

A revision of *Clematis* sect. *Brachiatae* (*Ranunculaceae*)

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Abstract *Clematis* sect. *Brachiatae* is revised in this paper. Twenty-four species and four varieties are recognized. They are keyed, described, and illustrated in most cases, and classified into two series. Brief taxonomic history and geographical distribution of the section are given, and its systematic position and origin are discussed. A western Himalayan species, *C. graveolens* Lindl., which has long been misplaced in the *C. orientalis* group (sect. *Meclatis*), is transferred to sect. *Brachiatae* on the basis of its floral structure being identical with that of *C. brachiata* Thunb. and its allies. Two new combinations, sect. *Brachiatae* *Snoeijer* ser. *Wightianae* (W. T. Wang) W. T. Wang and ser. *Dissectae* (W. T. Wang) W. T. Wang, are made, and two species, *C. zairensis* W. T. Wang and *C. bowkeri* Burt Davy, are described as new.

Key words *Clematis*, *Clematis* sect. *Brachiatae*, taxonomic revision.

1 Brief taxonomic history

In the first revision of the genus *Clematis* L. made by de Candolle (1818), two species of the section *Brachiatae*, *C. brachiata* Ker-Gawl. and *C. mauritiana* Lam., were recognized and placed in his large, heterogenous sect. *Flammula* which consists of some 70 species.

In the account of the tribe *Clematideae* made by Spach (1839), no species of sect. *Brachiatae* was included.

When Kuntze's monograph of the *Clematis* was published in 1885, some 12 species of sect. *Brachiatae* were described. In sect. 1. *Scandentes aperulatae*, *C. massoniana* DC., *C. graveolens* Lindl., *C. thunbergii* Steud. (= *C. triloba* Thunb.), *C. brachiata* Thunb., *C. wightiana* Wall. ex Wight & Arn., *C. inciso-dentata* A. Rich., and *C. simensis* Fresen. were all treated as infraspecific taxa of *C. orientalis* L., and *C. ibarensis* Baker, *C. commutata* Kuntze, and *C. dissecta* Baker as independent species; and in sect. 2. *Scandentes perulatae*, *C. mauritiana* Lam. with ssp. *laxiflora* (Baker) Kuntze and ssp. *strigillosa* (Baker) Kuntze, and in sect. 3. *Escandentes*, *C. wehuitschii* Hiern ex Kuntze were recognized respectively. Perhaps known only from a fruiting collection, *C. ibarensis* was much less understood by Kuntze, and was misplaced near the two unisexual species, *C. dioica* L. and *C. hexapetala* L. f., and the Madagascar unisexual species, *C. insidiosa* Baill. (= *C. edentata* Baker) was erroneously treated as a subspecies of *C. ibarensis*.

In the classification of the *Clematis* proposed by Prantl (1888), the *C. brachiata* group was recognized as a distinct taxon for the first time. Under sect. *Flammula* after subsect. *Orientalis* Prantl established a new subsection, subsect. *Wightianae*, which consists of the Indian *C. wightiana* Wall., the African *C. brachiata* Thunb., *C. thunbergii* Steud., *C. glaucescens* Fresen.,

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and *C. simensis* Fresen. , and the Madagascan and Mascarene *C. mauritiana* Lam. However , another three species belonging to the *C. brachiata* group , *C. welwitschii* Hiern ex Kuntze , *C. commutata* Kuntze , and *C. dissecta* Baker , were misplaced in his new section , sect. *Pseudanemone* , which is characterized by its imbricate aestivation of sepals and usual erect habit.

In his account of the *Clematis* , Schneider (1906) adopted Prantl 's classification. However , subsect. *Wightianae* was not included , and a species belonging to subsect. *Wightianae* , *C. graveolens* Lindl. , which occurs in western Himalaya , was misplaced in subsect. *Orientalis*. In *C. graveolens* Lindl. , just as in *C. brachiata* , *C. wightiana* and their allies , the sepals are spreading and white in colour , and the hairy stamen filaments are narrowly linear in outline. By these morphological characters it distinguishes from the species of the *C. orientalis* group , in which the sepals are usually ascending and yellow in colour , and the hairy stamen filaments are narrowly lanceolate in outline. In recent works on *Clematis* , the inclusion of *C. graveolens* in the *C. orientalis* group by Schneider has been adopted by Grey-Wilson (1989 , 2000) , Snoeijer (1992) , Johnson (1997) , and Brandenburg (2000) .

In the classifications of the *Clematis* proposed by Tamura (1987 , 1995) , the definition of Prantl 's subsect. *Wightianae* was probably misunderstood , because it was treated as a synonym of sect. *Campanella* (*C. connata* group) , which is characterized by having erect sepals. And , in his 1995 's classification , the African species *C. brachiata* , *C. simensis* , *C. hirsuta* Perr. & Guill. etc. were together with *C. orientalis* and its allies placed in sect. *Meclatis*.

In the classification of the *Clematis* proposed by Snoeijer (1992) , *C. brachiata* and its allied species were recognized as representing a distinct group as Prantl did in 1888 , although this group was treated by Snoeijer as a section (sect. *Brachiatae*) rather than a subsection. With obvious distinguishing characters from the *C. orientalis* group (see below) , the *C. brachiata* group appears to merit sectional recognition , and in the present revision , Snoeijer 's new section is accepted.

In his monograph of the *Clematis* , on the basis of *C. hirsuta* and its allies Johnson (1997) described a new subsection , subsect. *Africanae* under sect. *Clematis* , which is an equivalent of subsect. *Wightianae* described in 1888 by Prantl (see above) , and should be an illegitimate name. Following Kuntze (1885 , see above) , Johnson also treated the Madagascan unisexual *C. insidiosa* Baill. (= *C. edentata* Baker) as a subspecies of *C. ibarensis*. Besides , perhaps influenced by Tamura 's treatment (1987 , 1995 , see above) of the subsect. *Wightianae* Prantl , Johnson misplaced *C. wightiana* Wall. ex Wight & Arn. , a member of the *C. brachiata* group , in the *C. connata* group (sect. *Connatae* (Koehne) M. Johnson) , which is characterized by having erect sepals.

In his new book entitled *Clematis The Genus* , Grey-Wilson (2000) adopted Johnson 's subsect. *Africanae* (see above) , but transferred it to sect. *Meclatis* , and placed it before subsect. *Meclatis*. He also treated the Madagascan unisexual *C. insidiosa* Baill. as a subspecies of *C. ibarensis* as Kuntze (1885) and Johnson (1997) did.

2 Systematic position

In having spreading , valvate , white , usually oblong , ovate , lanceolate sepals , narrowly linear filaments , and oblong or narrowly oblong anthers with connectives not projected , sect. *Brachiatae* shows striking resemblance to sect. *Clematis* subsect. *Clematis* (Wang , 2003) , but differs mainly by having hairy stamen filaments. As mentioned above , species of sect. *Brachiatae* have often been placed in the *C. orientalis* group mainly because they all have hairy stamen filaments , a character shared by the *C. orientalis* group. However , they differ from those of the *C. orientalis* group in their spreading , white sepals and narrowly linear filaments. In species of the *C. orientalis* group ,

the sepals are usually ascending and yellow in colour, and the filaments are widened below, narrowly lanceolate in outline. According to the distinguishing characters mentioned above, sect. *Brachiatae* appears to be more or less related to sect. *Meclatis* (*C. orientalis* group), and the two sections might be together derived from sect. *Clematis* subsect. *Clematis* (Wang, 2003).

3 Infracsectional subdivision

In sect. *Brachiatae*, the sepals are spreading, white, usually more or less narrowed, oblong, ovate, or lanceolate, rarely widened, broadly elliptic (*C. falciformis* Viguier & Perrier, *C. dissecta*) in outline; the stamen filaments are pubescent, narrowly linear in outline; the anthers are usually narrowly oblong or oblong, rarely broadly elliptic (*C. oweniae* Harvey) or linear (*C. triloba*, *C. thalictrifolia* Engler) in outline, with connectives usually not projected (anthers obtuse at apex), rarely very slightly projected at apex (anthers minutely apiculate at apex) (*C. wightiana* and *C. triloba*); and the carpels are quite uniform, with densely pubescent ovaries and densely villous styles. From what mentioned above, the following evolutionary trends in the floral structure of sect. *Brachiatae* may to some extent be revealed: the sepals transforming from oblong in outline either to lanceolate or to broadly elliptic respectively, and the anthers elongated, transforming from broadly elliptic or oblong to linear in outline. On the other hand, in sect. *Brachiatae*, the leaves show a distinct evolutionary trend from simple to ternate and 1–2-pinnate, culminating in the 3–4-pinnatisect ones of *C. falciformis* and *C. dissecta*. In the *Clematis*, 3–4-pinnate or 3–4-pinnatisect leaves represent an advanced phase in leaf division, occurring in sect. *Aspidanthera* subsect. *Dioicae* (*C. millefoliolata* Eichler) and subsect. *Insidiosae* (*C. rutoides* W. T. Wang), sect. *Brachiatae* ser. *Dissectae* (*C. falciformis*, *C. dissecta*), sect. *Viorna* subsect. *Connatae* (*C. aethusifolia* Turcz.), and sect. *Pseudanemone* (*C. anethifolia* Hook.). In the present revision, on the basis of leaf division and sepal form, the species of sect. *Brachiatae* are grouped into two series, of which ser. 1. *Wightianae* accommodates the 22 species with simple to 1–2(–3)-pinnate leaves and oblong to lanceolate sepals, and ser. 2. *Dissectae*, the two species with 3–4-pinnatisect leaves and broadly elliptic sepals.

4 Geographical distribution

In the present revision 24 species and 4 varieties of sect. *Brachiatae* are recognized. They are widespread in Comoros, Madagascar, Mascarene, African mainland, and southern Asia. Of them, 2 species are endemic to Comoros, and 9 species occur in Madagascar and Mascarene, with 8 endemic species and 1 (*C. brachiata*) being in common for Madagascar and southern African mainland; 14 species are distributed on African mainland, with 11 endemic species, and 1 species and 1 variety (*C. simensis* and *C. hirsuta* var. *hirsuta*) extending northeastward from African mainland to southern Arabic Peninsula, and 1 being in common with Madagascar as mentioned above; and the remaining 2 species (*C. wightiana* and *C. graveolens*) are restricted in geographical distribution to southern India and western Himalaya in Asia respectively (Fig. 1).

