobes oblong,  $1\frac{1}{2}$ -2 lin. long, obtuse. Anthers inserted  $2-2\frac{1}{4}$  lin. above the base of the corolla-tube. Ovary densely tomentose. Fruit resembling a small orange.

**Mozamb. Dist.** German East Africa: Kondeland; in damp forests and near water at Ipyana, 1800 ft., *Stolz*, 94.

This yields according to the collector the caoutchouc of Kondeland.

24. **Landolphia Kirkii**, *Dyer*. Add: Busse in Engl. Jahrb. xxxii. 164; Dyer in Hook. Ic. Pl. t. 2755. *L. dondeensis*, Busse in Engl. Jahrb. xxxii. (1902) 165.

25. **Landolphia parvifolia**, *K. Schum.* Add: Busse in Engl. Jahrb. xxxii. 167; De Wild. & Gentil, Lian. Caoutch. Congo, 120; De Wild. Not. Apocyn. Laticif. Congo, 41, 42; Hua in Rev. Cult. Colon. xiv. (1904) 65.

**Mozamb. Dist.** German East Africa: Kilwa; near Donde-Barikiwa, *Busse*, 585! in the basin of the Djenye River, *Busse*, 1251; Lindl. near Nyunguo,

*Adams*, 2; Makonde Plateau, near Mkomadatchi, *Busse*, 1253; Nyasa Region; basin of the Luhagarra River, *Busse*, 1249; Likonde River, *Busse*, 1250; Lilambo River, *Busse*, 1252.

According to *Busse* the latex of this species is useless.

26. ***Landolphia Thollonii***, *Dewèvre*. The rhizomes much branched and almost matted; branches up to  $7\frac{1}{2}$  lin. in diam. and about 6–8 in. below the surface of the soil. Fruit globose or slightly attenuated at the base, up to 3 in. long, 2 in. in diam., dirty yellow, mottled with brown, rind thick; seeds 3–24 in an edible cream-like pulp, 10–15 lin. long.—*Cheval.* in *Bull. Mus. Hist. Nat. Par.* vii. (1901) 426; *De Wild.*, *Not. Apocyn. Laticif. Congo*, i. 40 et seq., 93, t. i. and *Études Fl. Bas et Moyen Congo*, i. 68; *De Wild. & Gentil*, *Lian. Caoutch. Congo*, 117, t. xxv., xxvi.; *Hua* in *Rev. Cult. Colon.* xiv. 65 et seq.

**South Central.** Congo Free State: Eastern Kwango and Lualaba-Kasai districts to 50° S. lat.

***Carpodinus* (?) *chylorrhiza***, *K. Schum.* in *Baum, Kunene-Samb. Exped.* 336. An undershrub about 16 in. high, with creeping rhizomes, much branched; branches minutely pubescent when young, then glabrous, dark brown, with minute lenticels. Leaves lanceolate, obtuse, acute or slightly rounded at the base, 1–3 in. long,  $2\frac{1}{2}$ – $7\frac{1}{2}$  lin. long, firmly coriaceous, quite glabrous, with about 15 lateral nerves, more prominent above than below. Fruit obovoid, over 1 in. long, with corky warts, glabrous.

26a. ***Landolphia droogmansiana***, *De Wild.* in *De Wild. & Gentil, Lian. Caoutch. Congo*, 59, t. iii. A liane, up to 100 yards long and 8 in. thick with numerous stout tendrils, glabrous when mature. Leaves oblong, almost rounded at the base, slightly and obtusely acuminate, 4–5 in. long, up to  $1\frac{1}{2}$  in. broad, coriaceous, glabrous, midrib channelled above; lateral nerves 10–15 on each side, subhorizontal, like the veins very prominent below; petiole about 4 lin. long. Flowers unknown. Fruit ovoid to obovoid, brick-red, with a thick coriaceous rugose transverse ring at the middle and with longitudinal ribs, slightly depressed at the top,  $1\frac{2}{3}$ –3 in. in diam., on a short stout pedicel; seeds 1–30, reddish-brown,  $7\frac{1}{2}$  lin. long,  $3\frac{1}{2}$  lin. wide, embedded in an acidulous, edible, greyish pulp.

**South Central.** Congo Free State: Kanda-Kanda, on the River Lusile, *Gentil*, 63.

This is, according to *De Wildeman* and *Gentil*, an excellent rubber vine. The actual position of this species is somewhat obscure, the flowers not being known.

26b. ***Landolphia dubreucqiana***, *De Wild.* in *De Wild. & Gentil, Lian. Caoutch. Congo*, 92, tt. 13–14. A liane, 4–5 yards long, up to 10 lin. thick, climbing by means of very slender tendrils or sensitive inflorescences; branches slender, spreadingly hirsute, at length glabrescent; bark brown with numerous minute lenticels. Leaves

oblong to elliptic-oblong or obovate-oblong, more or less cordate at the base,  $2\frac{1}{2}$ –6 in. long,  $1\frac{1}{3}$ –3 in. broad, shining and glabrous except the more or less hirsute (ultimately glabrescent) primary and secondary nerves; secondary nerves about 11–12 on each side, connected by bold arches some distance from the margin, like the veins distinct on both sides, reticulation close; petiole  $2\frac{1}{2}$ – $3\frac{1}{2}$  lin. long. Panicle terminal up to 8 in. long, bearing the sessile or subsessile flowers in clusters at the end of spreading or recurved filiform branches, up to over 1 in. long, glabrous excepting the hispid slender peduncle; bracts very small. Sepals lanceolate, acute,  $1\frac{1}{4}$ – $1\frac{1}{2}$  lin. long, shining, keeled, margins ciliate. Corolla white excepting the often reddish tube, glabrous outside; tube  $5\frac{1}{2}$  lin. long, slightly widened below the insertion of the stamens; lobes as long as the tube. Ovary ovoid, glabrous; style filiform, several times longer than the calyx, articulated with the ovary; stigma oblong-ovoid. Fruit depressed-globular, yellow suffused with carmine,  $1\frac{1}{4}$ –2 in. in diam.; seeds 1–30 in a yellowish-brown, sweetish-sour edible pulp, about 4 lin. long.

**South Central.** Congo Free State: Nyangwe, *Dewèrre*, 1036a! Kasai, *Luja*; Lubue, *Gentil*, 44.

This is very likely identical with *L. lucida* var. *hispidula*, Hallier (see p. 59). The latex is worthless.

27. **Landolphia Foreti**, *Jumelle*. Add: De Wild. Not. Apocyn. Laticif. Congo, 68.

28. **Landolphia lucida** var. *hispidula*, *Hall. f.* Add: Busse in Engl. Jahrb. xxxii. 171. Barren specimens collected on the Mpatila Plateau, *Busse*, 1100; said to yield caoutchouc.

1. **Clitandra henriquesiana**, *K. Schum.* Add: De Wild. Not. Apocyn. Laticif. Congo, 53; De Wild. & Gentil, Lian. Caoutch. Congo, 135, fig. 10. *Landolphia henriquesiana*, *Hall. f.*; *K. Schum.* in Baum, Kunene-Sambesi Exped., 336. The latex yields (according to Mannich in Baum, l.c.) a kind of gutta percha which is, however, probably worthless.

6. **Clitandra orientalis**, *K. Schum.* Fruit (according to De Wildeman & Gentil) globose to ellipsoid-globose, 2 to almost 5 in. long, pale green to orange-yellow with a blueish bloom, rind thick, glabrous, somewhat tubercled; seeds up to 40, pulp blood-red, very acid, edible.—*C. arnoldiana*, De Wild. in Compt. Rend. Acad. Paris, cxxxvi. (1903) 400, and Not. Apoc. Laticif. Congo, 20; De Wild. & Gentil, Lian. Caoutch. Congo, 80, tt. 9–10 and fig. 7 on p. 77; Chevalier in Rev. Cult. Colon. xv. 5.

According to De Wildeman and Gentil, this is one of the commonest rubber vines of the Congo Free State, extending westwards to Boma. The caoutchouc prepared from the latex is black and said to be of excellent quality. Dawe, who found it in the Dumu Forest, Buddu, at 4000 ft., also considers it as one of the best rubber plants of Uganda.

6a. **Clitandra Nzunde**, *De Wild. in Belgique Coloniale*, 1903, 126 & in *Notes Apocyn. Laticif. Congo*, i. (1903), 22. A liane, up to 100 yards long and 8 in. in diam.; stems glabrous, bark dull pale brown with numerous lenticels. Leaves oblong, cuneate at the base, acutely acuminate, (acumen about 5 lin. long),  $3\frac{1}{2}$ –7 in. long,  $1\frac{1}{3}$ – $2\frac{1}{2}$  in. broad, coriaceous, glabrous, dull; secondary nerves about 11 on each side, oblique, connected by submarginal arches, like the veins prominent on both sides. Panicles axillary and terminal, short, compound, dense, many-flowered, globose,  $7\frac{1}{2}$  lin. in diam., puberulous; peduncle short; bracts small; pedicels  $\frac{1}{2}$  lin. long, shortly pubescent. Corolla minutely puberulous without; tube inflated below, then suddenly contracted at the level of the calyx tips, inflated again and contracted at the mouth, about  $1\frac{1}{8}$  lin. long, up to  $\frac{1}{2}$  lin. wide; lobes oblong-linear, as long as the tube, over  $\frac{1}{3}$  lin. wide. Anthers inserted at the middle. Ovary glabrous, ovoid; style short.—*De Wild. in De Wild. & Gentil, Lian. Caoutch. Congo*, 83.

**South Central.** Congo Free State: Ubangi District; forests south of Banzyville, particularly along water courses.

This is evidently closely allied to *C. orientalis*, differing as it seems only in the size of the flowers. It is stated to yield excellent rubber. "Nzunde" is the vernacular name in the Ubangi District.

7a. **Clitandra nitida**, *Stapp*. A perfectly glabrous climber, with very long slender hook-branched terminal or axillary tendrils; young branches slightly quadrangular, drying dark chestnut-brown, more or less glossy, with scattered whitish lenticels. Leaves elliptic to obovate-elliptic, abruptly contracted into a rather broad obtuse acumen,  $3\frac{1}{2}$ – $4\frac{1}{2}$  lin. long, rounded at the base,  $2\frac{1}{2}$ –4 in. long,  $1\frac{1}{2}$  to over 2 in. broad, coriaceous, glossy on both sides drying greenish-brown, dark above, midrib slightly concave above, prominent below; secondary nerves about 4 to an inch, with parallel finer tertiary ones between them, very faintly raised above, very conspicuously connected below by flat arches near to the thickened margin; petioles 4–6 lin. long. Cymes very numerous, opposite, glabrous, 6 to more than 12-flowered, without the corollas about as long as the petioles; bracts ovate to lanceolate, minute; pedicels  $1\frac{1}{2}$  lin. long, very slender. Calyx scarcely 1 lin. long, glabrous; sepals ovate, subacute or obtuse, ciliolate. Corolla glabrous without; tube slender, subcylindric, slightly widened at the middle, 2 lin. long; lobes linear, subacute, 3 lin. long. Stamens inserted below the middle; filaments very short; anthers lanceolate, conspicuously acuminate,  $\frac{1}{2}$  lin. long. Ovary glabrous, ovoid, rather suddenly contracted into the extremely short style; stigma subcylindric from a thickened base, much longer than the style. Fruit (*Whyte*) globose or depressed globose,  $1\frac{2}{3}$ – $2\frac{1}{3}$  in. long, covered with prominent warts and nodules all over, light red or yellow. Seeds 15–20 in a pleasantly acid, pink pulp.

**Upper Guinea.** Liberia: within 20 miles from Karka Town, *Whyte!* Sinou Basin, *Whyte!* Greenville, *Sim*, 24!

The latex of this species is collected for rubber. *C. nitida* is nearest allied

to *C. Barteri* and *C. visciflua*, but is easily recognised by the bold and elegant looser nervation.

8. **Clitandra visciflua**, *K. Schum.* Second or outer marginal nerve sometimes indistinct or absent. Peduncle rarely minutely pubescent. Ovary sometimes with a few hairs in the upper part; ovules 16-20 in 4 rows in each carpel (not 8 in 2 rows as stated on p. 67). Fruit ovoid, about 3 in. long, truncate at the top; pericarp smooth, crustaceous (when dry). Seeds numerous, irregularly ovoid or ellipsoid, angular, 7-8 lin. long.

**Upper Guinea.** Cameroons: Bipinde, *Zenker*, 2244! 2244a!

**Lower Guinea.** Gaboon: *Klaine*, 1258! 3296!

10. **Clitandra cirrhosa**, *Radlk.* Fruit subglobose, suddenly contracted at the base, truncate at the top, coarsely and densely verrucose, warts partly confluent, up to 2 in. across. Seeds ellipsoid, 7-8 lin. long, 6-7 lin. broad.—Bonnet in *Bull. Mus. Hist. Nat. Par. vii.* (1901), 283; Chevalier in *Bull. Mus. Hist. Nat. Par. vii.* (1901), 426.

**Lower Guinea.** Add!—Gaboon, *Klaine*, 3079!

**North Central.** French Congo: everywhere along the Gribingui River, *Foureau*.

According to *Foureau* (ex *Bonnet*, l.c.), this yields good caoutchouc.

10a. **Clitandra lacourtiana**, *De Wild. in De Wild. & Gentil, Lian. Caoutch Congo*, 110, t. 24. A liane, up to 100 yards long, 6 in. in diam.; bark blackish-brown, shining with minute lenticels. Leaves oblong or obovate, very shortly cuneate at the base, abruptly acuminate (acumen linear, obtuse),  $2\frac{1}{4}$ - $4\frac{1}{2}$  lin. long, 1 to almost 2 in. broad, midrib broad, shallowly channelled above, prominent below; lateral nerves very numerous, subhorizontal, connected by a wavy submarginal nerve close to the margin; petiole slender. Flowers unknown. Fruit globose or pyriform, smooth or subrugose,  $1\frac{2}{3}$ -4 in. in diam.; rind thick, hard, yellowish; seeds grey in a whitish pulp, 3-70, about 11 lin. long, 6 lin. broad.

**South Central.** Congo Free State: Kanda-Kanda, on the Luile River, *Gentil*, 64.

There is nothing in the description and plate to distinguish *C. lacourtiana* from *C. cirrhosa*, *Radkl.* The petioles are, in the description, said to be 5-10 lin. long, but figured as  $2\frac{1}{2}$ - $5\frac{1}{2}$  lin. long. *C. lacourtiana* is stated to yield little and worthless rubber.

12a. **Clitandra Gentili**, *De Wild. in Belgique Colon.* 1903, 137 and in *Notes Apocyn. à Latex Congo*, 25. A liane with axillary tendrils; young branches glabrous, reddish-brown, shining, at length grey with small pale lenticels. Leaves ovate or ovate-oblong, abruptly and obtusely acuminate (acumen  $3\frac{1}{2}$ -4 lin. long, 1 lin. broad) rounded or obscurely cordate at the base,  $2\frac{3}{4}$ - $3\frac{1}{4}$  in. long, 2- $2\frac{3}{4}$  in. broad; margins wavy; midrib subconvex above, slightly prominent below;

secondary nerves about 16 on each side, horizontal, faint, connected by submarginal arches; veins scarcely visible; petiole channelled,  $1\frac{1}{2}$ –2 lin. long. Panicles short, congested, axillary and pseudo-terminal, about 10-flowered, loose, shortly pubescent, about 1 lin. long. Sepals ovate-oblong,  $\frac{3}{4}$  lin. long, keeled, ciliate. Corolla white, glabrous; tube  $\frac{3}{4}$  lin. long; lobes linear, obtuse, 3 lin. long. Anthers exceeding the corolla-mouth. Ovary ovoid; style short.

**South Central.** Congo Free State: Eastern Kwango; banks of the Juma River, *Gentil*.

The description exactly fits *C. Mannii*, with the exception of the inflorescence which is described as pubescent in *C. Gentili*, whilst it is perfectly glabrous in *C. Mannii*.

14a. **Clitandra membranacea**, *Stapp*. A climbing perfectly glabrous shrub, with long very slender tendrils; branches very slender, terete, green, at length pale brown, lenticels very scattered, inconspicuous. Leaves lanceolate to oblong-lanceolate, acuminate (acumen 4–8 lin. long, subacute or obtuse), minutely cordate at the base, 3–4 in. long,  $1\frac{1}{4}$ – $1\frac{1}{2}$  in. broad, thin-papery; midrib very slightly convex above, much more so below; secondary nerves 7–9 on each side, very slender, oblique, connected by faint arches, like the loose veins very faintly raised on both sides; petioles up to  $1\frac{1}{2}$  lin. long, rather broad at the base. Flowers solitary (always?) in the leaf-axils, subsessile; bracts about 6, gradually increasing upwards, ovate, sparingly ciliate. Calyx 1 lin. long, green; sepals 5, ovate, obtuse, sparingly and minutely ciliate. Corolla glabrous on both sides, 5 lin. long in bud, greenish; tube urceolate-campanulate, shortly exerted from the calyx; lobes linear, obtuse, 4 lin. long. Stamens inserted below the middle of the corolla-tube; filaments very short; anthers erect, ovate-lanceolate reaching to the corolla-mouth. Ovary oblong-conic, very minutely hairy; style extremely short; stigma conical.

**Upper Guinea.** Liberia; Greenville, *Sim*!

Some barren specimens, collected by Whyte in the Sinou Basin, with somewhat shorter and broader (elliptic) leaves and very fine long tendrils, evidently belong to this species.

1a. **Carpodinus eetveldeana**, *De Wild. in De Wild. & Gentil, Lian. Caoutch. Congo*, 107, t. xxiii. A strong liane; stems glabrous, 8–12 in. in diam., bark brown, with numerous white lenticels. Leaves elliptic, cuneate at the base, acutely acuminate, 5–12 in. long,  $1\frac{2}{3}$  to almost 4 in. broad, glabrous; midrib channelled above; secondary nerves 15 on each side, much raised, connected by submarginal arches; veins rather indistinct; petiole 6–15 lin. long. Flowers unknown. Fruit subglobose, truncate at the base, shortly or obscurely apiculate, 3–7 in. long, subsessile; rind yellowish-red, mottled with brown, thick, fleshy, smooth; seeds 4–10 in a yellow pulp, 1 in. long, 6 lin. broad.

**South Central.** Congo Free State: near the Lulua River, between Luebo and Luluabourg, *Gentil*, 60.

De Wildeman suggests *C. maxima* as the nearest ally.

5. **Carpodinus dulcis**, *Sabine*. Add: Chevalier in Bull. Mus. Hist. Nat. Par. vi. (1900) 317, 423.

5a. **Carpodinus oocarpa**, *Stapf*. A climbing shrub with pseudo-axillary flagelliform tendrils; young branchlets softly hairy, (tomentum consisting of short subadpressed and more or less numerous long rust-coloured hairs), at length glabrescent, brown with minute lenticels. Leaves oblong or elliptic-oblong, distinctly and often abruptly acuminate (acumen 4-7 lin. long, slender, acute or subacute), minutely but distinctly cordate, very rarely rounded at the base,  $2\frac{1}{2}$ -5 in. long,  $1\frac{1}{4}$ -2 in. broad, coriaceous, usually sparingly fulvo-hirsute on the midrib below otherwise glabrous except when quite young; midrib narrowly channelled above, much raised below; lateral nerves 4-6 on each side, slightly channelled above, raised below, connected by bold arches rather distant from the margin; petiole 1-3 lin. long. Cymes axillary, sessile, contracted, fulvo-hirsute, few-flowered; flowers sessile; bracts about 6 with each flower, oblong to lanceolate, the inner adpressed to the calyx, all fulvo-hirsute,  $1\frac{1}{2}$  lin. long. Calyx  $1\frac{1}{4}$ - $1\frac{1}{3}$  lin. long; sepals 4, ovate, acute, ciliolate. Corolla-tube slender,  $4\frac{1}{2}$  lin. long, widened above the insertions of the stamens, perfectly glabrous without, with a few hairs in the widened part within; lobes narrow-lanceolate, as long as the tube or slightly longer, twisted. Ovary densely hirsute above the middle; style very slender, minutely crispo-puberulous except at the hirsute base, 4 lin. long. Fruit according to a drawing by *Whyte* more or less egg-shaped oblong or ellipsoid, obtuse,  $2\frac{1}{2}$ -4 in. long,  $1\frac{1}{3}$ -2 in. across, yellow, rough transversely rugose. Seeds 30-60.

**Upper Guinea.** Liberia: Monrovia; within 20 miles of Karka Town, *Whyte*! Sinou basin, *Whyte*, 9! 3! Greenville, *Sim*, 7! 27!

Very closely allied to *C. dulcis*, and only differing from it in the leaves having cordate bases and fewer more distant nerves, slightly larger flowers and egg-shaped or ellipsoid, perfectly obtuse fruits.

One of *Sim*'s specimens, numbered 7, has quite glabrous leaves with rounded base and almost glabrous branches. This yields, according to *Whyte*, good rubber.

6. **Carpodinus hirsuta**, *Hua*. Add: Chevalier in Bull. Mus. Hist. Nat. Par. vi. (1900), 423; Arnaud, in Bull. Mus. Hist. Nat. Par. viii. (1902), 70; De Wild. & Gentil, Lian. Caoutch. Congo, 101, fig. 8, B.

6a. **Carpodinus globulifera**, *K. Schum.* in *Engl. Jahrb.* xxxiii. 316. A shrub, climbing with hook-branched tendrils, springing from the branch-forks; young branches stout, hirsute or hispid with reddish spreading hairs. Leaves elliptic to obovate, cuspidate or rounded at the apex, slightly sinuate at the base,  $1\frac{1}{2}$ - $4\frac{1}{2}$  in. long, 1-3 in. broad, coriaceous, drying blackish-brown above, sparingly hirsute above, soon glabrescent except the midrib, densely and softly hairy below, midrib very finely channelled above; lateral nerves about 6 on each side, rather spreading, slender; petiole stout,  $2\frac{1}{2}$  lin. long, densely hirsute. Flowers in dense hirsute sessile globose clusters in the leaf-axils; bracts ovate,

acute, densely fulvo-hirsute, close to the calyx and passing into the sepals. Calyx  $1\frac{1}{2}$  lin. long; sepals 5, ovate, acute, densely fulvo-hirsute. Corolla yellowish, 4 lin. long, clavate in bud, pubescent without except at the glabrous base; tube 2 lin. long, subpapillose within above the middle, otherwise glabrous; lobes broad and obliquely elliptic. Stamens inserted at the middle of the corolla-tube; filaments  $\frac{1}{2}$  lin. long; anthers  $\frac{1}{2}$  lin. long. Ovary ovoid, hispid; style 1 lin. long, finely filiform; stigma clavate. Fruit unknown.

**Upper Guinea.** Cameroons: Bipinde, in forest, *Zenker*, 2352!

Very near to *C. hirsuta*, Hua, differing from it somewhat in the shape of the leaves, but particularly in the shape of the sepals and corolla-lobes.

18. **Carpodinus turbinata**, *Stapf*. Add: De Wild. & Gentil, Lian. Caoutch. Congo, 102, tt. 18-19, figs. 1-3. Common in the forests of the Congo Free State. The latex is stated to be worthless.

19. **Carpodinus ligustrifolia**, *Stapf*. Fruit elongate-ovoid from a truncate base, obtuse, emitting a resinous odour when cut, golden-yellow when mature, smooth, over 4 in. long,  $2\frac{1}{2}$  in. across; seeds 4-10, about 10 lin. long, embedded in white pulp.—De Wild. & Gentil, Lian. Caoutch. Congo, 104, t. 21, figs. 1-4.

The area of this species extends, according to De Wildeman and Gentil, to the Lualaba-Kasai, Eastern Kwango and Aruwimi Districts.

Var. *angusta*, De Wild. in De Wild. and Gentil, l.c. 105, t. 22. Fruits more oblong than in the type, 2-5 in. long,  $1\frac{1}{3}$  to almost 2 in. across.

**South Central.** Congo Free State: on the banks of the River Lubue, near Mukanda Monene, *Gentil*, 47.

20. **Carpodinus gracilis**, *Stapf*. Add: De Wild. Not. Apocyn. Laticif. Congo, 43 et seq.; De Wild. & Gentil, Lian. Caoutch. Congo 129.—The latex is (according to De Wildeman and Gentil) useless.

22. **Carpodinus lanceolata**, *K. Schum.* Add: Cheval. in Bull. Mus. Hist. Nat. Par. vi. (1900), 317, and in Compt.-Rend. Acad. Paris, cxxxv. (1902) 512; De Wild. Not. Apocyn. Laticif. Congo, i. 39, 56, 94 and Études Fl. Bas et Moyen Congo, i. 68; De Wild. & Gentil, Lian. Caoutch. Congo, 130.

Common in all the plains and in the clearings of the equatorial forests of eastern part of the Congo Free State and in French Congo.

Dewèvre's statement that *C. lanceolata* assumes sometimes a climbing habit is, according to the accounts of more recent travellers and collectors, erroneous. Investigations made recently by Schlechter and others into the value of the latex have demonstrated its worthlessness for caoutchouc production.

27a. **Carpodinus leucantha**, *K. Schum in Baum, Kunene-Sambesi Exped.* 338. A shrub, erect up to  $1\frac{1}{2}$  ft. high, or climbing up to 9 ft.; branches glabrous, slender, reddish-brown, bark peeling off. Leaves ovate or ovate-oblong, shortly and obtusely acuminate, broad-acute at the base,  $1\frac{3}{4}$  to almost 3 in. long,  $\frac{2}{3}$ - $1\frac{1}{4}$  in. broad; lateral nerves

15 or more on each side, horizontal, more or less prominent; petiole  $1\frac{1}{2}$ – $2\frac{1}{2}$  lin. long. Flowers terminal, solitary; pedicel  $2\frac{1}{2}$ –5 lin. long; bracts in 3 pairs, close to the calyx. Sepals oblong-triangular, acute, scarcely 1 lin. long, minutely ciliate. Corolla funnel-shaped, yellowish-white; tube 10 lin. long, thickened at the mouth; lobes narrow,  $1$ – $1\frac{1}{2}$  lin. long. Anthers  $1\frac{3}{4}$  lin. long, inserted 8 lin. above the base. Fruit a globose, orange-coloured berry.—De Wild. & Gentil, Lian. Caoutch. Congo, 128.

**Lower Guinea.** South Angola; by the Longa River, above the Lazingua River, 4000 ft., *Baum*, 669!

Said to yield rubber in small quantities.

29. **Carpodinus Gentilii**, *De Wild.* Fruit subglobose to ovoid, to over 6 in. long, 5 in. in diam., coarsely rugose; seeds up to 52 in a very acid pulp.—De Wild. & Gentil, Lian. Caoutch. Congo, 99, tt. 16, 17 and 19, figs. 4–7.

The area of this species extends over the following districts of the Congo Free State: Équateur, Lualaba-Kasai, Eastern Kwango, Aruwimi and Bengala.

2. **Carissa Arduina**, *Lam.* Add: *Lycium cordatum*, Mill. Gard. Dict. ed. viii., No. 10.

**Acockanthera lycioides**, *G. Don*, *Gen. Syst.* iv. 485, is *Lycium cinereum*, Thunb.

8. **Pleiocarpa flavescens**, *Stapf.*

**Upper Guinea.** Togo: near Lome, *Warnecke*, 481!

9. **Pleiocarpa tubicina**, *Stapf.* Add: Stapf in De Wild. Ill. Fl. Congo, i. 91, t. 46. De Wild. Études Fl. Katanga, i. 107.

1. **Diplorrhynchus Welwitschii**, *Rolfe.* Add: De Wild. Notes Apocyn. Laticif. Congo, 33, 34; K. Schum. in Baum, Kunene-Samb. Exped. 338.

**Lower Guinea.** South Angola: between Gond Kopje and Kakele, 4000 ft., in sandy soil among rocks, *Baum*, 178.

2. **Diplorrhynchus angolensis**, *Büttner.* Add: De Wild. Not. Apocyn. Laticif. Congo, 33, 34.

4. **Diplorrhynchus mossambicensis**, *Benth.* Add: De Wild. Études Fl. Katanga, i. 101. *D. Welwitschii*, K. Schum. in Baum, Kunene-Samb. Exp. 338, non Benth.

9a. **Hunteria Ballayi**, *Hua in Bull. Mus. Hist. Nat. Par.* viii. (1902), 281. A perfectly glabrous shrub. Leaves elliptic, obtusely acuminate, acute or obtuse at the base,  $3$ – $7\frac{1}{2}$  in. long, 1 to almost 3 in. broad, shining, many-nerved. Cymes few-flowered, subsessile, axillary or pseudo-terminal, sometimes from the old wood. Calyx up to  $\frac{1}{2}$  lin.

long; sepals 5, broad, rotundate. Corolla perfectly glabrous without; tube cylindric, slightly constricted at the middle and the mouth, 3 lin. long; lobes ovate,  $1\frac{1}{2}$  lin. long. Stamens inserted 2 lin. above the base of the corolla-tube; filaments sparingly hairy at the base; anthers ovate, acute. Ovary glabrous, acute; carpels 2-ovuled.

**Lower Guinea.** Gaboon, *Bullay*.

This is undoubtedly a species of *Pleiocarpa*, evidently very close to *P. bicarpellata*.

2. **Rauwolfia caffra**, *Sonder*. Add: De Wild. Études Fl. Katanga, i. 102.

12. **Rauwolfia Cumminsii**, *Stapf*. Cymes 3-7-flowered; peduncle 2 in. long. Calyx  $\frac{1}{2}$ - $\frac{3}{4}$  lin. long. Corolla-tube  $4\frac{1}{2}$  lin. long, cylindric, constricted at the mouth and in the uppermost  $\frac{1}{3}$ , villous within just below the mouth, sparingly hairy below the stamens for a short distance; lobes broad-ovate, obtuse,  $\frac{1}{2}$  lin. long. Disc tubular, enclosing the free carpels to or beyond the middle. Style glabrous.

**Upper Guinea.** Liberia; without precise locality, *Whyte!*

A curious state of this species was collected by Whyte in Liberia, within 20 miles of Karka Town. It has an appearance rather different from that of the other specimens of *R. Cumminsii*, owing to the more abundant development of inflorescences and the reduction of the foliage. The fruits are mostly solitary mericarps and convex on both sides, although much more so on one side than on the other. The young flowers of the specimen agree, as far as they go, exactly with those of *R. Cumminsii*.

13a. **Rauwolfia liberiensis**, *Stapf*. A perfectly glabrous shrub; young branches terete or the youngest slightly angular. Leaves in whorls of usually 4, lanceolate or oblanceolate, acutely acuminate, long attenuate at the base, 3-6 in. long,  $\frac{3}{4}$ - $1\frac{1}{2}$  in. broad, thinly membranous; secondary nerves 9-12 on each side, much spreading, curved; veins quite obscure; petioles 3-6 lin. long. Flowers pedicelled in 5-7-flowered umbelliform cymes; cymes gathered in a 5-rayed umbel; peduncle slender, up to  $1\frac{1}{2}$  in. long; rays 5-10 lin. long, more or less unequal; pedicels very slender, up to 2 lin. long. Calyx  $\frac{1}{2}$  lin. long; segments ovate, acute. Corolla-tube 2- $2\frac{1}{2}$  lin. long, villous near the mouth, pubescent below the stamens within; lobes subrotundate, obtuse, scarcely  $\frac{1}{2}$  lin. long. Carpels free surrounded by a truncate disc to the middle. Style glabrous. Fruit unknown.

**Upper Guinea.** Liberia; Simou Basin, *Whyte!*

Very similar to *R. mombasiana*, but less robust, with shorter petioles, fewer secondary nerves, less compound inflorescences and slightly smaller flowers.

14. **Rauwolfia vomitoria**, *Afz.* Add: De Wild. Études Fl. Bas et Moyen Congo, i. 70.

**Upper Guinea.** Liberia: interior of Monrovia, *Whyte!* Greenville, *Sim*, 5!

**South Central.** Congo Free State: Lemfu, *Buloge* (Hb. *Gillet*, 2262); Bangala, *Demeuse*.

18. **Rauwolfia obscura**, *K. Schum.* Add: De Wild. *Études Fl. Bas et Moyen Congo*, i. 69.

**Lower Guinea.** Lower Congo; between Dembo and Kisantu, *Gillet*, 1583; near Kimuenza, *Gillet*, 776, 1652, 1661b.

1. **Allamanda cathartica**, *Linn.* Add: De Wild. *Études Fl. Bas et Moyen Congo*, i. 67.

**Lower Guinea.** Lower Congo: Leopoldville to Mombazi, *Gillet*, 2590.

1. **Lochnera rosea**, *Reichb.* Add:

**Upper Guinea.** Add: Liberia: near Monrovia, *Whyte!*

1. **Alstonia congensis**, *Engl.* Add: *A. scholaris*, Cheval. in *Bull. Mus. Hist. Nat. Par. vi.* (1900), 423.