Of the 24 species, 18 have 1–3-pinnate leaves, and the 2 species endemic to Madagascar, *C. falciformis* and *C. dissecta*, have 3–4-pinnatisect leaves. Only 1 species, *C. actinostemmatifolia* W. T. Wang, an endemic of Comoros, has simple leaves, and only 2 species, *C. strigillosa* Baker, an endemic of Madagascar, and *C. mauritiana* Baker, an endemic of Madagascar and Mascarene, have strictly ternate leaves. Thus, according to the leaf evolutionary trends mentioned above, the archipelagic region of Comoros, Madagascar, and Mascarene may be considered as the center of origin of sect. *Brachiatae*. Besides, *C. zairensis* W. T. Wang, an endemic of central African mainland, shows remarkable resemblance to the Madagascan *C. strigillosa* in having ternate leaves. However, in *C. zairensis*, in addition to ternate leaves, a few leaves are 5-foliolately pinnate. So, this African species is more advanced than *C. strigillosa*, and might be derived from the

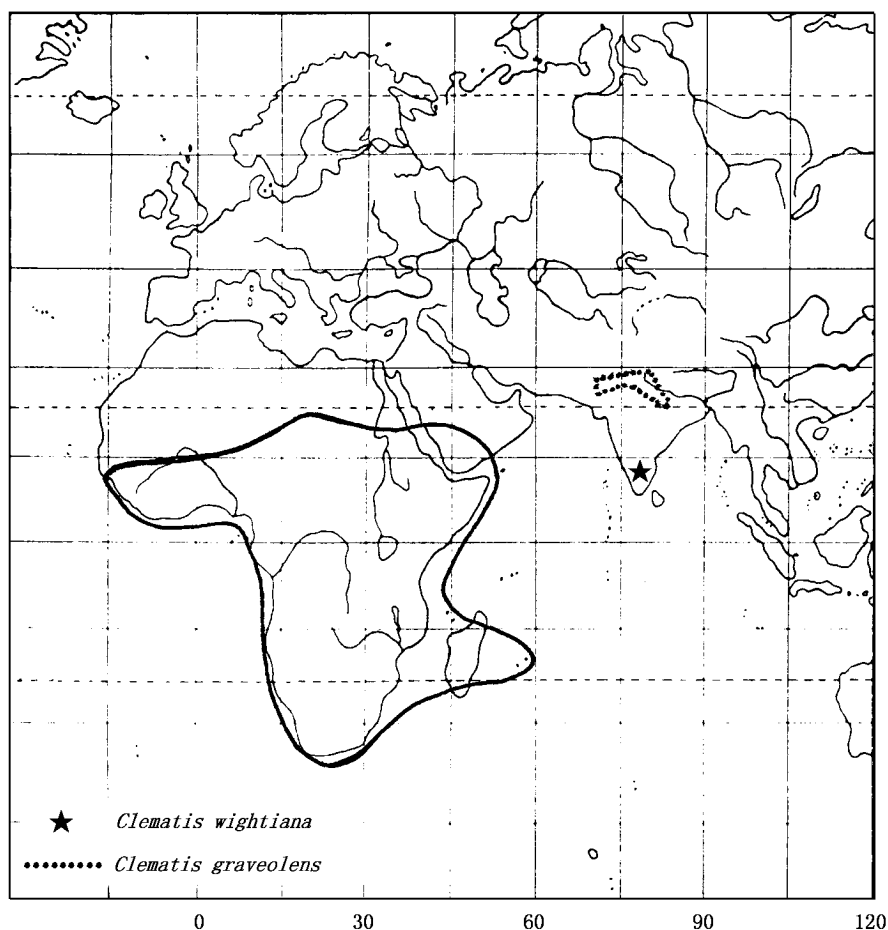


Fig. 1. Map showing the distribution of the section *Brachiatae*.

latter or its ally. On the other hand, *C. zairensis* does represent the relict primitive species of sect. *Brachiatae* of the African mainland, on which the other 13 species of that section all have 1 – 3-pinnate leaves.

According to Wilson (1963), Dietz and Holden (1970), and Raven and Axelrod (1974), the Indian plate, being part of the southern ancient supercontinent Gondwana, commenced its northward movement about 100 m. y. BP, and collided with the underbelly of Asia by the Middle Eocene. On the basis of what just mentioned, I would speculate that the two Asian species, *C. wightiana* and *C. graveolens*, might be derived from their African ancestors by the Late Cretaceous or early Tertiary when the Indian plate was near the African plate. If so, sect. *Brachiatae* must be one of the archaic groups in the genus *Clematis*.

5 Taxonomic treatment

Clematis L. sect. **Brachiatae** Snoeijer in *Clematis* 1992 : 12. 1992, ut "*Brachiata*". Type : *C. brachiata* Thunb.

Sect. *Flammula* DC. 13 *Wightianae* Prantl in *Bot. Jahrb.* 9 : 261. 1888. — Sect.

Meclatis (Spach) Tamura subsect. *Wightianae* (Prantl) W. T. Wang in Acta Phytotax. Sin. 38 : 321. 2000 et 39 : 325. 2001. Lectotype : *C. wightiana* Wall. ex Wight & Arn.

Sect. *Clematis* subsect. *Africanae* M. Johnson, *Clematis* 416. 1997, p.p., excl. *C. ibarensis* Baker ssp. *edentata* (Baker) Viguier & Perrier et *C. sigensis* Engler.—Sect. *Meclatis* (Spach) Tamura subsect. *Africanae* (M. Johnson) Grey-Wils., *Clematis* 155. 2000, p.p., excl. *C. ibarensis* ssp. *edentata* (Baker) Viguier & Perrier. Type : *C. hirsuta* Perr. & Guill.

Woody vines. Seedling leaves alternate (known from one species, *C. brachiata* (Essig, 1991)). Cauline leaves opposite, 1–2(–3)-pinnate, sometimes ternate, rarely simple or 3–4-pinnatisect. Flowers bisexual, medium-sized or small, in (1–)3–many-flowered, pedunculate, 2-bracteate cymes arising from leaf axils or apexes of hornotinous branches. Sepals 4(–5), petaloid, white, valvate, spreading, oblong, ovate, or lanceolate, rarely broadly elliptic, outside on margin velutinous. Stamens numerous; filaments narrowly linear, pubescent; anthers narrowly oblong or oblong, rarely broadly elliptic or linear, glabrous; connectives not projected, rarely slightly projected at apex. Achenes compressed, but not flattened; persistent styles elongate, plumose.

Twenty-four species in two series, mostly on African mainland, Madagascar, Comoros and Mascarene, a few distributed in southern Asia.

According to Article 21B. 1. of the International Code of Botanical Nomenclature (Greuter et al., 2000), “The epithet in the name of a subgenus or section is preferably a noun, that of a subsection or lower subdivision of a genus preferably a plural adjective”, the original sectional name sect. *Brachiata*, which is a singular adjective, is changed in the present revision to sect. *Brachiatae*, which is a plural adjective.

Key to infrasectional taxa

1. Leaves ternate or 1–2-pinnate, rarely simple, 3-pinnate or 2-pinnatisect; sepals oblong, ovate, or lanceolate... Ser. 1. **Wightianae**
2. Leaves simple 1. **C. actinostemmatifolia**
2. Leaves compound.
 3. Leaves ternate (in *C. zairensis*, a few leaves are pinnate).
 4. Leaflets margin from base to apex more or less densely dentate, undivided or 2–3-lobed; anthers narrowly oblong or linear 3. **C. mauritiana**
 5. Leaflets abaxially not reticulate 3a. var. **mauritiana**
 5. Leaflets abaxially finely reticulate 3b. var. **coriacea**
 4. Leaflets margin sparsely dentate or subentire; anthers oblong.
 6. Leaves all ternate, undivided, abaxially sparsely puberulous; petioles 4.5–7 cm long; peduncles 5–10 cm long; pedicels sparsely puberulous; sepals outside along margin with velutinous strips 0.5–1 mm broad 2. **C. strigillosa**
 6. Leaves mostly ternate, a few 5-foliolately pinnate, undivided or 3-lobed, abaxially densely puberulous; petioles shorter, 1.5–4 cm long; peduncles shorter, 2.8–4.8 cm long; pedicels densely puberulous; sepals on the very margin with velutinous strips 0.2–0.3 mm broad 4. **C. zairensis**
3. Leaves 1–2-pinnate.
 7. Leaves pinnate.
 8. Sepals inside glabrous or subglabrous.
 9. Leaflets abaxially puberulous.
 10. Leaflets lanceolate or narrowly ovate, up to 4.4 cm broad; sepals 3.5–9.8 mm long; anthers 2.2–2.8 mm long 8. **C. kakoulimensis**
 10. Leaflets ovate or narrowly ovate, up to 8 cm broad; sepals larger, 9–15(–21) mm long;

- anthers smaller, 1 – 2 mm long 15. *C. viridiflora*
9. Leaflets abaxially velutinous or lanate.
11. Leaflets abaxially yellow velutinous 12. *C. wightiana*
11. Leaflets abaxially greyish lanate 13d. *C. hirsuta* var. *inciso-dentata*
8. Sepals inside puberulous.
12. Leaflets on both surfaces glabrous or abaxially sparsely puberulous.
13. Leaflets lanceolate 10. *C. tibetica*
13. Leaflets ovate or narrowly ovate.
14. Anthers 2.8 – 3 mm long 9. *C. massoniana*
14. Anthers up to 2.5 mm long.
15. Leaflets usually narrowly ovate, usually undivided 7. *C. simensis*
15. Leaflets ovate or broadly ovate, usually 3-lobed 13b. *C. hirsuta* var. *glabrescens*
12. Leaflets on both surfaces puberulous, or abaxially velutinous.
16. Sepals outside densely tawny or yellow puberulous.
17. Leaflets abaxially tawny puberulous; pedicels 3.8 – 7.5 cm long 11. *C. dolichopoda*
17. Leaflets abaxially whitish puberulous; pedicels usually shorter, 2.7 – 4.5 cm long
..... 16. *C. commutata*
16. Sepals outside white puberulous.
18. Leaflets up to 1.6 cm broad, elliptic 20. *C. triloba*
18. Leaflets larger, up to 3 – 9 cm broad, ovate, broadly ovate, or oblong-lanceolate.
19. Leaflets narrowly ovate to lanceolate; pedicels subglabrous 5. *C. ibarensis*
19. Leaflets ovate or broadly ovate; pedicels puberulous.
20. Leaflets subcoriaceous, abaxially not reticulate 14. *C. brachiata*
20. Leaflets papery or thinly papery.
21. Leaf marginal teeth at apex apiculate, with apicula 0.5 – 0.8 mm long
..... 6. *C. microcupis*
21. Leaf marginal teeth at apex not or indistinctly apiculate.
22. Leaflets abaxially either reticulate or velutinous 13. *C. hirsuta*
23. Leaflets papery, abaxially reticulate, sparsely to densely puberulous
..... 13a. var. *hirsuta*
23. Leaflets thinly papery, abaxially velutinous, not reticulate
..... 13c. var. *junodii*
22. Leaflets abaxially neither reticulate nor velutinous 15. *C. viridiflora*
7. Leaves 2-pinnate, rarely 2-pinnatisect.
24. Anthers broadly elliptic or broadly oblong, 0.8 – 1.1 mm long 18. *C. oweniae*
24. Anthers narrowly oblong or oblong, rarely linear, (1 –)1.4 – 3.2 mm long.
25. Sepals inside glabrous or subglabrous 15. *C. viridiflora*
25. Sepals inside puberulous.
26. Sepals at apex truncate or emarginate, 1.1 – 1.6 cm long; leaves sometimes 3-pinnate
..... 22. *C. graveolens*
26. Sepals at apex acute, attenuate, or obtuse; leaves not 3-pinnate.
27. Sepals outside glabrous 19. *C. bowkeri*
27. Sepals outside puberulous.
28. Leaflets ovate.
29. Sepals outside densely tawny puberulous 16. *C. commutata*
29. Sepals outside white puberulous.
30. Leaflets subcoriaceous, not reticulate 14. *C. brachiata*
30. Leaflets papery or herbaceous.
31. Leaflets abaxially reticulate; persistent styles 2.5 – 3.5 cm long
..... 13a. *C. hirsuta* var. *hirsuta*
31. Leaflets abaxially not reticulate.