4. **Callichilia subsessilis**, *Stapf.* Add under:

**Upper Guinea.** Liberia: within 20 miles of Karka Town, *Whyte!*

4a. **Callichilia stenosepala**, *Stapf.* A glabrous shrub; branches slender, terete, pale green when young, at length whitish. Leaves lanceolate to elliptic-lanceolate, acutely acuminate (acumen slender), gradually attenuated or acuminate below and mostly suddenly contracted at the very base, 3-7 in. long, 1-2½ in. broad, membranous or papery; secondary nerves 8-12 on each side; petiole very short or 0. Inflorescences at first umbelliform, then lengthening out and racemiform with 2-3 flowers out at a time; peduncle slender, 2-3 in. long; bracts ovate, acute or acuminate, 1½-2 lin. long; pedicels 4-5 lin. long. Calyx 4-7 lin. long; sepals narrow, lanceolate, acuminate, with very numerous subulate glands at the base within. Corolla white; tube slender, constricted at the middle, about 1¼ in. long; lobes obliquely obovate, half as long as the tube. Stamens inserted at the middle of the corolla-tube; anthers about 2 lin. long. Disc shallow, wide, entire. Style 7-8 lin. long. Fruit unknown.

**Upper Guinea.** Liberia: Grant's Farm, near the Sincu River, *Whyte!*

Allied to *C. subsessilis*, *Stapf*, but easily distinguished by the very narrow sepals.

3. **Carvalhoa petiolata**, *K. Schum. in Engl. Jahrb.* xxxiii. 317. The description of this species agrees exactly with that of *C. macrophylla*. It was described from specimens collected by Scheffler near Derema in Usambara (No. 219).

5. **Gabunia glandulosa**, *Stapf.* Add:

**Upper Guinea.** Liberia: near Monrovia, *Whyte!* Sinou basin, *Whyte*, 6!

7a. **Gabunia Gentilii**, *De Wild. in Belg. Colon.*, 1902, 508 and *Études Fl. Bas et Moyen Congo*, i. 68. A tree, 60-90 ft. high; stem up to 2 ft. in diam. Leaves broad-ovate, obtuse, cuneate at the base, up to

16 in. long and 10 in. broad, glabrous; lateral nerves 11-16 (on each side?), slightly prominent below, connected by arches at some distance from the margin; petiole about  $7\frac{1}{2}$  lin. long. Cymes terminal, rather many-flowered; bracts ovate, acute; pedicels slender,  $3\frac{1}{2}$ -6 lin. long. Calyx  $2\frac{1}{2}$ - $3\frac{1}{2}$  lin. long; sepals ovate-oblong, broad, obtuse, glabrous. Corolla pure white, strong scented; tube 3 in. long or slightly longer, twisted, widened (to 5 lin.) above the calyx, then slender, glabrous within and without; lobes linear, up to  $1\frac{2}{3}$  in. long,  $3$ - $3\frac{1}{2}$  lin. wide. Anthers 5 lin. long. Fruit globose, 6-8 in. in diam.; seeds numerous, embedded in pulp.

**Lower Guinea.** Lower Congo: near Leopoldville, *Gillet*, 2528.

**South Central.** Congo Free State; Lubue River, *Gentil*.

This is, no doubt, a *Conopharyngia*, and possibly identical with *C. Smithii*, Stapf.

1. **Conopharyngia longiflora**, *Stapf*. Add:

**Upper Guinea.** Liberia: Sinou Basin, Greenville, *Sim*, 6! 18! 26!

7. **Conopharyngia crassa**, *Stapf*. Add:

**Upper Guinea.** Liberia: Sinou Basin, *Whyte*, 19!

17. **Conopharyngia (?) penduliflora**, *Stapf*. Add: De Wild. *Études Fl. Bas et Moyen Congo*, i. 68.

**Lower Guinea.** Congo Free State: Kanda-Kanda, *Gentil*, 7511.

1. **Voacanga obtusa**, *K. Schum.* Add: De Wild. *Études Fl. Bas et Moyen Congo*, i. 69.

7. **Voacanga africana**, *Stapf*. De Wild. (in *Études Fl. Katanga*, i. 102) refers a plant collected by Verdick near Lukafu in Katanga, Congo Free State, to this species.

10a. **Voacanga caudiflora**, *Stapf*. A perfectly glabrous shrub; branches slender, at length pallid. Leaves oblong-lanceolate, gradually and acutely long acuminate, long attenuate at the base, 8-9 in. long, 2-3 in. broad, papery; secondary nerves very oblique, gently curved, 9-11 on each side; petiole slender, 6-8 lin. long. Inflorescences from the youngest branch-forks, about 5-flowered, umbelliform; peduncle slender, about  $\frac{1}{2}$  in. long, more or less nodding; bracts navicular, obliquely oblong in profile, acute, up to 7 lin. long, deciduous; pedicels slender, up to 9 lin. long. Calyx tubular, about 8 lin. long,  $2$ - $2\frac{1}{2}$  lin. wide, with a transverse zone of scattered small glands somewhat above the base within; lobes broad-ovate to elliptic, obtuse or rarely subacute, 2 lin. long. Corolla-tube abruptly constricted just above the middle, gradually and slightly widening from the constriction towards the base, cylindric above it,  $9\frac{1}{2}$  lin. long, scarcely twisted, pubescent on the filamental ridges, otherwise glabrous within; limb rotate; lobes linear, subacuminate or obtuse, up to 8 lin. long, 1 lin.

broad (when expanded), more or less folded and curved. Stamens inserted above the middle; anthers over  $2\frac{1}{2}$  lin. long, quite included, tails moderately long. Disc annular, shorter than the carpels. Fruit unknown.

**Upper Guinea.** Liberia: within 20 miles of Karka Town, *Whyte!*

A very distinct species with tail-like corolla-lobes, allied to *V. psilocalyx*.

13. **Voacanga bracteata**, *var. lanceolata*, *Stapf*. Add:

**Upper Guinea:** Liberia, Sinou basin, *Whyte! Sim, 34!*

1. **Holarrhena febrifuga**, *Klotzsch*. Add: De Wild. Études Fl. Katanga, i. 101.

5. **Holarrhena Wulfsbergii**, *Stapf*. Add: De Wild. Études Fl. Bas et Moyen Congo, i. 68.

**South Central.** Congo Free State: Djuma Valley, *Gillet, 2758; Gentil*.

De Wildeman (l.c.) states that Laurent's plant, mentioned by me (p. 164) in a note under *H. africana*, is *H. Wulfsbergii*, adding, however, that he has no authentic specimens of this.

3a. **Pleioceras Whytei**, *Stapf*. A perfectly glabrous shrub; young branches drying chestnut-brown, sparingly dotted with lenticels. Leaves broad-ovate to elliptic, rather abruptly and obtusely acuminate, rounded at the base, up to 3 in. long and 2 in. broad, thin; secondary nerves about 7 on each side; petiole up to 3 lin. long. Panicle more or less trichotomous, corymbiform, many-flowered, 2-4 in. in diam.; primary branches undivided for  $1-1\frac{1}{4}$  in.; peduncle  $1-1\frac{1}{2}$  in. long; bracts ovate to ovate-lanceolate, acute, the intermediate up to 1 lin. long; pedicels slender, up to 6 lin. long, slender. Calyx 1 lin. long; sepals broad-ovate, rounded, quite glabrous, with the exception of the ciliolate margins; intracalycular glands rather conspicuous, ovate, alternating with the sepals. Corolla glabrous except at the pubescent mouth; tube  $2\frac{1}{2}$  lin. long; lobes elliptic-oblong, obtuse,  $3-3\frac{1}{2}$  lin. long; episepalous scales replaced by a pair of minute tomentose tubercles; epipetalous scales thin, narrowly linear, bifid, ciliate below; a pair of long filiform appendages on each side of each stamen, one entire, the other more or less divided. Anthers over 1 lin. long.

**Upper Guinea.** Liberia: near the River Sinou, *Whyte!*

4. **Pleioceras Gilletii**, *Stapf*. The leaves attain 5 in. by 2 in. according to De Wildeman, and the petioles up to 5 lin.—De Wild. Études Fl. Bas et Moyen Congo, i. 70.

**South Central.** Congo Free State: Djuma Valley, *Gillet, 2812; Gentil*.

1. **Strophanthus gratus**, *Franch*. This is always a liane, sometimes climbing into the highest trees.—Gilg in Engl. Monogr. Afr. Pfl.

vii.17, fig. 1 on p. 18; t. 9, fig. A, and t. 10, fig. O; Gilg, Thoms & Schedel, *Strophanthus* Frage, Bot. 1-19, t. 1.

**Upper Guinea.** Liberia: within 20 miles of Karka Town, *Whyte!* Monrovia, *Krause*.

**Lower Guinea.** Gaboon: islands of the Ogowé, near Limbareni, *Buchholz!*; Sibange Farm, *Soyaux*, 458; Libreville, *Klaine*, 216!

**2. *Strophanthus Tholloni*, Franch.** Follicles about 1 ft. long, up to 1 in. thick (closed), spindle-shaped, long rostrate, glabrous, blackish-brown, woody, covered with numerous lenticels. Seeds narrowly lanceolate, elongate, much attenuated at both ends, 10-12 lin. long, 1 lin. (or slightly more) broad, sparingly and very minutely hairy, hairs yellow; awn 7-10 lin. long, naked for  $2\frac{1}{2}$ - $3\frac{1}{2}$  lin., hairs up to 1 lin. long.—Gilg in Engl. Monogr. Afr. Pfl. vii. 8, 19, t. 9, fig. B, t. 10, P. *S. pierreanus*, De Wild. Études Fl. Katanga, i. 102, t. 30, figs. 10-16.

**Upper Guinea.** Cameroons: by a waterfall near Krilie, *Preuss!*; Eben Cataracts, *Dinklage*, 355, 888; near Mimfia and by the Lokundje River, *Zenker*, 2300!; near Bopindihof, *Zenker*, 2422! and without precisa locality, *Dusén*, 88.

**Lower Guinea.** Gaboon: Ogowé River, *Chalot*, 18.

**2a. *Strophanthus gardeniiflorus*, Gilg in Engl. Monogr. Afr. Pfl. vii. 20.** A rambling shrub; branches glabrous, brown-green, slender. Leaves oblong, usually somewhat oblique, shortly, broadly and acutely acuminate, cuneate at the base, 4-5 in. long,  $1\frac{1}{2}$ - $1\frac{2}{3}$  in. broad, sub-chartaceous; secondary nerves 5-7 on each side, slightly raised; veins inconspicuous; petiole 3-4 lin. long. Cymes 3-4-flowered, terminal; peduncle up to 4 lin. long; bracts lanceolate, acuminate or acute, scarious,  $2\frac{1}{2}$ -3 lin. long; pedicels  $2\frac{1}{2}$ -4 lin. long. Calyx 5-6 lin. long; sepals oblong, rounded at the apex, thin. Corolla large; tube funnel-shaped,  $1\frac{1}{3}$  in. long, cylindric for about 5 lin.; lobes  $1\frac{1}{2}$  in. long, 6-7 lin. broad at the base, long and finely acuminate; throat-scales linear, setaceously attenuate, 7- $8\frac{1}{2}$  lin. long, densely covered with long white hairs. Anthers  $8\frac{1}{2}$ -9 lin. long, passing into a long setaceously acuminate awn. Ovary glabrous.—*S. Thollonii*, De Wild. Études Fl. Katanga, i. 102, non Franch.

**South Central.** Congo Free State: Katanga, near Lakafu, *Verdick*, 235, 236.

The natives of Katanga prepare, according to Verdick, an arrow poison from the seeds of this species.

**3. *Strophanthus Ledienii*, Stein.** Add: Gilg in Engl. Monogr. Afr. Pfl. vii. 34.

**4. *Strophanthus holosericeus*, K. Schum. & Gilg.** Add: Gilg in Engl. Monogr. Afr. Pfl. vii. 39, t. 1, fig. A.

**5. *Strophanthus Emini*, Asch. & Pav.** Add: Gilg in Engl. Monogr. Afr. Pfl. vii. 39, t. 10, fig. B.

**Mozamb. Dist.** (Add)—German East Africa: Victoria Nyanza, *Fischer!*

Kilimatinde, *Trotha*, 212! Ugago; near Nsassa, *Busse*, 211! Usagara, near Kidete, *Busse*, 211; Ussangu, in the northern Kinga Mountains, 4300 ft., *Goetze*, 1016.

6. ***Strophanthus Nicholsoni***, *Holmes*. Add: Gilg in Engl. Monogr. Afr. Pfl. vii. 39, t. 1, B, a-c; t. 10, fig. A.

7. ***Strophanthus Kombe***, *Oliv.* Add: Gilg in Engl. Monogr. Afr. Pfl. vii. 36, t. 3, fig. A, a-e, t. 10, fig. E.

**Mozamb. Dist.** (Add)—German East Africa: Rufiji Steppe, near the Pangani Cataracts, *Goetze*, 89. British Central Africa: near Boruma, *Menyharth*, 1068.

8. ***Strophanthus hispidus***, *A.P.DC.* Add: Gilg in Engl. Jahrb. xxxii. 155 and in Tropenpfl. vi. (1902) 556, 560; and in Engl. Mon. Afr. Pfl. vii. 35, t. 2 and 10, fig. D.

**Upper Guinea.** (Add)—Togo: near Badja, *Warnecke*, 133; near Noëppe, *Zech*; Aka Valley, between Kumago and Agombe Tongbe, *Baumann*, 229; Kete Kratschi, *Zech*, 220, 221, 222; Sokode-Basari; near Kabure and near Bagn, *Kersting*, Konkomba, *Thierry*.

**Lower Guinea.** Lower Congo: Kisantu, *Gillet*, 83; Mayombe, *Cabra*.

Gilg now considers *S. thierryanus* merely as a form of *S. hispidus*.

9. ***Strophanthus bullenianus***, *Mast.* Add: Gilg in Engl. Mon. Afr. Pfl. vii. 38, t. 3, fig. C.

Gilg retains *S. Schlechteri* as a distinct species (l.c., t. 3, B). The figure given by Gilg confirms my opinion that *S. Schlechteri* is identical with *S. bullenianus*. It represents a branchlet with flower buds ready to open out. At this stage the corolla-tails have not yet attained their full length, and, if compared with those of flowers of *S. bullenianus* of the same age, do not show any marked difference. It is true *S. Schlechteri* has more hairy sepals than Soyaux's plant (No. 55), but this is an exception, the indumentum of the other specimens quoted by me under *S. bullenianus* being of the same character as shown in Gilg's figure of *S. Schlechteri*.

10. ***Strophanthus gracilis***, *K. Schum.* Add: Gilg in Engl. Mon. Afr. Pfl. vii. 23, t. 4, fig. B. *S. Klainei*, De Wild. Études Fl. Katanga, i. 106, t. 29, figs. 10-15.

**Upper Guinea.** (Add)—Cameroons: Ekundu Ndene, *Dusén*, 333.

**Lower Guinea.** (Add)—Gaboon, *Klaine*, 1124, 1125, 2375.

11. ***Strophanthus Preussii***, *Engl. & Pax.* Add: De Wild. & Dur. Pl. Thonner. Congol. 32. *S. bracteatus*, Franch. in Journ. de Bot. vii. 324 (see below).

**Upper Guinea.** (Add)—Cameroons: near Victoria, *Preuss*, 1114, 1328; Barombi Gorge, *Preuss*, 116.

**Lower Guinea.** (Add)—Gaboon, *Klaine*, 1996.

The follicles collected by Mann in Fernando Po in 1860 referred to by me in a note to *S. Preussii* do not belong to this species, as Gilg who had an opportunity of examining seeds of this species has pointed out. A description of the follicles and seeds will be found under *S. bracteatus*, Franch., which Gilg, after an examination of an authentic specimen, declares to be identical with *S. Preussii*.

12. **Strophanthus Barteri**, *Franch.* Add: Gilg in Engl. Monogr. Afr. Pfl. vii. 25, t. 10, fig. G.

13. **Strophanthus bracteatus**, *Franch.* = **S. Preussii**, *Engl. & Pax*, to which the references and localities quoted on p. 178 may be transferred.

14. **Strophanthus erythroleucus**, *Gilg.* Add: Gilg in Engl. Monogr. Afr. Pfl. vii. 27, t. 6, fig. B, a-c.

15. **Strophanthus parviflorus**, *Franch.* Add: Gilg in Engl. Monogr. Afr. Pfl. vii. 28. *S. Deweyrei*, *Gilg*, l.c. 25, t. 5, fig. A.

*S. Deweyrei* is retained by Gilg as a distinct species mainly on account of the length of the corolla-tails, which he says are 1 in. long in *S. parviflorus*, but 2 in. in *S. Deweyrei*; but they are actually 2 in. long in Welwitsch's specimen, the type of Franchet's species.

16. **Strophanthus arnoldianus**, *De Wild. & Dur.* Corolla yellow with brown spots inside.—Gilg in Engl. Monogr. Afr. Pfl. vii. 26, t. 5, fig. C, a-f, t. 10, fig. H.

17. **Strophanthus wildemanianus**, *Gilg.* Add: Gilg in Engl. Monogr. Afr. Pfl. vii. 26, t. 5, fig. B. a-b.

18. **Strophanthus sarmentosus**, *A.P.DC.* Add: Gilg in Engl. Monogr. Afr. Pfl. vii. 29, t. 10, fig. K. *S. laurifolius*, *A.P.DC.* in Bull. Soc. Phil. Paris iii. 123; Desf. and *A.P.DC.* in Ann. Mus. Hist. Nat. Paris, i. 411 (according to Gilg who saw DeCandolle's type specimen). *S. ogovensis* *Franch.* (See below.)

**Upper Guinea.** (Add)—Togo: near Badja, *Warnecke*, 476; Sokode-Basare, *Kersting*, 2, 671; Lagos, *Millen*, 36, 121, 175; Cameroons: Yaunde, *Zenker*, 505a; *Zenker and Staudt*, 142.

**Nile Land.** Uganda: Kionsozi Forest, at Mawokoto, 4200 ft., *Dawe*, 20; Entebbe, 4000 ft., *Mahon*!

**Lower Guinea.** (Add)—Lower Congo: Bolama, *Carvalho*, 295.

19. **S. ogovensis**, *Franch.* = **S. sarmentosus**, to which the references and locality quoted may be transferred.

20. **S. verrucosus**, *Stapf.* Add: *S. grandiflorus*, *Gilg* in Engl. Monogr. Afr. Pfl. vii. 28 (in part), t. 7, t. 10, fig. J.

Gilg retains the name *S. grandiflorus* for this species as he considers the Delagoa plant (*S. petersianus*, var. *grandiflorus*, *N.E.Br.*) identical with the *S. sarmentosus*, var. *verrucosus*, *Pax*, (i.e., *S. verrucosus*, *Stapf.*). He suggests that in separating the two species I may have relied mainly on the differences in the calyx. That is the case. The sepals of Monteiro's Delagoa Bay specimen are lanceolate,  $1\frac{1}{2}$ – $2\frac{1}{4}$  lin. broad at the middle, and acute, not subulate-acuminate as in *verrucosus*. This character he considers too inconstant, a conclusion which is not suggested by the material I have seen. There is, however, probably another

character to consider. Gilg figures and describes the foliicles of his *S. grandiflorus* as perfectly smooth. Now, Mrs. Monteiro says in her book "Delagoa Bay," 164, that there are two species of *Strophanthus* in Delagoa Bay. The foliicles of one are much sought for, so that "they disappear most mysteriously when ripe, those of another species being left unnoticed," and in a letter to Sir W. T. Thielton-Dyer she observes that the latter species had rather smaller and rougher foliicles. She actually sent two kinds of foliicles to Kew, one very rough with numerous lenticels, the other smooth, like that figured by Gilg on Plate vii. of his monograph. She further suggests that the plant raised at Kew and figured in *Bot. Mag.* t. 7390 (the real basis of *S. petersianus* var. *grandiflorus*) was the one with the rough foliicles. Under those circumstances I consider it more expedient—quite apart from the question of priority—to use the name *S. verrucosus* instead of the ambiguous *S. grandiflorus*.

21. **Strophanthus petersianus**, *Klotzsch*. Add: Gilg in Engl. Monogr. Afr. Pfl. vii. 33, t. 8, fig. A.

**Mozamb. Dist.** British Central Africa: near Boruma, *Menyharth*, 501.

22. **Strophanthus Courmonti**, *Sacl.* Add: K. Schum. in Engl. Jahrb. xxxiii. 320; Gilg in Engl. Monogr. Afr. Pfl. vii. 22, t. 10, fig. N. Numerous additional localities in German East Africa are quoted by Gilg, ranging from the Tana River to Lake Nyasa.

23. **Strophanthus ecaudatus**, *Rolfe*. Add: *S. Welwitschii*, Gilg in Engl. Monogr. Afr. Pfl. vii. 21, t. 8, fig. B, a-k and t. 10, fig. M. *S. parvifolius*, K. Schum. in Engl. & Prantl, Pflanzenfam. iv. ii. 182. *S. Gilletii*, De Wild. Études Fl. Katanga, i. 105, t. 31, figs. 1-12. *S. Verdickii*, De Wild. l.c. 103 (incl. var. *latisepalus*), t. 32, figs. 1-12.

**Lower Guinea.** (Add)—Lower Congo: Kimuenza, *Gillet*, 2129; Angola: *Anchieta*, 61; Huilla, *Antunes*, 143a, 282, 327.

**South Central.** Congo Free State: Katanga; near Lukafu, *Verdick*, 84, 146.

24. **Strophanthus Schuchardti**, *Pax*. Add: Gilg in Engl. Monogr. Afr. Pfl. vii. 40, t. 1, fig. C, b-e; t. 10, fig. C.

**Lower Guinea.** (Add)—Huilla, *Antunes*, 92, 353.

25. **Strophanthus Demeusei**, *Dewèvre*. Add: Gilg in Engl. Monogr. Afr. Pfl. vii. 32 with fig.

26. **Strophanthus intermedius**, *Pax*. Add: Gilg in Engl. Monogr. Afr. Pfl. vii. 31 with fig.

27. **S. congoensis**, *Franch.* Add: Gilg in Engl. Monogr. Afr. Pfl. vii. 32.

28. **S. amboensis**, *Engl. & Pax*. Add: Gilg in Engl. Monogr. Afr. Pfl. vii. 33, t. 10, fig. L.

**Lower Guinea.** (Add)—Angola: Huilla, *Antunes*, 286.

29. **Strophanthus asper**, *Oliv.* Gilg (in Engl. Monogr. Afr. Pfl. vii. 39) considers this as identical with *S. Nicholsonii*.

30. **Strophanthus minor**, *Christy.* Gilg (in Engl. Monogr. Afr. Pfl. vii. 41), suggests that this may be *S. Barteri* or a species closely allied to it.

31. **Strophanthus mirabilis**, *Gilg.* Add: Gilg in Engl. Monogr. Afr. Pfl. vii. 27, t. 6, fig. A, a-d.

**Nile Land.** (Add)—Somaliland: Merchan, *Robecchi-Bricchetti*, 316.

32. **Strophanthus sp.**, *Heckel (S. d'Autran).* Add: Gilg in Engl. Monogr. Afr. Pfl. vii. 41.

33. **Strophanthus sp.**, *Pax (Kurzfrüchtiger Strophanthus).* Gilg in Engl. Monogr. Afr. Pfl. vii. 30, suggests *S. sarmmentosus* for this.

34. **Strophanthus sp.**, *Pax (Senegal Strophanthus).* Add: Gilg in Engl. Monogr. Afr. Pfl. vii. 42. This is very probably not a *Strophanthus*.

35. **Strophanthus sp.**, *Helbing (White Strophanthus).* Referred to *S. Nicholsonii* by Gilg in Engl. Monogr. Afr. Pfl. vii. 39.

2. **Isonema Smeathmannii**, *Roem. & Schult.*

**Upper Guinea.** (Add)—Liberia: within 20 miles of Karka Town, north of Monrovia, *Whyte!* Grant's Farm, by the Sinoe River, *Whyte!*

1. **Funtumia africana**, *Stapf.* Add: *Kickxia africana*, Hua in Bull. Mus. Hist. Nat. Par. viii. (1902), 67.

**Upper Guinea.** (Add)—Liberia: Simou basin, *Whyte!* Sim, 4! Dahomey; Aja Ouere, *Le Testu.*

2. **Funtumia elastica**, *Stapf.* Add: De Wild. in Rev. Cult. Colon. xii. (1903), 193 et seq. and Not. Apocyn. Laticif. Congo, 78, 91; Ceuleneer in Bull. Soc. Étude. Colon. xi. (1904), 6 et seq. *Kickxia elastica*, Cheval. in Bull. Mus. Hist. Nat. Par. vii. (1901), 426.

3. **Funtumia latifolia**, *Stapf.*

**Nile Land.** (Add)—Uganda: forest near Entebbe, 3900 ft., *Mahon!*

1. **Malouetia Heudelotii**, *ADC.* Add: De Wild. Études Fl. Bas et Moyen Congo, i. 68.

**Lower Guinea.** Lower Congo: Environs of Léopoldville, *Gillet.*

**South Central.** Congo Free State: Djuma Valley, *Gillet*, 2784; Kwango District; Inzia, *Gentil*, 40; Wamba, *Gentil*, 108.

*Malhouetia sp.*, De Wild. Notes Apocyn. Laticif. Congo, 11. Very similar to *M. Heudelotii*, but leaves up to 7½ in. long and 3 in. broad; corolla-tube 7 lin. long; lobes 4-7 lin. long; anthers 2 lin. long; seeds 1½-1¼ lin. long, 2 lin. broad. It is said to have been found by Gillet and Gentil in the Kwango region and near

Léopoldville and also to occur in the French Congo. I suppose it is the same plant which De Wildeman called *M. Heudelotii* in *Études Fl. Bas et Moyen Congo*, i. 68, although he does not refer there to the *Malouetia* sp. of his *Notes Apocyn. Laticif. Congo*. If I am right, the Lower Congo plant can hardly be *M. Heudelotii*.

2a. **Alafia Whytei**, *Stapf*. Branches terete, glabrous. Leaves elliptic-lanceolate to elliptic-oblong, rather abruptly and subobtusely acuminate, acute at the base, 4–8 in. long, 2 to over 3 in. broad, papery, dull, glabrous with the exception of the very sparingly pubescent underside of the midrib; midrib deeply channelled above, prominent below; secondary nerves 6–8, oblique, connected by very bold arches 4–6 lin. from the margin, raised like the very loosely anastomosing veins; petiole 2–3 lin. long. Cymes many-flowered, collected in a very shortly peduncled or almost sessile congested corymb, 1–2 in. in diam., very delicately pubescent; bracts broad ovate, obtuse, small; pedicels about 1 lin. long. Calyx 1 lin. long, very delicately pubescent; sepals ovate, obtuse, 2 or 3 of them with a gland at the base within. Corolla white (?), drying black, delicately velvety without; tube up to 5 lin. long, densely hairy below the stamens within; lobes suborbicular, 3 lin. in diam., hairy at the base. Anthers not reaching the corolla-mouth,  $2\frac{1}{2}$  lin. long. Carpels delicately pubescent.

**Upper Guinea.** Liberia: Sinou Basin, *Whyte!*

A very marked species with large leaves, subsessile corymbs and large flowers.

3. **Alafia landolphioides**, *K. Schum.* Add: Cheval. in *Bull. Mus. Hist. Nat. Par. vi.* (1900), 423. *A. scandens*, De Wild., *Notes Apocyn. Laticif. Congo* 15 (in foot-note).

**Upper Guinea.** (Add.) Togo: Lome, *Warnecke.* 110! 3331!

6a. **Alafia parciflora**, *Stapf*. Whole plant glabrous. Branches very slender, terete, drying dark brown; lenticels scattered, inconspicuous. Leaves oblong to elliptic-oblong, acuminate (acumen narrow subacute or obtuse, up to 6 lin. long), rarely subobtusely, acute or shortly acuminate at the base,  $2\frac{1}{2}$ –4 in. long, 1–2 in. broad, papery, dark green above, pale below; secondary nerves about 7 on each side, very slender, slightly raised below; veins anastomosing very loosely; petioles 2–4 lin. long. Flowers in at first umbelliform, then racemiform few-flowered cymes, usually 1 or 2 out at a time; peduncle slender, very short; bracts very small and broad with narrow scarious margins; pedicels up to 1 lin. long. Calyx glabrous, 1 lin. long; sepals ovate, obtuse with a small narrow gland at the base within. Corolla-limb yellow (?) with a red pubescent centre; tube red in the upper part, slender, about 5 lin. long, hairy within just below the stamens, otherwise glabrous; lobes lanceolate-oblong, subacute,  $3\frac{1}{2}$  lin. long. Staminal-cone  $1\frac{1}{2}$  lin. long, reaching to  $1\frac{1}{2}$  lin. below the corolla-mouth. Carpels glabrous with the exception of the whitish-puberulous tips.

**Upper Guinea.** Liberia: Greenville, *Sim*, 25!

The flowers and inflorescences are similar to those of *A. Benthamii*, but the foliage is totally different.

21. **Alafia orientalis**, *K. Schum.* Add: De Wild. Notes Apocyn. Latic. Congo, 15. De Wildeman describes the corolla-tube as  $3-4\frac{1}{2}$  lin. long and the lobes as 3-4 lin. long.

1. **Holalafia multiflora**, *Stapf.* De Wildeman (Notes Apocyn. Latic. Congo, 16) retains *Alafia major*, Stapf, in *Alafia*, and says that its carpels are free and its corolla has a tube 2 lin. and lobes 4-5 lin. long. There must be some confusion. My drawings made in 1899 from Dewèvre, 673, show the ovary perfectly syncarpous, and the drawing made from the whole plant has the corolla-tube 4-5 lin. long.

2. **Baissea erythrostickta**, *K. Schum.* Add: K. Schum. in Engl. Jahrb. xxxiii. 319.

4. **Baissea Wulfshorstii**, *Schinz.* Add: K. Schum. in Baum, Kunene-Samb. Exped. 338.

5. **Baissea multiflora**, *A. DC.* Add: Cheval. in Bull. Mus. Hist. Nat. Par. vi. (1900), 423.

8. **Baissea angolensis**, *Stapf.* De Wildeman (Notes Apoc. Laticif. Congo, 12 *congolensis*, by error) suggests that his *Guerkea angolana*, referred to by me under *Baissea angolensis* is more probably identical with *Baissea laxiflora*. From the additional characters, he mentions l.c., it appears that he may be right.

10. **Baissea axillaris**, *Hua.* Follicles subcylindric, obtuse, connate at the very base, spreading at right angles to each other, slightly curved outwards, 8-9 in. long,  $2\frac{1}{2}$ -3 lin. in diam., covered with brown woolly pubescence; placenta at length detached. Seeds linear, obtuse  $7\frac{1}{2}$ -9 lin. long, truncate at the apex with a reddish plume up to  $1\frac{3}{4}$  in. long, flat or channelled on the ventral side, brown, smooth. Embryo straight, radicle cylindric, cotyledons very narrow, acute; albumen fleshy, copious.—Hua in Bull. Mus. Hist. Nat. Par. viii. (1902), 479. (See *Guerkea schumanniana*, De Wild. & Durand, below.)

14. **Baissea odorata**, *K. Schum.*

Upper Guinea. (Add)—Liberia: Greenville, Sim, 32!

18. **Baissea tenuiloba**, *Stapf.* Add: De Wild. Notes Apoc. Laticif. Congo, 13.

23. **Guerkea schumanniana**, *De Wild. & Durand.* **Baissea axillaris**, *Hua.* Hua, in Bull. Mus. Hist. Nat. Par. viii. (1902) 479, has shown that these two plants are identical. The references and localities under *G. schumanniana* on p. 217 may therefore be transferred to *B. axillaris*.

1. **Oncinotis glandulosa**, *Stapf.* The intracalycular glands do not seem to be always distinct or constant. Follicles subcylindric from

an attenuated base, obtuse, 11 in. long,  $\frac{3}{4}$  in. in diam. Seed-plumes slightly greyish, about  $1\frac{1}{2}$  in. long.

**Upper Guinea.** (Add)—Cameroons : Bipinde, *Zenker*, 2424 ! 2607a ! 2538 ! 2208 ! distributed as *O. nitida*, Benth.

## 2. *Oncinotis nitida*, Benth.

**Upper Guinea.** (Add)—Togo : near Lome, *Warnecke*, 45a !

6a. ***Oncinotis thyrsiflora*, K. Schum.** MS. Young branches finely rusty-pubescent, compressed at the tips, soon terete. Leaves oblong to lanceolate-oblong, attenuated into a long acute acumen (up to almost 1 in. long), shortly acute or obtuse at the base,  $2\frac{1}{2}$ –5 in. long, 1 to almost 2 in. broad, thinly papery, very sparingly and minutely pubescent below on the nerves or quite glabrous; secondary nerves 5–6 on each side, but particularly below; reticulation very loose; petiole pubescent, slender, 2–3 lin. long. Panicle subterminal, ovoid, about 1 in. long (without the peduncle), rusty-pubescent; peduncle slender, much compressed, about 1 in. long; bracts minute; pedicels 1 lin. long. Calyx  $\frac{3}{4}$  lin. long; sepals broad ovate, subobtuse, thin, delicately and sparingly pubescent, eglandular. Corolla-tube slightly wider above the middle,  $1\frac{1}{2}$  lin. long, finely tomentose outside; throat-scales rotundate-ovate,  $\frac{1}{3}$  lin. long; lobes oblong, obtuse, slightly longer than the tube. Anthers  $1\frac{1}{4}$  lin. long. Carpels delicately velvety.

**Upper Guinea.** Cameroons : Bipinde, *Zenker*, 2588 !

Allied to *O. gracilis*, but the indumentum is much more delicate and scanty, the nervation bolder, the acumen longer, the petiole shorter, sepals and corolla-lobes and throat-scales broader.