32. Leaflets papery, 1–3-dentate per side; persistent styles 3–5 cm long 15. *C. viridiflora*
32. Leaflets thinner, herbaceous, 4–6-dentate per side; persistent styles ca. 4.5 cm long 17. *C. comorensis*
28. Leaflets oblong or linear.
33. Leaves 2-pinnate; leaflets oblong or narrowly oblong; cymes 3–10-flowered, often panicle-like; peduncles up to 12 cm long; pedicels 2–(3–7.5) cm long; sepals 10–15 × 4–8 mm; anthers narrowly oblong or linear, 1.5–3.2 mm long ... 20. *C. triloba*
33. Leaves 2-pinnate or 2-pinnatisect; leaflets or ultimate lobes narrowly oblong to linear; cymes 1–3-flowered, never panicle-like; peduncles 7–20 cm long; pedicels (3–)7–19 cm long; sepals often larger, 16–30 × 7–15 mm; anthers linear, 2.8–4 mm long 21. *C. thalictrifolia*
1. Leaves 3–4-pinnatisect; sepals usually broadly elliptic Ser. 2. **Dissectae**
34. Branches only on nodes sparsely pilose, elsewhere glabrous; leaves glabrous; leaf ultimate lobes linear or narrowly linear, 4–35 × 1–2 mm; cymes terminal and axillary; peduncles up to 10 cm long; sepals 3 × 1.8 cm; stamens 12–17 mm long 23. *C. falciformis*
34. Branches puberulous; leaves on rhachis puberulous; leaf ultimate lobes smaller, linear-lanceolate, linear, or narrowly triangular, 1.5–4 × 0.4–0.8 mm; cymes only axillary; peduncles short, 5–10 mm long; sepals smaller, 1.2–1.6 × 0.8–1.1 cm; stamens shorter, 7–10 mm long 24. *C. dissecta*

Ser. 1. **Wightianae** (W. T. Wang) W. T. Wang, comb. nov. — Sect. *Meclatis* (Spach) Tamura subsect. *Wightianae* (Prantl) W. T. Wang ser. *Wightianae* W. T. Wang in Acta Phytotax. Sin. 38 : 421. 2000. Type: *C. wightiana* Wall. ex Wight & Arn.

Leaves 1–2-pinnate, sometimes ternate, rarely simple, 3-pinnate, or 2-pinnatisect, with leaflets usually ovate, oblong, or lanceolate in outline. Axillary cymes (1–) few–many-flowered. Sepals oblong, ovate, or lanceolate.

Twenty-two species, with the same distribution area as that of the section (see above).

1. *Clematis actinostemmatifolia* W. T. Wang in Acta Phytotax. Sin. 38 : 421, fig. 3 : 1–3. 2000 et 39 : 326. 2001. Type: Comoros. Plateau de la Grande Comore, 1850-05, Boivin s. n. (holotype, P!).

C. orientalis L. ssp. *simensis* auct. non (Fresen.) Kuntze: Viguier & Perrier in Mém. Inst. Sci. Madag., ser. B, 2(2) : 223. 1949, p. p. quad pl. Comoros.

Fig. 2 : E–G

Woody vine. Branches terete, very shallowly 8-sulcate, subglabrous. Leaves simple; leaf blade chartaceous, ovate, 7–9.5 × 5.5–7 cm, apex acute, base cordate, subcordate, or rounded, margin above base regularly rounded-dentate or dentate, 3-lobulate, on both surfaces only on midrib sparsely puberulous, abaxially finely reticulate, basal veins abaxially prominent; petioles 7–8.5 cm long, often cirrhiform, subglabrous. Cymes axillary, (3–)5–7-flowered; peduncles 4–8 cm long, glabrous; bracts petiolate, narrowly ovate or lanceolate, 1.6–3 cm long, glabrous. Flower 2–3 cm in diam.; pedicel 1–3 cm long, glabrous. Sepals 4, obovate-elliptic or broadly elliptic, 12–17 × 8–11 mm, apex rounded, inside appressed-puberulous, outside glabrous, margin with a broad velutinous strip. Stamens 7–10 mm long; filaments narrowly linear, pubescent; anthers narrowly oblong, 1.8–2 mm long, glabrous, apex obtuse. Ovaries densely puberulous; styles 6–8 mm long, densely villous. Fl. May.

Comoros.

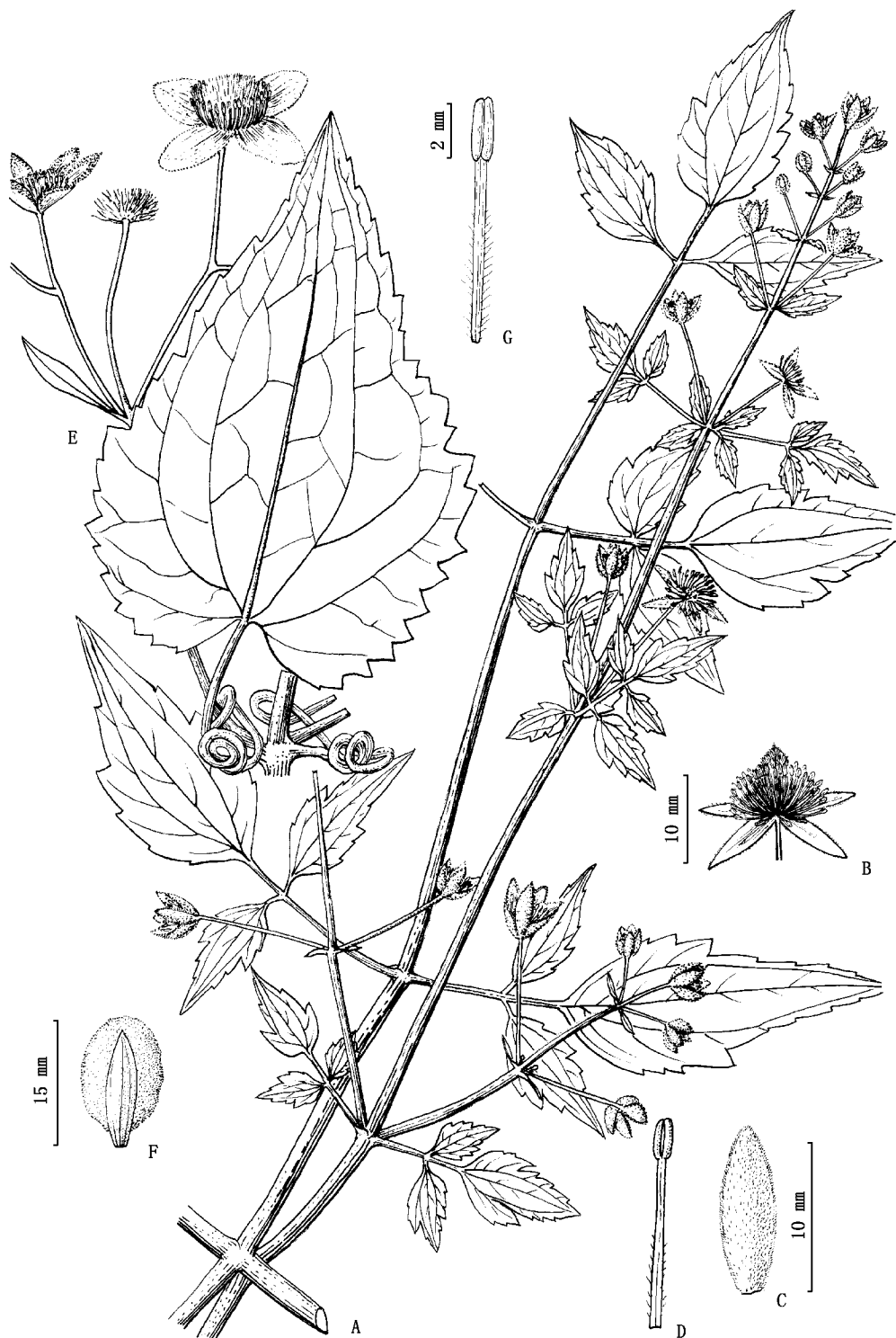


Fig. 2. A–D, *Clematis comoresensis* W. T. Wang. A, flowering branch; B, flower; C, sepal outside; D, stamen (from Humblot 1518). E–G, *C. actinostemmatifolia* W. T. Wang. E, leaf and its axillary inflorescence; F, sepal outside; G, stamen (from Boivin s. n.).

2. *Clematis strigillosa* Baker in J. Linn. Soc. Bot. 18 : 265. 1881 ; Baill. in Bull. Soc. Linn. Paris 1 : 331. 1882 ; W. T. Wang in Acta Phytotax. Sin. 39 : 328 , fig. 6 : 1 , 2. 2001. — *C. mauritiana* Lam. ssp. *strigillosa* (Baker) Kuntze in Verh. Bot. Ver. Brand. 26 : 166. 1885. — *C. mauritiana* var. *strigillosa* (Baker) Durand & Schinz , Consp. Fl. Afr. 1 (2) : 5. 1898. Type : Madagascar. Tanala , Kitching s. n. (lectotype , K ! ; isolectotype , P !) ; Anevoca , between Tamtava and Antananarivo , 1862-07 , Meller s. n. (syntype , K !).

C. laxiflora Baker in J. Linn. Soc. Bot. 21 : 317. 1884 ; M. Johnson , Klematis 463. 1997 ; Grey-Wils. , Clematis 156. 2000. — *C. mauritiana* ssp. *laxiflora* (Baker) Kuntze in l. c. — *C. mauritiana* var. *laxiflora* (Baker) Durand & Schinz l. c. Type : Central Madagascar. Without precise locality , Baron 2448 (holotype , K ! ; isotypes , BM ! , P !).

C. orientalis L. ssp. *wightiana* auct. non (Wall.) Kuntze ; Viguier & Perrier in Mém. Inst. Sci. Madag. , ser. B , 2 (2) : 223. 1949 , p. p. quoad Baron 2448 ; Perrier in Humbert , Fl. Madag. Comor. 76° Fam. Renonculac. 13. 1950 , p. p. quoad Baron 2448.