## 7. *Oncinotis gracilis*, Stapf.

**Upper Guinea.** (Add)—Gold Coast : Acropong, *Johnson*, 902 !

*Oncinotis chlorogena*, *K. Schum.*, which is fully described by *K. Schumann* in *Engl. Jahrb.* xxxiii. 320, appears from the description to be identical with *O. gracilis*.

8. ***Oncinotis hirta*, Oliv.** Add : De Wild. Notes Apocyn. Laticif. Congo, 7.

**Lower Guinea.** (Add)—Lower Congo : Kisantu, *Gillet*.

*Gillet* states that the latex of this species yields caoutchouc if treated with the acid juice of an *Amomum* called "Minkenie" by the natives.

10. ***Oncinotis subsessilis*, K. Schum.** in *Engl. Jahrb.* xxxiii. 321. A climbing shrub; branches very slender, terete, or compressed when young, rusty-tomentose, tardily glabrescent. Leaves linear-oblong, shortly and acutely acuminate, rounded or subcordate at the base,  $1\frac{2}{3}$  to almost 4 in. long,  $\frac{4}{5}$  to over 1 in. broad, glabrous above, puberulous below, particularly on the nerves; secondary nerves 5–6, like the veins prominent below. Panicles trichotomous, dark rusty-tomentose all over, shortly peduncled, bracteate; bracts oblong-

lanceolate. Calyx 1 lin. long; sepals lanceolate. Corolla 6 lin. long, funnel-shaped; tube 2 lin. long; lobes linear-lanceolate, acuminate, tomentose outside. Anthers 1 lin. long.

**Upper Guinea.** Lagos: Yoruba; near Ishagamo, *Schlechter*, 12310.

This is evidently a *Baissea*, probably allied to *B. tenuiloba*.

1. **Motandra guineensis**, A.DC. Add: *Motandra* sp., Hua in Bull. Mus. Hist. Nat. Par. viii. (1902), 480. This contains a very full description of the fruit and seed.

3. **Motandra Lujæi**, De Wild. & Dur. Add: De Wild. Notes Apoc. Laticif. Congo, 17.

4. **Motandra rostrata**, *K. Schum. in Engl. Jahrb.* xxxiii. 318. A shrub; branches slender, flattened when young and minutely rusty-tomentose, then terete and brown. Leaves oblong-lanceolate or narrowly linear-oblong, rostrate-acuminate, 1 to almost 4 in. long, 5-15 lin. broad, membranous, glabrous above, bearded in the nerve-axils below; secondary nerves about 5-7 on each side, distinctly prominent below; petioles 2 lin. long. Panicles terminal, about 1 in. long; powdery-subtomentose; pedicels 1 lin. long. Calyx 1 lin. long; sepals ovate, powdery subtomentose. Corolla 2 lin. long; tube 1 lin. long; lobes linear, subfalcate. Anthers  $1\frac{1}{4}$  lin. long with a plumose point.

**Upper Guinea.** Lagos: near Ishagamo, *Schlechter*, 12312.

Certainly very near to *M. guineensis*, if not identical with it,

4a. **Motandra Erlangeri**, *K. Schum. in Engl. Jahrb.* xxxiii. 318. A shrub or small tree, up to 12 ft. high; branches slender, terete, flattened and rusty papillose when young, later pale brown. Leaves obovate-oblong, shortly acuminate, cuneate at the base,  $3-4\frac{1}{4}$  in. long, 1-2 in. broad, glabrous above, minutely bearded in the nerve-axils below, lateral nerves about 5 on each side, like the venation prominent below; petiole  $2\frac{1}{2}-4$  lin. long. Racemes or panicles axillary up to  $1\frac{1}{2}$  in. long, minutely tomentose, shortly peduncled; pedicels  $\frac{3}{4}$  lin. long. Calyx  $1\frac{1}{2}$  lin. long, sepals triangular-lanceolate. Corolla greenish,  $5\frac{1}{2}$  lin. long, papillose without, villous behind the anthers within; lobes 4 lin. long, linear-obtuse, ciliolate. Anthers  $1\frac{1}{2}$  lin. long, reaching the corolla-mouth.

**Nile Land.** Somaliland: near Lake Awala, *Ellenbeck*, 1710.

I suspect this is not a *Motandra* but rather an *Oncinotis*.

4b. **Motandra viridiflora**, *K. Schum. in Engl. Jahrb.* xxxiii. 319. A tall climbing shrub; branches very long, slender, terete, perfectly glabrous also when quite young, at length greenish-grey, smooth. Leaves oblong or obovate-oblong, shortly and obtusely acuminate, acute at the base,  $2-3\frac{1}{2}$  in. long,  $\frac{1}{3}-1\frac{1}{3}$  in. broad, glabrous on both sides except in the minutely bearded nerve-axils; secondary nerves about 6 on each side, distinct below; petiole  $1\frac{1}{2}-2\frac{1}{2}$  lin. long. Flowering branchlets terminal and from the axils of the uppermost leaves, gathered

in a panicle 2-4 in. long, very minutely hairy; pedicels up to  $\frac{3}{4}$  lin. long. Calyx scarcely  $\frac{1}{2}$  lin. long; sepals ovate, acute. Corolla greenish,  $1\frac{3}{4}$  lin. long, glabrous without; lobes  $\frac{1}{2}$  lin. long.

**Mozamb. Dist.** German East Africa: Usambara; in forest near Nguelo, Scheffler, 28.

I suspect that this, like *M. Erlangeri*, is not a true *Motandra*, but a species of *Oncinotis*.

5. **Adenium Honghel**, *A. DC.* Add: Cheval. in Bull. Mus. Hist. Nat. Par. vi. (1900), 304.

1. **Pachypodium Lealii**, *Welw.* Add: K. Schum. in Baum, Kunene-Samb. Exped. 339.

8. **Cryptolepis producta**, *N. E. Br.* Add: *C. Baumii*, Schlechter in Baum, Kunene-Samb. Exped. 340.

9. **Cryptolepis Baumii**, *N. E. Br.* Add: *C. scandens*, Schlechter in Baum, Kunene-Samb. Exped. 340.

11. **Cryptolepis Welwitschii**, *Hiern.* To this species should probably be referred *Ectadiopsis scandens*, De Wild. Études Fl. Katanga, i. 108; collected in the Congo Free State at Lukafu, Verdick, 341.

4. **Tacazzea rosmarinifolia**, *N. E. Br.* Add: *T. salicina*, Schlechter in Baum, Kunene-Samb. Exped. 339.

2. **Raphionacme linearis**, *K. Schum.* Add: *Raphiacme linearis*, Schlechter in Baum, Kunene-Samb. Exped. 340.

3. **Raphionacme splendens**, *Schlechter.* Add: *Raphiacme splendens*, and *R. macrostemon*, K. Schum. in Engl. Jahrb. xxxiii. 322.

**South Central.** Congo Free State: Mtowa, on Lake Tanganyika, *Descamps.*

4. **Glossonema Revoili**, *Franch.* Strike out the reference K. Schum. in Ann. Istit. Bot. Roma, vii. 36 and the locality Dolo (which belong to *G. Rive*, below), and add K. Schum. in Engl. Jahrb. xxxiii. 322.

**Nile Land.** Somaliland: near Artu, *Ellenbeck*, 318.

6. **Glossonema Rivæi**, *K. Schum. in Engl. Jahrb.* xxxiii. 323. Plant 16-20 in. high, branched; young branches flattened, tomentose. Leaves petiolate, oblong or elliptic, obtuse, acute at the base, puberulous on both sides; petiole up to 10 lin. long. Flowers few together, in axillary fascicles, pedicellate. Sepals 2-2 $\frac{1}{4}$  lin. long, subulate, puberulous. Corolla 2 $\frac{1}{2}$  lin. long, subcampanulate; lobes ovate, obtuse, yellow. Coronal-lobes filiform, not dilated at the base, erect, flexible. Staminal-column 1 lin. long.—*G. Revoili*, K. Schum. in Ann. Istit. Bot. Rom. vii. 36, not of Franchet.

**Nile Land.** Somaliland: by the River Daua, near Dolo, *Riva*, 1129.

7. **Glossonema Erlangeri**, *K. Schum. in Engl. Jahrb.* xxxii. 322. A perennial herb, about 1 ft. high. Stem branching, puberulous, flattened at the younger parts. Leaves linear-oblong or linear-lanceolate, acute or obtuse, mucronulate, acute at the base, puberulous on both sides; petiole 4 lin. long; blade 7–17 lin. long,  $2\frac{1}{2}$ –7 lin. broad. Flowers 2–3 in a fascicle. Pedicels  $2\frac{1}{2}$  lin. long. Sepals  $1\frac{1}{4}$  lin. long, subulate, puberulous. Corolla 2 lin. long; lobes acuminate, white, striped with brown. Coronal-lobes  $1\frac{1}{4}$  lin. long, erect, filiform, dilated at the base. Style-apex pyramidal.

**Nile Land.** Somaliland: near Hensa, *Ellenbeck*, 195; stony slopes of the Fulla Valley, *Ellenbeck*.

2. **Calotropis busseana**, *K. Schum. in Engl. Jahrb.* xxxiii. 323. Plant about  $2\frac{1}{2}$  ft. high. Stem stout, tomentose on the young parts. Leaves 4– $5\frac{1}{2}$  in. long, 2– $3\frac{1}{4}$  in. broad, linear-oblong or elliptic, obtuse or retuse, apiculate, truncate at the base, thinly pilose on both sides, echinulate-scabrous on the margins, transversely veined; petiole up to 5 lin. long. Umbels lateral at the nodes, about 5-flowered. Peduncles up to 4 in. long, subtomentose. Pedicels about  $1\frac{1}{3}$  in. long, subtomentose. Sepals  $4\frac{1}{2}$  lin. long, subulate. Corolla rotate, greenish-violet, about  $7\frac{1}{2}$  lin. long (*i.e.*, lobes probably about  $\frac{1}{2}$  in. long). Coronal-lobes arising  $\frac{3}{4}$  line above the base of the staminal-column,  $3\frac{1}{2}$  lin. long, deeply bifid with a spreading incurved spur. Staminal-column  $1\frac{3}{4}$  lin. long. Follicles subglobose-inflated.

**Mozamb. Dist.** German East Africa: Usambara; on the way up from Luengera Valley to Sakarre, 2500 ft, *Busse*, 341.

1. **Xysmalobium decipiens**, *N. E. Br. Add: X. Holubyi*. Schlechter in Baum, Kunene-Samb. Exped. 340.

10a. **Xysmalobium leucotrichum**, *N. E. Br.* Stem 3 ft. or more high,  $3\frac{1}{2}$  lin. thick at the base, simple, thinly puberulous. Leaves spreading; petiole  $3\frac{1}{2}$ –5 lin. long; blade  $4\frac{3}{4}$ – $6\frac{1}{4}$  in. long and up to  $\frac{3}{4}$  in. broad, lanceolate-oblong or linear-oblong, usually acuminate, auriculate-cordate at the base, scabrous on both sides. Umbels lateral, pedunculate, several-flowered. Peduncle  $1\frac{1}{2}$ –2 in. long, suberect, puberulous. Pedicels  $\frac{3}{4}$  in. long. Sepals 3 lin. long,  $\frac{3}{4}$  lin. broad, linear-lanceolate, acute, densely puberulous. Corolla campanulate, greenish; lobes 4 lin. long, nearly  $1\frac{1}{2}$  lin. broad, oblong, obtuse, glabrous on the back, densely bearded with white silky hairs on the upper half of the inner face. Coronal-lobes shorter than the staminal-column, erect or suberect, fleshy, 3-lobed, with a slightly thickened keel on the inner face, the obtuse middle lobe overtopping the very obtuse lateral lobes. Anther-appendages subquadrate-rounded, very obtuse, inflexed on the style-apex.—*Asclepias leucotricha*, Schlechter in Baum, Kunene-Samb. Exped. 342.

**Lower Guinea.** Angola: by the River Kwebe, 3700 ft., *Baum*, 332.

This is closely allied to *X. dispar*, *N. E. Br.*, and may prove to be identical with that species. I have not seen it.

14. **Xysmalobium andongense**, *Hiern*. Add: *Asclepias tri-corniculata*, Schlechter in Baum, Kunene-Samb. Exped. 343.

3. **Asclepias glaucophylla**, *Schlechter*. In the description of the follicles, strike out the sentence after the word "obtuse" and substitute:—with about 6 narrow, toothed wings, some of the upper teeth produced into compressed linear obtuse processes 2–4 lin. long.

12a. **Asclepias macropetala**, *N. E. Br.* Stem stout, up to 3 ft. high, subtomentose on the upper part. Leaves oblong, acute at both ends, densely puberulous beneath; petiole up to  $4\frac{1}{2}$  lin. long; blade  $2\frac{3}{4}$ – $5\frac{1}{2}$  in. long,  $1$ – $1\frac{3}{4}$  in. broad. Inflorescence paniculate (corymbose)  $\frac{3}{4}$  in. in diam. Umbels pedunculate, many-flowered. Peduncles  $1\frac{1}{2}$  lin. long. Pedicels 2 in. long, puberulous. Sepals  $4$ – $4\frac{1}{2}$  lin. long, subulate, puberulous. Corolla-lobes  $\frac{3}{4}$  in. long, oblong-lanceolate, acute, thinly puberulous, reddish-brown. Coronal-lobes 7 lin. long, arising at the base of the  $3\frac{1}{2}$  lin. long staminal-column and much overtopping it, lanceolate, obtuse, undulate at the upper part, with a pair of teeth at the middle.—*Stathmostelma macropetalum*, Schlechter & K. Schum. in Engl. Jahrb. xxxiii. 325.

**Mozamb. Dist.** German East Africa: Kilimanjaro region; near Ndala, Trotha, 179.

17a. **Asclepias Kæssneri**, *N. E. Br. in Journ. Bot.* 1903, 362. Stems erect, branching, white-woolly on the young parts, becoming glabrous below. Leaves ascending-spreading; petiole  $\frac{1}{8}$ – $\frac{1}{4}$  in. long, woolly when young; blade  $3\frac{1}{4}$ – $6\frac{1}{4}$  in. long,  $\frac{1}{4}$ – $\frac{1}{2}$  in. broad, linear-lanceolate, tapering to a very acute point, more or less acute at the base, with flat or narrowly revolute margins, glabrous on both sides or with a very minute scattered pubescence above and thinly woolly on the midrib beneath. Umbels several, racemose, 4–6-flowered, ascending. Peduncles and pedicels equal,  $\frac{3}{4}$ – $1\frac{1}{4}$  in. long, woolly. Sepals  $2\frac{1}{2}$ – $3\frac{1}{4}$  lin. long, 1 lin. broad at the base, thence tapering to a very acute point, woolly, reflexed. Corolla lobed almost to the base, reflexed, apparently whitish or yellowish; lobes  $4\frac{1}{2}$ –5 lin. long,  $2\frac{1}{2}$ – $2\frac{3}{4}$  lin. broad, ovate, obtusely pointed, shortly ciliate on one margin, otherwise quite glabrous. Coronal-lobes arising  $\frac{1}{2}$ – $\frac{3}{4}$  lin. up the staminal-column and reaching to the same level,  $1\frac{3}{4}$ –2 lin. long and about as broad, cuneately suborbicular in side view, much compressed, divided for only  $\frac{1}{3}$  of the distance from the inner to the dorsal margin, with a falcate denticulate tooth from the side, apical angles recurving within a groove along the top of the lobe about  $\frac{1}{3}$  lin. deep, which has a keel or crest along the bottom of it; each side of the lobe (in the dried state) has a ridge corresponding to the depth to which it is divided, and is narrowly winged at the base and inner margins. Staminal-column  $2\frac{1}{4}$ – $2\frac{1}{2}$  lin. long; anther-appendages transverse,  $\frac{1}{4}$  lin. long,  $\frac{3}{4}$  lin. broad, very obtusely rounded. Style-apex depressed-truncate. Young follicles solitary, globose, very

densely covered with long spreading intermingled hair-like pubescent processes, greenish-yellow.

**Nile Land.** British East Africa: Kiu, *Kaessner*, 664!

Allied to *A. pubiseta*, N. E. Br., but differing in its broader leaves, coronal-lobes, and the much more slender tortuous (not straight) processes on the fruit.

19. ***Asclepias rostrata***, N. E. Br. Add: *A. fruticosa*, Schlechter in Baum, Kunene-Samb. Exped. 342, not of Linn.

23a. ***Asclepias Buchwaldii***, N. E. Br. Stem about 16 in. high, slender,  $\frac{3}{4}$  lin. thick at the base, minutely puberulous above, scaberulous at the base. Leaves subsessile, 2-2 $\frac{1}{2}$  in. long, 4 $\frac{1}{2}$ -7 lin. broad, linear-lanceolate, acute, rounded at the base, glabrous on both sides, scabrous along the revolute margin. Raceme decussate, terminal, lax. Pedicels 4 $\frac{1}{2}$ -9 lin. long, minutely puberulous. Sepals 2 lin. long, oblong-triangular, minutely puberulous. Corolla 3 lin. long, very deeply divided. Coronal-lobes 3 lin. long, arising about 1 lin. above the base of the 2 lin. long staminal-column, lanceolate, obtuse, concave on the inner face.—*Gomphocarpus Buchwaldii*, Schlechter & K. Schum. in Engl. Jahrb. xxxiii. 324.

**Mozamb. Dist.** German East Africa: Usambara; near Mombo, *Buchwald*, 375.

43a. ***Asclepias Baumii***, Schlechter in Baum, Kunene-Samb. Exped. 341. Stem about 10 in. high, simple, slender, puberulous along 2 lines. Leaves 2-3 $\frac{1}{6}$  in. long, erect or erectly-spreading, very narrowly linear, acute, narrowed at the base into a very short petiole, glabrous. Umbels few-flowered. Peduncles long, slender, erect, slightly puberulous. Pedicels 4 $\frac{1}{2}$ -7 lin. long, slightly puberulous. Sepals 2 lin. long, lanceolate, acute, puberulous. Corolla slightly reflexed, 5 $\frac{1}{2}$  lin. in diam., rosy; lobes 2 $\frac{1}{2}$  lin. long, nearly 1 $\frac{1}{2}$  lin. broad, oblong, obtuse, sparsely puberulous on the back towards the apex, glabrous on the inner face. Coronal-lobes conspicuously longer than the staminal-column, 2 $\frac{1}{2}$  lin. long, erectly-spreading, in dorsal view ligulate, thickened, obtuse, marked with a dark longitudinal stripe, the lower part on each side with an oblique triangular incurved tooth. Anther-appendages rounded, very obtuse, incurved on the style-apex.

**Lower Guinea.** Angola: Amboella; by the River Longa, *Baum*, 699a.

46a. ***Asclepias stolzianus***, N. E. Br. Stem up to 16 in. high, simple, slender, puberulous along 1 line. Leaves sessile, 2 in. long, 1 $\frac{1}{2}$  lin. broad, linear, acuminate, cuneate at the base, with recurved margins, glabrous. Umbels terminal, solitary, or 2 to a stem, pedunculate, about 8-flowered. Peduncle 1 $\frac{1}{2}$  in. long. Pedicels  $\frac{3}{4}$  in. long, minutely tomentose. Sepals 1 $\frac{1}{4}$ -1 $\frac{1}{2}$  lin. long, subulate. Corolla 4 $\frac{1}{2}$  lin. long, greenish-white, puberulous outside; lobes oblong-lanceolate. Coronal-lobes arising above the base of the staminal-column, 1 $\frac{3}{4}$  lin. long, truncate, with a rather large linear tooth in front (at the apex of the inflexed sides?), and a small triangular apical tooth, no tooth

within.—*Gomphocarpus stolzianus*, K. Schum. in Engl. Jahrb. xxxiii. 324.

**Mozamb. Dist.** German East Africa: Nyasa region; on the steppe at Isoyana, 1700 ft., *Stolz*, 26.

15a. **Schizoglossum macroglossum**, K. Schum. in Engl. Jahrb. xxxiii. 324. Stem erect. Leaves sessile, 3–3½ in. long, 2–3 lin. broad, narrowly linear-lanceolate, attenuate-acuminate, narrowed to the base, glabrous on both sides. Umbels lateral at the nodes, few-flowered. Pedicels 7 lin. long. Sepals 1½ lin. long, subulate, glabrous. Corolla-lobes about 5 lin. long, oblong, obtuse. Coronal-lobes arising ¾ lin. above the base of the staminal-column and overtopping it, ovate, acuminate, rounded at the base, glabrous. Staminal-column 1¾ lin. long.

**Lower Guinea.** Lower Congo: near Stanley Pool, *Demeuse*.

25a. **Schizoglossum debeersianum**, K. Schum. in Engl. Jahrb. xxxiii. 323. Stem somewhat compressed-tetragonous, subvillous. Leaves lanceolate, acute, cordate at the base, subvillous on both sides; petiole up to 1½ lin. long; blade 2¼–2¾ in. long, 1–1½ in. broad. Umbels pedunculate, 3-flowered. Peduncles ½ in. long, subtomentose. Pedicels 8 lin. long, subtomentose. Sepals 4½ lin. long, lanceolate, puberulous. Corolla reddish-brown; lobes about ½ in. long, oblong, acute, pilose on the back. Coronal-lobes arising 2 lin. above the base of the staminal-column and much overtopping it, 4½–5 lin. long, petaloid, subspathulate, serrate. Staminal-column 4 lin. long.

**South Central.** Congo Free State: Buluba, in the region of Marungu, *De Beers*.

5. **Margaretta Cornetii**, *Dewèvre*. Add: coronal-lobes 2½–3½ lin. broad.—De Wild. Études Fl. Katanga i. 108; Lukafu, *Verdick*, 284. Also add:

Var. *pallida*, De Wild., Études Fl. Katanga, i. 108. Leaves 2½–4 in. long, 1½ in. or more broad (“3,5–13 cm.” broad ex De Wild., but this must be an error), lanceolate, acute, rounded or subcordate at the base, scabrous on both sides. Sepals 4 lin. long. Corolla-lobes about ½ in. long. Coronal-lobes blue (*Verdick*), but pallid in the dried state, 10 lin. long, and not more than 3 lin. broad, wavy on the margins, glabrous. Follicles about 4 in. long. Seeds 2½ lin. long, 2 lin. broad, ovate, flat, rugose, marginate.

**South Central.** Congo Free State: Katanga region; Lukafu, *Verdick*, 133. No mention is made of any teeth upon the claw of the coronal-lobes.

13. **Cynanchum somaliense**, *N. E. Br.* Add: *C. trifurcatum*, Schlechter in Bull. Herb. Boiss. iv. 448.

2a. **Tylophora plagiopetala**, *Schlechter & K. Schum.* in Engl. Jahrb. xxxiii. 330. Stem slender, twining, glabrous. Leaves membranous; petiole 4½–7 lin. long; blade 1½–4 in. long, ¾–2½ in. broad, oblong or ovate-oblong, shortly and very acutely acuminate, subcordate at the minutely glandular base. Inflorescence from one axil only,

loosely paniculate, up to 4 in. long, with a filiform and often curled rhachis. Pedicels  $2\frac{1}{2}$ –7 lin. long; sepals  $\frac{1}{2}$  lin. long, oblong-ovate, acute, very shortly ciliolate. Corolla 4– $4\frac{1}{2}$  lin. in diam., greenish with violet veins, very much twisted when in bud; lobes very obliquely subelliptic, ciliolate at the apex. Staminal-column  $\frac{1}{2}$  lin. long. Coronal-lobes tuberculate.

**Upper Guinea.** Cameroons: Bipinde, *Zenker*, 1820; Batanga, *Dinklage*, 911; banks of the River Lobe, *Dinklage*, 1237.

8a. **Tylophora dahomensis**, *K. Schum. in Engl. Jahrb.* xxxiii. 329. Stem twining, slender, puberulous. Leaves spreading; petiole  $3\frac{1}{2}$ –6 lin. long; blade  $\frac{1}{2}$ – $1\frac{3}{4}$  in. long, 4–13 lin. broad, elliptic, apiculate or very shortly cuspidate, rounded or acute at the base, thinly pubescent on both sides, with 2 glands at the base; panicles (cymes?) axillary, several-flowered, lax; peduncle  $1\frac{1}{6}$ – $2\frac{1}{3}$  in. long, slender; pedicels  $\frac{1}{3}$  in. long; sepals  $\frac{3}{4}$  lin. long, lanceolate, with a few hairs near the base; corolla rotate, lobed nearly to the base, brownish-red; lobes  $1\frac{1}{2}$  lin. long, lanceolate, glabrous; coronal-lobes subulate, very much thickened at the base; style-apex depressed; follicles  $3\frac{1}{2}$ – $4\frac{3}{4}$  in. long, slender, pisiform.

**Upper Guinea:** Dahomey, *Newton*. Togo: near Lome, *Warnecke*, 190.

2. **Sphærocodon melananthus**, *N. E. Br.* Add: *Gymnema melananthum*, *K. Schum. ex Schlechter in Baum, Kunene-Samb. Exped.* 344.

3a. **Marsdenia stelostigma**, *K. Schum. in Engl. Jahrb.* xxxiii. 330. Shrubby, with slender flowering branches, subtomentose on the young parts, becoming glabrous. Leaves spreading; petiole  $2\frac{1}{2}$ –5 lin. long; blade 5–19 lin. long,  $3\frac{1}{2}$ –12 lin. broad, ovate or ovate-oblong, acute, rounded or subcordate at the base, minutely pilose above, subtomentose beneath. Flowers in sessile or pedunculate fascicles in one or both axils of a pair of leaves, at length elongating into racemes. Peduncle 0 to 5 lin. long. Pedicels up to  $1\frac{1}{4}$  lin. long. Sepals  $1\frac{1}{2}$  lin. long, oblong-lanceolate, acute, subtomentose. Corolla  $2\frac{1}{2}$  lin. long, campanulate, deeply lobed, yellowish-white; lobes oblong, obtuse, white-villous to the middle on the inner face. Coronal lobes  $\frac{1}{4}$  lin. long, oblong-lanceolate, acute. Staminal-column  $\frac{1}{2}$  lin. long; anther-appendages elongated. Style-apex produced into a slender process  $\frac{3}{4}$  lin. long, shortly 2-armed at the top.

**Nile Land.** Somaliland: Tarro Gumbi in Boranland, *Ellenbeck*, 2080.

2. **Pergularia adenophylla**, *Schlechter & K. Schum. in Engl. Jahrb.* xxxiii. 331. Stem or branches slender, twining, minutely puberulous on the young parts. Leaves herbaceous; petiole  $\frac{1}{2}$ –1 in. long; blade  $1\frac{1}{6}$ – $2\frac{1}{2}$  in. long, 7–16 lin. broad, oblong-ovate, acute, rounded or subcordate at the base, glabrous, shining. Panicles (cymes?)  $1\frac{1}{4}$  in. long, with congested subumbellate flowers. Pedicels  $\frac{3}{4}$  in. long. Sepals

1 lin. long, oblong-ovate, very minutely pilose. Corolla-tube  $1\frac{1}{2}$  lin. long; lobes 2 lin. long, villous on the inner face, but more densely near the base. Coronal-lobes arising  $1\frac{1}{2}$  lin. up the  $2\frac{1}{2}$  lin. long staminal-column,  $\frac{3}{4}$ -1 lin. long, ligulate, oblong, acute. Style-apex produced about 1 lin. long beyond the coronal-lobes into a 2-lobed beak.

**Upper Guinea.** Cameroons: Batanga, *Dinklage*, 726.

2. **Fockea Schinzii**, *N.E.Br.* To the synonymy of this species should probably be referred *F. multiflora*, 'De Wild. *Études Fl. Katanga*, i. 110.

**South Central.** Congo Free State: near Lukafu, *Verdick*, 121, 190 and 225.

17a. **Ceropegia gemmifera**, *K. Schum. in Engl. Jahrb.* xxxiii. 328. Stem twining, branching, somewhat fleshy, with short thick branchlets  $\frac{1}{3}$ - $1\frac{1}{4}$  in. long, having 1-4 internodes, glabrous. Leaves few, fleshy; petiole 2- $3\frac{1}{2}$  lin. long; blade  $1\frac{1}{3}$ - $1\frac{1}{6}$  in. long, 3-8 lin. broad, ovate, acute, or shortly acuminate, broadly cuneate at the base, glabrous, ciliate with a few hairs. Peduncles lateral at the nodes, up to 5 lin. long, bearing 1 or 2 flowers. Pedicels  $2\frac{1}{2}$  lin. long. Sepals 2 lin. long, narrowly linear. Corolla-tube 13 lin. long, scarcely inflated at the base, dilated above the middle, green, spotted with purple-brown, hairy inside below the middle; lobes deltoid, replicate, connate at the tips, emerald-green, with a black spot at the middle and a yellowish-white spot below it with some long blackish (dark purple?) scattered hairs. Outer coronal-lobes  $1\frac{1}{2}$  lin. long, clavate, erect, red, brown at the base and yellowish-white at the tips.—*K. Schum. Monatschr. für Kakt.* xiii. 79.

**Upper Guinea.** Togo: near Lome, *Warnecke*, 242.

Remarkable for its short thick axillary branchlets which probably fall and reproduce the plant.

22a. **Ceropegia Verdickii**, *De Wild. Études Fl. Katanga*, i. 109. Stem twining, pubescent. Leaves spreading; petiole about 8 in. ("20 cm.") long; blade up to  $1\frac{2}{3}$  in. long and 1 in. broad, oblong-cordate, acuminate, sometimes slightly 3-lobed, pubescent on both sides, with prominent veins beneath. Cymes lateral, subsessile, or with a thick peduncle up to  $1\frac{1}{4}$  lin. long, 3-11-flowered. Bracts linear, pubescent. Pedicels  $3\frac{1}{2}$ -4 lin. long. Sepals  $1\frac{1}{2}$ -2 lin. long, linear, pubescent. Corolla about  $9\frac{1}{2}$  lin. long; tube inflated and about  $1\frac{3}{4}$  lin. in diam. at the base,  $\frac{1}{2}$  lin. in diam. at the middle enlarging to  $2\frac{1}{2}$  lin. at the mouth, glabrous outside; lobes about 2 lin. long, pubescent with spreading hairs, purple. Corona  $\frac{3}{4}$  lin. long, otherwise undescribed.

**South Central.** Congo Free State: Lukafu, *Verdick*, 389.

29a. **Ceropegia Bonafouxii**, *K. Schum. in Engl. Jahrb.* xxxiii. 327. Stem twining, slender, subtomentose, with scattered longer hairs. Leaves herbaceous; petiole 4-5 lin. long; blade  $1\frac{1}{6}$ - $1\frac{1}{2}$  in. long,

7-9 lin. broad, oblong or elliptic, acute at both ends, puberulous on both sides but more densely so beneath. Flowers in pairs. Pedicels 5 lin. long, subtomentose. Sepals 2 lin. long, subulate, minutely pilose. Corolla-tube about 11 lin. long, subconical in the lower part, which is longitudinally striate, 2-banded, minutely pilose, tapering cylindrical above the middle, dotted, dilated at the mouth; lobes short,  $2\frac{1}{2}$  lin. long, suborbicular, with reflexed margins, connate at the tips. Follicles 4 in. long, slender, terete.

**Lower Guinea.** Angola: Huilla, *Antunes*, 42, *Dekindt*, 42.

**31a. *Ceropegia Ellenbeckii*, K. Schum. in Engl. Jahrb. xxxiii. 327.** Stem twining, slender, subtomentose on the young parts. Leaves spreading; petiole up to 5 lin. long; blade  $1-1\frac{1}{3}$  in. long,  $4\frac{1}{2}-6$  lin. broad, lanceolate, acuminate, rounded at the base, pubescent on both sides; but more densely so beneath. Umbels subaxillary, pedunculate, about 5-flowered. Pedicels and the  $1\frac{1}{3}$  lin. long narrowly subulate sepals puberulous. Corolla probably brown with yellow tips; tube  $\frac{1}{2}$  in. long, subglobose-inflated and glabrous at the base, puberulous above; lobes  $4\frac{1}{2}$  lin. long, deltoid-ovate, acuminate, auriculate at the base, puberulous on both sides. Outer coronal-lobes  $1\frac{1}{4}$  lin. long, bifid at the apex. Inner coronal-lobes  $1\frac{1}{4}$  lin. long, filiform.

**Nile Land.** Somaliland: Gara Mulata, in Harar, 8000 ft., *Ellenbeck*, 583.

**33a. *Ceropegia subaphylla*, K. Schum. in Engl. Jahrb. xxxiii. 329.** A dwarf branching herb, with slender twining glabrous branches. Leaves reduced to lanceolate-subulate fleshy scales  $3-3\frac{1}{2}$  lin. long. Flowers solitary, axillary. Pedicels 4-5 lin. long, bearing 2 linear bracts. Sepals  $3\frac{1}{2}$  lin. long, linear, acuminate, reddish, dotted with dark brown. Corolla-tube  $1\frac{1}{3}$  in. long, moderately inflated at the base, puberulous outside; lobes  $\frac{3}{4}$  in. long, narrowly spatulate from a deltoid base, connate at the tips, white-villous near the base on the inner face. Outer coronal-lobes  $1\frac{1}{4}$  lin. long, divided into 2 linear segments, which cohere at their tips and are ciliate. Inner coronal-lobes  $2\frac{1}{2}$  lin. long, filiform.

**Nile Land.** Somaliland: near Dadah, *Ellenbeck*, 190.

**32b. *Ceropegia Botrys*, K. Schum. in Engl. Jahrb. xxxiii. 328.** Stems decumbent, slightly branching, slender, glabrous. Leaves reduced to lanceolate-subulate scales. Umbels shortly pedunculate, few-flowered, arranged in an elongated panicle about 4 in. long. Pedicels  $2\frac{1}{2}$  lin. long. Sepals 2 lin. long, subulate, glabrous. Corolla-tube  $\frac{3}{4}$  in. long, glabrous; lobes 7 lin. long, narrowly spatulate, deltoid at the base, with a few scattered hairs. Outer coronal-lobes 1 lin. long, deeply bifid. Inner coronal-lobes  $1\frac{1}{2}$  lin. long, filiform.

**Nile Land.** Somaliland: near Dadah, *Ellenbeck*, 190a.

**40a. *Ceropegia angustiloba*, De Wild. *Études Fl. Katanga*, i. 109.** Stem twining, glabrous. Leaves shortly petiolate; blade  $1\frac{1}{2}-2$  in. long,  $4\frac{1}{2}-7$  lin. broad, elliptic-lanceolate, cuneate at both ends, api-

culate, glabrous on both sides, shortly ciliate. Cymes lateral at the nodes, shortly pedunculate. Bracts subulate, glabrous. Pedicels about  $2\frac{1}{2}$  lin. long. Sepals about  $1\frac{1}{2}$  lin. long, subulate, often recurved at the tips. Corolla-tube 7 lin. long, narrow, slightly inflated at the base, slightly dilated at the mouth; lobes  $6\frac{1}{2}$  lin. long, about  $\frac{1}{4}$  lin. broad, connate at the tips, becoming free with age, glabrous. Inner coronal-lobes elongated, about 2 lin. long, much exceeding the staminal-column, otherwise undescribed.

**South Central.** Congo Free State: Lukafu, *Verdick*, 367.

The liberation of the coronal-lobes with age is, so far as I am aware, unique in the genus, and may have been caused by pressure in the process of drying.

43a. **Ceropegia Kerstingii**, *K. Schum. in Engl. Jahrb.* xxxiii. 326. Stem solitary from a thickened rhizome, erect, 6–8 in. high, simple, minutely pilose at the apex, yellowish-brown. Leaves sessile, about 1 in. long,  $\frac{1}{2}$  lin. broad, linear-filiform, minutely pilose on the margin. Flowers solitary or in pairs on each stem. Pedicels 1–2 in. long. Sepals  $2\frac{1}{2}$  lin. long, subulate. Corolla  $4\frac{1}{2}$  in. long; lurid purple with a white mouth spotted with brown; tube ellipsoid, inflated at the base, dilated at the mouth; lobes as long as the tube, narrowly linear from a triangular base, connate at the apex. Follicles elongated linear-terete, acuminate, narrowed at the base.

**Upper Guinea.** Togo: near Aledyo in the Lokode-Basari district, 2500 ft., *Kersting*, 307.

Remarkable for its very large flowers and long pedicels.

1. **Echidnopsis cereiformis**, Hook f. Add: *E. tessellata*, *K. Schum. Monatssch. für Kakt.* xiii. 109.

3a. **Caralluma tombuctuensis**, *N. E. Br.* Stems  $1\frac{1}{4}$ – $2\frac{2}{3}$  ft. high, erect, branching, 4-angled; upper branches short and spreading, pale green, glaucous; angles wing-like, irregularly crenate, with spreading or deflexed teeth at the crenatures 7–14 lin. apart. Flowers in compact balls as large as an orange. Pedicels 5–7 lin. long. Sepals  $1\frac{1}{2}$  lin. long, lanceolate, acute. Corolla funnel-shaped-rotate, 6–7 lin. in diam., blackish-purple, smooth outside, rugose-papillate on the inner face, ciliate with vibratile purple hairs 1 lin. long. Outer coronal-lobes spreading, deeply divided into 2 subulate segments, which diverge and curve towards the segments of the adjacent lobes; inner coronal-lobes short, linear from a deltoid convex base, inflexed upon the backs of the anthers and not exceeding them. Follicles 4– $4\frac{3}{4}$  in. long, linear-fusiform, acuminate or beaked.—*Boucerosia tombuctuensis*, *A. Chev. in Actes Congr. Intern. Bot. Paris, 1900*, 271 & 261, t. 11.

**North Central.** Timbuctu and vicinity, *Chevalier*.

5a. **Huernia concinna**, *N. E. Br.* Transfer to the synonymy of this species the references "*H. macrocarpa*, *Schweinfurth. ex K. Schumann, Monatschr. für Kakteenkunde, 1894*, iv. 155, with fig.; *Engl. and Prantl, Pflanzenfam. iv. ii. 279*, fig. 84, F, and 280," which were wrongly entered under *H. Penzigii*, *N.E.Br.*

11a. **Mostuea Gilletii**, *De Wild. Études Fl. Bas et Moyen Congo*, i. 174. A tree. Branches slender, densely velvety with yellow hairs turning rusty brown. Leaves oval-oblong, apiculate, cuneate at the base, 9–20 lin. long, 5–9 lin. wide, velvety on both surfaces, ciliate, paler beneath. Cymes terminal or terminating lateral branches, 2–3-flowered; pedicels 1 lin. long, accrescent. Calyx  $1\frac{1}{2}$  lin. long, velvety; lobes very acute, wide at the base, 1 lin. long. Corolla about 4 lin. long; tube enlarged at the throat; lobes rounded, about 1 lin. in diam. Stamens equal. Fruit reniform, velvety, seated on the persistent calyx, which is 5 lin. in diam. and with lobes 3 lin. long.

**Lower Guinea.** Lower Congo: Valley of the Djuma, *Gentil, Gillet*, 2914, 2928.

19a. **Mostuea taymansiana**, *De Wild. Études Fl. Bas et Moyen Congo*, i. 174. A shrub about 20 in. high. Young branchlets densely velvety with spreading hairs. Leaves oval-oblong, 9–18 in. long, 5–9 in. wide, abruptly apiculate, cuneate at the base, with long scattered adpressed hairs on the upper surface and on the nerves beneath, ciliate on the margins, lower surface paler than the upper; petiole  $1-2\frac{1}{2}$  lin. long. Flowers 2–3 at the ends of short branchlets, white, yellow at the base of the corolla-tube; pedicels short. Calyx-lobes 5, linear-setaceous, free almost to the base, 2 lin. long, with spreading hairs on the back and margins. Corolla tubular, funnel-shaped above,  $4\frac{1}{2}$  lin. long; lobes oval, rounded, about 1 lin. long. Stamens equal, reaching to the corolla-throat. Style shorter than the stamens. Capsule obreniform, about 5 lin. in diam., furnished with a border 2 lin. wide at the top and  $2\frac{1}{2}$  lin. wide on the lobes, with numerous straight spreading hairs.

**South Central.** Congo Free State: Bena-Dibele, *Luja*, 252.

11b. **Mostuea Duchesnei**, *De Wild. Études Fl. Bas et Moyen Congo*, i. 173. A bush about 4 ft. high. Young branches shortly and densely velvety with adpressed hairs. Leaves oval, apiculate, cuneate at the base, more or less decurrent on the petiole, glabrous above except on the midrib, sparingly velvety below especially on the nerves, ciliate on the margin, obscurely toothed; petiole  $2\frac{1}{2}$  lin. long. Inflorescence axillary or terminal, sessile or on a peduncle 9 lin. long, velvety. Flowers 3–7 together, white, subsessile or on pedicels  $2\frac{1}{2}$  lin. long. Calyx nearly 2 lin. long; lobes about 1 lin. long, lanceolate, acute, velvety, ciliate. Corolla glabrous, about 7 lin. long; lobes oval-rounded, about 2 lin. long, 2 lin. wide. Stamens  $2\frac{1}{2}$  lin. long. Style longer than the stamens, deeply lobed. Fruit unknown.

**South Central.** Congo Free State: in forests on the right bank of the river at Stanleyville, *Duchesne*, 16.

47a. **Strychnos variabilis**, *De Wild. Études Fl. Bas et Moyen Congo*, i. 178. A medium-sized tree. Branchlets with brownish adpressed and long silky spreading hairs, without tendrils. Leaves oval-

oblong or oblong-lanceolate, sometimes broadly oval, acute to emarginate,  $1\frac{1}{2}$ –3 in. long, 9 lin. wide, rounded or subcordate at the base, ciliate on the margins and nerves; basal nerves 5, two outer slender and soon anastomosing; petiole  $1$ – $1\frac{1}{2}$  lin. long, with spreading brownish hairs. Cymes terminal on the branches, dense,  $1\frac{1}{2}$  in. in diam., shortly peduncled or sessile; flowers shortly pedicelled; pedicels accrescent, about 2 lin. long; bracts linear, hairy, ciliate. Calyx-lobes linear, 2 lin. long, long ciliate. Corolla about  $2\frac{1}{2}$  lin. long; tube 1 lin. long, glabrous outside; lobes triangular, acute, densely hairy inside and at the throat, ciliate. Ovary ovoid; style 2 lin. long. Fruit ovoid or subglobose, crowned by the persistent style-base,  $\frac{3}{4}$ –1 in. long; seed brownish, more or less glossy.

**Lower Guinea.** Lower Congo: Kisantu, *Gillet*, 808, Kimuenza, *Gillet*, 2081, 1726, near Leopoldville, *Gillet*.

67a. **Strychnos Gilletii**, *De Wild. Études Fl. Bas et Moyen Congo* i. 176. A tree. Branches thickened and flattened at the nodes, brownish-yellow when dry, shortly pubescent, becoming glabrous and corky; spines axillary on slender sterile branches only, slender, more or less recurved. Leaves oblong or oboval, narrowed into a petiole 9 lin. long, from apiculate to deeply emarginate at the apex, coriaceous,  $1\frac{1}{2}$ – $2\frac{3}{4}$  in. long, 1 in. wide, shining on the upper surface, dull on the lower, 5-nerved, 2 central nerves vanishing near the centre of the leaf. Cymes lax, 6 lin. long, terminal on the principal branches or lateral; peduncle 6 lin. long, shortly hairy; pedicels slender, hairy, about 1 lin. long; bracts 2, linear,  $1\frac{1}{2}$  lin. long, sparingly ciliate. Sepals long linear,  $2\frac{1}{2}$  lin. long, acute, ciliate. Corolla nearly 2 lin. long in bud, caducous, hairy outside. Ovary hairy; style short. Fruit 2 in. in diam.

**Upper Guinea.** Lower Congo: Kisantu, *Gillet*, 134, 880.

67b. **Strychnos suberosa**, *De Wild. Études Fl. Bas et Moyen Congo*, i. 177. A tree or shrub. Branches thickened and flattened at the nodes, deep brown and more or less shining when dry, becoming glabrous and corky; spines axillary on the barren branches only, slender, more or less recurved, 4 lin. long. Leaves broadly oval or oval-oblong, acute or subobtuse, rounded or cuneate at the base, subcoriaceous,  $2$ – $2\frac{3}{4}$  in. long,  $1\frac{1}{2}$ –2 in. wide, hairy on both surfaces when young, becoming glabrous on the upper; lateral nerves reaching to the middle of the leaf; petiole about 4 lin. long, hairy. Cymes dense, nearly  $1\frac{1}{2}$  in. long and 2 in. in diam., terminal; peduncle  $1\frac{1}{4}$  in. long, hairy; pedicels  $\frac{3}{4}$  lin. long; bracts  $\frac{3}{4}$  lin. long, ciliate. Sepals lanceolate, hairy and ciliate, about 1 lin. long, acute. Corolla  $1\frac{3}{4}$  lin. long; lobes 5, shorter than the tube, triangular, shortly hairy outside, glabrous inside except at the throat where there is a dense ring of white hairs. Ovary hairy; style included.

**Lower Guinea.** Lower Congo: Lemfu, *Gillet*, 2261, Kisantu, *Gillet*.

67c. **Strychnos schumanniana**, *Gilg in Baum, Kunene-Samb. Exped.* 330. A tree, 12–22 ft. high, without cirrhi. Branches grey

pilose; spines axillary, recurved. Leaves decussate, elliptical, rounded or widely acuminate, apiculate, about  $1\frac{1}{2}$  in. long, 9–14 lin. wide, grey pilose on both surfaces; nerves impressed above, prominent beneath, about 7 basal; petioles about 2 lin. long. Cymes terminal on the branches, dense, many-flowered; peduncles about 4 lin. long, as well as the very short pedicels and calyx grey-hirsute. Calyx 2 lin. long; lobes almost linear, recurved at the apex. Corolla shortly pubescent outside; tube 2–3 times as long as the lobes, long pilose inside the base; lobes deltoid-ovate, acuminate.

**Lower Guinea.** Angola: by the Kubango River below Massaca, in sand in maize-fields, 4760 ft., Baum, 290; Huilla, *Dekindt*, 1a.

2. ***Anthocleista nobilis***, G. Don. Add: *A. nigrescens*, Afz. ex Gilg in Engl. Jahrb. xvii. 575.

4a. ***Anthocleista squamata***, De Wild. and Dur. in Bull. Herb. Boiss. 2 sér. i. 830. A tree. Branches terete, leafless at the base, unarmed; internodes about 7 lin. long. Leaves obovate-lanceolate, quite entire, 6–10 in. long, glabrous, acute, the upper with petioles  $1\frac{1}{2}$  in. long; stipules short; lateral nerves 12–13 each side, midrib and nerves prominent beneath. Panicles terminal, cymose, dichotomous, about 7 in. long; branches compressed, densely scaly; pedicels about 3 lin. long, compressed, scaly. Sepals suborbicular, about 4 lin. long, glabrous, blackish, the inner rather longer than the outer. Corolla unknown. Fruit subglobose, 16 lin. long, 14 lin. in diam., crowned by the style base, enclosed at the base in the persistent sepals, dark brown, somewhat shining; stalk about 1 in. long, 2 lin. thick.

**Lower Guinea.** Lower Congo: Kimuenza, Gillet, 1773.

10a. ***Anthocleista bærtsiana***, De Wild. & Dur. in Bull. Herb. Boiss. 2 sér. i. 829. A large tree. Branches terete; internodes about 5 lin. long. Leaves near the end of the branches, obovate-lanceolate, acute, attenuate at the base, 10–27 in. long,  $3\frac{1}{2}$ –7 in. wide, quite entire; midrib and nerves prominent beneath, lateral nerves about 13 on each side: stipules semiorbicular, 8 lin. long, 3 lin. wide, undulate; petiole channelled above. Panicles terminal, about 7 in. long, cymose, dichotomous; branches compressed; pedicels about 2 lin. long. Sepals suborbicular, the inner slightly longer than the outer. Corolla longer than the sepals, fleshy; tube funnel-shaped, about 10 lin. long,  $4\frac{1}{2}$  lin. in diam. at the apex; lobes 12, oblong, 7 lin. long,  $2\frac{1}{2}$  lin. wide. Anthers about 12, 3 lin. long; filaments connate about 1 lin. up. Ovary ovoid; style thick, about 14 lin. long, not longer than the corolla; stigma capitate, about 1 lin. in diam. Fruit elliptical, 9 lin. long,  $7\frac{1}{2}$  lin. in diam.; pericarp more or less spongy, 4-lobed.

**Lower Guinea.** Lower Congo: Kisantu, Gillet, 56.

9a. ***Belmontia chionantha***, Gilg in Baum, Kunene-Samb. Exped.

332. An erect annual 12–16 in. high. Stem simple or rarely with 1 or 2 branches, slender, glabrous. Leaves few, small; the lower  $3\frac{1}{2}$ –4 lin. long,  $1\frac{1}{2}$ –2 lin. broad, ovate; the upper  $2\frac{1}{2}$ –4 lin. long,  $1$ – $1\frac{1}{2}$  lin. broad, lanceolate or linear-lanceolate, acute. Flower solitary, terminal, pentamerous. Sepals  $3\frac{1}{2}$ –5 lin. long, about  $1\frac{1}{2}$  lin. broad, ovate-lanceolate, very acute, with an acute or slightly winged dorsal keel decurrent on the pedicel. Corolla hypocrateriform, white; tube 6– $7\frac{1}{2}$  lin. long, cylindric, slightly inflated around the anthers, narrowed above; lobes 2– $2\frac{3}{4}$  lin. long,  $1$ – $1\frac{1}{2}$  lin. broad, oblanceolate, acute. Stamens inserted slightly above the middle of the corolla-tube; filaments short, anthers with a thick ovate densely papillate apical gland half as large as the anther itself, eglandular at the base. Style filiform, without a tubercular thickening; stigma long, cylindric.

**Lower Guinea.** Angola: by the River Lazingua, *Baum*, 838! near the River Kuebe, *Baum*, 316; and by the River Longa above the River Quiriri, *Baum*, 701.

9b. **Belmontia baumiana**, *Gilg in Baum, Kunene-Samb. Exped.*

331. A slender annual 6–10 in. high, simple or rarely with one branch, glabrous. Leaves few, very small,  $1\frac{1}{2}$ – $2\frac{1}{2}$  lin. long,  $\frac{1}{2}$ – $\frac{3}{4}$  lin. broad, linear or lanceolate-linear, acute. Flower solitary, terminal, pentamerous. Sepals  $1\frac{1}{2}$ –2 lin. long,  $\frac{3}{4}$  lin. broad, lanceolate, tapering to a long very acute point, scarcely nerved on the back. Corolla subhypocrateriform, whitish; tube  $2\frac{1}{2}$ –3 lin. long, inflated around the anthers, slightly enlarged at the mouth; lobes  $1$ – $1\frac{1}{2}$  lin. long,  $\frac{3}{4}$ –1 lin. broad, broadly ovate, acute. Stamens inserted at the middle of the tube; filaments short; anthers tipped with a very small gland, eglandular at the base. Style filiform, without a tubercular thickening; style long, cylindric.

**Lower Guinea.** Angola: by the River Longa above the River Quiriri, *Baum*, 692!

2. **Chironia erythræodes**, *Hiern*. To this species should probably be referred the specimen quoted under *C. rosacea*, Gilg, by Schoch in Bot. Centralbl., Beihefte, xiv. 229, as from "Huilla, *Welwitsch*, 1528." No mention is made of the number 1528 among the *Gentianeæ* by Hiern in Cat. Afr. Pl. Welw. and probably it is an error for 1525. *C. rosacea* Gilg is a native of Pondoland.

2a. **Chironia baumiana**, *Gilg in Baum, Kunene-Samb. Exped.*

334. A glabrous annual, 1–2 ft. high. Stem 4-angled, cymosely branched above. Radical leaves 5–11 lin. long,  $2\frac{1}{2}$ –3 lin. broad, subsessile, oblong-lanceolate (obovate, ex *Gilg*), acute, narrowed at the base; stem-leaves in a few distant pairs, sessile, erect, 6–11 lin. long,  $1$ –2 lin. broad, linear-lanceolate or linear, acute. Cymes moderately lax, paniculate, with the main branches 4–5-flowered. Pedicels 3–6 lin. long. Sepals 5, erect, shortly connate at the base, 2–3 lin. long,  $\frac{2}{3}$ – $\frac{3}{4}$  lin. broad, lanceolate, acuminate to a very acute point, acutely keeled. Corolla 5-lobed, carmine; tube  $1\frac{1}{4}$  lin. long; lobes  $3\frac{1}{2}$  lin. long,  $1\frac{1}{8}$  lin. broad, lanceolate, acute. Stamens inserted in the throat of

the tube, exerted; filaments  $\frac{3}{4}$  lin. long; anthers  $1\frac{1}{2}$  lin. long, linear, slightly twisted, yellow. Style about  $\frac{1}{4}$  in. long, filiform; stigmatic part narrowly elongate-conical, acute.—Schoch in Bot. Centralbl., Beihefte, xiv. 232.

**Lower Guinea.** Angola: by the Kampulve River, *Baum*, 739

Gilg describes the corolla-tube as 2 lin. (4 mm.) long, the lobes as  $5-5\frac{1}{2}$  lin. (10-11 mm.) long, and the stigma as 2-lobed. I find them as above described on the type specimens.

4. **Chironia transvaalensis**, *Gilg*. Add: *C. palustris*, Gilg in *Baum*, Kunene-Samb. Exped. 334, not of Burchell.

**South Central.** Congo Free State: left bank of the River Kubango, near Kavanga, *Baum*, 417.



## INDEX OF GENERA AND SPECIES.

*The Synonyms and Species incidentally mentioned are printed in Italics.*

	Page		Page		Page
<i>Acocanthera</i> . . . . .	92	<i>Alafia</i> ( <i>continued</i> )		<i>Anthocleista</i> ( <i>continued</i> )	
<i>Acocanthera</i> . . . . .	92	<i>lucida</i> , <i>Stapf</i> . . . . .	198	<i>Kalbreyeri</i> , <i>Baker</i> . . . . .	540
<i>abyssinica</i> , <i>K. Schum.</i>	93, 95	<i>major</i> , <i>Stapf</i> . . . . .	201, 611	<i>kamerunensis</i> , <i>Gilg</i> . . . . .	538
<i>Deflersii</i> , <i>Schweinf.</i>	94	<i>malouetioides</i> , <i>K.</i>		<i>lanceolata</i> , <i>Gilg</i> . . . . .	539
<i>Lamarkii</i> , <i>G. Don</i> . . . . .	94	<i>Schum.</i> . . . . .	201	<i>laxiflora</i> , <i>Baker</i> . . . . .	542
<i>lycioides</i> , <i>G. Don</i> . . . . .	600	<i>microstylis</i> , <i>K.</i>		<i>liebrechtsiana</i> , <i>De</i>	
<i>Ouabaio</i> , <i>Poisson</i> . . . . .	93	<i>Schum.</i> . . . . .	200	<i>Wild. &amp; Dur.</i> . . . . .	540
<i>Schinperi</i> , <i>Schweinf.</i>	93	<i>orientalis</i> , <i>K. Schum.</i>		<i>macrantha</i> , <i>Gilg</i> . . . . .	539
<i>Schimperi</i> , <i>Schweinf.</i>	94	<i>Schum.</i> . . . . .	200, 611	<i>macrophylla</i> , <i>G. Don</i> . . . . .	538
var. <i>Deflersii</i> ,		<i>parciflora</i> , <i>Stapf</i> . . . . .	610	<i>magnifica</i> , <i>Gilg</i> . . . . .	541
<i>Stapf</i> . . . . .	94	<i>reticulata</i> , <i>K. Schum.</i>	198	<i>nianniamensis</i> , <i>Gilg</i> . . . . .	539
<i>sp.</i> , <i>Benth. &amp; Hook. f.</i>	95	<i>sarmentosa</i> , <i>Stapf</i> . . . . .	200	<i>nigrascens</i> , <i>Afz.</i> . . . . .	625
<i>spectabilis</i> , <i>Hook. f.</i>	95	<i>scandens</i> , <i>De Wild.</i>	610	<i>nobilis</i> , <i>G. Don</i> . . . . .	538, 625
<i>venenata</i> , <i>G. Don</i> . . . . .	94	<i>Schumannii</i> , <i>Stapf</i> . . . . .	197	<i>orientalis</i> , <i>Gilg</i> . . . . .	539
<i>venenata</i> , <i>Schweinf.</i>	95	<i>Whytei</i> , <i>Stapf</i> . . . . .	610	<i>parviflora</i> , <i>Baker</i> . . . . .	539
<i>Adenium</i> . . . . .	226	<i>Allamanda</i> . . . . .	117	<i>procera</i> , <i>Lepr.</i> . . . . .	539
<i>arabicum</i> , <i>Balf. f.</i> . . . . .	229	<i>Aubletii</i> , <i>Pohl</i> . . . . .	118	<i>pulcherrima</i> , <i>Gilg</i> . . . . .	540
<i>bœhmianum</i> , <i>Schinz</i> . . . . .	227	<i>cathartica</i> , <i>Lin.</i> . . . . .	117, 602	<i>scandens</i> , <i>Hook. f.</i> . . . . .	542
<i>coëtaneum</i> , <i>Stapf</i> . . . . .	227	<i>Schottii</i> , <i>Bot. Mag.</i> . . . . .	118	<i>Scheffleri</i> , <i>Gilg</i> . . . . .	542
<i>Hongel</i> , <i>A. DC.</i> . . . . .	229, 614	<i>Alstonia</i> . . . . .	120	<i>Schweinfurthii</i> , <i>Gilg</i> . . . . .	541
<i>multiflorum</i> ,		<i>congensis</i> , <i>Engl.</i> . . . . .	121, 602	<i>squamata</i> , <i>De Wild.</i>	
<i>Klotzsch</i> . . . . .	229	<i>scholaris</i> , <i>Chev.</i> . . . . .	121, 602	<i>&amp; Dur.</i> . . . . .	645
<i>namaquarium</i> ,		<i>Ancylobotrys</i>		<i>stuhlmanniana</i> , <i>Gilg</i> . . . . .	540
<i>Henslow</i> . . . . .	491	<i>amœna</i> , <i>Hua</i> . . . . .	46, 590	<i>Vogelii</i> , <i>Planch.</i> . . . . .	538
<i>obesum</i> , <i>Balf. f.</i> . . . . .	228	<i>mammosa</i> , <i>Pierre</i> . . . . .	44	<i>zambesiaca</i> , <i>Baker</i> . . . . .	540
<i>somalense</i> , <i>Balf. f.</i> . . . . .	228	var. <i>crassifolia</i> ,		<i>Zenkeri</i> , <i>Gilg</i> . . . . .	539
<i>speciosum</i> , <i>Fenzl</i> . . . . .	228	<i>Pierre</i> . . . . .	44	<i>Antura</i>	
<i>speciosum</i> , <i>Oliv.</i> . . . . .	228	var. <i>mucronata</i> ,		<i>hadiensis</i> , <i>G. F. Gmel</i> . . . . .	89
<i>Adenopogon</i>		<i>Pierre</i> . . . . .	44	<i>Aphanostylis</i>	
<i>stellarioides</i> , <i>Welw.</i> . . . . .	581	<i>petersiana</i> , <i>Pierre</i> . . . . .	48	<i>exserens</i> , <i>Pierre</i> . . . . .	69
<i>Æchmolepis</i> . . . . .	260	var. <i>forbesiana</i> ,		<i>flaviflora</i> , <i>Pierre</i> . . . . .	71
<i>rosmarinifolia</i> ,		<i>Pierre</i> . . . . .	48	<i>laxiflora</i> , <i>Pierre</i> . . . . .	70
<i>Decne.</i> . . . . .	263	<i>pyriformis</i> , <i>Pierre</i> . . . . .	60	<i>leptantha</i> , <i>Pierre</i> . . . . .	70
<i>Alafia</i> . . . . .	195	<i>robusta</i> , <i>Pierre</i> . . . . .	43	<i>Mannii</i> , <i>Pierre</i> . . . . .	69
<i>Barteri</i> , <i>Oliv.</i> . . . . .	197	<i>rotundifolia</i> , <i>Pierre</i> . . . . .	48	<i>pyramidata</i> , <i>Pierre</i> . . . . .	72
<i>Benthamii</i> , <i>Stapf</i> . . . . .	199	<i>Anisopus</i> . . . . .	415	<i>Apocynacea</i>	
<i>Butayei</i> , <i>Stapf</i> . . . . .	199	<i>bicolorata</i> , <i>N. E. Br.</i> . . . . .	416	<i>No. 55</i> , <i>Welw.</i> . . . . .	147
<i>caudata</i> , <i>Stapf</i> . . . . .	199	<i>Mannii</i> , <i>N. E. Br.</i> . . . . .	416	APOCYNACEÆ . . . . .	24
<i>cuneata</i> , <i>Stapf</i> . . . . .	198	<i>Anthocleista</i> . . . . .	537	<i>Apocynum</i>	
<i>grandis</i> , <i>Stapf</i> . . . . .	196	<i>bœrtsiana</i> , <i>De Wild.</i>		<i>frutescens</i> , <i>Afz.</i> . . . . .	281
<i>landolphioides</i> , <i>K.</i>		<i>&amp; Dur.</i> . . . . .	625	<i>viminale</i> , <i>Bassi</i> . . . . .	384
<i>Schum.</i> . . . . .	197, 610	<i>Buchneri</i> , <i>Gilg</i> . . . . .	539	<i>zeylanicum</i> , <i>Herm.</i> . . . . .	127
		<i>inermis</i> , <i>Engl.</i> . . . . .	541	<i>Aporyanthera</i> . . . . .	269

	Page		Page		Page
<i>Apteranthes</i>		<i>Asclepias (continued)</i>		<i>Asclepias (continued)</i>	
<i>cylindrica</i> , Decne. . . . .	477	<i>Galpinii</i> , Schlechter . . . . .	377	<i>rhacodes</i> , <i>N. E. Br.</i> . . . .	342
<i>tessellata</i> , Decne. . . . .	475	<i>geminata</i> , Roxb. . . . .	414	<i>robusta</i> , <i>N. E. Br.</i> . . . .	324
<i>Arduina</i>		<i>gigantea</i> , Jacq. . . . .	295	<i>rostrata</i> , <i>N. E. Br.</i> . . . .	331
<i>acuminata</i> , E. Meyer . . . .	91	<i>gigantiflora</i> , <i>N. E. Br.</i> . . . .	326	<i>rubella</i> , <i>N. E. Br.</i> . . . .	348
<i>bispinosa</i> , Linn. . . . .	91	<i>glaberrima</i> , Schlechter . . . . .	298	<i>rubicunda</i> , Schlechter . . . . .	322
<i>edulis</i> , Spreng. . . . .	89	<i>glaucophylla</i> , Schlechter . . . . .	321, 616	<i>scandens</i> , Beauv. . . . .	388
<i>edulis</i> , Warb. . . . .	92	<i>Grantii</i> , Schlechter . . . . .	370	<i>schinziana</i> , Schlechter . . . . .	377
<i>erythrocarpa</i> , Eckl. . . . .	91	<i>integra</i> , <i>N. E. Br.</i> . . . .	334	<i>schumanniana</i> , Hiern . . . . .	346
<i>ferox</i> , E. Meyer . . . . .	91	<i>Kæssneri</i> , <i>N. E. Br.</i> . . . .	616	<i>Schweinfurthii</i> , <i>N. E. Br.</i> . . . . .	323
<i>haematocarpa</i> , Eckl. . . . .	91	<i>laurentiana</i> , <i>N. E. Br.</i> . . . . .	342	<i>semiamplexens</i> , Hiern . . . . .	320
<i>Ouabaio</i> , Cornu . . . . .	93	<i>laniflora</i> , Forsk. . . . .	297	<i>semilunata</i> , <i>N. E. Br.</i> . . . . .	327
<i>tetramera</i> , Sacleux . . . . .	92	<i>leucocarpa</i> , Schlechter . . . . .	337	<i>setosa</i> , Forsk. . . . .	333
<i>Argelia</i>		<i>leucotricha</i> , Schlechter . . . . .	615	<i>spectabilis</i> , <i>N. E. Br.</i> . . . .	325
<i>Delilii</i> , Decne. . . . .	403	<i>lineolata</i> , Schlechter . . . . .	322	<i>sphacelata</i> , <i>N. E. Br.</i> . . . .	339
ASCLEPIADEÆ . . . . .	231	<i>lineolatus</i> , S. Moore . . . . .	323	<i>stolzianus</i> , <i>N. E. Br.</i> . . . .	617
<i>Asclepias</i> . . . . .	313	<i>lisianthoides</i> , <i>N. E. Br.</i> . . . . .	326	<i>tenuifolia</i> , <i>N. E. Br.</i> . . . .	337
<i>abyssinica</i> , <i>N. E. Br.</i> . . . .	333	<i>longissima</i> , <i>N. E. Br.</i> . . . .	338	<i>transvaalensis</i> , Schlechter . . . . .	376
<i>albida</i> , <i>N. E. Br.</i> . . . . .	334	<i>macrantha</i> , Hochst. . . . .	340	<i>tricorniculata</i> , Schlechter . . . . .	616
<i>amabilis</i> , <i>N. E. Br.</i> . . . . .	338	<i>macrochila</i> , Schlechter . . . . .	376	<i>valida</i> , Schlechter . . . . .	377
<i>angustata</i> , <i>N. E. Br.</i> . . . .	343	<i>macropetala</i> , <i>N. E. Br.</i> . . . . .	616	<i>Welwitschii</i> , Britt. & Rend. . . . .	341
<i>aphylla</i> , Thunb. . . . .	400	<i>mashonensis</i> , Schlechter . . . . .	366	<i>Astephanus</i>	
<i>aurea</i> , Schlechter . . . . .	345	<i>modesta</i> , <i>N. E. Br.</i> . . . .	348	<i>arenarius</i> , Decne. . . . .	289
var. <i>brevicuspis</i> , <i>S. Moore</i> . . . . .	345	var. <i>foliosa</i> , <i>N. E. Br.</i> . . . . .	349	<i>cernuus</i> , Decne. . . . .	289
<i>Baumii</i> , Schlechter . . . . .	617	<i>muhindensis</i> , <i>N. E. Br.</i> . . . . .	344	<i>ovatus</i> , Decne. . . . .	289
<i>buchenaviana</i> , Schinz . . . . .	337	<i>muricata</i> , Schum. & Thonn. . . . .	388	<i>recurvatus</i> , Klotzsch <i>Schimperi</i> , Vathek . . . . .	290, 419
<i>Buchwaldii</i> , <i>N. E. Br.</i> . . . .	617	<i>nuda</i> , Schum. & Thonn. . . . .	384	<i>stenolobus</i> , K. Schum. . . . .	409
<i>Burchellii</i> , Schlechter . . . .	335	<i>nutans</i> , <i>N. E. Br.</i> . . . . .	352	<i>Azima</i> . . . . .	22
<i>coccinea</i> , <i>N. E. Br.</i> . . . . .	340	<i>Nuttii</i> , <i>N. E. Br.</i> . . . . .	339	<i>spinosissima</i> , Engl. . . . .	23
<i>concolor</i> , Schlechter . . . . .	378	<i>odorata</i> , <i>N. E. Br.</i> . . . .	324	<i>tetracantha</i> , Lam. . . . .	22
<i>conspicua</i> , <i>N. E. Br.</i> . . . .	324	<i>pachyclada</i> , <i>N. E. Br.</i> . . . .	325	<i>Baissea</i> . . . . .	203
<i>convolvulacea</i> , Willd. . . . .	388	<i>palustris</i> , Schlechter . . . . .	349	<i>angolensis</i> , Stapf . . . . .	209, 611
<i>cordata</i> , Forsk. . . . .	386	<i>petherickiana</i> , Schlechter . . . . .	369	var. <i>major</i> , Stapf . . . . .	210
<i>crassifolia</i> , Linn. . . . .	330	<i>Phillipsiæ</i> , <i>N. E. Br.</i> . . . .	332	<i>axillaris</i> , Hua . . . . .	210, 611
<i>crinita</i> , <i>N. E. Br.</i> . . . . .	352	<i>physocarpa</i> , Schlechter . . . . .	328	<i>Baillonii</i> , Hua . . . . .	211
<i>curassavica</i> , Linn. . . . .	328	<i>procera</i> , Willd. . . . .	295	<i>brachyantha</i> , Stapf . . . . .	213
<i>curassavica</i> , <i>N. E. Br.</i> . . . .	320	<i>propinqua</i> , <i>N. E. Br.</i> . . . .	343	<i>calophylla</i> , Stapf . . . . .	205
<i>denticulata</i> , Schlechter . . . . .	323	<i>pubiseta</i> , <i>N. E. Br.</i> . . . .	329	<i>congolensis</i> , De Wild. . . . .	611
<i>dependens</i> , <i>N. E. Br.</i> . . . . .	352	<i>pulchella</i> , <i>N. E. Br.</i> . . . .	346	<i>dichotoma</i> , Stapf . . . . .	215
<i>dissoluta</i> , Schlechter . . . . .	347	<i>pygmaea</i> , <i>N. E. Br.</i> . . . .	350	<i>elliptica</i> , Stapf . . . . .	215
<i>eminens</i> , Schlechter . . . . .	351	<i>Randii</i> , S. Moore . . . . .	351	<i>erythrostricta</i> , K. Schum. . . . .	206, 611
<i>eximia</i> , Schlechter . . . . .	371	<i>reflexa</i> , Britt. & Rend. . . . .	344	<i>gracillima</i> , Hua . . . . .	216
<i>filiformis</i> , Benth. & <i>Hk. f.</i> . . . . .	336			<i>Heudelotii</i> , Hua . . . . .	208
var. <i>buchenaviana</i> , <i>N. E.</i> <i>Br.</i> . . . . .	336			<i>laxiflora</i> , Stapf . . . . .	208
<i>firma</i> , Schlechter . . . . .	368			<i>leonensis</i> , Benth. . . . .	213
<i>flavida</i> , <i>N. E. Br.</i> . . . . .	331				
<i>foliosa</i> , <i>N. E. Br.</i> . . . . .	349				
<i>foliosa</i> , Hiern . . . . .	349				
<i>Frederici</i> , Hiern . . . . .	335				
<i>fruticosa</i> , Linn. . . . .	330				
var. <i>angustissima</i> , Schlechter . . . . .	333				
<i>fulva</i> , <i>N. E. Br.</i> . . . . .	321				