C. mauritiana auct. non Lam. : Viguier & Perrier in l. c. , p. p. quoad syn. *C. strigillosa* Baker ; Perrier in Humbert l. c. , p. p. quoad syn. *C. strigillosa* Baker ; M. Johnson , Klematis 463. 1997 , p. p. quoad syn. *C. strigillosa* Baker.

Fig. 3 : A , B

Woody vine. Branches terete , ca. shallowly 10-sulcate , sparsely puberulous. Leaves ternate ; leaflets chartaceous , ovate or narrowly or broadly ovate , 5.8 – 9 × 3.3 – 6.5 cm , apex acute or acuminate , base rounded , subtruncate or subcordate , margin usually sparsely denticulate , rarely denticulate (teeth often mucronate) , sometimes nearly entire , on both surfaces sparsely appressed-puberulous , and finely reticulate , basal veins abaxially prominent ; petioles 4.5 – 7 cm long , sparsely puberulous. Cymes axillary , usually many-flowered , panicle-like ; peduncles 5 – 10 cm long , sparsely puberulous or subglabrous ; bracts petiolate , ovate or narrowly ovate , 2 – 5.5 cm long. Flower 1.7 – 3.5 cm in diam. ; pedicel 1 – 3 cm long , sparsely puberulous. Sepals 4 , white or white-yellowish , obovate-oblong or oblong-elliptic , 8 – 17 × 2.5 – 7 mm , apex subrounded or truncate or emarginate , on both surfaces densely appressed-puberulous , outside on margin with a broad velutinous strip. Stamens 6 – 10 mm long ; filaments narrowly linear , on middle part pubescent ; anthers narrowly oblong , 1 – 2 mm long , glabrous , apex obtuse , rarely minutely apiculate. Ovaries densely puberulous ; styles 5 – 9 mm long , densely villous. Achenes compressed , ovate , 2.5 – 3 × 1.8 – 2 mm , puberulous ; persistent styles 2.5 – 3.5 cm long , plumose. Fl. Jul. – Oct.

Madagascar. On slopes ; alt. 800 – 1000 m.

Additional specimens examined.

Madagascar. Antsiranana , Lewis et al. 1234 (P) ; Toamasina : Andasibe , Phillipson 2093 (K) ; without precise locality , Baron 13 , Catat 1701 , Perrier 12610 (P).

3. *Clematis mauritiana* Lam. , Encyc. 2 : 42. 1786 ; Pers. , Syn. 2 : 99. 1807 ; DC. , Syst. 1 : 152. 1818 ; et Prodr. 1 : 16. 1824 ; Delessert , Icon. Pl. 2. 1820 ; Baker , Fl. Maurit. & Seych. 1. 1877 ; Baill. in Bull. Soc. Linn. Paris 1 : 331. 1882 ; Kuntze in Verh. Bot. Ver. Brand. 26 : 166. 1885 ; Prantl in Bot. Jahrb. 9 : 261. 1888 ; Cordem. , Fl. Reun. 297. 1895 ; Durand & Schinz , Consp. Fl. Afr. 1 (2) : 4. 1898 ; Viguier & Perrier in Mém. Inst. Sci. Madag. , ser. B , 2 (2) : 224. 1949 , p. p. ; Perrier in Humbert , Fl. Madag. Comor. 76° Fam. Renonculac. 14. 1950 , p. p. ; Coode in Bosser et al. , Fl. Mascar. 3. 1980 ; M. Johnson , Klematis 463. 1997 , p. p. excl. syn. *C. strigillosa* Baker ; Grey-Wils. , Clematis 156. 2000 ; W. T. Wang in Acta Phytotax. Sin. 39 : 328 , fig. 6 : 5 – 7. 2001. Type : Reunion. Without precise locality , Commer-son 12 (lectotype , P !).



Fig. 3. A, B, *Clematis strigillosa* Baker. A, flowering branch; B, stamen (from Lewis et al. 1234). C, D, *C. ibarensis* Baker. C, flowering branch; D, stamen (from Seyrig 38). E - G, *C. mauritiana* Lam. var. *mauritiana*. E, flowering branch; F, sepal outside; G, stamen (from Ayres s. n.).

C. triflora Vahl, Symb. Bot. 3 : 74. 1794. Type : Reunion. Bourbon, type specimen not seen.

C. mauritiana β. *sonneratii* Pers., Syn. 2 : 99. 1807. Type : unknown.

C. furialis Comm. ex Kuntze in l.c., pro syn.

C. sarcophaga Comm. ex Kuntze in l.c., pro syn.

C. urentissima Comm. ex Kuntze in l.c., pro syn.

C. mauritiana ssp. *humilis* Kuntze in l.c. — *C. mauritiana* var. *humilis* (Kuntze) Durand & Schinz l.c. Type : unknown.

C. mauritiana Lam. fa. *normalis* Perrier in Humbert, l.c., fig. 4 : 1 – 4.

This species consists of two varieties occurring in Mauritius, Reunion, and Madagascar.

3a. var. **mauritiana**

Fig. 3 : E – G

Woody vine. Branches shallowly 6 – 8-sulcate, sparsely puberulous or nearly glabrous. Leaves ternate; leaflets papery, ovate, narrowly ovate, or triangular, 2.6 – 7 × 1.5 – 4.5 cm, apex acute, acuminate, or long acuminate, base subcordate, subtruncate, or rounded, margin regularly dentate or denticulate (teeth mucronate), undivided, sometimes 2 – 3-lobulate, on both surfaces sparsely appressed-puberulous or glabrous, basal veins abaxially nearly flat; petioles 0.8 – 5 cm long, puberulous. Cymes axillary, (1 – 3) – 9-flowered; peduncles 0.8 – 9 cm long; bracts ovate or lanceolate, 0.3 – 1.8 cm long. Flower 1.5 – 3 cm in diam.; pedicel 2.5 – 3.4 cm long, sparsely puberulous. Sepals 4, oblong or elliptic, 9 – 15 × 4 – 9 mm, apex obtuse, on both surfaces appressed-puberulous, outside on margin with a broad velutinous strip. Stamens 7 – 13 mm long; filaments narrowly linear, below pubescent; anthers narrowly oblong or linear, 2 – 2.6 mm long, glabrous, apex obtuse. Ovaries puberulous; styles 7 – 9 mm long, densely villous. Achenes compressed, elliptic, ca. 3.5 × 2.6 mm, pubescent, narrowly rimmed; persistent styles 2 – 4 cm long, plumose. Fl. Jan. – May.

Reunion, Madagascar, and Mauritius. Alt. 1100 – 1800 m.

Additional specimens examined.

Reunion. Without precise locality, Bosser 9538 (P), Cadet 4331, Friedmann 1229 (K, P), Frappier 48, 50 (P).

Madagascar. Ambalavao, Ragafwdza 3058 (P); Ambohimanga, Waterlot s.n. (P); Itremo, Humbert 29957 (P).

Mauritius. Without precise locality, Ayres s.n. (GH), Boivin s.n. (G, P, UPS), 1296 (LE), Bojer s.n., Hooker s.n. (K), Perrotet s.n. (G, P).

3b. var. coriacea Kuntze in Verh. Bot. Ver. Brand. 26 : 166. 1885; Durand & Schinz, Consp. Fl. Afr. 1 (2) : 4. 1898; W. T. Wang in Acta Phytotax. Sin. 39 : 328. 2001. Type : Madagascar. Without precise locality, Baron s.n. (lectotype, K!).

C. bathiei Lév. in Bull. Acad. Intern. Geogr. Bot. 7 : 3. 1917. Type : Madagascar. Analamazoatra, alt. 800 m, 1912-08, Perrier 4916 (holotype, P!).

C. mauritiana var. *sulfurea* Viguier & Perrier in Mém. Inst. Sci. Madag., ser. B, 2 (2) : 224. 1949; Perrier in Humbert, Fl. Madag. Comor. 76° Fam. Renonculac. 16. 1950. Type : Madagascar. Andringitra Mts., alt. 2200 m, 1911, Perrier 4908 (holotype, P!).

C. orientalis L. ssp. *simensis* auct. non (Fresen.) Kuntze; Viguier & Perrier in l.c. 223, p.p. quoad Cours 1410, Perrier 4904 et 4916; Lauener & Green in Not. R. Bot. Gard. Edinb. 23 : 583. 1961, p.p. quoad syn. *C. bathiei* Lév. tantum.

Leaflets papery or subcoriaceous, 3 – 12 × 2 – 7.5 cm, abaxially glabrous or sparsely to densely puberulous. Cymes 3 – 22-flowered. Sepals 10 – 24 × 4.8 – 12 mm. Fl. Mar. – Sept.

This variety differs from var. *mauritiana* in the leaflets abaxially finely and conspicuously reticulate and often thicker, subcoriaceous in texture.

Reunion and Madagascar. At forest margins; alt. 300 – 1700 m.

Additional specimens examined.

Reunion. Without precise locality, Lorence 2731 (P).

Madagascar. Ankaratra Mts., Humbert 30292 (P); Ambositra, Humbert & Swingle 4797 (P); Antanarivo, Rakotozafy et al. 2731 (P); Antsirabe, Humbert & Swingle 4695 (G); Gorges de la Mandraka, Humbert 2305 (P); Ouulatoudzazaka, Rhkotovao 12134 (P); Tananarivo, Goudot s.n. (G); without precise locality, Baron 323, 808, 1155, 1319, 1507, Parker s.n. (K).

Unclear variety: *Clematis mauritiana* Lam. var. *kelleriana* Kuntze in Bull. Herb. Boiss. 2: 182. 1894. Type: Reunion. Without precise locality, Keller s.n. (holotype, not seen). According to the original diagnosis “*Foliis longe acuminatis simplicibus (an inferioribus compositis?)*”, this taxon appears to be related to *C. actinostemmatifolia* W. T. Wang of Comoros (see above).

4. *Clematis zairensis* W. T. Wang, sp. nov. Type: Zaire, southwest slope of Mt. Mikeno, alt. 3100 m, 1927-05-13, D. H. Linder 2304 (holotype, here designated, GH).

Fig. 4

Affinis *C. strigillosae* Baker, quae foliis omnibus ternatis haud pinnatis indivisis subtus sparse puberulis, petiolis longioribus (4.5 – 7 cm longis), pedunculis longioribus (5 – 10 cm longis), pedicellis sparse puberulis, sepalis extus secus marginem fascia velutina 0.5 – 1 mm lata obtectis distinguitur.