	Page		Page		Page
<i>Baissea</i> (continued)		<i>Brachystelma</i> (continued)		<i>Caralluma</i> (continued)	
<i>major</i> , Hiern . . . . .	210	<i>shirensis</i> , Schlechter	468	<i>lutea</i> , N. E. Br. . . . .	486
<i>micrantha</i> , Hua . . . . .	216	<i>sp.</i> , Thoms. . . . .	470	<i>maculata</i> , N. E. Br. . . . .	487
<i>multiflora</i> , A. DC.	207, 611	<i>subaphyllum</i> , K.		<i>penicillata</i> , N. E. Br. . . . .	482
var. <i>caudiloba</i> ,		Schum. . . . .	473	<i>respiciens</i> , K. Schum. . . . .	481
<i>Stapf</i> . . . . .	208	Tavalla, K. Schum. . . . .	470	<i>retrospiciens</i> ,	
<i>ochrantha</i> , K. Schum. . . . .	206	<i>Brehmia</i>		N. E. Br. . . . .	480
<i>odorata</i> , K. Schum.	212, 611	<i>spinosa</i> , Haw. . . . .	537	var. <i>glabra</i> ,	
<i>ogowensis</i> , Hua . . . . .	212	<i>Buddleia</i> . . . . .	515	N. E. Br. . . . .	481
<i>spectabilis</i> , Hua . . . . .	207	<i>acuminata</i> , A. Br. . . . .	516	<i>robusta</i> , N. E. Br. . . . .	482
<i>tenuiloba</i> , Stapf . . . . .	214, 611	<i>aurantiaco-maculata</i> ,		<i>somalica</i> , N. E. Br. . . . .	482
<i>Tholloni</i> , Hua . . . . .	209	<i>Gilg</i> . . . . .	517	<i>speciosa</i> , N. E. Br. . . . .	479
<i>uropetala</i> , Hua . . . . .	214	<i>foliata</i> , A. Br. . . . .	516	<i>Sprengeri</i> , N. E. Br. . . . .	484
<i>Welwitschii</i> , Stapf . . . . .	211	<i>madagascariensis</i> ,		<i>subulata</i> , Decne. . . . .	489
<i>Wulfhorstii</i> , Schinz	207, 611	Lam. . . . .	517	<i>tombuctuensis</i> ,	
<i>zygodioides</i> , Stapf . . . . .	210	<i>oreophila</i> , Gilg . . . . .	516	N. E. Br. . . . .	622
<i>Barrowia</i> . . . . .	434	<i>polystachya</i> , Fresen. . . . .	515	<i>valida</i> , N. E. Br. . . . .	486
<i>jasminiflora</i> , Decne. . . . .	435	<i>rufa</i> , Fresen. . . . .	516	<i>vittata</i> , N. E. Br. . . . .	483
<i>Baseonema</i> . . . . .	259	<i>salvifolia</i> , Lam. . . . .	516	<i>Carandas</i>	
<i>Gregorii</i> , Schl. &		<i>usambarensis</i> , Gilg . . . . .	516	<i>edulis</i> , Hiern . . . . .	89
<i>Rend.</i> . . . .	259	<i>virgata</i> , Linn. f. . . . .	511	<i>Carissa</i> . . . . .	88
<i>Batesanthus</i> . . . . .	253	<i>Callichilia</i> . . . . .	130	<i>abyssinica</i> , R. Br. . . . .	93
<i>purpureus</i> , N. E. Br. . . . .	254	<i>Barteri</i> , Stapf . . . . .	133	<i>acuminata</i> , DC. . . . .	91
<i>Belmontia</i> . . . . .	551	<i>inæqualis</i> , Stapf . . . . .	132	<i>africana</i> , DC. . . . .	92
<i>baumiana</i> , Gilg . . . . .	626	<i>Mannii</i> , Stapf . . . . .	131	<i>Arduina</i> , Lam. . . . .	91, 600
<i>chionantha</i> , Gilg . . . . .	625	<i>monopodialis</i> , Stapf . . . . .	131	<i>bispinata</i> , Lewin . . . . .	91
<i>debilis</i> , Schinz . . . . .	552	<i>stenosepala</i> , Stapf . . . . .	602	<i>bispinosa</i> , Desf. . . . .	91
<i>gracilis</i> , Welw. . . . .	551	<i>subsessilis</i> , Stapf	132, 602	<i>candolleana</i> , Jaub.	
<i>grandis</i> , E. Mey. . . . .	553	<i>Calocramer</i> . . . . .	128	& Spach . . . . .	89
<i>mechowiana</i> , Vatke . . . . .	553	<i>Preussii</i> , K. Schum. . . . .	128	<i>Carandas</i> , Lour. . . . .	92
<i>oligantha</i> , Gilg . . . . .	552	<i>Calotropis</i> . . . . .	294	<i>cornifolia</i> , Jaub. &	
<i>platyptera</i> , Baker . . . . .	552	<i>busseana</i> , K. Schum. . . . .	615	Spach . . . . .	89
<i>primulæflora</i> , Schinz . . . . .	553	<i>heterophylla</i> , Decne. . . . .	294	<i>dulcis</i> , Sch. & Thonn. . . . .	89
<i>pumila</i> , Baker . . . . .	552	<i>procera</i> , Ait. . . . .	294	<i>edulis</i> , Engl. . . . .	92
<i>Teuszii</i> , Schinz . . . . .	554	<i>Canscora</i> . . . . .	557	<i>edulis</i> , Vahl . . . . .	89
<i>zambesiaca</i> , Baker . . . . .	552	<i>decussata</i> , Roem. &		var. <i>major</i> , Stapf . . . . .	90
<i>Boucerosia</i> . . . . .	478	Sch. . . . .	557	var. <i>tomentosa</i> ,	
<i>acutangula</i> , Decne. . . . .	483	<i>diffusa</i> , R. Br. . . . .	558	<i>Stapf</i> . . . . .	90
<i>cylindrica</i> , Brongu. . . . .	476	<i>Kirkii</i> , N. E. Br. . . . .	558	<i>erythrocarpa</i> , DC. . . . .	91
<i>decaisneana</i> , Lem. . . . .	488	<i>ramosissima</i> , Baker . . . . .	558	<i>ferox</i> , DC. . . . .	91
<i>russeliana</i> , Courb. . . . .	481	<i>tetragona</i> , Schinz . . . . .	557	<i>hematocarpa</i> , DC. . . . .	91
<i>tombuctuensis</i> , Chev. . . . .	622	<i>Caralluma</i> . . . . .	477	<i>Mepte</i> , Hochst. . . . .	93
<i>Brachystelma</i> . . . . .	466	<i>acutangula</i> , N. E. Br. . . . .	483	<i>myrtoides</i> , Desf. . . . .	91
<i>Bingeri</i> , A. Chev. . . . .	469	<i>adscendens</i> , R. Br. . . . .	488	<i>oblongifolia</i> , Hochst.	
<i>Buchanani</i> , N. E. Br. . . . .	467	<i>Ango</i> , N. E. Br. . . . .	488	91, 95	
<i>ellipticum</i> , A. Rich. . . . .	472	<i>atrosanguinea</i> ,		<i>pilosa</i> , Schinz . . . . .	90
<i>euphorbioides</i> , K.		N. E. Br. . . . .	485	<i>pubescens</i> , DC. . . . .	89
Schum. . . . .	469	<i>caudata</i> , N. E. Br. . . . .	485	<i>richardiana</i> , Jaub.	
<i>Johnstoni</i> , N. E. Br. . . . .	468	<i>decaisneana</i> ,		& Spach . . . . .	89
<i>keniense</i> , Schweinf. . . . .	471	N. E. Br. . . . .	488	<i>Schimperi</i> , Balf. f. . . . .	89
<i>lineare</i> , A. Rich. . . . .	470	<i>Edithæ</i> , N. E. Br. . . . .	481	<i>Schimperi</i> , A. DC. . . . .	93
<i>magicum</i> , N. E. Br. . . . .	468	<i>gracilipes</i> , K. Schum. . . . .	484	<i>sp.</i> , Collins . . . . .	86
<i>phyteumoides</i> , K.		<i>hirtiflora</i> , N. E. Br. . . . .	480	<i>sp.</i> , Franch. & Poiss. . . . .	93
Schum. . . . .	469	<i>huillensis</i> , Hiern . . . . .	487	<i>sp. no. 3</i> , Oliv. . . . .	89
<i>plocamoides</i> , Oliv. . . . .	470	<i>lateritia</i> , N. E. Br. . . . .	486	<i>tetraptera</i> , Stapf . . . . .	91
<i>Schinzii</i> , N. E. Br. . . . .	471	<i>longidens</i> , N. E. Br. . . . .	483	<i>tomentosa</i> , A. Rich. . . . .	90
		<i>Lugardi</i> , N. E. Br. . . . .	487	<i>xylopicron</i> , Thouars . . . . .	92
				<i>Carpouinus</i> . . . . .	72
				<i>acida</i> , Sabine . . . . .	86

	Page		Page		Page
Carpodinus ( <i>continued</i> )		Carpodinus ( <i>continued</i> )		Ceropegia ( <i>continued</i> )	
<i>acida</i> , Schweinf. . . . .	51	Schlechteri, K.		<i>gymnopoda</i> ,	
Barteri, <i>Stapf</i> . . . . .	77	<i>Schum.</i> . . . .	75	Schlechter . . . . .	439
<i>calabarius</i> , <i>Stapf</i> . . . . .	42	subrepanda, K.		<i>hirsuta</i> , Hochst. . . . .	463
<i>camptoloba</i> , K.		<i>Schum.</i> . . . .	81	<i>humilis</i> , <i>N. E. Br.</i> . . . .	464
<i>Schum.</i> . . . .	85	<i>tenuifolia</i> , <i>Pierre</i> . . . . .	78	<i>infausta</i> , <i>N. E. Br.</i> . . . .	459
<i>chylorrhiza</i> , K.		<i>trichanthera</i> , <i>Pierre</i> . . . . .	82	Johnsoni, <i>N. E. Br.</i> . . . .	451
<i>Schum.</i> . . . .	58, 63, 593	<i>turbinata</i> , <i>Stapf</i> . . . . .	83, 599	Kerstingii, K.	
<i>congolensis</i> , <i>Stapf</i> . . . . .	76	<i>umbellata</i> , K.		<i>Schum.</i> . . . .	622
<i>cymulosa</i> , <i>Stapf</i> . . . . .	70	<i>Schum.</i> . . . .	103	<i>kroboensis</i> , <i>N. E. Br.</i> . . . .	440
<i>decipiens</i> , <i>Pierre</i> . . . . .	75	<i>uniflora</i> , <i>Stapf</i> . . . . .	75	<i>kwebensis</i> , <i>N. E. Br.</i> . . . .	456
<i>dulcis</i> , <i>Sabine</i> . . . . .	76, 598	<i>violacea</i> , <i>K. Schum.</i> . . . .	80	<i>leucotenaria</i> , K.	
<i>eetveldeana</i> , <i>De</i>		<i>watsonianus</i> ,		<i>Schum.</i> . . . .	451
<i>Wild.</i> . . . .	597	<i>Vogtherr</i> . . . . .	34	<i>loranthiflora</i> , K.	
<i>exserens</i> , K. <i>Schum.</i> . . . .	69	<i>Carvalhoa</i> . . . . .	133	<i>Schum.</i> . . . .	441
<i>flava</i> , <i>Pierre</i> . . . . .	78	<i>campanulata</i> , K.		<i>Lugardæ</i> , <i>N. E. Br.</i> . . . .	455
<i>flavidiflora</i> , K.		<i>Schum.</i> . . . .	134	<i>medoensis</i> , <i>N. E. Br.</i> . . . .	460
<i>Schum.</i> . . . .	71	<i>macrophylla</i> , K.		<i>Meyeri, Decne.</i> . . . .	454
<i>foretiana</i> , <i>Pierre</i> . . . . .	87	<i>Schum.</i> . . . .	134	<i>Meyeri-Johannis</i> ,	
<i>friabilis</i> , <i>Pierre</i> . . . . .	81	<i>petiolata</i> , <i>K. Schum.</i> . . . .	602	<i>Engl.</i> . . . .	449
<i>fulva</i> , <i>Pierre</i> . . . . .	87	<i>Catharensis</i>		<i>mozambicensis</i> ,	
<i>Gentili, De Wild.</i>		<i>roseum</i> , <i>G. Don</i> . . . . .	119	<i>Schlechter</i> . . . . .	447
. . . . .	88, 600	<i>Centaurium</i>		<i>nigra</i> , <i>N. E. Br.</i> . . . .	440
<i>glabra</i> , <i>Pierre</i> . . . . .	81	<i>angustifolium flori-</i>		<i>nilotica</i> , <i>Kotschy</i> . . . . .	447
<i>globulifera</i> , K.		<i>bus, &amp;c.</i> , <i>Burm.</i> . . . .	563	<i>pachystelma</i> ,	
<i>Schum.</i> . . . .	598	<i>Ceropegia</i> . . . . .	435	<i>Schlechter</i> . . . . .	457
<i>gracilis</i> , <i>Stapf</i> . . . . .	84, 599	<i>abyssinica</i> , <i>Decne.</i> . . . .	462	<i>papillata</i> , <i>N. E. Br.</i> . . . .	452
<i>gracilis</i> , <i>Stapf</i> . . . . .	84	<i>abyssinica</i> , <i>A. Rich.</i> . . . .	441	<i>paricyma</i> , <i>N. E. Br.</i> . . . .	457
<i>griffoniana</i> , <i>Pierre</i> . . . . .	87	<i>affinis</i> , <i>Vatke</i> . . . . .	445	<i>Perrottetii</i> , <i>N. E. Br.</i> . . . .	448
<i>hirsuta</i> , <i>Hua</i> . . . . .	77, 598	<i>angusta</i> , <i>N. E. Br.</i> . . . .	458	<i>pubescens</i> , <i>E. Meyer</i> . . . . .	454
<i>iganda</i> , <i>Pierre</i> . . . . .	88	<i>angustiloba</i> , <i>De Wild.</i> . . . .	621	<i>pumila</i> , <i>N. E. Br.</i> . . . .	439
<i>incerta</i> , K. <i>Schum.</i> . . . .	70	<i>aristolochioides</i> ,		<i>purpurascens</i> , K.	
<i>Jumellei</i> , <i>Pierre</i> . . . . .	88	<i>Decne.</i> . . . .	464	<i>Schum.</i> . . . .	450
<i>klaineana</i> , <i>Pierre</i> . . . . .	79	<i>beccariana</i> , <i>Martelli</i> . . . . .	446	<i>pygmæa</i> , <i>Schinz</i> . . . . .	439
<i>Klainei</i> , <i>Pierre</i> . . . . .	79	<i>biddumana</i> , K.		<i>racemosa</i> , <i>N. E. Br.</i> . . . .	456
<i>lacteus</i> , K. <i>Schum.</i> . . . .	81	<i>Schum.</i> . . . .	445	<i>ringens</i> , <i>A. Rich.</i> . . . .	442
<i>lanceolata</i> , K.		<i>Bonafouxii</i> , K.		<i>ringens</i> , <i>Vatke</i> . . . . .	455
<i>Schum.</i> . . . .	85, 599	<i>Schum.</i> . . . .	620	<i>ruspoliana</i> , K.	
<i>landolphoides</i> ,		<i>botrys</i> , K. <i>Schum.</i> . . . .	621	<i>Schum.</i> . . . .	445
<i>Stapf</i> . . . . .	80	<i>calcarata</i> , <i>N. E. Br.</i> . . . .	463	<i>scandens</i> , <i>N. E. Br.</i> . . . .	449
<i>laxiflora</i> , K. <i>Schum.</i> . . . .	70	<i>campanulata</i> , <i>G. Don</i> . . . . .	462	<i>setiflora</i> , <i>Schlechter</i> . . . . .	457
<i>leptantha</i> , K. <i>Schum.</i> . . . .	70	<i>convolvuloides</i> , <i>A.</i>		<i>sinuata</i> , <i>Decne.</i> . . . .	442
<i>leptantha</i> , <i>Stapf</i> . . . . .	82	<i>Rich.</i> . . . .	454	<i>sobolifera</i> , <i>N. E. Br.</i> . . . .	444
<i>leucantha</i> , K. <i>Schum.</i> . . . .	599	<i>debilis</i> , <i>N. E. Br.</i> . . . .	458	<i>stenantha</i> , K. <i>Schum.</i> . . . .	459
<i>ligustrifolia</i> , <i>Stapf</i>		<i>denticulata</i> , K.		<i>var. parvifolia</i> ,	
. . . . .	83, 599	<i>Schum.</i> . . . .	448	<i>N. E. Br.</i> . . . .	459
<i>var. angusta</i> , <i>De</i>		<i>dichroantha</i> , K.		<i>Stuedneri</i> , <i>Vatke</i> . . . . .	463
<i>Wild.</i> . . . .	599	<i>Schum.</i> . . . .	461	<i>stuedneriana</i> , K.	
<i>macrantha</i> , K.		<i>distincta</i> , <i>N. E. Br.</i> . . . .	443	<i>Schum.</i> . . . .	464
<i>Schum.</i> . . . .	85	<i>Ellenbeckii</i> , K.		<i>subaphylla</i> , K.	
<i>maxima</i> , K. <i>Schum.</i> . . . .	74	<i>Schum.</i> . . . .	621	<i>Schum.</i> . . . .	621
<i>myriantha</i> , K.		<i>filipendula</i> , K.		<i>subtruncata</i> ,	
<i>Schum.</i> . . . .	71	<i>Schum.</i> . . . .	462	<i>N. E. Br.</i> . . . .	444
<i>ocarpa</i> , <i>Stapf</i> . . . . .	598	<i>floribunda</i> , <i>N. E. Br.</i> . . . .	460	<i>tentaculata</i> ,	
<i>parviflora</i> , <i>Stapf</i> . . . . .	78	<i>fusiformis</i> , <i>N. E. Br.</i> . . . .	450	<i>N. E. Br.</i> . . . .	443
<i>parvifolius</i> , <i>Pierre</i> . . . . .	63	<i>gemmifera</i> , K.		<i>var. puberula</i> ,	
<i>pauciflora</i> , K.		<i>Schum.</i> . . . .	620	<i>Hiern</i> . . . . .	443
<i>Schum.</i> . . . .	78	<i>Giletii</i> , <i>De Wild. &amp;</i>		<i>umbraticola</i> , K.	
<i>rufinervis</i> , <i>Pierre</i> . . . . .	79	<i>Dur.</i> . . . .	452	<i>Schum.</i> . . . .	461

	Page		Page		Page
<i>Ceropegia (continued)</i>		<i>Clitandra (continued)</i>		<i>Cryptolepis (continued)</i>	
<i>Verdickii</i> , De Wild. . . . .	620	<i>parvifolia</i> , Stapf . . . . .	63	<i>Brazzai</i> , Baill. . . . .	248
<i>vignaldiana</i> , A. Rich. . . . .	463	<i>robustior</i> , K. Schum. . . . .	71	<i>Brazzai</i> , Henriq. . . . .	248
<i>vignaldiana</i> , Vatke . . . . .	464	Schweinfurthii,		<i>capensis</i> , K. Schum. . . . .	244
<i>volubilis</i> , N. E. Br. . . . .	446	<i>Stapf</i> . . . . .	68	<i>d-cidua</i> , N. E. Br. . . . .	243
<i>Cestrum</i>		<i>sclerophylla</i> , K.		<i>Elliotii</i> , Schlechter . . . . .	250
<i>oppositifolium</i> , Lam. . . . .	95	Schum. . . . .	67	<i>Hensii</i> , N. E. Br. . . . .	246
<i>venenatum</i> , Thunb. . . . .	95	<i>sp.</i> , Stapf . . . . .	68	<i>hypoglauca</i> , K.	
<i>Chironia</i> . . . . .	554	<i>Standtii</i> , Stapf . . . . .	67	Schum. . . . .	244
<i>angolensis</i> , Gilg . . . . .	556	<i>togolana</i> , Stapf . . . . .	64	<i>laxa</i> , Baill. . . . .	252
<i>baumiana</i> , Gilg . . . . .	626	<i>visciflua</i> , Hall. f. . . . .	67	<i>microphylla</i> , Baill. . . . .	245
<i>densiflora</i> , Scott-		<i>visciflua</i> , K. Schum.		<i>Monteiroa</i> , Oliv. . . . .	253
<i>Elliot</i> . . . . .	555	66, 596		<i>myrtifolia</i> ,	
<i>erythraeodes</i> , Hiern		<i>var. sclerophylla</i> ,		Schlechter . . . . .	248
555, 626		<i>Stapf</i> . . . . .	67	<i>nigritana</i> , N. E. Br. . . . .	251
<i>humilis</i> , Gilg . . . . .	555	<i>Codoneura</i>		<i>oblongifolia</i> ,	
<i>Krebsii</i> , Griseb. . . . .	554	<i>calophylla</i> , K. Schum. . . . .	206	Schlechter . . . . .	249
<i>laxiflora</i> , Baker . . . . .	556	<i>Coinochlamys</i> . . . . .	504	<i>obtusa</i> , N. E. Br. . . . .	246
<i>palustris</i> , Gilg . . . . .	627	<i>angolana</i> , S. Moore . . . . .	510	<i>producta</i> , N. E. Br.	
<i>purpurascens</i> , Rolfe . . . . .	555	<i>congokana</i> , Gilg . . . . .	509	247, 614	
<i>rubrocerulea</i> , Gilg . . . . .	556	<i>hirsuta</i> , T. Anders. . . . .	509	<i>sanguinolenta</i> ,	
<i>transvaalensis</i> , Gilg		<i>poegeana</i> , Gilg . . . . .	510	Schlechter . . . . .	245
555, 627		<i>Schweinfurthii</i> , Gilg . . . . .	510	<i>scandens</i> , Schlechter . . . . .	249
<i>Wilmsii</i> , Gilg . . . . .	555	<i>Conomitra</i>		<i>Sizenandi</i> , Rolfe . . . . .	248
<i>Chlorocodon</i> . . . . .	254	<i>linearis</i> , Fenzl . . . . .	291	<i>suffruticosa</i> , N. E. Br. . . . .	251
<i>ecornutus</i> , N. E. Br. . . . .	256	<i>Conopharyngia</i> . . . . .	139	<i>triangularis</i> , N. E. Br. . . . .	245
<i>Whyteii</i> , Hook. f. . . . .	255	<i>angolensis</i> , Stapf . . . . .	146	<i>Welwitschii</i> , Hiern	
<i>Chlorostelma</i>		<i>brachyantha</i> , Stapf. . . . .	148	248, 614	
<i>fritillarioides</i> , Welw. . . . .	327	<i>contorta</i> , Stapf . . . . .	142	<i>var. luteola</i> ,	
<i>Cleghornia</i> . . . . .	203	<i>crassa</i> , Stapf. . . . .	144, 603	Hiern . . . . .	249
<i>Clitandra</i> . . . . .	60	<i>Cumminsii</i> , Stapf . . . . .	145	<i>Welwitschii</i> ,	
<i>alba</i> , Stapf . . . . .	64	<i>durissima</i> , Stapf . . . . .	143	Schlechter . . . . .	251
<i>arnoldiana</i> , De Wild. . . . .	594	<i>elegans</i> , Stapf . . . . .	149	<i>Curroria</i> . . . . .	242
<i>Barteri</i> , Stapf . . . . .	66	<i>Holstii</i> , Stapf . . . . .	146	<i>decidua</i> , Planch. . . . .	243
<i>Buchanani</i> , Hall. f. . . . .	35	<i>Johnstonii</i> , Stapf . . . . .	147	<i>Cylindropsis</i> . . . . .	61
<i>cirrhosa</i> , Radlk. . . . .	67, 596	<i>Jollyana</i> , Stapf . . . . .	144	<i>parvifolia</i> , Pierre . . . . .	63
<i>cymulosa</i> , Benth. . . . .	65	<i>longiflora</i> , Stapf . . . . .	142, 603	<i>togolana</i> , Hall. f. . . . .	64
<i>flavidiflora</i> , Hall. f. . . . .	70	<i>pachysiphon</i> , Stapf. . . . .	145	<i>Cynanchum</i> . . . . .	390
<i>Gentili</i> , De Wild. . . . .	596	<i>penduliflora</i> , Stapf		<i>abyssinicum</i> , Decne. . . . .	392
<i>gracilis</i> , Hall. f. . . . .	85	149, 603		<i>var. tomentosum</i> ,	
<i>henriquesiana</i> , K.		<i>Smithii</i> , Stapf . . . . .	142	Oliv. . . . .	392
Schum. . . . .	62, 594	<i>stapfiana</i> , Stapf . . . . .	147	<i>acuminatum</i> , K.	
<i>kilimandjarica</i> ,		<i>stenosiphon</i> , Stapf . . . . .	147	Schum. . . . .	394
<i>Warb.</i> . . . . .	34	<i>Thonneri</i> , Stapf . . . . .	143	<i>Adalings</i> , K. Schum. . . . .	394
<i>laconriana</i> , De		<i>usambarensis</i> , Stapf . . . . .	148	<i>altiscandens</i> , K.	
<i>Wild.</i> . . . . .	596	<i>ventricosa</i> , Stapf . . . . .	149	Schum. . . . .	396
<i>landolphioides</i> ,		<i>Craterostigma</i>		<i>aphyllum</i> , Linn. . . . .	384
Hall. f. . . . .	80	<i>Skinzii</i> , K. Schum. . . . .	471	<i>Argel</i> , Delile . . . . .	403
<i>laxiflora</i> , Hall. f. . . . .	69	<i>Crioceras</i> . . . . .	128	<i>bicolor</i> , Andr. . . . .	388
<i>leptantha</i> , Hall. f. . . . .	70	<i>dipladeniiflora</i> , K.		<i>brevidens</i> , N. E. Br. . . . .	396
<i>macrantha</i> , Hall. f. . . . .	85	Schum. . . . .	129	<i>var. zambesiacum</i> ,	
<i>Mannii</i> , Stapf . . . . .	69	<i>longiflora</i> , Pierre . . . . .	129	N. E. Br. . . . .	396
<i>membranacea</i> , Stapf . . . . .	597	<i>Cryptolepis</i> . . . . .	242	<i>clavidens</i> , N. E. Br. . . . .	397
<i>myriantha</i> , K.		<i>angolensis</i> , Welw. . . . .	249	<i>complexum</i> , N. E. Br. . . . .	393
Schum. . . . .	71	<i>apiculata</i> , K. Schum. . . . .	244	<i>cefoliascens</i> , K.	
<i>nitida</i> , Stapf . . . . .	595	<i>Barteri</i> , K. Schum. . . . .	252	Schum. . . . .	400
<i>Nzunde</i> , De Wild. . . . .	595	<i>Barteri</i> , K. Schum. . . . .	245	<i>dentatum</i> , K. Schum. . . . .	401
<i>orientalis</i> , K. Schum.		<i>Baumii</i> , N. E. Br.		<i>Dewevrei</i> , De Wild	
65, 594		247, 614		& Dur. . . . .	400