Liana lignosa. Ramus vetus subteres, circ. 5 mm diam., indistincte striatus, densiuscule adpresseque puberulus; ramus homotinus inferne indistincte 4-angulatus, alibi subteres, circ. 3 mm diam., vadosissime 8-sulcatus, dense adpresseque puberulus. Folia ternata, raro 5-foliolatum pinnata; foliola chartacea, late ovata vel ovata, 3.5 – 9.5 cm longa, 2 – 9 cm lata, apice acuta vel breviter acuminata, basi subcordata vel rotundata, margine sparse denticulata, raro dentata, plerumque indivisa, interdum 3-lobata, supra sparse subtus dense adpresseque puberula, nervis basalibus 3 subtus leviter prominentibus; petioli 1.5 – 4 cm longi, dense puberuli. Cymae axillares, 6 – 10-florae; pedunculi 2.8 – 4.8 cm longi, puberuli; bracteae petiolatae vel subsessiles, ovatae vel obovato-ellipticae, 1 – 3 cm longae. Flos circ. 2 cm diam.; pedicellus 0.7 – 2 cm longus, dense puberulus. Sepala 4, oblonga vel anguste oblonga, raro anguste ovata, 10 – 13 mm longa, 3 – 6 mm lata, apice acuta vel obtusiuscula, intus dense puberula, extus luteolo- vel brunneo-puberula, ad marginem fascia velutina 0.2 – 0.3 mm lata obtecta. Stamina 26 – 32, 8 – 11 mm longa; filamenta anguste linearia, infra medium dense brunneo-pubescentia; antherae anguste oblonga, 1.8 – 2.2 mm longa, glabra, apice obtusa. Carpella 20 – 22, circ. 10 mm longa; ovaria dense puberula; styli 8 – 9 mm longi, dense villosi.

Woody vine. Old branch subterete, ca. 5 mm in diam., slightly densely appressed-puberulous, indistinctly striate; homotinous branch below indistinctly 4-angulate, elsewhere subterete, ca. 3 mm in diam., very shallowly 8-sulcate, densely appressed-puberulous. Leaves ternate, occasionally 5-foliolately pinnate; leaflets chartaceous, broadly ovate or ovate, 3.5 – 9.5 × 2 – 9 cm, apex acute or shortly acuminate, base subcordate or rounded, margin sparsely denticulate, rarely dentate, usually undivided, sometimes 3-lobed, adaxially sparsely, abaxially densely appressed-puberulous, basal veins 3, abaxially slightly prominent; petioles 1.5 – 4 cm long, densely puberulous. Cymes axillary, 6 – 10-flowered; peduncles 2.8 – 4.8 cm long, puberulous; bracts petiolate or subsessile, ovate or obovate-elliptic, 1 – 3 cm long. Flower ca. 2 cm in diam.; pedicel 0.7 – 2



Fig. 4. *Clematis zairensis* W. T. Wang. A, flowering branch; B, sepal outside; C, stamen (from Linder 2304).

cm long, densely puberulous. Sepals 4, oblong or narrowly oblong, rarely narrowly ovate, 10–13 × 3–6 mm, apex acute or slightly obtuse, inside densely puberulous, outside yellowish- or brown-puberulous, margin with a velutinous strip 0.2–0.3 mm broad. Stamens 26–32, 8–11 mm long; filaments narrowly linear, below the middle densely brown pubescent; anthers narrowly oblong, 1.8–2.2 mm long, glabrous, apex obtuse. Carpels 20–22, ca. 10 mm long; ovaries densely puberulous; styles 8–9 mm long, densely villous. Fl. May.

Zaire (Mt. Mikeno). Alt. 3100 m.

C. zairensis, usually with ternate, occasionally pinnate leaves, might be the relict primitive species among those of the *Clematis* occurring on African mainland, in which the leaves are 1–2-pinnate (see above discussion).

5. *Clematis ibarensis* Baker in J. Linn. Soc. London 18:264. 1881; Baill. in Bull. Soc. Linn. Paris 1:331. 1882; Kuntze in Verh. Bot. Ver. Brand. 26:110. 1885; Durand & Schinz, Consp. Fl. Afr. 1(2):3. 1898, excl. syn.; Grey-Wils., *Clematis* 156. 2000; W. T. Wang in Acta Phytotax. Sin. 39:329, fig. 6:3, 4. 2001. Type: Madagascar. Ibara Country, 1879, Kitching s.n. (holotype, K!; phototype, P!).

C. orientalis L. ssp. *wightiana* auct. non (Wall.) Kuntze: Viguier & Perrier in Mém. Inst. Sci. Madag., ser. B, 2(2):223. 1949, p.p. quoad Pervillé 775, Perrier 4911, 13147; Perrier in Humbert, Fl. Madag. Comor. 76° Fam. Renonculac. 13. 1950, p.p.

Fig. 3: C, D

Woody vine. Branches slender, shallowly 6–8-sulcate, sparsely puberulous or subglabrous. Leaves pinnate, 5-foliolate, seldom ternate; leaflets papery or thickly papery, narrowly ovate, ovate, or lanceolate, 4–7 × 1.5–3.6 cm, apex acute or acuminate, base rounded, margin denticulate (teeth mucronate), adaxially appressed-pilose, abaxially densely or sparsely puberulous, basal veins abaxially nearly flat or slightly prominent; petioles 2–5.5 cm long. Cymes axillary and terminal, 5–many-flowered, often panicle-like; peduncles 1.4–5.5 cm long, subglabrous; bracts linear-triangular, lanceolate, or ovate, 1–4 cm long. Flower 1.2–2.8 cm in diam.; pedicel 1.3–3 cm long, subglabrous or near apex puberulous. Sepals 4, obovate-oblong, broadly elliptic, or ovate, (6–8)–14 × (3–4)–9 mm, apex obtuse or acute, on both surfaces puberulous, outside on margin velutinous. Stamens 6–10 mm long; filaments narrowly linear, pubescent; anthers oblong, 1–1.5 mm long, glabrous, apex obtuse. Ovaries densely pubescent; styles 7–8 mm long, densely villous. Achenes compressed, suborbicular or subrhombic, 3–3.5 × 2.5 mm, pubescent, narrowly rimmed; persistent styles ca. 3 cm long, plumose. Fl. Mar. – Aug.

Madagascar. Alt. 400–1000 m.

Additional specimens examined.

Madagascar. Ampandrandava, Seyrig 38 (P); Autsirabe, Perrier 4925, 4927 (P); Bet-sileo, Perrier 4911 (P); Esira, Rakotomana 3920 (P); Imerina, Perrier 4910 (P); Isalo, Keraudren 1193 (P); Muma Koanbaluy, Kotovao 12199 (P); Nohibe, Perville 775 (P); Poalomaua, Ischzy 7439 (P); Ranolua, Razafuicizakobo 10687 (P); Tchennana, Poisson 301 (P).

6. *Clematis microcupis* Baker in J. Linn. Soc. London 21:317. 1884; M. Johnson, *Clematis* 464. 1997; Grey-Wils., *Clematis* 156. 2000; W. T. Wang in Acta Phytotax. Sin. 39:330. 2001. — *C. orientalis* L. ssp. *thunbergii* var. *microcupis* (Baker) Kuntze in Verh. Bot. Ver. Brand. 26:126. 1885. — *C. thunbergii* Steud. var. *microcupis* (Baker) Durand & Schinz, Consp. Fl. Afr. 1(2):7. 1898. Type: Central Madagascar. Without precise locality, Baron 2336 (lectotype, K!; isolectotype, P!), 2333 (syntypes, BM!, K!).

C. orientalis L. ssp. *simensis* auct. non (Fresen.) Kuntze: Viguier & Perrier in Mém. Inst.

Sci. Madag., ser. B, 2(2): 223. 1949; Perrier in Humbert, Fl. Madag. Comor. 76° Fam. Renonculac. 13. 1950, p.p. quoad syn. *C. microcupis* Baker et specimina Cours 1410, Decary 14675 et Perrier 4904.

Fig. 5 : C – E

Woody vine. Branches shallowly 10 – 14-sulcate, puberulous or pubescent. Leaves pinnate, 5-foliolate; leaflets papery or thinly coriaceous, broadly ovate or ovate, 4.5 – 10 × 3 – 9 cm, apex acute or acuminate, base cordate, subcordate, or rounded, margin denticulate or dentate (teeth mucronate), sometimes somewhat incised, adaxially appressed-pilose, abaxially usually densely appressed-puberulous, basal veins abaxially prominent; petioles 3.2 – 6 cm long, puberulous. Cymes axillary, 11 – many-flowered, panicle-like; peduncles 3.2 – 6 cm long, puberulous; bracts petiole-late, ovate or lanceolate, 1.2 – 5 cm long. Flower ca. 2 cm in diam.; pedicel 1 – 3 cm long, puberulous. Sepals 4, ovate-oblong, 10 – 12 × 3.5 – 5 mm, apex slightly acute or obtuse, on both surfaces appressed-puberulous, outside on margin velutinous. Stamens 6 – 10 mm long; filaments narrowly linear, below pubescent; anthers oblong or narrowly oblong, 1 – 1.5 mm long, glabrous, apex obtuse. Ovaries pubescent; styles 6 – 9 mm long, densely villous. Achenes compressed, ovate, ca. 3 × 2 mm, puberulous; persistent styles ca. 2.5 cm long, plumose. Fl. Jun. – Aug.

Madagascar. Alt. 780 – 1000 m.

Additional specimens examined.

Madagascar. Ambatondrazaka, Cours 1410 (P); Analamazaotra, Perrier 4904 (P); Voehmar, Decary 14675 (P).

7. *Clematis simensis* Fresen. in Mus. Senckenb. 2:267. 1837; A. Rich., Tent. Fl. Abyss. 1:3. 1847; Oliv., Fl. Trop. Afr. 1:6. 1868; Prantl in Bot. Jahrb. 9:261. 1888; Durand & Schinz, Consp. Fl. Afr. 1(2):6. 1898; De Wild. & Durand, Pl. Gillet. 2:60. 1901; Durand, Syll. Fl. Congol. 14. 1909; Engler in Wiss. Ergeb. Deutsch. Zentr.-Afr. Exped. 1907 – 1908, 207. 1914; De Wild., Pl. Bequaert. 2:32. 1923; Exell & Mendonca in Carrisso, Consp. Fl. Angol. 1:2. 1937; Robyns, Fl. Sperm. Parc. Nat. Albert 1:170. 1948; Andrews, Flow. Pl. Anglo-Egypt. Sudan 1:10. 1950; Staner & Leonard in Bull. Soc. R. Bot. Belg. 82:329. 1950; et in Robyns, Fl. Congo Belg. Ruanda-Urundi 191. 1951; Milne-Redhead & Turrill, Fl. Trop. E. Afr. Ranunculac. 2. 1952, p.p. excl. syn. *C. sigensis* Engler; Keay, Fl. W. Trop. Afr., ed. 2, 1:64. 1954; Exell & Milne-Redhead in Fl. Zambes. 1:90. 1960; Exell et al. in Fernand., Fl. Mocamb. 4. Ranunculac. 2. 1973; Agnew, Upland Keny Wild Flow. 76. 1974; Troupin, Fl. Rwanda 1:271, fig. 57:2. 1978; Cribb & Leedal, Mount. Flow. S. Tanzan. 35, pl. 1, fig. A. 1982; Collenette, Ill. Guide Fl. Saudi Arabia 416. 1985; Thulin, Fl. Somal. 1:14. 1993; Wood, Handb. Yemen Fl. 65. 1997; M. Johnson, *Clematis* 466. 1997, p.p. excl. syn. *C. stolzii* Engler; Grey-Wils., *Clematis* 157, fig. 114. 2000. — *C. orientalis* L. ssp. *simensis* (Fresen.) Kuntze in Verh. Bot. Ver. Brand. 26:126. 1885; Hiern, Cat. Afr. Pl. Welwet. 3. 1896. Type: Ethiopia. Simen, Ruppell s.n. (holotype, not seen; phototype, K!).

? *C. orientalis* ssp. *simensis* var. *brevifoliola* Kuntze et var. *longifoliola* Kuntze in l.c. Type: unknown.

C. simensis var. *kilimandscharica* Engler, Pflanzenw. Ost.-Afr. C. 180. 1895. Type: Tanzania. Marangu: Kilimandscharo, Volkens 849 (holotype, B).

? × *C. intermedia* Chiov. in Ann. Bot. Roma 9(1):51. 1911.

C. kissenyensis Engler in Wiss. Ergeb. Deutsch. Zentr.-Afr. Exped. 1907 – 1908, 2:207. 1914. Type: Kissenje. Ninagongo, alt. 2500 – 2800 m, 1907-11, Mildbread 1343 (holotype, B).

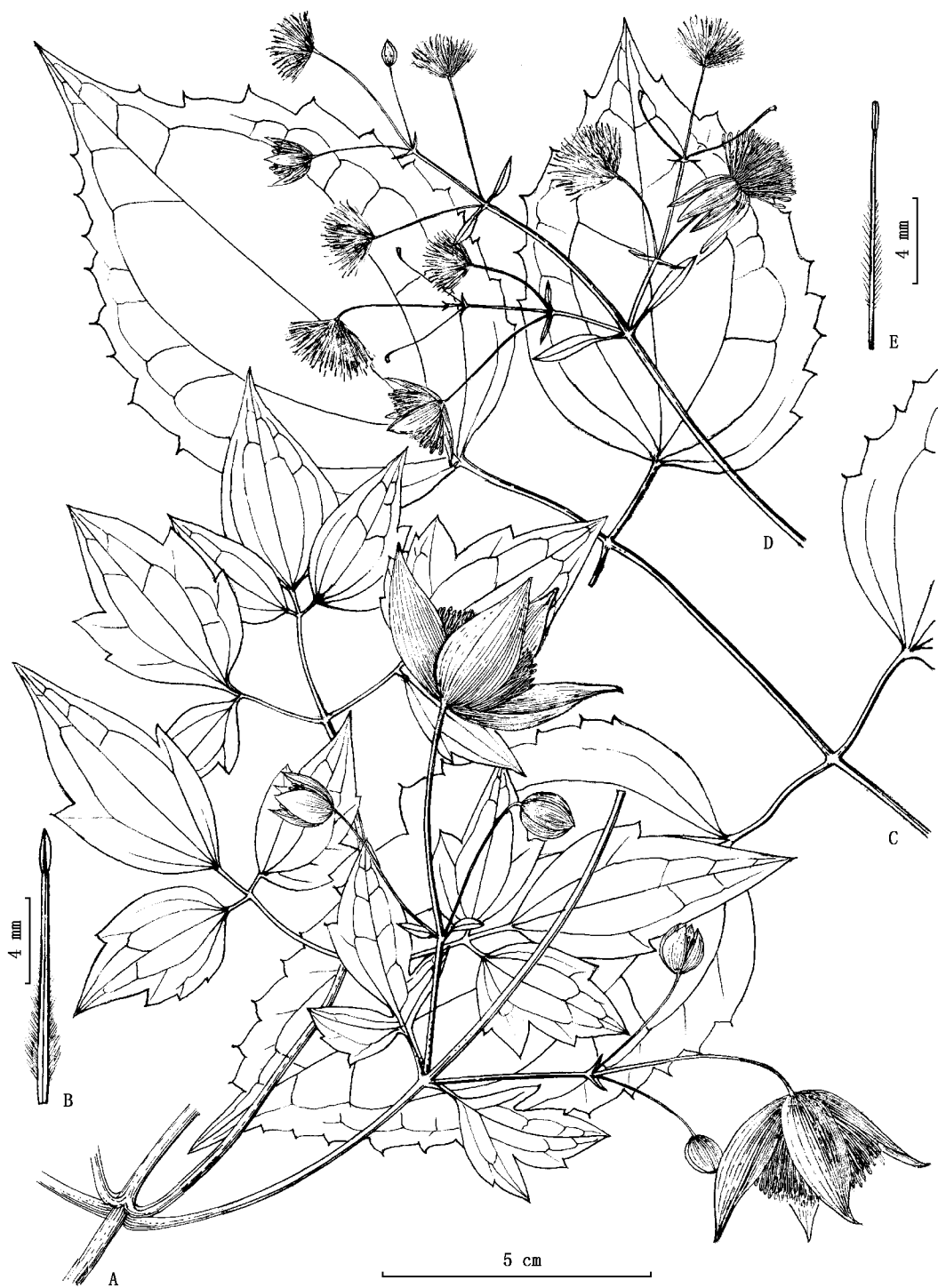


Fig. 5. A, B, *Clematis commutata* Kuntze. A, flowering branch; B, stamen (from de Winter & Marais 4942). C - E, *C. microscapis* Baker. C, leaf; D, inflorescence; E, stamen (from Perrier 4904).

C. altissima Hutch. in Kew Bull. 1923 : 180. 1923. Type : Tropical Africa. Fernando Po, 1860-11, Mann 576 (holotype, K !). Cameron, Mann 1245, 2170, Johnston 28, 103 (paratypes, K !).

C. simensis var. *ruwenzoriensis* De Wild., Pl. Bequaert. 2 : 32. 1923. Type : Rwanda. Rwenzori, 1914-04-14, Bequaert 3675 (holotype, not seen).

C. simensis f. *glabrescens* De Wild., l.c. 33. Type : Mukule, 1914-09-26, Bequaert 5880 (holotype, not seen).

Fig. 6 : A - D

Woody vine. Branches shallowly 8 - 10-sulcate, glabrous or puberulous. Leaves pinnate, 5-foliolate, or upper leaves sometimes ternate; leaflets papery, narrowly ovate, broadly lanceolate, or ovate, 3 - 12 × 1.5 - 5.8 (- 7) cm, apex acuminate or long acuminate, base rounded or subcordate, margin dentate or denticulate, sometimes nearly entire, undivided, rarely 3-lobed, on both surfaces glabrous or abaxially sparsely puberulous, basal veins abaxially slightly prominent; petioles 2.2 - 5 cm long. Cymes axillary and terminal, usually many-flowered, panicle-like; peduncles 2 - 11 cm long; bracts usually leaflet-like, sometimes very small, triangular. Flower 1.6 - 2.2 (- 3) cm in diam.; pedicel 0.4 - 1.6 (- 2) cm long, usually densely, rarely sparsely puberulous. Sepals 4 - 5, white, oblanceolate-oblong, narrowly oblong, or broadly lanceolate, 7 - 13 (- 19) × 3 - 4.5 (- 6) mm, apex acute to obtuse, on both surfaces more or less densely puberulous, outside on margin velutinous. Stamens 5 - 9 (- 14) mm long; filaments below densely pubescent; anthers narrowly oblong, 1.5 - 2.5 (- 2.5) mm long, glabrous, apex obtuse. Ovaries puberulous; styles 5 - 6 (- 10) mm long, densely villous. Achenes compressed, elliptic or ovate, 3 - 3.5 × 2 - 2.5 mm, densely appressed-puberulous; persistent styles 2.8 - 4 cm long, plumose. Fl. Jan. - Dec.

Africa (Angola, Burundi, Cameroon, Congo, Equatorial Guinea, Ethiopia, Kenya, Malawi, Nigeria, Rwanda, Sierra Leone, Somalia, Sudan, Tanzania, Uganda, Zaire, Zambia, Zimbabwe) and SW Asia (Saudi Arabia, Yemen). In grassy places, along forest margins, or in thickets; alt. 1000 - 3200 m.

Specimens examined.

Angola. Bumbo, Welwitsch 1214 (K); Huila, Menezes 1136 (K); Lunda, Gossweiler 11379 (PRE).

Burundi. Bujumbura, Lewalle 3541 (G); Kitaba, Lewalle 5692 (K); Rushubi, Lewalle 2028 (K); Teza, Reekmans 10671 (K, S).

Cameroon. Bamenda, Keay 28412 (K); Cameroon Mts., Breteler 26 (P, UPS); Nkongsamba, Leeuwenberg 8786 (PRE, UPS).

Congo. Boko, Koechlin 1227 (P); Koukouya, Halle 1779 (P); Manieto, Bouquet 412 (P).

Equatorial Guinea. Bioco, Casas 11190, 11487 (G, K, P), 11958 (K, P).

Ethiopia. Addis Ababa, Ash 35 (K, UPS), Meyer 7533 (K, US); Adoa, Schimper 1512 (G, LE, S); Bala : Goba, Gilbert 60 (UPS); Bellaka, Schimper 332 (G); Jimma, Meyer 8059 (K, US); Medani Alem, Roberston 1465 (K); Mt. Maigudo, Friis et al. 1501 (K); Mt. Scholoda, Schimper 395 (G, K, LE, P); Nazareth, Mooney 8249 (S); Sassa, Schimper 4969 (P).

Kenya. Chyulu, Bally 7806 (K); Kinanzop, Napier 1238 (K); Lamuru, Scheffler 239 (K); Londiani, Graham 2813 (G); Mt. Aberdare, Fries 504 (K, UPS); Mt. Elgon, Irwin 38 (S); Tweedie 87 (K); Mt. Kenya, Hedberg 2000 (UPS); Nakuru, Geesteranus 6049 (G, S); Nasampulai Valley, Greenway & Kanuri 14895 (K, PRE); Sasia, Moor 1258 (K, P); Sotik, Bally 7836 (G).