	Page		Page		Page
<i>Cynanchum (continued)</i>		<i>Cynoctonum</i>		<i>Dregea (continued)</i>	
<i>echinatum</i> , Thunb. . . . .	388	<i>acuminatum</i> , Benth. . . . .	394	<i>rubicunda</i> , Hiern . . . . .	421
<i>extensum</i> , Jacq. . . . .	388	<i>Dæmia</i> . . . . .	385	<i>rubicunda</i> , K. Schum. . . . .	422
<i>fraternum</i> , <i>N. E. Br.</i> . . . .	395	<i>æthiopica</i> , Decne. . . . .	388	Duvalia . . . . .	502
<i>hastatum</i> , Pers. . . . .	431	<i>angolensis</i> , Decne. . . . .	388	<i>dentata</i> , <i>N. E. Br.</i> . . . .	502
<i>hastifolium</i> , <i>N. E. Br.</i> . . . .	397	<i>barbata</i> , Klotzsch . . . . .	388	<i>transvaalensis</i> , Schlechter . . . . .	503
<i>hastifolium</i> , K. Schum. . . . .	397	<i>barbata</i> , Schlechter . . . . .	388		
heteromorphum, <i>Vatke</i> . . . . .	401	<i>bicolor</i> , Sweet . . . . .	388	<i>Echinopsis</i> . . . . .	474
<i>heterophyllum</i> , Delile . . . . .	432	<i>cordata</i> , <i>R. Br.</i> . . . . .	386	<i>cereiformis</i> , <i>Hook. f.</i> . . . .	475, 622
<i>Holstii</i> , K. Schum. . . . .	392	<i>cordifolia</i> , K. Schum. . . . .	388	var. <i>brunnea</i> , <i>Berger</i> . . . . .	475
<i>lanceolatum</i> , Poir. . . . .	431	<i>extensa</i> , <i>R. Br.</i> . . . . .	387	var. <i>obscura</i> , <i>Berger</i> . . . . .	475
<i>lanceifolium</i> , Sch. & Thonn. . . . .	431	<i>garipeensis</i> , Engl. . . . .	387	<i>cylindrica</i> , K. Schum. . . . .	477
<i>longipes</i> , <i>N. E. Br.</i> . . . .	398	<i>garipeensis</i> , <i>E. Meyer</i> . . . . .	387	<i>dammanniana</i> , K. Schum. . . . .	476
<i>Mannii</i> , <i>N. E. Br.</i> . . . .	394	<i>guineensis</i> , G. Don . . . . .	388	<i>dammanniana</i> , Schweinf. . . . .	475
<i>nensense</i> , Schweinf. . . . .	397	<i>incana</i> , Decne. . . . .	386	var. <i>brunnea</i> , <i>Dammann</i> . . . . .	475
<i>microstegium</i> , K. Schum. . . . .	402	<i>scandens</i> , G. Don . . . . .	388	<i>dammanniana</i> , <i>Sprenger</i> . . . . .	475
<i>minutiflorum</i> , K. Schum. . . . .	396	<i>tomentosa</i> , Pomel . . . . .	386	<i>nubica</i> , <i>N. E. Br.</i> . . . .	475
<i>mossambicense</i> , Schlechter . . . . .	393	<i>Decabelone</i>		<i>somalensis</i> , <i>N. E. Br.</i> . . . .	477
<i>mossambicense</i> , K. Schum. . . . .	392	<i>Barklyi</i> , Dyer . . . . .	494	<i>tessellata</i> , K. Schum. . . . .	475, 622
<i>obscurum</i> , K. Schum. . . . .	393	<i>elegans</i> , Decne. . . . .	494	<i>Virchowii</i> , K. Schum. . . . .	476
<i>oleaeifolium</i> , Nectoux . . . . .	403	<i>grandiflora</i> , K. Schum. . . . .	494		
<i>pendulum</i> , Poir. . . . .	388	<i>Dekindtia</i> . . . . .	588	<i>Echites</i>	
<i>pleianthum</i> , K. Schum. . . . .	401	<i>africana</i> , <i>Gilg</i> . . . . .	588	<i>guineensis</i> , Thonn. . . . .	225
<i>polyanthum</i> , K. Schum. . . . .	393	<i>Desmidorchis</i>		<i>paniculata</i> , Thonn. . . . .	225
<i>præcox</i> , Schlechter . . . . .	399	<i>acutangula</i> , Decne. . . . .	483	<i>Ectadiopsis</i> . . . . .	242
<i>pyrotechnicum</i> , Forsk. . . . .	433	<i>retrospiciens</i> , Ehrenb. . . . .	481	<i>acurifolia</i> , Benth. . . . .	250
<i>sarcostemmatoides</i> , K. Schum. . . . .	399	<i>Dictyopheba</i>		<i>Büttneri</i> , K. Schum. . . . .	252
<i>sarcostemmoides</i> , K. Schum. . . . .	400	<i>lucida</i> , Pierre . . . . .	59	<i>lanceolata</i> , Baill. . . . .	248
<i>scabrum</i> , Sch. & Thonn. . . . .	431	<i>Diplorhynchus</i> . . . . .	105	<i>myrtifolia</i> , Baill. . . . .	248
<i>Schimperi</i> , Hochst. . . . .	419	<i>angolensis</i> , Britten . . . . .	106	<i>nigritana</i> , Benth. . . . .	251
<i>schistoglossum</i> , Schl. Schlechter . . . . .	390	<i>angolensis</i> , Büttner . . . . .	106, 600	var. <i>congesta</i> , K. Schum. . . . .	251
<i>senegalense</i> , Sieb. . . . .	414	<i>angustifolia</i> , <i>Stapf</i> . . . . .	107	<i>nigritiana</i> , K. Schum. . . . .	251
<i>somaliense</i> , <i>N. E. Br.</i> . . . .	398, 618	<i>mossambicensis</i> , Benth. . . . .	107, 600	<i>oblongifolia</i> , Benth. . . . .	250
<i>subvulubile</i> , Sch. & Thonn. . . . .	414	<i>Poggei</i> , K. Schum. . . . .	106	<i>scandens</i> , K. Schum. . . . .	249
<i>trifurcatum</i> , Schlechter . . . . .	618	<i>psilopus</i> , <i>Welw.</i> . . . .	106	<i>scandens</i> , De Wild. . . . .	614
<i>vagum</i> , <i>N. E. Br.</i> . . . .	396	<i>Welwitschii</i> , <i>Rolfe</i> . . . . .	105, 600	<i>suffruticosa</i> , K. Schum. . . . .	252
<i>validum</i> , <i>N. E. Br.</i> . . . .	398	<i>Welwitschii</i> , K. Schum. . . . .	600	<i>Welwitschii</i> , Baill. . . . .	248
<i>viminale</i> , Linn. . . . .	384	<i>Diplostigma</i> . . . . .	389	<i>Welwitschii</i> , Britt. . . . .	251
<i>Welwitschii</i> , Schl. & Rend. . . . .	393	<i>canescens</i> , K. Schum. . . . .	389		
		<i>Djeratonia</i>		<i>Ectadium</i>	
		<i>sp.</i> , Pierre . . . . .	78	<i>oblongifolium</i> , Meisn. . . . .	250
		<i>Dobera</i> . . . . .	21		
		<i>coriacea</i> , A. DC. . . . .	22	<i>Ectinocladus</i>	
		<i>glabra</i> , A. DC. . . . .	21	<i>Benthami</i> , Baill. . . . .	199
		<i>loranthifolia</i> , Warb. . . . .	22	<i>Edithcolea</i> . . . . .	492
		<i>Roxburghii</i> , <i>Planch.</i> . . . .	21	<i>grandis</i> , <i>N. E. Br.</i> . . . .	492
		<i>Dregea</i> . . . . .	417	<i>Enicostema</i> . . . . .	562
		<i>abyssinica</i> , K. Schum. . . . .	421		
		<i>africana</i> , Martelli . . . . .	421		
		<i>floribunda</i> , <i>E. Meyer</i> . . . . .	422		
		<i>macrantha</i> , Klotzsch . . . . .	420		

	Page		Page		Page
<i>Enicostema</i> (continued)		<i>Gabunia</i> (continued)		<i>Gomphocarpus</i> (con-	
<i>latiloba</i> , N. E. Br. . . . .	564	<i>Gentili</i> , De Wild. . . . .	602	<i>tinued</i> )	
<i>littorale</i> , Bl. . . . .	563	<i>glandulosa</i> , Stapf	138, 602	var. <i>purpureus</i> ,	
<i>verticillare</i> , Baill. . . . .	563	<i>latifolia</i> , Stapf . . . . .	137	Schweinf. . . . .	330
<i>verticillatum</i> , Engl. . . . .	563	<i>longiflora</i> , Stapf. . . . .	138	var. <i>tomentosa</i> ,	
<i>verticillatum</i> , Gilg . . . . .	564	<i>psorocarpa</i> , Pierre . . . . .	137	K. Schum. . . . .	332
<i>Epitaberna</i> . . . . .	588	<i>Gaertnera</i> . . . . .	542	var., Vathe . . . . .	333
<i>myrmæcia</i> , K. Schum. . . . .	588	<i>Dinklagei</i> , K. Schum. . . . .	543	<i>glaberrimus</i> , Oliv. . . . .	298
<i>Ervatamia</i> . . . . .	126	<i>morindoides</i> , Baker . . . . .	543	<i>glaucophyllus</i> ,	
<i>coronaria</i> , Stapf . . . . .	127	<i>occidentalis</i> , Baill. . . . .	544	Schlechter. . . . .	321
<i>Erythraea</i> . . . . .	556	<i>paniculata</i> , Benth. . . . .	543	<i>Grantii</i> , Schlechter . . . . .	370
<i>pulchella</i> , Hornem. . . . .	557	<i>rhodantha</i> , Baker . . . . .	543	<i>lanatus</i> , E. Meyer . . . . .	336
<i>ramosissima</i> , Pers. . . . .	556	<i>salicifolia</i> , C. H.	543	<i>lineolatus</i> , Decne. . . . .	323
<i>Euphorbia</i>		<i>Wright</i> . . . . .	543	<i>lisianthoides</i> , Decne. . . . .	327
<i>pendula</i> , Link . . . . .	385	<i>Gentiana</i>		<i>longissimus</i> , K.	
<i>vinimalis</i> , Linn. . . . .	384	<i>verticillaris</i> , Retz. . . . .	563	Schum. . . . .	339
<i>Exacum</i> . . . . .	545	<i>verticillata</i> , Linn. f. . . . .	563	<i>McKenii</i> , Harv. . . . .	277
<i>quinquenervium</i> ,		<i>verticillata</i> , Linn. . . . .	564	<i>nutans</i> , Klotzsch . . . . .	352
<i>Griseb.</i> . . . .	546	GENTIANEÆ . . . . .	544	<i>paluster</i> , K. Schum. . . . .	350
<i>zombensis</i> , N. E. Br. . . . .	546	<i>Glossonema</i> . . . . .	290	<i>palustris</i> , K. Schum. . . . .	350
<i>Ecochenium</i>		<i>affine</i> , N. E. Br. . . . .	292	<i>pauciflorus</i> , Klotzsch . . . . .	345
<i>debile</i> , Welw. . . . .	552	<i>boveanum</i> , Decne. . . . .	292	<i>pedunculatus</i> , Decne. . . . .	341
<i>grande</i> , Griseb. . . . .	553	<i>boveanum</i> , Kotschy . . . . .	292	<i>physocarpus</i> , E.	
<i>primulæflorum</i> ,		<i>Elliotii</i> , Schlechter . . . . .	293	Meyer . . . . .	320
Welw. . . . .	553	<i>Erlangeri</i> , K. Schum. . . . .	615	<i>physocarpus</i> , K.	
<i>Faroa</i> . . . . .	565	<i>lineare</i> , Decne. . . . .	291	Schum. . . . .	328
<i>affinis</i> , De Wild. . . . .	567	<i>nubicum</i> , Decne. . . . .	291	<i>pulchellus</i> , Decne. . . . .	347
<i>amara</i> , Gilg . . . . .	567	<i>Revoili</i> , Franch. . . . .	292, 614	<i>purpurascens</i> , A.	
<i>axillaris</i> , Baker . . . . .	566	<i>Revoili</i> , K. Schum. . . . .	614	Rich. . . . .	350
<i>Bohmii</i> , Engl. . . . .	568	<i>Rivæi</i> , K. Schum. . . . .	614	<i>rhinophyllus</i> , K.	
<i>Bushmani</i> , Baker . . . . .	565	<i>Thruppii</i> , Oliv. . . . .	293	Schum. . . . .	377
<i>gomphrenoides</i> , Engl. . . . .	567	<i>Glossostelma</i>		<i>robustus</i> , A. Rich. . . . .	324
<i>graveclens</i> , Baker . . . . .	567	<i>angolense</i> , Schlechter . . . . .	311	<i>roseus</i> , K. Schum. . . . .	348
<i>involutrata</i> , Knobl. . . . .	566	<i>Gomphocarpus</i> . . . . .	313	<i>rubicundus</i> , K.	
<i>nyasica</i> , N. E. Br. . . . .	568	<i>abyssinicus</i> , Hochst. . . . .	333	Schum. . . . .	322
<i>pusilla</i> , Baker . . . . .	568	<i>amænus</i> , K. Schum. . . . .	346	<i>scaber</i> , Harv. . . . .	377
<i>salutaris</i> , Welw. . . . .	569	<i>aureus</i> , Schlechter . . . . .	345	<i>scaber</i> , K. Schum. . . . .	377
<i>Schweinfurthii</i> ,		<i>bisacculatus</i> , Oliv. . . . .	323	<i>semiamplexens</i> , K.	
Engl. & Knobl. . . . .	568	<i>Buchwaldii</i> , Schl. &		Schum. . . . .	321
<i>Fockea</i> . . . . .	427	K. Sch. . . . .	617	<i>semilunatus</i> , A.	
<i>Lugardi</i> , N. E. Br. . . . .	429	<i>chironioides</i> , Decne. . . . .	327	Rich. . . . .	328
<i>multiflora</i> , De Wild. . . . .	620	<i>chlorojodina</i> , K.		<i>sessilis</i> , Decne. . . . .	309
<i>multiflora</i> , Hiern . . . . .	429	Schum. . . . .	367	<i>setosus</i> , A. Rich. . . . .	333
<i>multiflora</i> , K. Schum.		<i>concolor</i> , Decne. . . . .	378	<i>spathulata</i> ,	
428, 620		<i>cornutus</i> , Decne. . . . .	350	Schlechter . . . . .	313
<i>Schinzii</i> , N. E. Br. . . . .	428	<i>crinitus</i> , Bert. . . . .	352	<i>sphacelatus</i> , K.	
<i>sessiliflora</i> , Schlechter . . . . .	429	<i>crinatus</i> , Decne. . . . .	350	Schum. . . . .	340
<i>Funtumia</i> . . . . .	189	<i>dependens</i> , K. Schum. . . . .	352	<i>stenophylla</i> , Oliv. . . . .	335
<i>africana</i> , Stapf . . . . .	190, 609	<i>drepanostephanus</i> ,		<i>stenophyllus</i> , Oliv. . . . .	338
<i>elastica</i> , Stapf . . . . .	191, 609	Hochst. . . . .	324	<i>stolzianus</i> , K.	
<i>latifolia</i> , Stapf . . . . .	192, 609	<i>filiformis</i> , D. Dietr. . . . .	336	Schum. . . . .	618
<i>Gabunia</i> . . . . .	136	<i>foliosus</i> , K. Schum. . . . .	349	<i>tomentosus</i> , Burch. . . . .	336
<i>brachypoda</i> , Stapf . . . . .	137	<i>fruticosus</i> , R. Br. . . . .	330	<i>trachyphyllus</i> , K.	
<i>crispiflora</i> , Stapf . . . . .	139	var. <i>angustissi-</i>		Schum. . . . .	377
<i>eglandulosa</i> , Stapf . . . . .	138	<i>mus</i> , Engl. . . . .	333	<i>verticillatus</i> , Turcz. . . . .	333
var. <i>macrocalyx</i> ,		var. <i>purpureus</i> ,		<i>Gomphostigma</i> . . . . .	511
<i>Stapf.</i> . . . .	139	Martelli . . . . .	333	<i>scoparioides</i> , Turcz. . . . .	511

	Page		Page		Page
<i>Gongronema</i> (continued)		<i>Hoodia</i> . . . . .	490	<i>Jasminonerieum</i> (con-	
<i>Welwitschii</i> , K.		<i>Currori</i> , Decne. . . . .	491	tinued)	
Schum. . . . .	412	<i>Gordonii</i> , Sw. . . . .	491	<i>bispinosum</i> , O. Ktze. . . . .	91
<i>Guerkea</i>		<i>Lugardi</i> , N. E. Br. . . . .	491	<i>dulce</i> , O. Ktze. . . . .	90
<i>conyolana</i> , De Wild.		<i>parviflora</i> , N. E. Br. . . . .	491	<i>edule</i> , O. Ktze. . . . .	90
& Dur. . . . .	209	<i>Hoya</i>		<i>erythrocarpum</i> ,	
<i>floribunda</i> , K.		<i>africana</i> , Decne. . . . .	421	O. Ktze. . . . .	91
Schum. . . . .	216	<i>Huernia</i> . . . . .	495	<i>ferox</i> , O. Ktze. . . . .	91
<i>gracillima</i> , K.		<i>aspera</i> , N. E. Br. . . . .	496	<i>hematocarpum</i> ,	
Schum. . . . .	216	<i>concinna</i> , N. E. Br. . . . .	497, 622	O. Ktze. . . . .	91
<i>schumanniana</i> , De		Engleri, Terracc. . . . .	499	<i>oblongifolium</i> ,	
Wild. & Dur. 217, 611		<i>macrocarpa</i> , N. E. Br. . . . .	498	O. Ktze. . . . .	91
<i>uropetala</i> , K. Schum. . . . .	214	<i>macrocarpa</i> ,		<i>pubescens</i> , O. Ktze. . . . .	90
<i>Gymnema</i> . . . . .	413	Dammanu . . . . .	497	<i>tomentosum</i> , O. Ktze. . . . .	90
<i>crenatum</i> , Klotzsch . . . . .	414	<i>macrocarpa</i> ,		<i>Jasminum</i> . . . . .	1
<i>fruticulosum</i> ,		Schweinf. . . . .	497, 622	<i>abyssiunicum</i> , f. Br. . . . .	11
Hochst. . . . .	414	<i>macrocarpa</i> , Taub. . . . .	497	<i>Afu</i> , Gilg . . . . .	7
<i>geminatum</i> , Hiern . . . . .	414	<i>oculata</i> , Hook. f. . . . .	496	<i>angolense</i> , Welw. . . . .	8
<i>humile</i> , Decne. . . . .	414	<i>Penzigii</i> , N. E. Br. . . . .	497, 622	<i>angulare</i> , Gilg . . . . .	588
<i>longepedunculata</i> ,		<i>similis</i> , N. E. Br. . . . .	495	<i>auriculatum</i> , DC. . . . .	10
Schweinf. . . . .	404	<i>somalica</i> , N. E. Br. . . . .	497	<i>Bakeri</i> , Scott-Elliott . . . . .	12
<i>macrocarpum</i> , A.		<i>Sprengeri</i> , Schweinf. . . . .	484	<i>brachyscyphum</i> ,	
Rick. . . . .	419	<i>Tavaresii</i> , Welw. . . . .	494	<i>Baker</i> . . . . .	5
<i>melananthum</i> , K.		<i>Huerniopsis</i> . . . . .	499	<i>brevipes</i> , Baker . . . . .	5
Schum. . . . .	619	<i>decipiens</i> , N. E. Br. . . . .	499	<i>bukobense</i> , Gilg . . . . .	9
<i>M'Kenii</i> , Harv. . . . .	414	<i>Hunteria</i> . . . . .	104	<i>dichotomum</i> , Vahl . . . . .	9
<i>nitidum</i> , Benth. . . . .	415	<i>africana</i> , K. Schum. . . . .	104	<i>dicranolepidiforme</i> ,	
<i>parvifolium</i> , Oliv. . . . .	285	<i>ambiens</i> , K. Schum. . . . .	100	<i>Gilg</i> . . . . .	8
<i>rufescens</i> , Decne. . . . .	414	<i>Ballayi</i> , Hua . . . . .	600	<i>dshericum</i> , Gilg . . . . .	3
<i>subvolubile</i> , Decne. . . . .	414	<i>breviloba</i> , Hall. f. . . . .	102	<i>Eminii</i> , Gilg . . . . .	6
<i>subvolubile</i> , Hook. . . . .	414	<i>camerunensis</i> , Hall. f. . . . .	102	<i>Engleri</i> , Gilg . . . . .	3
<i>sylvestre</i> , R. Br. . . . .	413	<i>pleiocarpa</i> , Hall. f. . . . .	99	<i>floribundum</i> , R. Br. . . . .	13
<i>Gymnolæma</i> . . . . .	241	<i>pycnantha</i> , Hall. f. . . . .	100, 101, 103	<i>gardeniodorum</i> , Gilg . . . . .	8
<i>Newii</i> , Benth. . . . .	241	<i>pycnantha</i> , K.		<i>getzeanum</i> , Gilg . . . . .	12
<i>Gymolaima</i>		Schum. . . . .	99	<i>gratissimum</i> , Desfiers . . . . .	10
<i>Newii</i> , K. Schum. . . . .	241	<i>rostrata</i> , Hall. f. . . . .	98	<i>guineense</i> , G. Don . . . . .	9
<i>Heinsia</i> . . . . .	588	<i>sp.</i> , Hall. f. . . . .	97	<i>Hildebrandtii</i> ,	
<i>Hippion</i>		<i>umbellata</i> , Hall. f. . . . .	104	<i>Knobl</i> . . . . .	11
<i>hyssopifolium</i> ,		<i>Iboga</i>		<i>Holstii</i> , Gilg . . . . .	11
Spreng. . . . .	563	<i>vateriana</i> , J. Br. &		<i>Kirkii</i> , Baker . . . . .	6
<i>verticillatum</i> , O. Kze. . . . .	563	K. Schum. . . . .	125	<i>longipes</i> , Baker . . . . .	7
<i>Helalafia</i> . . . . .	201	<i>Ichnocarpus</i>		<i>mauritanium</i> , Bojer . . . . .	10, 588
<i>multiflora</i> , Stapf . . . . .	201, 611	<i>Afelii</i> , Roem. &		<i>megalosiphon</i> , Gilg . . . . .	10
<i>Holarrhena</i> . . . . .	161	Sch. . . . .	281	<i>Meyeri-Johannis</i> ,	
<i>africana</i> , A. DC. . . . .	164	<i>Isonema</i> . . . . .	187	<i>Engl</i> . . . . .	5
<i>africana</i> , Wulfsb. . . . .	165	<i>Buchholzii</i> , Engl. . . . .	189	<i>microphyllum</i> , Baker . . . . .	4
<i>congolensis</i> , Stapf . . . . .	163	<i>infundibuliflorum</i> ,		<i>mossamedense</i> ,	
<i>febrifuga</i> , Klotzsch . . . . .	162, 604	<i>Stapf</i> . . . . .	188	<i>Hiern</i> . . . . .	12
var. <i>glabra</i> , Oliv. . . . .	163	<i>Smeathmanni</i> ,		<i>niloticum</i> , Gilg . . . . .	6
<i>Fischeri</i> , K. Schum. . . . .	163	<i>Roem. &amp; Sch.</i> . . . . .	188, 609	<i>noctiflorum</i> , Afz. . . . .	9
<i>floribunda</i> , Dur. &		<i>Jasminonerieum</i>		<i>obovatum</i> , Baker . . . . .	7
Sch. . . . .	164	<i>acuminatum</i> ,		var. <i>Welwitschii</i> ,	
<i>glabra</i> , Klotzsch . . . . .	163	O. Ktze. . . . .	91	<i>Hiern</i> . . . . .	7
<i>ovata</i> , A. DC. . . . .	163	<i>africanum</i> , O. Ktze. . . . .	90	<i>obtusifolium</i> , Baker . . . . .	4
<i>tettensis</i> , Klotzsch . . . . .	163			<i>officinale</i> , Linn. . . . .	13
<i>Wulfsbergii</i> , Stapf . . . . .	164, 604			<i>oleæcarpum</i> , Baker . . . . .	8

Page		Page		Page	
	<i>Jasminum</i> (continued)		<i>Landolphia</i> (continued)		<i>Landolphia</i> (continued)
10	<i>Pospischilii</i> , Gilg		var. <i>florida</i> , K.	54	<i>Michelinii</i> , Benth.
	<i>Preussii</i> , Engl. & Knobl. . . . . 9	39, 40	Schum. . . . .	40	<i>ochracea</i> , K. Schum.
4	<i>Schimperi</i> , Vatke		<i>comorensis</i> ,		var. <i>glabrata</i> ,
	<i>schroterianum</i> ,	50, 56	<i>Vogtherr</i> . . . . .	41	<i>Hall. f.</i> . . . . .
	<i>Schinz</i> . . . . . 12	34	<i>crassipes</i> , Radlk. . . . .	49	<i>owariensis</i> , Beauv.
3	<i>Schweinfurthii</i> , Gilg		<i>Dawei</i> , Stapf . . . . .	51	forma, Dyer . . . . .
3	<i>Smithii</i> , Baker		<i>Dewevrei</i> , Stapf . 52, 592		var. <i>parvifolia</i> ,
	<i>somaliense</i> , Baker . . . . . 11		<i>dondeensis</i> , Busse . . . . . 57	58	<i>Hall. f.</i> . . . . .
6	<i>stenodon</i> , Baker		<i>droogmansiana</i> ,		var. <i>rubiginosa</i> ,
4	<i>stenolobum</i> , Rolfe		<i>De Wild.</i> . . . . . 593	50	<i>Stapf.</i> . . . . .
	<i>Stendneri</i> , Schweinf.		<i>dubreucquiana</i> ,		var. <i>tomentella</i> ,
9	<i>ternifolium</i> , Baker		<i>De Wild.</i> . . . . . 593	51, 590	<i>Stapf.</i> . . . . .
5, 9	<i>ternum</i> , Knobl. . . . .		<i>elastica</i> , Vatke . . . . . 56	52	<i>owariensis</i> , Dewèvre
10	<i>tettense</i> , Klotzsch		<i>eminiana</i> , Hall. f. . . . . 41	45	<i>pachyphylla</i> , Stapf . . . . .
5	<i>tomentosum</i> , Knobl.		<i>ferruginea</i> , Stapf . . . . . 46	57	<i>parviflora</i> , Moller . . . . .
	<i>Walleri</i> , Baker . . . . . 9		<i>florida</i> , Benth. . . . . 38, 590		<i>parvifolia</i> , K. Schum.
	<i>Welwitschii</i> , Baker . . . . . 7		var. <i>senegalensis</i> ,	57, 592	
	<i>zanzibariense</i> , Bojer . . . . . 10		<i>Hall. f.</i> . . . . . 37	47, 590	<i>petersiana</i> , Dyer . . . . .
127	<i>zeylanicum</i> , J. Burm.		var. <i>leiantha</i> , Oliv. . . . . 39		var. <i>angustifolia</i> ,
			<i>florida</i> , Bot. Mag. . . . . 39	48	<i>Stapf.</i> . . . . .
			<i>Foreti</i> , Jum. . . . . 58, 594		var. <i>crassifolia</i> ,
			<i>Gentilii</i> , De Wild. . . . . 50, 51, 590	48	<i>Dewèvre</i> . . . . .
544	<i>Kalanchoë</i> . . . . .		<i>henriquesiana</i> ,	44	var. <i>crassifolia</i> ,
295	<i>Kanahia</i> . . . . .		<i>Hall. f.</i> . . . . . 63, 594	44	<i>K. Schum.</i> . . . . .
	<i>consimilis</i> , N. E. Br. . . . . 298		<i>Heudelotii</i> , A. DC. . . . . 53, 592	44	var. <i>mucronata</i> ,
	<i>Delilii</i> , Decne. . . . . 296		var. <i>Djenge</i> , Stapf . . . . . 55	44	<i>Dewèvre</i> . . . . .
	<i>Forskali</i> , Decne. . . . . 298		var. <i>tomentosa</i> ,	48	var. <i>rotundifolia</i> ,
	<i>glaberrima</i> , N. E. Br. . . . . 297		<i>Hua</i> . . . . . 54	48	<i>Dewèvre</i> . . . . .
	<i>laniflora</i> , R. Br. . . . . 296		<i>Heudelotii</i> ,	48	var. <i>schweinfur-</i>
			<i>Schlechter</i> . . . . . 50	48	<i>thiana</i> , Stapf . . . . .
			<i>Heudelotii</i> , K. . . . . 51	49	var. <i>Tubeufii</i> ,
			<i>Schum.</i> . . . . . 53, 592	49	<i>Busse</i> . . . . .
			<i>humilis</i> , K. Schum. . . . . 58, 592	44	<i>petersiana</i> , Jum. . . . .
			<i>kilimandjarica</i> , Stapf . . . . . 34	34	<i>petersiana</i> , K. . . . .
			<i>Kirkii</i> , Dyer . . . . . 55, 592	591	<i>Schum.</i> . . . . .
			var. <i>delagoensis</i> ,	56	<i>Pierrei</i> , Hua . . . . .
			<i>Dewèvre</i> . . . . . 56	56	<i>polyantha</i> ,
			var. <i>dondeensis</i> ,	56	K. Schum. . . . .
			<i>Stapf.</i> . . . . . 56	71	<i>Preussii</i> , K. Schum. . . . .
			var. <i>parvifolia</i> ,	72	<i>pyramidata</i> , Pierre . . . . .
			<i>Hall. f.</i> . . . . . 57	60	<i>pyriformis</i> , Stapf . . . . .
			<i>Klainei</i> , Pierre . . . . . 51, 591	60	<i>reticulata</i> , Hall. f. . . . .
			<i>Laurentii</i> , De Wild. . . . . 30, 589	43	<i>robusta</i> , Stapf . . . . .
			var. <i>grandiflora</i> ,	590	<i>scandens</i> , Busse . . . . .
			<i>De Wild.</i> . . . . . 589	590	var. <i>petersiana</i> ,
			<i>Lecomtei</i> , Dewèvre . . . . . 42	590	<i>Busse</i> . . . . .
			<i>leonensis</i> , Stapf . . . . . 36	590	var. <i>rotundifolia</i> ,
			<i>lucida</i> , K. Schum. . . . . 59	590	<i>Busse</i> . . . . .
			var. <i>hispida</i> ,	43, 46	<i>Busse</i> . . . . .
			<i>Hall. f.</i> . . . . . 59, 594	48	var. <i>angustifolia</i> ,
			<i>Mannii</i> , Dewèvre . . . . . 71	48	<i>Hall. f.</i> . . . . .
			<i>Mannii</i> , De Wild & Dur. . . . . 43	44	var. <i>coriaceo</i> ,
			<i>Mannii</i> , Dyer . . . . . 52	44	<i>Hall. f.</i> . . . . .
				47	var. <i>ferruginea</i> ,
					<i>Hall. f.</i> . . . . .

Page	Page	Page
<i>Landolphia</i> (continued)	<i>Leptadenia</i> (continued)	<i>Marsdenia</i> (continued)
var. <i>genuina</i> , Hall. f. . . . . 44	<i>visciformis</i> , Vatke . 257	<i>angolensis</i> , N. E. Br. 423
var. <i>petersiana</i> , Hall. f. . . . . 48	<i>Leptocladus</i>	<i>bicoronata</i> , K. Schum. . . . . 417
var. <i>rigida</i> , Hall. f. 48	<i>Thomsoni</i> , Oliv. . . 505	<i>crinita</i> , Oliv. . . . . 418
var. <i>rotundifolia</i> , Hall. f. . . . . 48	<i>Leptopactia</i> . . . 260, 268	<i>efulensis</i> , N. E. Br. 423
var. <i>schweinfur-</i> <i>thiana</i> , Hall. f. 48	<i>Limnanthemum</i> . . . 583	<i>floribunda</i> , N. E. Br. 422
var. <i>stuhlman-</i> <i>niana</i> , Hall. f. 48	<i>abyssinicum</i> , N. E. Br. . . . . 584	<i>glabriflora</i> , Benth. . 424
<i>scandens</i> , <i>Didr.</i> 44, 590	<i>ecklonianum</i> , Griseb. 584	var. <i>orbicularis</i> , N. E. Br. . . . . 425
<i>senegalensis</i> , <i>Kotschy &amp; Peyr.</i> 36, 590	<i>forbesianum</i> , Griseb. 584	<i>latifolia</i> , Schlechter 425
var. <i>glabriflora</i> , <i>Hua</i> . . . . . 37	<i>indicum</i> , <i>Dur. &amp; De</i> <i>Wild.</i> . . . . . 587	<i>leonensis</i> , Benth. . . 424
<i>senensis</i> , K. Schum. 48	<i>Kirkii</i> , N. E. Br. . . 585	<i>profusa</i> , N. E. Br. . . 425
<i>sp.</i> , Benth. . . . . 37	<i>niloticum</i> , <i>Kotschy</i> <i>&amp; Peyr.</i> . . . . . 585	<i>profusa</i> , N. E. Br. . . 410
<i>sp.</i> , Collins . . . . . 56	<i>orbiculatum</i> , <i>Griseb.</i> 586	<i>racemosa</i> , K. Schum. 425
<i>sp.</i> , K. Schum. . . . . 71	<i>orbiculatum</i> , Griseb. 586	<i>rhynchoygyna</i> , K. Schum. . . . . 416
<i>Stolzii</i> , <i>Busse</i> . . . 592	<i>Rautaneni</i> , N. E. Br. 585	<i>rubicunda</i> , N. E. Br. 421
<i>Tayloris</i> , <i>Stapf</i> . . . 45	<i>sonegalense</i> , N. E. Br. 586	<i>Schimperi</i> , <i>Decne.</i> . 419
<i>Thollonii</i> , <i>Dewèvre</i> 58, 593	<i>thunbergianum</i> , <i>Griseb.</i> . . . . . 584	<i>spissa</i> , <i>S. Moore</i> . . . 420
<i>tomentosa</i> , <i>Dewèvre</i> 54, 56	<i>Whytei</i> , N. E. Br. . 585	<i>stelostigma</i> , K. Schum. . . . . 619
<i>ngandensis</i> , <i>Stapf</i> . 589	<i>Linociera</i> . . . . . 19	<i>Taylori</i> , <i>Schl. &amp;</i> <i>Rend.</i> . . . . . 422
<i>Traunii</i> , <i>Sadeb.</i> . . . 54	<i>angolensis</i> , <i>Baker</i> . . 20	<i>umbellifera</i> , K. Schum. . . . . 422
<i>Watsoni</i> , <i>Hort.</i> . . . 34	<i>congesta</i> , <i>Baker</i> . . 20	<i>zambesiaca</i> , <i>Schlechter</i> . . . . . 420
<i>watsoniana</i> , <i>Vogtherr</i> 33	<i>gilgiana</i> , <i>Volkens</i> . 19	<i>Mascarenhasia</i> . . . . 193
<i>Welwitschii</i> , <i>Dyer</i> . 44	<i>Johnsoni</i> , <i>Baker</i> . . 20	<i>caustica</i> , K. Schum. 194
<i>Lantana</i>	<i>Mannii</i> , <i>Solered.</i> . . 19	<i>elastica</i> , K. Schum. 194
<i>salvifolia</i> , <i>Linn.</i> . . 516	<i>nilotica</i> , Oliv. . . . . 19	<i>variegata</i> , <i>Britt. &amp;</i> <i>Rend.</i> . . . . . 193
<i>Lasiostelma</i>	<i>urophylla</i> , <i>Gilg</i> . . . 19	<i>Mayepea</i> . . . . . 19
<i>somalense</i> , <i>Schlechter</i> . . . . . 473	<i>Welwitschii</i> , <i>Baker</i> 20	<i>africana</i> , <i>Knobl.</i> . . 20
<i>Leptadenia</i> . . . . . 430	<i>Lochnera</i> . . . . . 118	<i>Mannii</i> , <i>Knobl.</i> . . . 19
<i>abyssinica</i> , <i>Decne.</i> . 432	<i>rosea</i> , <i>Reichb.</i> 118, 602	<i>nilotica</i> , <i>Knobl.</i> . . 20
<i>cordata</i> , <i>Hochst.</i> . . 431	LOGANIACEÆ . . . . . 503	<i>Welwitschii</i> , <i>Knobl.</i> 21
<i>Delilii</i> , <i>Decne.</i> . . . 432	<i>Lycium</i>	<i>Menyanthes</i>
<i>Forskalii</i> , <i>Decne.</i> . . 432	<i>cinereum</i> , <i>Thunb.</i> . 600	<i>indica</i> , <i>Thunb.</i> . . . 584
<i>gracilis</i> , <i>Decne.</i> . . 433	<i>cordatum</i> , <i>Mill.</i> . . 600	<i>indica</i> , var. $\beta$ , <i>Lam.</i> 586
<i>hastata</i> , <i>Vatke</i> . . . 431	<i>Macropelma</i>	<i>Meristostylus</i> . . . . 544
<i>hastatum</i> , <i>Decne.</i> . . 431	<i>angustifolium</i> , K. Schum. . . . . 241	<i>Microloma</i>
<i>heterophylla</i> , <i>Decne.</i> 431	<i>Malouetia</i> . . . . . 194	<i>pyrotechnicum</i> , Spreng. . . . . 433
<i>heterophylla</i> , <i>Decne.</i> 280, 383	<i>africana</i> , K. Schum. 195	<i>Microstephanus</i> . . . 288
<i>jacquemontiana</i> , <i>Decne.</i> . . . . . 433	<i>Heudelotii</i> , <i>A. DC.</i> 195, 609	<i>cernuus</i> , N. E. Br. 288
<i>lancifolia</i> , <i>Decne.</i> . 430	<i>sp.</i> , <i>De Wild.</i> . . . . 609	<i>Monetia</i>
var. <i>scabra</i> , <i>Decne.</i> 431	<i>Margaretta</i> . . . . . 372	<i>barlerioides</i> , L'Herit. 23
<i>pallida</i> , <i>Hochst.</i> . . 432	<i>Cornetii</i> , <i>Dewèvre</i> 376, 618	<i>Monobothrium</i>
<i>pyrotechnica</i> , <i>Decne.</i> 433	var. <i>pallida</i> , <i>De</i> <i>Wild.</i> . . . . . 618	<i>Schimperi</i> , <i>Hochst.</i> . 573
<i>schimperiana</i> , <i>Hochst.</i> . . . . . 432	<i>distincta</i> , N. E. Br. 371	<i>Monostemma</i>
<i>Spartium</i> , <i>Wight</i> . . . 432	<i>Holstii</i> , K. Schum. . 374	<i>aphyllum</i> , <i>Turcz.</i> . . 400
<i>visciformis</i> , <i>Vatke</i> . 433	<i>orbicularis</i> , N. E. Br. 375	<i>tetrapterum</i> , <i>Turcz.</i> 400
	<i>rosea</i> , <i>Britt.</i> . . . . 374	<i>Monothylacium</i> . . . 490
	<i>rosa</i> , <i>Oliv.</i> . . . . 373	<i>Morinda</i>
	<i>rosea</i> , <i>Oliv.</i> . . . . 375	<i>longiflora</i> , G. Don . 543
	<i>Whytei</i> , K. Schum. 374	<i>Mostuea</i> . . . . . 504
	<i>Marsdenia</i> . . . . . 417	<i>angolana</i> , <i>Hiern.</i> . . 510