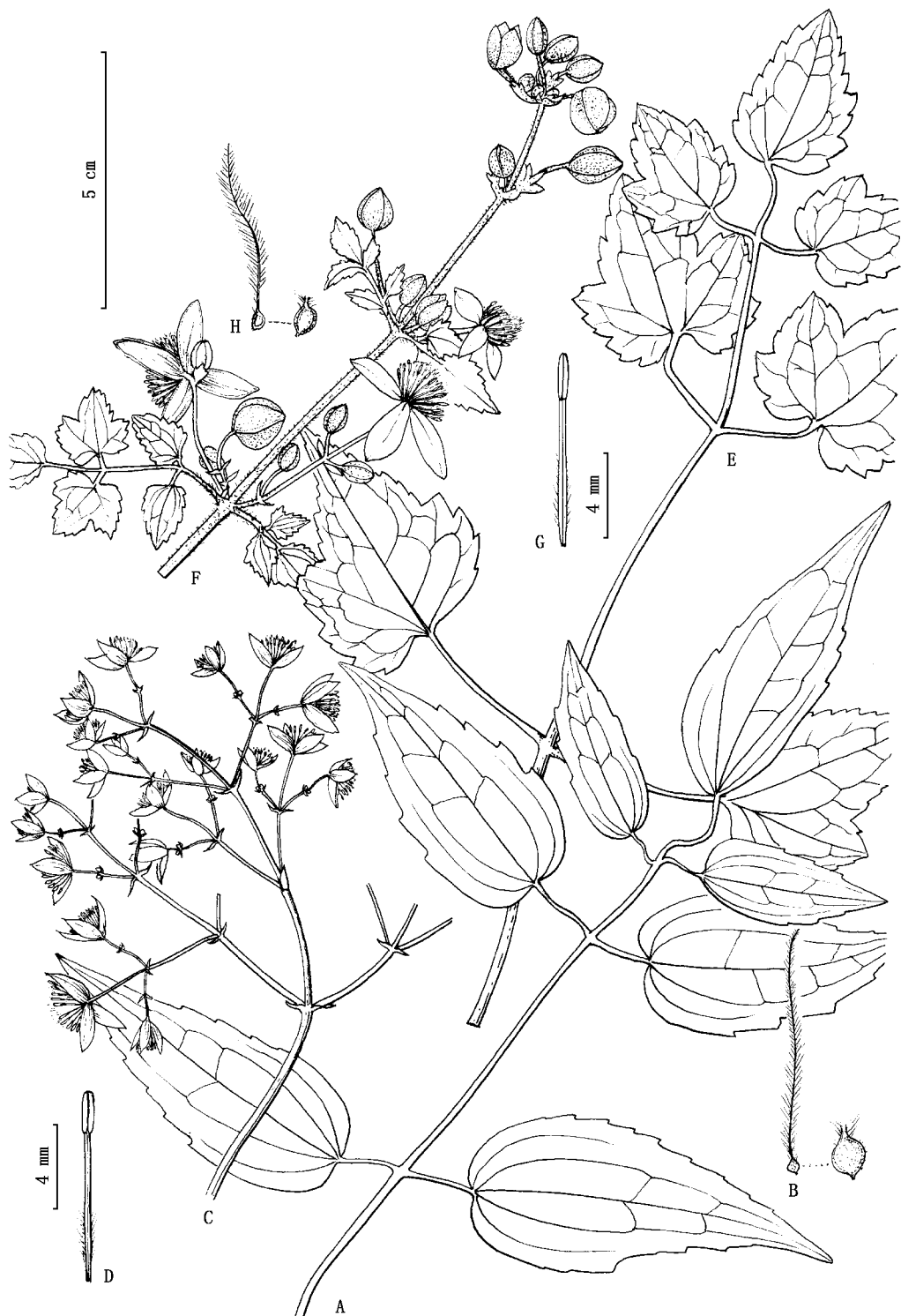


Fig. 6. A - D, *Clematis simensis* Fresen. A, leaf; B, achene (from E. H. Wilson s. n.); C, inflorescence; D, stamen (from Meyer 8059). E - H, *C. hirsuta* Perr. & Guill. var. *hirsuta*. E, leaf; F, inflorescence; G, stamen (from Roos 639); H, achene (from Hedberg 92181).

Malawi. Chitipa , Pawek 7014 (K) ; Dedza , LaCroix 3103 (PRE) ; Masuku Plateau , Johnston 279 (K) ; Mlanje , Brass 16860 , Richards 16696 (K) ; Mt. Zomla , Jackson 2027 (K).

Nigeria. Awba Hills , Jones 7321 (K) ; Kagawa , Meike 840 (K) ; Sardauna , Chapman 3398 , 5147 (K).

Rwanda. Mt. Visoke , Fossey 37 (K).

Sierra Leone. Mt. Loma , ?379 (P).

Somalia. Acleyeh , Mooney 8397 (K) ; Erigavo , Hemming & Watson 3217 (K).

Sudan. Deriba , Sahni 430 (K) ; Jebel Marra , Lynes 102 (K , US) , Wickens 101 (K).

Tanzania. Mahali Mts. , Jefford 1745 (K) ; Meru , Haarer 279 , Hedberg 2436 (K , UPS) ; Morogoro , Schlieben 4106 (G , S) ; Mufindi , Greenway 3460 , Procter 1274 (K) ; Ruhudje , Schlieben 239 , 1113 (S) ; Rungwe , Mgaza 467 (K).

Uganda. Buschiges Hochland , Scheffler 239 (G) ; Kigezi , Purselglove 3473 , 3650 , Stauffer 608 (K , UPS) ; Mulanag , Dummer 5525 (K).

Zaire. Kivu , Stauffer 131 (K , P , UPS) ; Mt. Mikeno , Linder 2304 (K , P) ; Nyamlagira , Louis 4817 (K , P).

Zambia. Nyika , Lawton 921 (K).

Zimbabwe. Gazaland , Swynnerton 447 (K) ; Mazoe Dam , Gilliland 202 (K) ; Melsetter , Noel 2436 (K) ; Sysolilo , Wild 5781 (K).

Yemen. Wadi Shalalah , Hepper 6274 (K).

8. *Clematis kakoulimensis* Schnell in Bull. Soc. Bot. France 96 : 223. 1949 ; Keay , Fl. W. Trop. Afr. , ed. 2 , 1 : 64. 1954. Type : Sierra Leone. Mt. Kakoulima , 1945-02 , Schnell 2466 (holotype , P !).

Fig. 7 : C , D

Woody vine. Branches subterete , 10 – 12-sulcate , glabrescent. Leaves pinnate , 5-foliolate , sometimes ternate ; leaflets papery , lanceolate , narrowly ovate , elliptic-ovate , or ovate , (3.5 – 4.5 – 9.8 × (1.2 – 2.2 – 4.4 cm , apex acuminate or attenuate , base rounded or subcordate , margin sparsely denticulate or subentire , adaxially glabrous or sparsely puberulous , abaxially slightly reticulate , on vein net sparsely puberulous , basal veins abaxially prominent ; petioles 3.2 – 4 cm long , pubescent. Cymes axillary , laxly (1 – 3 – 5 – 11-flowered ; peduncles (3.8 – 8 – 11 cm long , puberulous ; bracts petiolate , ternate , ca. 7 cm long , or small , sessile , triangular or lanceolate-linear , 4 – 7 mm long. Flower 3 – 5 cm in diam. ; pedicel 1.5 – 4 cm long , densely yellowish puberulous or yellowish velutinous. Sepals 4 , ovate or narrowly ovate , 16 – 27 × 5 – 14 mm , apex acute , inside glabrous or sparsely puberulous , outside velutinous or densely puberulous , margin velutinous. Stamens 1.5 – 2 cm long ; filaments narrowly linear , above base slightly dilated and densely brown pubescent ; anthers narrowly oblong , 2.2 – 2.8 mm long , glabrous , apex obtuse. Ovaries densely pubescent ; styles 1.2 – 1.4 cm long , densely villous. Fl. Nov. – Feb.

Sierra Leone. Alt. 1550 – 1600 m.

Additional specimens examined.

Sierra Leone. Mt. Loma , Jaeger 788 , 8854 (G , P).

9. *Clematis massoniana* DC. , Syst. 1 : 135. 1818 ; et Prodr. 1 : 3. 1824. — *C. orientalis* L. ssp. *normalis* Kuntze var. *albida* (Klotzsch) Kuntze f. *massoniana* (DC.) Kuntze in Verh. Bot. Ver Brand. 26 : 124. 1885 , p. p. Type : “ in Africa australiori ” , Masson s. n. (holotype , not seen).

C. thunbergii auct. non Steud. : Lynch in Gard. Chron. , ser. 3 , 50 : 253 , fig. 112. 1911.



Fig. 7. A, B, *Clematis bowkeri* Burt Davy. A, flowering branch; B, stamen (from West 1801). C, D, *C. kakoulimensis* Schnell. C, flowering branch; D, stamen (from Jaeger 788).

C. brachiata auct. non Thunb. : M. Johnson , Klematis 456. 1997 , p. p. quoad syn. *C. massoniana* DC. tantum.

Fig. 8 : D , E

Woody vine. Branches shallowly sulcate , subglabrous. Leaves pinnate , 5-foliolate ; leaflets chartaceous or subcoriaceous , ovate or narrowly rhombic-ovate , 2 – 5.5 × 1 – 3.5 cm , apex long acuminate , base broadly cuneate or subtruncate , margin 1 – 4-dentate per side , usually 3-lobed or 3-lobulate , on both surfaces glabrous ; petioles ca. 2 cm long. Cymes axillary and terminal , 3 – 9-flowered ; peduncles 3 – 4 cm long ; bracts narrowly ovate or subulate , 3 – 10 mm long. Flower 2 – 3.3 cm in diam. , very sweet-scented ; pedicel 1.5 – 2.8 cm long. Sepals 4 , white , lanceolate , 11 – 17 × 3 – 5 mm , at apex attenuate , on both surfaces appressed-puberulous , outside on margin velutinous. Stamens 6 – 9 mm long ; filaments narrowly linear , below the middle fulvous-pubescent ; anthers narrowly oblong or sublinear , 2.8 – 3 mm long , glabrous , apex obtuse. Ovaries densely puberulous ; styles 7 – 9 mm long , densely villous. Achenes compressed , elliptic , pubescent , with long plumose persistent styles. Fl. Oct.

South Africa.

Specimen examined.

South Africa. Plant raised from seed sent from Karoo by Prof. Pearson , 1909-10-20 , Hort. Cantab. s. n. (K).

10. *Clematis tibestica* Quézel in Bull. Soc. Hist. Nat. Afr. Nord. 48 : 86. 1957 ; M. Johnson , Klematis 468. 1997 ; Grey-Wils. , *Clematis* 159. 2000. Type : Chad. Tibesti Mts. , type specimen deposited in MARSSJ , not seen.

Woody vine , 3 – 10 m long. Branches angulate , striate , pubescent. Leaves pinnate , 5-foliolate ; leaflets lanceolate , 4 – 6 × 2 – 3 cm , apex attenuate , margin densely dentate , on both surfaces subglabrous or on veins sparsely hairy ; petioles 3 – 6 cm long , pubescent. Cymes axillary and terminal , 3 – 7-flowered ; peduncles more than 2 cm long , shorter than leaves. Flower 3 – 3.5 cm in diam. ; pedicel 1 – 1.5 cm long. Sepals 4 , unequal , the larger ones broadly ovate , 15 × 7 – 8 mm , the smaller ones linear , 15 × 3 mm , apex obtuse , on both surfaces hispid. Achenes with persistent styles ca. 3 cm long.