Page		Page		Page
	<i>Mostuea</i> (continued)		<i>Nathusia</i> (continued)	
	<i>Batesii</i> , Baker . . . 506		<i>Holstii</i> , Engl. & Gilg . . . . . 17	
	<i>Brunonis</i> , <i>Dirr.</i> . . 505		<i>trichoclada</i> , O. Kze. 15	
	<i>Buchholzii</i> , <i>Engl.</i> . . 505		<i>Nerium</i>	
	<i>Camporum</i> , <i>Gilg.</i> . . 509		<i>coronarum</i> , Jacq. . . 127	
	<i>congolana</i> , <i>Baker.</i> . . 509		<i>divaricatum</i> , Linn. . . 127	
	<i>densiflora</i> , <i>Gilg.</i> . . 508		<i>scandens</i> , Thonn. . . 197	
	<i>Dinklagei</i> , <i>Gilg.</i> . . 508		<i>Neurotheca</i> . . . . . 559	
	<i>Duchesnei</i> , <i>De Wild.</i> 623		<i>Baumii</i> , <i>Gilg.</i> . . . 562	
	<i>erythrophylla</i> , <i>Gilg.</i> 506		<i>congolana</i> , <i>De Wild.</i>	
	<i>fuchsiae-folia</i> , <i>Baker.</i> 507		& <i>Dur.</i> . . . . . 562	
	<i>gabonica</i> , <i>Baill.</i> . . 509		<i>corymbosa</i> , <i>Hua</i> . . . 562	
	<i>Gilletii</i> , <i>De Wild.</i> . . 623		<i>exacoides</i> , <i>Gilg.</i> . . 562	
	<i>grandiflora</i> , <i>Gilg.</i> . . 507		<i>laeselioides</i> , <i>Oliv.</i> . 560	
	<i>hirsuta</i> , <i>Baill.</i> . . . 509		<i>longidens</i> , <i>N. E. Br.</i> 560	
	<i>Lujæi</i> , <i>De Wild.</i> & <i>Dur.</i> . . . . . 506		<i>robusta</i> , <i>Hua</i> . . . . 561	
	<i>microphylla</i> , <i>Gilg.</i> . 505		<i>rupicola</i> , <i>Hua</i> . . . . 561	
	<i>neurocarpa</i> , <i>Gilg.</i> . . 508		<i>Schlechteri</i> , <i>Gilg.</i> . 561	
	<i>orientalis</i> , <i>Baker.</i> . . 508		<i>Nuxia</i> . . . . . 511	
	<i>penduliflora</i> , <i>Gilg.</i> . 505		<i>angolensis</i> , <i>Gilg.</i> . . 514	
	<i>poggeana</i> , <i>Baker.</i> . . 510		<i>congesta</i> , <i>R. Br.</i> . . 512	
	<i>rubinervis</i> , <i>Engl.</i> . . 508		<i>Dekindtii</i> , <i>Gilg.</i> . . 514	
	<i>rubrinervis</i> , <i>Engl.</i> . . 508		<i>dentata</i> , <i>R. Br.</i> . . 513	
	<i>schumanniana</i> , <i>Gilg.</i> 508		<i>floribunda</i>	
	<i>Schweinfurthii</i> , <i>Baker.</i> . . . . . 510		var. <i>Holstii</i> , <i>Gilg.</i> 515	
	<i>taysmansiana</i> , <i>De Wild.</i> . . . . 623		<i>gœtzeana</i> , <i>Gilg.</i> . . 514	
	<i>Thomsoni</i> , <i>Benth.</i> . . 505		<i>Holstii</i> , <i>Gilg.</i> . . 515	
	<i>ulugurensis</i> , <i>Gilg.</i> . . 506		<i>Mannii</i> , <i>Gilg.</i> . . 512	
	<i>Walleri</i> , <i>Baker.</i> . . . 507		<i>odorata</i> , <i>Gilg.</i> . . 513	
	<i>Zenkeri</i> , <i>Gilg.</i> . . . . 507		<i>oppositifolia</i> , <i>Benth.</i> 513	
	<i>Motandra</i> . . . . . 224		<i>platyphylla</i> , <i>Gilg.</i> . 512	
	<i>Erlangeri</i> , <i>K. Schum.</i> 613		<i>polyantha</i> , <i>Gilg.</i> . . 513	
	<i>glabrata</i> , <i>Baill.</i> . . . 222		<i>rupicola</i> , <i>Gilg.</i> . . . 514	
	<i>guineensis</i> , <i>A. DC.</i> . . 224, 613		<i>sambesina</i> , <i>Gilg.</i> . . 514	
	<i>guineensis</i> , <i>Hiern.</i> . . 225		<i>usambarensis</i> , <i>Gilg.</i> 515	
	<i>Lujæi</i> , <i>De Wild.</i> & <i>Dur.</i> . . . . . 225, 613		<i>Volkensii</i> , <i>Gilg.</i> . . 515	
	<i>pyramidalis</i> , <i>Stapf.</i> . 225		<i>Octopleura</i>	
	<i>rostrata</i> , <i>K. Schum.</i> . . 226, 613		<i>laeselioides</i> , <i>Sprnce.</i> 560	
	<i>viridiflora</i> , <i>K. Schum.</i> . . . . 613		var. <i>compacta</i> , <i>Oliv.</i> . . . . . 560	
	<i>welwitschiana</i> , <i>Baill.</i> 223		var. <i>grandiflora</i> , <i>Knobl.</i> . . 561, 562	
	<i>Nanostelma</i> . . . . . 411		<i>Odontostelma</i>	
	<i>congolana</i> , <i>Baill.</i> . . 411		<i>Welwitschii</i> , <i>Rendlo.</i> 365	
	<i>congolatum</i> , <i>K. Schum.</i> . . . . 411		<i>Olea</i> . . . . . 17	
	<i>Nathusia</i>		<i>chrysophylla</i> , <i>Engl.</i> . . 18	
	<i>alata</i> , <i>Gilg.</i> . . . . 16		<i>chrysophylla</i> , <i>Lam.</i> . . 18	
	<i>alata</i> , <i>Hiern.</i> . . . . 15		<i>europæa</i> , <i>Linn.</i> . . . 18	
	var. <i>tomentella</i> , <i>Hiern.</i> . . . . 17		var. <i>nubica</i> , <i>Schweinf.</i> . . . 18	
	<i>alata</i> , <i>Hochst.</i> . . . . 16		var. <i>sativa</i> , <i>DC.</i> . . . 18	
	<i>golungensis</i> , <i>O. Kze.</i> 14		<i>Hochstetteri</i> , <i>Baker</i> . . 17	
			<i>laurifolia</i> , <i>Hochst.</i> . . 17	
			<i>laurifolia</i> , <i>Lam.</i> . . . 18	
			<i>somaliensis</i> , <i>Baker.</i> . . 18	
			<i>undulata</i> , <i>Jacq.</i> . . . 18	
			OLEACEÆ . . . . . 1	
			<i>Omphalagonus</i> . . . . . 256	
			<i>calophyllus</i> , <i>Baill.</i> . . 256	
			<i>Oncinotis</i> . . . . . 220	
			<i>axillaris</i> , <i>K. Schum.</i> 216	
			<i>Batesii</i> , <i>Stapf.</i> . . . 221	
			<i>campanulata</i> , <i>K. Schum.</i> . . . . . 222	
			<i>chlorogena</i> , <i>K. Schum.</i> . . . . 224, 612	
			<i>glabrata</i> , <i>Stapf.</i> . . . 222	
			<i>glandulosa</i> , <i>Stapf.</i> . . . . 221, 611	
			<i>gracilis</i> , <i>Stapf.</i> . . . . 223, 612	
			<i>hirta</i> , <i>Oliv.</i> . . . . . 223, 612	
			<i>melanocephala</i> , <i>K. Schum.</i> . . . . . 219	
			<i>nitida</i> , <i>Benth.</i> . . . . 221, 612	
			<i>subsessilis</i> , <i>K. Schum.</i> . . . . 224, 612	
			<i>tenuiloba</i> , <i>Stapf.</i> . . . 222	
			<i>thyrsiflora</i> , <i>K. Schum.</i> . . . . . 612	
			<i>zygodioides</i> , <i>K. Schum.</i> . . . . . 211	
			<i>Oncostemma</i> . . . . . 410	
			<i>cuspidatum</i> , <i>K. Schum.</i> . . . . . 410	
			<i>Ophelia</i>	
			<i>gimbriata</i> , <i>Hochst.</i> . . 573	
			<i>Orelia</i>	
			<i>grandiflora</i> , <i>Aubl.</i> . . . 118	
			<i>Orthanthera</i> . . . . . 433	
			<i>albida</i> , <i>Schinz.</i> . . . . 434	
			<i>browniana</i> , <i>Schinz.</i> . . 435	
			<i>jasminiflora</i> , <i>N. E. Br.</i> . . . . . 434	
			<i>stricta</i> , <i>Hiern.</i> . . . . 434	
			<i>Orthostemon</i>	
			<i>erectum</i> , <i>R. Br.</i> . . . . 558	
			<i>Kirkii</i> , <i>N. E. Br.</i> . . . 558	
			<i>Oxystelma</i> . . . . . 382	
			<i>egyptiacum</i> , <i>Decne.</i> . . 383	
			<i>Alpini</i> , <i>Decne.</i> . . . . 279, 383	
			<i>esculentum</i> , var. <i>Alpini</i> , <i>N. E. Br.</i> . . . . 382	
			<i>Secamone</i> , <i>K. Schum.</i> . . . . 383	
			<i>Pachycarpus</i> . . . . . 376	
			<i>concolor</i> , <i>E. Meyer.</i> . . 377	
			<i>corniculatus</i> , <i>Hochst.</i> 341	
			<i>Galpinii</i> , <i>N. E. Br.</i> . . 377	
			<i>ma-rochilus</i> , <i>N. E. Br.</i> . . . . . 376	
			<i>McKenii</i> , <i>N. E. Br.</i> . . 377	
			<i>rhinophyllus</i> , <i>N. E. Br.</i> . . . . 377	
			<i>scaber</i> , <i>N. E. Br.</i> . . . . 377	

	Page		Page		Page
<i>Pachycarpus</i> ( <i>continued</i> )		<i>Periploca</i> ( <i>continued</i> )		<i>Pterotaberna</i> .	125
<i>schinzianus</i> , <i>N.E.Br.</i>	376	<i>nigrescens</i> , <i>Azel.</i>	258	<i>inconspicua</i> , <i>Stapf</i>	126
<i>transvaalensis</i> ,		<i>nigricans</i> , <i>Schlechter</i>	258	<i>Pterygocarpus</i>	
<i>N.E.Br.</i>	376	<i>ovata</i> , <i>Poir.</i>	289	<i>abyssinicus</i> , <i>Hochst.</i>	421
<i>validus</i> , <i>N.E.Br.</i>	377	<i>petersiana</i> , <i>Vatke</i>	420	<i>Pycnobotrya</i>	202
<i>Pachypodium</i>	230	<i>Preussii</i> , <i>K.Schum.</i>	258	<i>multiflora</i> , <i>K.Schum.</i>	203
<i>Lealii</i> , <i>Welw.</i>	230, 614	<i>Secamone</i> , <i>Del.</i>	383	<i>nitida</i> , <i>Benth.</i>	202
<i>Pacouria</i>		<i>Secamone</i> , <i>Linn.</i>	279	<i>Pycnosphaera</i>	564
<i>crassifolia</i> , <i>Hiern</i>	44	<i>syvestris</i> , <i>Retz.</i>	414	<i>Buchanani</i> , <i>N.E.Br.</i>	565
<i>florida</i> , <i>Hiern</i>	39	<i>venosa</i> , <i>Hochst.</i>	264	<i>trimeria</i> , <i>Gilg.</i>	564
<i>parvifolia</i> , <i>Hiern</i>	57	<i>Perithryx</i>	254		
<i>Parasia</i>	551	<i>glabra</i> , <i>Pierre</i>	254	<i>Raphiacme</i>	269
<i>debilis</i> , <i>Hiern</i>	552	<i>Petalostemma</i>		<i>angolensis</i> , <i>K.Schum.</i>	272
<i>gracilis</i> , <i>Hiern</i>	551	<i>Chenopodii</i> , <i>R.Br.</i>	292	<i>browniana</i> ,	
<i>grandis</i> , <i>Hiern</i>	553	<i>Piaranthus</i>	478	<i>Schlechter</i>	273
<i>platyptera</i> , <i>Hiern</i>	553	<i>fascicularis</i> , <i>Hort.</i>	475	<i>globosa</i> , <i>K.Schum.</i>	271
<i>primuliflora</i> , <i>Hiern</i>	553	<i>Picalima</i>	96	<i>grandiflora</i> , <i>K.</i>	
<i>Parquetina</i>		<i>klaineana</i> , <i>Pierre</i>	96	<i>Schum.</i>	270
<i>gabonica</i> , <i>Baill.</i>	258	<i>Platymitium</i>		<i>linearis</i> , <i>K.Schum.</i>	270
<i>Pentarrhinum</i>	378	<i>loranthifolium</i> ,		<i>linearis</i> , <i>Schlechter</i>	614
<i>abyssinicum</i> , <i>Decne.</i>	379	<i>Warb.</i>	22	<i>longifolia</i> , <i>K.Schum.</i>	275
<i>var. angolense</i> ,		<i>Pleiocarpa</i>	97	<i>macrostemon</i> , <i>K.</i>	
<i>N.E.Br.</i>	379	<i>bicarpellata</i> , <i>Stapf</i>	99	<i>Schum.</i>	614
<i>abyssinicum</i> , <i>De</i>		<i>breviloba</i> , <i>Stapf</i>	102	<i>splendens</i> , <i>K.Schum.</i>	614
<i>Wild. &amp; Dur.</i>	379	<i>camerunensis</i> , <i>Stapf</i>	102	<i>Raphionacme</i>	268
<i>fasciculatum</i> , <i>K.</i>		<i>flavescens</i> , <i>Stapf</i>	101, 600	<i>angolensis</i> , <i>N.E.Br.</i>	271
<i>Schum.</i>	381	<i>micrantha</i> , <i>Stapf</i>	100	<i>Brownii</i> , <i>Scott-Elliott</i>	273
<i>insipidum</i> , <i>Hiern</i>	379	<i>microcarpa</i> , <i>Stapf</i>	102	<i>denticulata</i> , <i>N.E.Br.</i>	275
<i>insipidum</i> , <i>E.Meyer</i>	378	<i>mutica</i> , <i>Benth.</i>	98	<i>excisa</i> , <i>Schlechter</i>	272
<i>Pentatropis</i>	380	<i>pycnantha</i> , <i>Stapf</i>	99	<i>globosa</i> , <i>K.Schum.</i>	271
<i>cynanchoides</i> , <i>R.Br.</i>	380	<i>rostrata</i> , <i>Benth.</i>	98	<i>grandiflora</i> , <i>N.E.Br.</i>	270
<i>var. senegalensis</i> ,		<i>salicifolia</i> , <i>Stapf</i>	99	<i>jurensis</i> , <i>N.E.Br.</i>	272
<i>N.E.Br.</i>	381	<i>tubicina</i> , <i>Stapf</i>	101, 600	<i>lanceolata</i> , <i>Schinz</i>	274
<i>fasciculatus</i> ,		<i>Welwitschii</i> , <i>Stapf</i>	100	<i>var. latifolia</i> ,	
<i>N.E.Br.</i>	381	<i>Pleioceras</i>	165	<i>N.E.Br.</i>	274
<i>hoyoides</i> , <i>K.Schum.</i>	381	<i>Afelii</i> , <i>Stapf</i>	166	<i>linearis</i> , <i>K.Schum.</i>	
<i>senegalensis</i> , <i>Decne.</i>	381	<i>Barteri</i> , <i>Baill.</i>	166	270, 614	
<i>spiralis</i> , <i>Decne.</i>	381	<i>Gilletii</i> , <i>Stapf</i>	167, 604	<i>var. glabra</i> , <i>K.</i>	
<i>var. longepetiolata</i> ,		<i>Whytei</i> , <i>Stapf</i>	604	<i>Schum.</i>	270
<i>Engl.</i>	381	<i>Zenkeri</i> , <i>Stapf</i>	166	<i>Loandæ</i> , <i>Schlecht. &amp;</i>	
<i>Pergularia</i>	426	<i>Pleurostelma</i>		<i>Rend.</i>	275
<i>adenophylla</i> , <i>Schl. &amp;</i>		<i>africanum</i> ,		<i>longifolia</i> , <i>N.E.Br.</i>	274
<i>K.Schum.</i>	619	<i>Schlechter</i>	262	<i>splendens</i> , <i>Schlechter</i>	271, 614
<i>africana</i> , <i>N.E.Br.</i>	426	<i>Plumeria</i>	119	<i>volubilis</i> , <i>Schlechter</i>	262
<i>jasmiflora</i> , <i>Burch.</i>	435	<i>africana</i> , <i>Mill.</i>	120	<i>Welwitschii</i> ,	
<i>sanguinolenta</i> ,		<i>rubra</i> , <i>Linn.</i>	120	<i>Schlecht. &amp; Rend.</i>	273
<i>Britten</i>	427	<i>Plumiera</i>		<i>Raphistemma</i>	
<i>sanguinolenta</i> ,		<i>rosea</i> , <i>K.Schum.</i>	120	<i>caliatum</i> , <i>Hook. f.</i>	388
<i>Lindl.</i>	245	<i>rubra</i> , <i>K.Schum.</i>	120	<i>Rauwolfia</i>	108
<i>tomentosa</i> , <i>Linn.</i>	386	<i>Podostelma</i>	289	<i>caffra</i> , <i>Sonder</i>	110, 601
<i>Pèrianthostelma</i>	390	<i>Schimperi</i> , <i>K.Schum.</i>	290	<i>var. natalensis</i> ,	
<i>Perinerion</i>		<i>Schimperi</i> , <i>K.Schum.</i>	419	<i>Stapf</i>	111
<i>Welwitschii</i> , <i>Baill.</i>	212	<i>Pæderia</i>		<i>cardiocarpa</i> , <i>K.</i>	
<i>Periploca</i>	256	<i>owariensis</i> , <i>Spreng.</i>	50	<i>Schum.</i>	113
<i>Afelii</i> , <i>G. Don</i>	258	<i>Polyadoa</i>	103	<i>congolana</i> , <i>De Wild.</i>	
<i>aphylla</i> , <i>Decne.</i>	257	<i>Elliotii</i> , <i>Stapf</i>	104	<i>&amp; Dur.</i>	115
<i>latifolia</i> , <i>K.Schum.</i>	255	<i>umbellata</i> , <i>Stapf</i>	103	<i>Cumminsii</i> , <i>Stapf</i>	
<i>linearifolia</i> , <i>Dill. &amp;</i>		<i>Prosopostelma</i>	390	114, 601	
<i>Rich.</i>	257	<i>Pterophora</i>	417		

	Page		Page		Page
<i>Rauwolfia</i> (continued)		<i>Salvadora</i> (continued)		<i>Schizoglossum</i> (con-	
<i>dichotoma</i> , K. Schum. . . . .	116	<i>persica</i> , Garcin . . . . .	23	tinued)	
<i>Gœtzei</i> , Stapf . . . . .	113	SALVADORACEÆ . . . . .	21	<i>lividiflorum</i> , K.	
<i>gonioclada</i> , K.		<i>Sarcocodon</i>		<i>Schum.</i> . . . .	367
<i>Schum.</i> . . . .	110	<i>codonoïdes</i> , K.		<i>macroglossum</i> , K.	
<i>inebrians</i> , K. Schum. . . . .	112	<i>Schum.</i> . . . .	480	<i>Schum.</i> . . . .	618
<i>inebrians</i> , K. Schum.		<i>speciosus</i> , N. E. Br. . . . .	480	<i>mansuicium</i> , N. E. Br. . . . .	358
112, 113		<i>Sarcococyphula</i> . . . . .	390	<i>multifolium</i> , N. E. Br. . . . .	363
<i>leucopoda</i> , K. Schum. . . . .	110	<i>Gerrardi</i> , Harv. . . . .	400	Nyrsæ, Britt. &	
<i>liberiensis</i> , Stapf . . . . .	601	<i>Sarcostemma</i> . . . . .	383	<i>Rend.</i> . . . .	363
<i>longeacuminata</i> , De		<i>andongense</i> , Hiern . . . . .	385	<i>petherickianum</i> ,	
<i>Wild. &amp; Dur.</i> . . . .	116	<i>aphyllum</i> , R. Br. . . . .	400	<i>Oliv.</i> . . . .	368
<i>macrophylla</i> , Stapf . . . . .	110	<i>aphyllum</i> , Hochst. . . . .	384	<i>scyphostigma</i> , K.	
<i>Mannii</i> , Stapf . . . . .	113	<i>Daltoni</i> , Decnc. . . . .	385	<i>Schum.</i> . . . .	372
<i>mombasiana</i> , Stapf . . . . .	114	<i>nulum</i> , C. Sm. . . . .	385	<i>shireense</i> , N. E. Br. . . . .	361
<i>monopyrena</i> , K.		<i>pyrotechnicum</i> ,		<i>simulans</i> , N. E. Br. . . . .	369
<i>Schum.</i> . . . .	115	<i>Roem. &amp; Sch.</i> . . . .	433	<i>spatulatum</i> , K.	
<i>natalensis</i> , Sond. . . . .	111	<i>sp.</i> , Hook. . . . .	384	<i>Schum.</i> . . . .	312
<i>obliquinervis</i> , Stapf . . . . .	112	<i>tetrapterum</i> , Turcz. . . . .	400	<i>spurium</i> , N. E. Br. . . . .	367
<i>obscura</i> , K. Schum.		<i>viminale</i> , R. Br. . . . .	384	<i>strictissimum</i> , S.	
117, 602		<i>Welwitschii</i> , Hiern . . . . .	385	<i>Moore</i> . . . . .	358
<i>ochrosioides</i> , K.		<i>Schinziella</i> . . . . .	557	<i>tricorniculatum</i> , K.	
<i>Schum.</i> . . . .	111	<i>tetragona</i> , Gilg . . . . .	557	<i>Schum.</i> . . . .	310
<i>ochrosioides</i> , K.		<i>Schizocalyx</i>		<i>truncatulum</i> , K.	
<i>Schum.</i> . . . .	113	<i>coriaceus</i> , Hochst. . . . .	22	<i>Schum.</i> . . . .	303
<i>pleiosciadica</i> , K.		<i>Schizoglossum</i> . . . . .	353	<i>violaceum</i> , K. Schum. . . . .	348
<i>Schum.</i> . . . .	115	<i>abyssinicum</i> , K.		<i>viridulum</i> , K. Schum. . . . .	362
<i>Preussii</i> , K. Schum. . . . .	114	<i>Schum.</i> . . . .	356	<i>Welwitschii</i> ,	
<i>rosea</i> , K. Schum. . . . .	114	<i>aciculare</i> , N. E. Br. . . . .	363	N. E. Br. . . . .	365
<i>Senegambia</i> , DC. . . . .	115	<i>alpestre</i> , K. Schum. . . . .	364	<i>Whytei</i> , N. E. Br. . . . .	357
<i>senegambica</i> , A. DC. . . . .	115	<i>angoleuse</i> , Schl. &		<i>Schizostephanus</i> . . . . .	390
<i>Stuhlmannii</i> , K.		<i>Rend.</i> . . . .	364	<i>alatus</i> , Hochst. . . . .	398
<i>Schum.</i> . . . .	115	<i>angustissimum</i> , K.		<i>somaliensis</i> ,	
<i>Volkenzii</i> , Stapf . . . . .	116	<i>Schum.</i> . . . .	357	N. E. Br. . . . .	399
<i>vomitorea</i> , Afz. . . . .	115, 601	<i>barbatum</i> , Britt. &		<i>Schizozygia</i> . . . . .	135
<i>Welwitschii</i> , Stapf . . . . .	110	<i>Rend.</i> . . . .	362	<i>coffeoides</i> , Baill. . . . .	135
<i>Rhynchosigma</i>		<i>Baumii</i> , Schlechter . . . . .	361	<i>Schlezerella</i>	
<i>brevipès</i> , Benth. . . . .	287	<i>Carsoni</i> , N. E. Br. . . . .	366	<i>africana</i> , K. Schum. . . . .	262
<i>Lujzei</i> , De Wild. &		<i>chlorojodium</i> ,		<i>Schrebera</i> . . . . .	13
<i>Dur.</i> . . . .	287	N. E. Br. . . . .	366	<i>alata</i> , Welw. . . . .	15
<i>parviflorum</i> , Benth. . . . .	288	<i>connatum</i> , N. E. Br. . . . .	356	<i>alata</i> , Welw. . . . .	15
<i>racemosum</i> , Benth. . . . .	287	<i>debeersianum</i> , K.		<i>var. tomentella</i> ,	
<i>Riocrexia</i> . . . . .	465	<i>Schum.</i> . . . .	618	<i>Welw.</i> . . . .	17
<i>longiflora</i> , K. Schum. . . . .	460	<i>debile</i> , Schlechter . . . . .	359	<i>Buchanani</i> , Baker . . . . .	14
<i>profusa</i> , N. E. Br. . . . .	465	<i>distinctum</i> , N. E. Br. . . . .	371	<i>gœtzeana</i> , Gilg . . . . .	16
<i>splendida</i> , K. Schum. . . . .	466	<i>dolichoglossum</i> ,		<i>golonensis</i> , Welw. . . . .	14
<i>torulosa</i> , K. Schum. . . . .	466	N. E. Br. . . . .	367	<i>Holstii</i> , Gilg . . . . .	17
<i>Rondeletia</i>		<i>elatum</i> , K. Schum. . . . .	357	<i>obliquifoliolata</i> , Gilg . . . . .	16
<i>floribunda</i> , G. Don . . . . .	164	<i>Elliotii</i> , Schlechter . . . . .	359	<i>oigantha</i> , Gilg . . . . .	14
<i>Roupellia</i>		<i>erubescens</i> ,		<i>platyphylla</i> , Gilg . . . . .	15
<i>grata</i> , Wall. & Hook. . . . .	170	<i>Schlechter</i> . . . . .	359	<i>tomentella</i> , Gilg . . . . .	16
<i>Sacleuxia</i>		<i>eximium</i> , N. E. Br. . . . .	370	<i>trichoclada</i> , Welw. . . . .	15
<i>salicina</i> , Baill. . . . .	241	<i>filipes</i> , Schlechter . . . . .	360	<i>Welwitschii</i> , Gilg . . . . .	15
<i>Salacia</i>		<i>firmum</i> , N. E. Br. . . . .	368	<i>Schultesia</i> . . . . .	559
<i>nitida</i> , N. E. Br. . . . .	415	<i>fuscopurpureum</i> ,		<i>senegalensis</i> , Baker . . . . .	559
<i>Salvadora</i> . . . . .	23	<i>Schl. &amp; Rend.</i> . . . .	361	<i>stenophylla</i>	
<i>crassinervis</i> , Hochst. . . . .	23	<i>Gœtzei</i> , K. Schum. . . . .	371	<i>var. latifolia</i> , Mart. . . . .	559
<i>paniculata</i> , Hochst. . . . .	24	<i>Grantii</i> , Oliv. . . . .	370	<i>Sclerodictyon</i>	
		<i>gwelense</i> , N. E. Br. . . . .	360	<i>griffonianum</i> , Pierre . . . . .	87

	Page		Page		Page
<i>Scytanthus</i> . . .	490	Secamone ( <i>continued</i> )		Stathmostelma ( <i>con-</i>	
<i>Burkei</i> , Hook. . .	491	<i>Thunbergii</i> , E. Mey. . .	279	<i>tinued</i> )	
<i>Currouri</i> , Hook. . .	491	<i>usambarica</i> , N. E. Br. . .	281	<i>pedunculatum</i> , K.	
<i>sp.</i> , J. C. Br. . .	491	<i>Whytei</i> , N. E. Br. . .	283	Schum. . . . .	341
<i>Sebæa</i> . . .	546	<i>zambesiaca</i> ,		<i>reflexum</i> , Britt. &	
<i>affinis</i> , Welw. . .	549	<i>Schlechter</i> . . . .	285	Rend. . . . .	345
<i>barbeyiana</i> , Schinz . .	549	<i>Sideroxylum</i>		<i>rhacodes</i> , K. Schum. . .	343
<i>brachyphylla</i> , Engl. . .	548	<i>toxiferum</i> , Thunb. . .	95	<i>rostrata</i> , N. E. Br. . .	617
<i>brachyphylla</i> ,		<i>Slevogtia</i> . . . . .	563	<i>Welwitschii</i> , Britt. &	
Griseb. . . . .	548, 549	<i>orientalis</i> , Griseb. . .	563	Rend. . . . .	342
<i>brachyphylla</i> ,		<i>Solenostemma</i> . . . . .	402	<i>Stomatostemma</i> . . . .	252
Hook. f. . . . .	549	<i>Argel</i> , Hayne . . . . .	402	<i>Monteiroæ</i> , N. E. Br. . .	253
<i>chironioides</i> , Gilg . . .	550	<i>Sphaerocodon</i> . . . . .	411	<i>Strophanthus</i> . . . . .	167
<i>crassulæfolia</i> , Cham.		<i>caffrum</i> , Schlechter . . .	412	<i>amboensis</i> , Engl. &	
& Schl. . . . .	547	<i>longipedunculata</i> ,		<i>Pax</i> . . . . .	185, 608
var. <i>brevisflora</i> ,		K. Schum. . . . .	404	<i>arnoldianus</i> , De	
Schweinf. . . . .	548	<i>melananthus</i> ,		<i>Wild. &amp; Dur.</i> . . . .	179, 607
<i>involutrata</i> ,		N. E. Br. . . . .	412, 619	<i>asper</i> , Oliv. . . . .	186, 609
Klotzsch . . . . .	566	<i>natalensis</i> , K.		<i>Barteri</i> , Franch. . . . .	177, 607
<i>leiostyla</i> , Gilg . . . . .	548	Schum. . . . .	412	<i>bracteatus</i> , De Wild.	
<i>multinodis</i> , N. E. Br. . .	548	<i>natalense</i> , Benth. . . . .	412	& Dur. . . . .	177
<i>oreophila</i> , Gilg . . . . .	547	<i>obtusifolia</i> , K.		<i>bracteatus</i> , Franch.	
<i>pratensis</i> , Gilg . . . . .	550	Schum. . . . .	412	177, 606, 607	
<i>schimperiana</i> ,		<i>obtusifolium</i> , Benth. . .	412	<i>bullenianus</i> , Mast.	
<i>Buching.</i> . . . .	548	<i>Stapelia</i> . . . . .	500	175, 606	
<i>Welwitschii</i> , Schinz . . .	550	<i>Ango</i> , A. Rich. . . . .	488	<i>congoensis</i> , Franch.	
<i>Secamone</i> . . . . .	276	<i>atrosanguinea</i> ,		185, 608	
<i>acutifolia</i> , Sond. . . . .	250	N. E. Br. . . . .	485	<i>Courmonti</i> , Sacd. . . . .	182, 608
<i>Afzeli</i> , K. Schum. . . . .	280	<i>cylindrica</i> , Hort. . . . .	475	var. <i>fallax</i> ,	
<i>Alpini</i> , Schult. . . . .	279	<i>digitaliflora</i> , Pfersd. . . .	494	Holmes . . . . .	183
<i>emetica</i>		<i>gigantea</i> , N. E. Br. . . . .	501	var. <i>Kirkii</i> ,	
var. <i>glabra</i> , K.		<i>kwebensis</i> , N. E. Br. . . . .	501	Holmes . . . . .	183
Schum. . . . .	282	<i>macrocarpa</i> , N. E. Br. . . . .	498	<i>d'Autran</i> , Heckel	
<i>erythradenia</i> , K.		<i>macrocarpa</i> ,		187, 609	
Schum. . . . .	278	Martelli . . . . .	497	<i>Demeusei</i> , Dewèvre	
<i>floribunda</i> , N. E. Br. . . .	282	<i>vaga</i> , N. E. Br. . . . .	501	184, 608	
<i>frutescens</i> , Decne. . . . .	283	<i>Stathmostelma</i> . . . . .	313	<i>Deweveii</i> , Gilg . . . . .	607
<i>gracilis</i> , N. E. Br. . . . .	278	<i>angustatum</i> , K.		<i>Deweveii</i> , De Wild. . . .	179
<i>Kirkii</i> , N. E. Br. . . . .	285	Schum. . . . .	344	<i>du Niger</i> , Blondel . . . .	186
<i>leonensis</i> , N. E. Br. . . . .	281	<i>bicolor</i> , K. Schum. . . . .	344	<i>ecaudatus</i> , Rolfe	
<i>micrandra</i> , K.		<i>fruticosa</i> , Schlechter . . .	617	183, 608	
Schum. . . . .	281	<i>gigantiflora</i> , K.		<i>Emini</i> , Asch. & Pax	
<i>mombasica</i> , N. E. Br. . . . .	284	Schum. . . . .	326	172, 605	
<i>myrtifolia</i> , Benth. . . . .	280	<i>globuliflorum</i> , K.		<i>erythroleucus</i> , Gilg	
<i>platystigma</i> , K.		Schum. . . . .	341	178, 607	
Schum. . . . .	280	<i>incarnatum</i> , K.		<i>Fischeri</i> , Hartw. . . . .	172
<i>punctulata</i> , Decne. . . . .	284	Schum. . . . .	340	<i>gardeniiflorus</i> , Gilg . . . .	605
var. <i>stenophylla</i> ,		<i>laurentiana</i> ,		<i>Gilletii</i> , De Wild. . . . .	608
N. E. Br. . . . .	284	Dewèvre . . . . .	342	<i>glaber</i> , Cornu . . . . .	170
<i>retusa</i> , N. E. Br. . . . .	279	<i>macropetalum</i> , Schl.		<i>glabre du Gabon</i> ,	
<i>rubiginosa</i> , K. Schum. . . .	287	& K. Schum. . . . .	616	Blondel . . . . .	170
<i>sansibariensis</i> , K.		<i>odoratum</i> , K.		<i>gracilis</i> , K. Schum.	
Schum. . . . .	282	Schum. . . . .	325	& Pax . . . . .	175, 606
<i>Schweinfurthii</i> , K.		<i>pachycladum</i> , K.		<i>grandiflorus</i> , Gilg	
Schum. . . . .	284	Schum. . . . .	325	182, 607	
<i>stenophylla</i> , K.		<i>pauciflorum</i> , K.		<i>gratus</i> , Franch. . . . .	170, 604
Schum. . . . .	284	Schum. . . . .	345	<i>hirta</i> , Poir. . . . .	174
<i>Stuhlmannii</i> K.		<i>pedunculatum</i> ,		<i>hispidus</i> , A. P. D.C.	
Schum. . . . .	283	Schlechter . . . . .	343	174, 606	

	Page		Page		Page
<i>Strophanthus</i> (continued)		<i>Strophanthus</i> (continued)		<i>Strychnos</i> (continued)	
<i>hispidus</i> , Hardy & Gallois . . . . .	170	<i>scaber</i> , Pax . . . . .	176	Engleri, Gilg . . . . .	532
<i>hispidus</i> , Oliv. . . . .	173	<i>Schlechteri</i> , K. Schum. . . . .	175	<i>erythrocarpa</i> , Gilg . . . . .	522
var. <i>Kombe</i> , Holmes . . . . .	173	Schuchardti, Pax . . . . .	184, 608	<i>euryphylla</i> , Gilg & Busse . . . . .	526
<i>holosericens</i> , K. Schum. & Gilg . . . . .	171, 605	<i>Senegal</i> , Pax . . . . .	187, 609	<i>floribunda</i> , Gilg . . . . .	527
<i>intermedius</i> , Pax . . . . .	185, 608	<i>Senegambica</i> , A. DC. . . . .	180	Gilletii, De Wild. . . . .	624
<i>Klainei</i> , De Wild. . . . .	606	<i>sp.</i> , Gerrard . . . . .	93	Goetzei, Gilg . . . . .	534
<i>Kombe</i> , Oliv. . . . .	173, 606	<i>sp.</i> , Heckel . . . . .	187	<i>gracillima</i> , Gilg . . . . .	536
<i>Kurzfrüchtiger</i> , Pax . . . . .	187, 609	<i>sp.</i> , Helbing . . . . .	187	<i>guerckeana</i> , Gilg . . . . .	521
<i>laineux du Zambèze</i> , Blondel . . . . .	186	<i>spp.</i> , Pax . . . . .	187	<i>henriquesiana</i> , Baker . . . . .	528
<i>laurifolius</i> , A.P.DC. . . . .	607	<i>stanleyanus</i> , Hort. . . . .	170	<i>henriquesiana</i> , Gilg . . . . .	530
<i>laurifolius</i> , Pax . . . . .	180	<i>Stuhlmanni</i> , Pax . . . . .	172	<i>heterodoxa</i> , Gilg . . . . .	530
<i>Lediinii</i> , Stein . . . . .	171, 605	<i>thierryanus</i> , K. Schum. & Gilg . . . . .	175, 606	<i>Holstii</i> , Gilg . . . . .	529
<i>minor</i> , Christy . . . . .	186, 609	<i>Tholloni</i> , Franch. . . . .	171, 605	<i>Icaja</i> , Baill. . . . .	528
<i>mirabilis</i> , Gilg . . . . .	186, 609	<i>Tholloni</i> , De Wild. . . . .	605	<i>innocua</i> , Del. . . . .	532
<i>Nicholsoni</i> , Holmes . . . . .	172, 606	<i>Verdickii</i> , De Wild. . . . .	608	var. <i>pubescens</i> , Solered. . . . .	533
<i>Niger</i> , Christy . . . . .	181, 607	var. <i>latisepalus</i> , De Wild. . . . .	608	<i>Kipapa</i> , Gilg . . . . .	521
<i>ogovensis</i> , Franch. . . . .	181, 607	<i>verrucosus</i> , Stapf . . . . .	181, 607	<i>laza</i> , Solered. . . . .	536
<i>Ouabaio</i> , Holmes . . . . .	170	<i>Welwitschii</i> , Gilg . . . . .	608	<i>loandensis</i> , Baker . . . . .	523
<i>Paroissei</i> , Franch. . . . .	180	<i>Welwitschii</i> , K. Schum. . . . .	183	<i>Lokua</i> , A. Rich. . . . .	536
<i>parviflorus</i> , Franch. . . . .	178, 607	<i>White</i> , Helbing . . . . .	187, 609	<i>longicaudata</i> , Gilg . . . . .	527
<i>parvifolius</i> , K. Schum. . . . .	608	<i>wildemanianus</i> , Gilg . . . . .	179, 607	<i>lucens</i> , Baker . . . . .	524
<i>pendulus</i> , Kumm. & Hook. . . . .	180	<i>Strychnos</i> . . . . .	517	<i>malacoclados</i> , C. H. Wright . . . . .	523
<i>petersianus</i> , Klotzsch . . . . .	182, 608	<i>abyssinica</i> , Hochst. . . . .	93	<i>malifolia</i> , Baker . . . . .	525
var. <i>amboensis</i> , Schinz. . . . .	186	<i>aculeata</i> , Solered. . . . .	520	<i>Marquesii</i> , Baker . . . . .	530
var. <i>grandiflorus</i> , N. E. Br. . . . .	181, 607	<i>acutissima</i> , Gilg . . . . .	524	<i>megalocarpa</i> , Gilg & Busse . . . . .	526
<i>pierreanus</i> , De Wild. . . . .	605	<i>Azelii</i> , Gilg . . . . .	522	<i>melastomoides</i> , Gilg . . . . .	527
<i>Preussii</i> , Engl. & Pax . . . . .	176, 606, 607	<i>alnifolia</i> , Baker . . . . .	532	<i>microcarpa</i> , Baker . . . . .	525
<i>sarmentosus</i> , A. P. DC. . . . .	180	<i>angolensis</i> , Gilg . . . . .	522	<i>Miniungansamba</i> , Gilg . . . . .	536
var. <i>eusarmentosus</i> , Pax . . . . .	180	<i>Barteri</i> , Solered. . . . .	523	<i>Moloneyi</i> , Baker . . . . .	527
var. <i>major</i> , Dewèvre . . . . .	180	<i>behrensiana</i> , Gilg & Busse . . . . .	531	<i>myrtoides</i> , Gilg & Busse . . . . .	531
var. <i>pendulus</i> , Pax . . . . .	180	<i>brachyura</i> , Gilg . . . . .	534	<i>nigritana</i> , Baker . . . . .	523
var. <i>verrucosus</i> , Pax . . . . .	182	<i>Buettneri</i> , Gilg . . . . .	535	<i>occidentalis</i> , Solered. . . . .	530
<i>sarmentosus</i> , K. Schum. . . . .	181, 607	<i>Burtoni</i> , Baker . . . . .	533	<i>omphalocarpa</i> , Gilg & Busse . . . . .	525
var. <i>verrucosus</i> , Pax . . . . .	607	<i>Carvalhoi</i> , Gilg . . . . .	535	<i>panganensis</i> , Gilg . . . . .	526
		<i>cerasifera</i> , Gilg . . . . .	531	<i>pendulilora</i> , Baker . . . . .	531
		<i>chlorocarpa</i> , Gilg . . . . .	521	<i>pungens</i> , Solered. . . . .	530
		<i>chrysocarpa</i> , Baker . . . . .	529	<i>Quaqua</i> , Gilg . . . . .	531
		<i>chrysophylla</i> , Gilg . . . . .	525	<i>randiaeformis</i> , Baill. . . . .	533
		<i>cocculoides</i> , Baker . . . . .	533	<i>sansibariensis</i> , Gilg . . . . .	535
		<i>congolana</i> , Gilg . . . . .	521	<i>scandens</i> , Sch. & Thonn. . . . .	44
		<i>dekintiana</i> , Gilg . . . . .	534	<i>Scheffleri</i> , Gilg . . . . .	537
		<i>densiflora</i> , Baill. . . . .	528	<i>schumanniana</i> , Gilg . . . . .	624
		<i>Dewevrei</i> , Gilg . . . . .	521	<i>Schweinfurthii</i> , Gilg . . . . .	525
		<i>Dinklagei</i> , Gilg . . . . .	520	<i>sennensis</i> , Baker . . . . .	529
		<i>distichophylla</i> , Gilg . . . . .	525	<i>sp.</i> , Benth. . . . .	524
		<i>dysophylla</i> , Benth. . . . .	533	<i>spinosa</i> , Lam. . . . .	536
		<i>emarginata</i> , Baker . . . . .	537	var. <i>pubescens</i> , Baker . . . . .	537
				<i>splendens</i> , Gilg . . . . .	524

	Page		Page		Page
<i>Strychnos</i> (continued)		<i>Swertia</i> (continued)		<i>Tabernaemontana</i> (con-	
<i>Staudtii</i> , Gilg . . .	528	<i>petitiana</i> , A. Rich. . .	577	<i>tinued</i> )	
<i>Stuhlmanni</i> , Gilg . . .	529	<i>pleurogynoides</i> ,		<i>penduliflora</i> , K.	
<i>suaveolens</i> , Gilg . . .	528	<i>Baker</i> . . . . .	582	Schum. . . . .	149
<i>suberosa</i> , De Wild. . .	624	<i>polyantha</i> , Gilg . . .	580	<i>Smithii</i> , Stapf . . . .	143
<i>subscandens</i> , Baker . .	524	<i>porphyrantha</i> , Baker .	579	<i>stapfiana</i> , Britt. . . .	147
<i>Tonca</i> , Gilg . . . . .	527	<i>pumila</i> , Engl. . . . .	575, 576	<i>stenosiphon</i> , Stapf . .	148
<i>triclisioides</i> , Baker . .	533	<i>pumila</i> , Hochst. . . .	575	<i>subsessilis</i> , Benth. . .	133
<i>Unguacha</i> , A. Rich. . .	534	<i>quartiniana</i> , A. Rich. .	574	<i>Thonneri</i> , De Wild.	
var. <i>dschurica</i> ,		Richardi, Engl. . . . .	575	& Dur. . . . .	143
Gilg . . . . .	534	Schimper, Griseb. . . .	573	<i>trialata</i> , Pierre . . . .	126
var. <i>dysophylla</i> ,		Sharpei, N. E. Br. . . .	581	<i>usambarensis</i> , Engl. . .	149
Gilg . . . . .	533	stellarioides, Ficalho .	581	<i>ventricosa</i> , Britt. . . .	149
var. <i>grandifolia</i> ,		subalpina, N. E. Br. . .	578	<i>ventricosa</i> , Hochst. . .	149
Gilg . . . . .	534	tetrandra, Hochst. . . .	582	<i>Volkensii</i> , K. Schum. . .	116
var. <i>micrantha</i> ,		usambarensis, Engl. . .	580	<i>Tabernanthe</i> . . . . .	122
Gilg . . . . .	532	Volkensii, Gilg . . . . .	576	<i>albiflora</i> , Stapf . . . .	124
var. <i>microcarpa</i> ,		Wellbyi, N. E. Br. . . .	577	<i>Bocca</i> , Stapf . . . . .	122
Gilg . . . . .	534	<i>Welwitschii</i> , Engl. . . .	581	<i>Iboga</i> , Baill. . . . .	124
var. <i>polyantha</i> ,		Whytei, N. E. Br. . . .	579	<i>Iboga</i> , Oliv. . . . .	123, 124
Gilg . . . . .	534	wojeratensis,		<i>Mannii</i> , Stapf . . . . .	123
var. <i>Stuedneri</i> ,		N. E. Br. . . . .	577	<i>sübsessilis</i> , Stapf . . .	123
Gilg . . . . .	533			<i>tenuiflora</i> , Stapf . . . .	124
<i>usambarensis</i> , Gilg . . .	526	<i>Tabernaemontana</i>		<i>Tacazzea</i> . . . . .	260
<i>variabilis</i> , De Wild. . .	623	130, 140, 151		<i>africana</i> , N. E. Br. . . .	261
<i>Vogelii</i> , Baker . . . . .	523	<i>africana</i> , A. DC. . . . .	150	<i>apiculata</i> , Oliv. . . . .	267
<i>Volkensii</i> , Gilg . . . . .	536	<i>angolensis</i> , Stapf . . . .	147	var. <i>benedicta</i> ,	
<i>Vuntac</i> , Bojer . . . . .	536	<i>Barteri</i> , Hook. f. . . . .	133	<i>Scott-Elliot</i> . . . . .	267
<i>Wakefieldii</i> , Baker . . .	532	<i>brachyantha</i> , Stapf . . .	148	var. <i>glabra</i> , K.	
<i>Welwitschii</i> , Gilg . . . .	524	<i>brachypoda</i> , K.		Schum. . . . .	267
<i>Welwitschii</i> , Hiern		Schum. . . . .	137	<i>Barteri</i> , Baill. . . . .	266
523, 524		<i>contorta</i> , Stapf . . . . .	142	<i>conferta</i> , N. E. Br. . . .	265
<i>xerophila</i> , Baker . . . . .	534	<i>coronaria</i> , Willd. . . . .	127	<i>floribunda</i> , K.	
<i>xylophylla</i> , Gilg . . . . .	526	<i>crassa</i> , Benth. . . . .	145	Schum. . . . .	266
<i>Zenkeri</i> , Gilg . . . . .	529	<i>crassa</i> , Cummins . . . . .	145	<i>Kirkii</i> , N. E. Br. . . . .	268
<i>zizyphoides</i> , Baker . . . .	522	<i>crispiflora</i> , K.		<i>Martini</i> , Baill. . . . .	264
<i>Sweetia</i> . . . . .	570	Schum. . . . .	139	<i>nigritana</i> , N. E. Br. . . .	265
<i>Swertia</i> . . . . .	570	<i>dipladeniiflora</i> ,		<i>pedicellata</i> , K.	
<i>abyssinica</i> , Hochst. . . .	578	Stapf . . . . .	129	Schum. . . . .	262
<i>brevipedicellata</i> , Gilg . . .	577	<i>divaricata</i> , R. Br. . . . .	127	var. <i>occidentalis</i> ,	
<i>calycina</i> , N. E. Br. . . . .	574	<i>durissima</i> , Stapf . . . . .	144	N. E. Br. . . . .	263
<i>clarenceana</i> , Hook. f. . . .	578	<i>eglandulosa</i> , Stapf		<i>rosmarinifolia</i> ,	
<i>crassiuscula</i> , Gilg . . . . .	576	138, 139		N. E. Br. . . . .	263, 614
<i>curtioides</i> , Gilg . . . . .	580	<i>elegans</i> , Stapf . . . . .	150	<i>salicina</i> , Schlechter . . .	614
<i>dissimilis</i> , N. E. Br. . . . .	579	<i>erythrophthalma</i> ,		<i>Tholloni</i> , Baill. . . . .	266
<i>Eminii</i> , Engl. . . . .	580	K. Schum. . . . .	196	<i>venosa</i> , Decne. . . . .	264
<i>Engleri</i> , Gilg . . . . .	575	<i>grandiflora</i> , Hook. . . . .	150	var. <i>Martini</i> ,	
<i>erosula</i> , N. E. Br. . . . .	572	<i>Holstii</i> , Engl. . . . .	146	N. E. Br. . . . .	264
<i>filicaulis</i> , Gilg . . . . .	577	<i>inaequalis</i> , Pierre . . . .	132	<i>verticillata</i> , K.	
<i>fwambensis</i> ,		<i>inconspicua</i> , Stapf . . . .	126	Schum. . . . .	265
N. E. Br. . . . .	574	<i>jollyana</i> , Pierre . . . . .	144	<i>volubilis</i> , N. E. Br. . . .	262
<i>internixta</i> , A. Rich. . . . .	383	<i>longiflora</i> , Benth. . . . .	142	<i>Welwitschii</i> , Baill. . . .	264
<i>Johnsoni</i> , N. E. Br. . . . .	572	<i>malaccensis</i> , Hook. f. . . .	126	<i>Tachiadenus</i>	
<i>killimandcharica</i> ,		<i>mborensis</i> , K. Schum. . . .	150	<i>continentalis</i> , Baker . . .	554
Engl. . . . .	573	<i>monopodialis</i> , K.		<i>Tavaresia</i> . . . . .	493
<i>Lastii</i> , Engl. . . . .	579	Schum. . . . .	131	<i>angolensis</i> , Welw. . . . .	493
<i>Mannii</i> , Hook. f. . . . .	581	<i>nitida</i> , Stapf . . . . .	97	<i>Barklyi</i> , N. E. Br. . . . .	494
<i>minima</i> , Gilg . . . . .	575	<i>pachysiphon</i> , Stapf . . . .	146	<i>Tenaris</i> . . . . .	472
<i>multicaulis</i> , Engl. . . . .	575	<i>peduncularis</i> , Wall. . . . .	126	<i>rostrata</i> , N. E. Br. . . .	473

	Page		Page		Page
<b>Tenaris</b> ( <i>continued</i> )		<i>Unguacha</i>		<b>Voacanga</b> ( <i>continued</i> )	
<i>somaliensis</i> ,		<i>Simiurum</i> , Hochst. . . . .	534	<i>diplochlamys</i> , K.	
<i>N. E. Br.</i> . . . . .	473	<i>Usteria</i> . . . . .	517	<i>Schum.</i> . . . .	160
<i>subaphylla</i> , <i>N. E. Br.</i>	473	<i>guineensis</i> , Willd. . . . .	517	<i>Dregei</i> , E. Meyer . . . . .	154
<i>Volkensis</i> , K.		<i>volubilis</i> , Afzel. . . . .	517	<i>glabra</i> , K. Schum. . . . .	158
<i>Schum.</i> . . . .	474	<b>Vahadenia</b> . . . . .	29	<i>Holstii</i> , Engl. . . . .	146
<b>Tithymalus</b>		<i>Laurentii</i> , <i>Stapf</i> . 30, 589		<i>Klainii</i> , Pierre . . . . .	156
<i>pendulus</i> , Haw. . . . .	385	<b>Vahea</b>		<i>lutescens</i> , <i>Stapf</i> . . . . .	157
<b>Torenia</b>		<i>comorensis</i> , Boj. . . . .	40	<i>obtusata</i> , K. Schum. . . . .	153, 603
<i>spicata</i> , Engl. . . . .	558	<i>elastica</i> , Kl. . . . .	50, 56	<i>pubilocalyx</i> , Pierre . . . . .	159
<b>Toxicophlœa</b>		<i>florida</i> , F. Muell. . . . .	39	<i>puberula</i> , K. Schum. . . . .	156
<i>spectabilis</i> , This.-		<i>Heudelotii</i> , F. Muell. . . . .	54	<i>Schweinfurthii</i> , De	
Dyer . . . . .	95	<i>Kirkii</i> , Sadeb. . . . .	56	Wild. . . . .	156
<i>Thunbergii</i> , Harv. . . . .	95	<i>senegalensis</i> , F. Muell. . . . .	50	<i>Schweinfurthii</i> , Dur.	
<i>Thunbergii</i> , Sonder. . . . .	95	<i>senegalensis</i> , A. DC. . . . .	37	& De Wild. . . . .	158
<b>Toxocarpus</b> . . . . .	286	var. <i>Traunii</i> ,		var. <i>parviflora</i> ,	
<i>africanus</i> , Oliv. . . . .	280	Sadeb. . . . .	55	K. Schum. . . . .	158
<i>brevipes</i> , <i>N. E. Br.</i> . . . .	287	<i>tomentosa</i> , Lepr. . . . .	54	<i>Schweinfurthii</i> ,	
<i>parviflorus</i> , <i>N. E. Br.</i> . . . .	288	<i>Traunii</i> , Sadeb. . . . .	54	<i>Stapf</i> . . . . .	155
<i>racemosus</i> , <i>N. E. Br.</i> . . . .	287	<b>Villarsia</b>		<i>spectabilis</i> , <i>Stapf</i> . . . . .	155
<b>Traunia</b> . . . . .	417	<i>orbiculata</i> , G. Don . . . . .	587	<i>Thouarsii</i> , Hiern . . . . .	153
<i>albiflora</i> , K. Schum. . . . .	419	<i>senegalensis</i> , G. Don		<i>Thouarsii</i> , Roem. &	
<b>Trichocaulon</b> . . . . .	489	586, 587		<i>Sch.</i> . . . .	154
<i>officinale</i> , <i>N. E. Br.</i> . . . .	489	<b>Vinca</b>		<i>Zenkeri</i> , <i>Stapf</i> . . . . .	159
<i>pedicellatum</i> , <i>Schinz</i> . . . . .	490	<i>fol. oblongo-ovatis</i> ,		<b>Voyria</b> . . . . .	569
<b>Tylophora</b> . . . . .	404	Mill. . . . .	119	<i>platypetala</i> , <i>Baker</i> . . . . .	570
<i>Adalinæ</i> , K. Schum. . . . .	410	<b>Vincetoxicum</b> . . . . .	390	<i>primuloides</i> , <i>Baker</i> . . . . .	569
<i>anfracta</i> , <i>N. E. Br.</i> . . . .	408	<i>Adalinæ</i> , K. Schum. . . . .	395	<b>Willughbeia</b>	
<i>apiculata</i> , K.		<i>heterophyllum</i> ,		<i>cordata</i> , Klotzsch . . . . .	40
<i>Schum.</i> . . . .	407	<i>Vatke</i> . . . . .	404	<i>petersiana</i> , Klotzsch . . . . .	48
<i>bojeriana</i> , Decne. . . . .	408	<i>Holstii</i> , K. Schum. . . . .	392	<i>senensis</i> , Klotzsch . . . . .	48
<i>caffra</i> , Meism . . . . .	412	<i>Mannii</i> , Scott-Ell. . . . .	394	<b>Woodia</b>	
<i>cameroonica</i> ,		<i>polyanthum</i> , K.		<i>trilobata</i> , Schlechter . . . . .	306
<i>N. E. Br.</i> . . . .	407	<i>Schum.</i> . . . .	393	<b>Wrightia</b>	
<i>cirrosa</i> , Aschers. . . . .	381	<i>sarcostemmoides</i> ,		<i>Azeliæ</i> , K. Schum. . . . .	166
<i>conspicua</i> , <i>N. E. Br.</i> . . . .	405	<i>Schweinf.</i> . . . .	400	<i>parviflora</i> , <i>Stapf</i> . . . . .	166
<i>dahomensis</i> , K.		<b>Virchowia</b>		<i>Stuhlmannii</i> , K.	
<i>Schum.</i> . . . .	619	<i>africana</i> , <i>Vatke</i> . . . . .	476	<i>Schum.</i> . . . .	198
<i>heterophylla</i> , A.		<b>Voacanga</b> . . . . .	151	<i>zeylanica</i> , R. Br. . . . .	127
<i>Rich.</i> . . . .	404	<i>africana</i> , <i>Stapf</i> . . . . .	157, 603	<b>Xysmalobium</b> . . . . .	298
<i>incana</i> , Brunn. . . . .	431	<i>africana</i> , <i>Stapf</i> . . . . .	156, 157	<i>andongense</i> , <i>Hiern</i>	
<i>longipedunculata</i> ,		var. ? <i>Stapf</i> . . . . .	155	309, 616	
Schlechter . . . . .	404	<i>angolensis</i> , <i>Stapf</i> . . . . .	154	<i>angolense</i> , <i>Scott-</i>	
<i>oblonga</i> , <i>N. E. Br.</i> . . . .	408	<i>angolensis</i> , <i>Stapf</i> . . . . .	156	<i>Elliot</i> . . . . .	308
<i>oculata</i> , <i>N. E. Br.</i> . . . .	406	<i>angustifolia</i> , K.		<i>barbigerum</i> ,	
<i>orthocaulis</i> , K.		<i>Schum.</i> . . . .	111	<i>N. E. Br.</i> . . . .	307
<i>Schum.</i> . . . .	410	<i>Boehmii</i> , K. Schum. . . . .	161	<i>bellum</i> , <i>N. E. Br.</i> . . . .	311
<i>plagiopetala</i> , <i>Schl. &amp;</i>		<i>Bakmii</i> , K. Schum. . . . .	157	<i>Carsoni</i> , <i>N. E. Br.</i> . . . .	366
K. Schum. . . . .	618	<i>bracteata</i> , <i>Stapf</i> . . . . .	160	<i>Cecilæ</i> , <i>N. E. Br.</i> . . . .	310
<i>silvatica</i> , K. Schum. . . . .	408	var. <i>lanceolata</i> ,		<i>concolor</i> , D. Dietr. . . . .	378
<i>stenoloba</i> , <i>N. E. Br.</i> . . . .	409	<i>Stapf</i> . . . . .	161, 604	<i>decipiens</i> , <i>N. E. Br.</i>	
<i>sylvatica</i> , Decne. . . . .	407	<i>bracteata</i> , <i>Stapf</i> . . . . .	160	301, 615	
<i>syriacæfolia</i> ,		<i>caudiflora</i> , <i>Stapf</i> . . . . .	603	<i>dispar</i> , <i>N. E. Br.</i> . . . .	307
<i>Spreng.</i> . . . .	431	<i>chaliotiana</i> , Pierre . . . . .	158	<i>dissolutum</i> , K.	
<i>tenuipedunculata</i> , K.		<i>densiflora</i> , K. Schum. . . . .	161	<i>Schum.</i> . . . .	348
<i>Schum.</i> . . . .	409	<i>dichotoma</i> , K.			
<b>Tylophoropsis</b> . . . . .	403	<i>Schum.</i> . . . .	161		
<i>heterophylla</i> ,					
<i>N. E. Br.</i> . . . .	403				

	Page		Page		Page
Xysmalobium (con- tinued)		Xysmalobium (con- tinued)		Xysmalobium (con- tinued)	
<i>dolichoglossum</i> , K.		<i>leucotrichum</i> ,		<i>spurium</i> , N. E. Br.	367
Schum. . . . .	368	N. E. Br. . . . .	615	<i>trilobatum</i> , N. E. Br.	306
<i>fraternum</i> , N. E. Br.	305	<i>membraniferum</i> ,		<i>Zaccatea</i> . . . . .	269
<i>fritillarioides</i> ,		N. E. Br. . . . .	304	<i>angolensis</i> , Baill.	272
Rendle . . . . .	327	<i>orbiculare</i> , Decne.	305	<i>Zucchellia</i> . . . . .	269
<i>gramineum</i> , S. Moore	302	<i>padifolium</i> , Scott-		<i>angolensis</i> , Deone.	272
<i>grande</i> , N. E. Br.	311	Elliot . . . . .	305	<i>Zygodia</i> . . . . .	217
<i>heudelotianum</i> ,		<i>prismatostigma</i> , K.		<i>axillaris</i> , Benth.	210
Decne. . . . .	304	Schum. . . . .	308	<i>kindengensis</i> , K.	
<i>heudelotianum</i> ,		<i>reticulatum</i> ,		Schum. . . . .	219
Scott-Elliott . . . . .	305	N. E. Br. . . . .	303	<i>melanocephala</i> ,	
<i>Holubii</i> , Scott-		<i>rhomboideum</i> ,		Stapf . . . . .	219
Elliot . . . . .	302	N. E. Br. . . . .	305	<i>myrtilolia</i> , Benth.	218
<i>Holubii</i> , Scott-Elliott	302	<i>schumannianum</i> , S.		<i>subsessilis</i> , Benth.	218
<i>Holubyi</i> , Schlechter	615	Moore . . . . .	303	<i>urceolata</i> , Stapf.	218
<i>involutatum</i> , Decne.	302	<i>sessile</i> , Decne. . . . .	308	<i>Zygonerion</i>	
<i>lapathifolium</i> K		<i>spathulatum</i> ,		<i>Welwitschii</i> , Baill.	183
Schum. . . . .	307	N. E. Br. . . . .	312		

## ERRATA.

- Page 26, line 41, for *DIPLORRHYNCUS* read *DIPLORHYNCUS*.  
 ,, 34, ,, 5, for 403 read 401.  
 ,, 89, ,, 18, after *Ovules* insert about 8.  
 ,, ,, bottom line, for ii. read i.  
 ,, 94, line 19, for ser. 7 read ser. 1.  
 ,, 126, ,, 10, for *malaccana* read *malaccensis*.  
 ,, 139, ,, 10 from bottom, for D. Don read G. Don.  
 ,, 186, ,, 7, for *Gürick* read *Gürich*.  
 ,, 225, ,, 6 from bottom, for 1½-4 lin. read 1½-4 in.  
 ,, 237, ,, 18, for 21 read 19.  
 ,, ,, ,, 37, for 19 read 20.  
 ,, ,, ,, 42, for 20 read 21.  
 ,, 240, ,, 13, for *TOVAREZIA* read *TAVAREZIA*.  
 ,, 278, ,, 8, for *leonense* read *leonensis*.  
 ,, 281, ,, 24, for **leonense** read **leonensis**.  
 ,, 316, ,, 41, for 13 read 14.  
 ,, 381, ,, 2, *dele* & Arnott.  
 ,, 382, ,, 9 from bottom, for 1-1½ lin. read 1-1½ in.  
 ,, 512, ,, 12, for *Dekindtii* read *dekindtiana*.  
 ,, 514, ,, 10, for **Dekindtii** read **dekindtiana**.  
 ,, 546, ,, 4, for *zombensis* read *zombense*.  
 ,, ,, ,, 24, for **zombensis** read **zombense**.  
 ,, 560, ,, 29, for i. read ii.  
 ,, 564, ,, 25, for 10 read 11.  
 ,, 565, ,, 11 from bottom, for 11 read 12.  
 ,, 569, ,, 26, for 12 read 13.  
 ,, 570, ,, 10, for 12 read 14.  
 ,, 572, ,, 9, for *Emini* read *Eminii*.