N Chad (Tibesti Mts.). In bushes on open woodland ; alt. 2100 – 2400 m (Grey-Wilson , 2000).

I have not seen any specimen of *C. tibestica*. The above description in English is translated from the original description in both Latin and French.

Grey-Wilson (2000) considered that *C. tibestica* is possibly only a variety of *C. simensis* Fresen.

11. *Clematis dolichopoda* Brenan in Kew Bull. 1949 : 71. 1949 ; Milne-Redhead & Turrill , Fl. Trop. E. Afr. 5. 1952 ; Grey-Wils. , *Clematis* 157. 2000. — *C. longipes* Engler in Bot. Jahrb. 45 : 272. 1910 , non Freyn , 1880. — *C. hirsuta* Perr. & Guill. var. *dolichopoda* (Brenan) Staner & Leonard in Bull. Soc. R. Bot. Belg. 82 : 336. 1950 ; et in Robyns , Fl. Congo Belg. & Ruanda-Urundi 194. 1951 ; Troupin , Fl. Rwanda 271. 1978 ; M. Johnson , Klematis 461. 1997. Type : Tanzania. Amani , alt. 500 – 900 m , 1903-07 , Warnecke 422 (lectotype , here designated , K ! ; isolectotype , P !) , Engler 763 (syntype , B , destroyed) , Braun 758 (syntype , B , destroyed) ; Usambara , Scheffler 82 (syntype , B , destroyed).

Fig. 8 : A – C

Woody vine. Branches shallowly 8 – 10-sulcate , puberulous. Leaves pinnate 5-foliolate ; leaflets papery , ovate , 4 – 10 × 3 – 7 cm , apex acuminate or acute , base cordate , subcordate , or

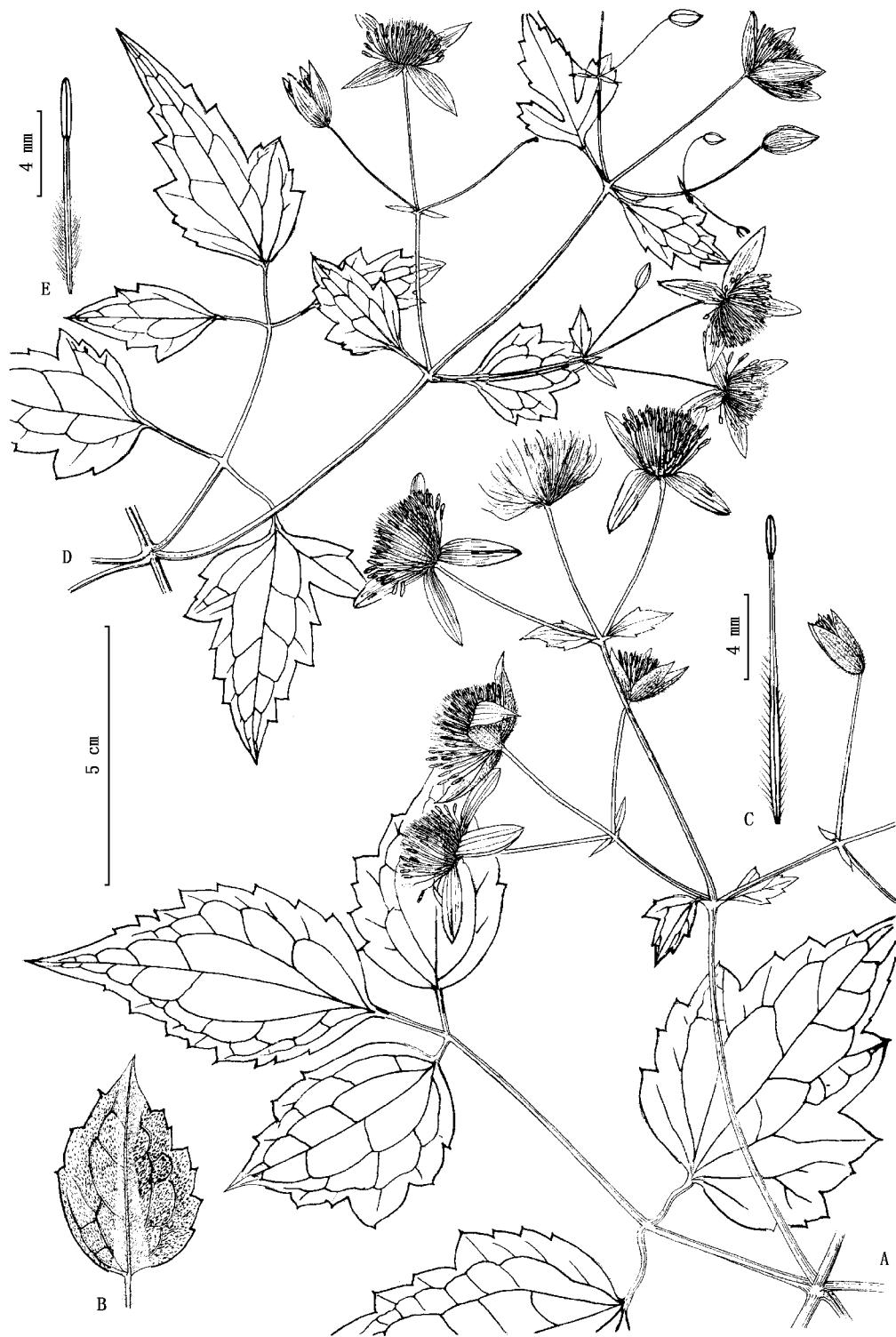


Fig. 8. A - C, *Clematis dolichopoda* Brenan. A, flowering branch; B, leaflet, showing the abaxial surface; C, stamen (from Schlieben 3991). D, E, *C. massoniana* DC. D, flowering branch; E, stamen (from Hort. Cantab. s. n.).

rounded, margin coarsely dentate, often 3-lobulate, adaxially strigose, abaxially tawny puberulous, basal veins abaxially slightly prominent; petioles 2–7.5 cm long. Cymes axillary, (3–)5–9-flowered; peduncles 6.5–10 cm long, puberulous; bracts ovate or narrowly ovate, 1–3 cm long. Flower 3–4.8 cm in diam.; pedicel 3.8–7.5 cm long, puberulous. Sepals 4, white, obovate-oblong or narrowly oblong, 14–24 × 5–7.5 mm, apex obtuse, inside puberulous, outside densely tawny puberulous, margin velutinous. Stamens 10–12 mm long; filaments lanceolate-linear, pubescent; anthers oblong or narrowly oblong, 2–2.2 mm long, glabrous, apex obtuse. Ovaries puberulous; styles ca. 11 mm long, densely villous. Achenes compressed, ovate or subrhombic, 3.2–4 × 2 mm, puberulous, narrowly rimmed; persistent styles 5–6 cm long, plumose. Fl. May–Jul.

Kenya, Rwanda, Tanzania, Uganda, and Zaire. On grassy slopes; alt. 600–2000 m.

Additional specimens examined.

Kenya. Taita Hills, Faden et al. 1047 (K).

Rwanda. Shanguu, Christiaesen 1617 (K).

Tanzania. Amani, Greenway 1630, Drummond & Hemsley 3264, Koritschonet 731, Tarrer 2998 (K); Derema, Mahamedi 9096 (K); Lushoto, Drummond & Hemsley 3156, Archbold 207 (K); Mahenge, Schlieben 2183 (G); Morogoro, Schlieben 3991 (G, K); Usambara, Verdecourt 275A (K, PRE).

Uganda. Kigezi, Purseclove 3372 (K).

12. *Clematis wightiana* Wall. [Cat. n. 4674. 1832] ex Wight & Arn., Prodr. Fl. Penin. Ind. Orient. 2. 1834; Wight, Ic. Pl. Ind. Orient. 3 : t. 935. 1846; Hook. f. & Thoms., Fl. Ind. 10. 1855; et in Hook. f., Fl. Brit. Ind. 1 : 5. 1872; Prantl in Bot. Jahrb. 9 : 261. 1888; Finet & Gagnep. in Bull. Soc. Bot. France 50 : 541. 1903; Cooke, Fl. Bombay 1 : 3. 1903; Gamble, Fl. Madras 1 : 3. 1915; Fyson, Fl. Nilgiri & Pulney Hill-Tops 1 : 2. 1915; Mukerjee in Bull. Bot. Surv. Ind. 1 (1) : 140. 1959; Gupta in Bull. Nat. Bot. Gard. Lucknow 54 : pl. 19. 1961; Kapoor in l. c. 78 : 60. 1962 et 124 : 81. 1966; Rau in Sharma et al., Fl. Ind. 1 : 80. 1993; M. Johnson, *Clematis* 322. 1997; Matthew, Fl. Palni Hills 1 : 4. 1999; Grey-Wils., *Clematis* 159. 2000. — *C. orientalis* L. ssp. *wightiana* (Wall.) Kuntze in Verh. Bot. Ver. Brand. 26 : 125. 1885. Type: India. Nilgiri Hills, Wight 6 (syntype, not seen), Wallich 4674 (syntype, not seen).

C. orientalis ssp. *thunbergii* (Steud.) Kuntze in l. c. 124, p. p. quoad specim. Dalzell s. n. ex India austr. lectum.

C. orientalis ssp. *wightiana* var. *pseudobuchananiana* Kuntze in l. c. Type: India. Nilgiri, Schmidt s. n. (syntypes, K!, LE!, S!), Hochenacker 1486 (syntype, LE!).

Fig. 9 : C, D

Woody vine. Branches shallowly 8–10-sulcate, densely puberulous or velutinous. Leaves pinnate, 5-foliolate; leaflets papery or coriaceous, ovate, broadly ovate, or cordate, (2.5–)3.5–7 (–9.5) × (2–)3–6.5 (–8) cm, apex acute, base cordate or rounded, margin dentate or denticulate, often 3-lobed, adaxially more or less densely yellowish pubescent, abaxially yellowish velutinous, basal veins abaxially slightly prominent; petioles 4–6 cm long, velutinous. Cymes axillary, (3–)9–15-flowered, often panicle-like; peduncles 3–7.5 cm long, velutinous; bracts sessile or shortly petiolate, narrowly ovate, often 3-lobed. Flower 2.6–4.2 cm in diam.; pedicel 0.7–2.5 cm long, velutinous. Sepals 4, oblong, 13–22 × 7–11 mm, apex slightly acute, inside glabrous, outside yellowish velutinous. Stamens 9–13 mm long; filaments narrowly linear, below the middle pubescent; anthers narrowly oblong, 1.8–2 mm long, glabrous, apex obtuse or

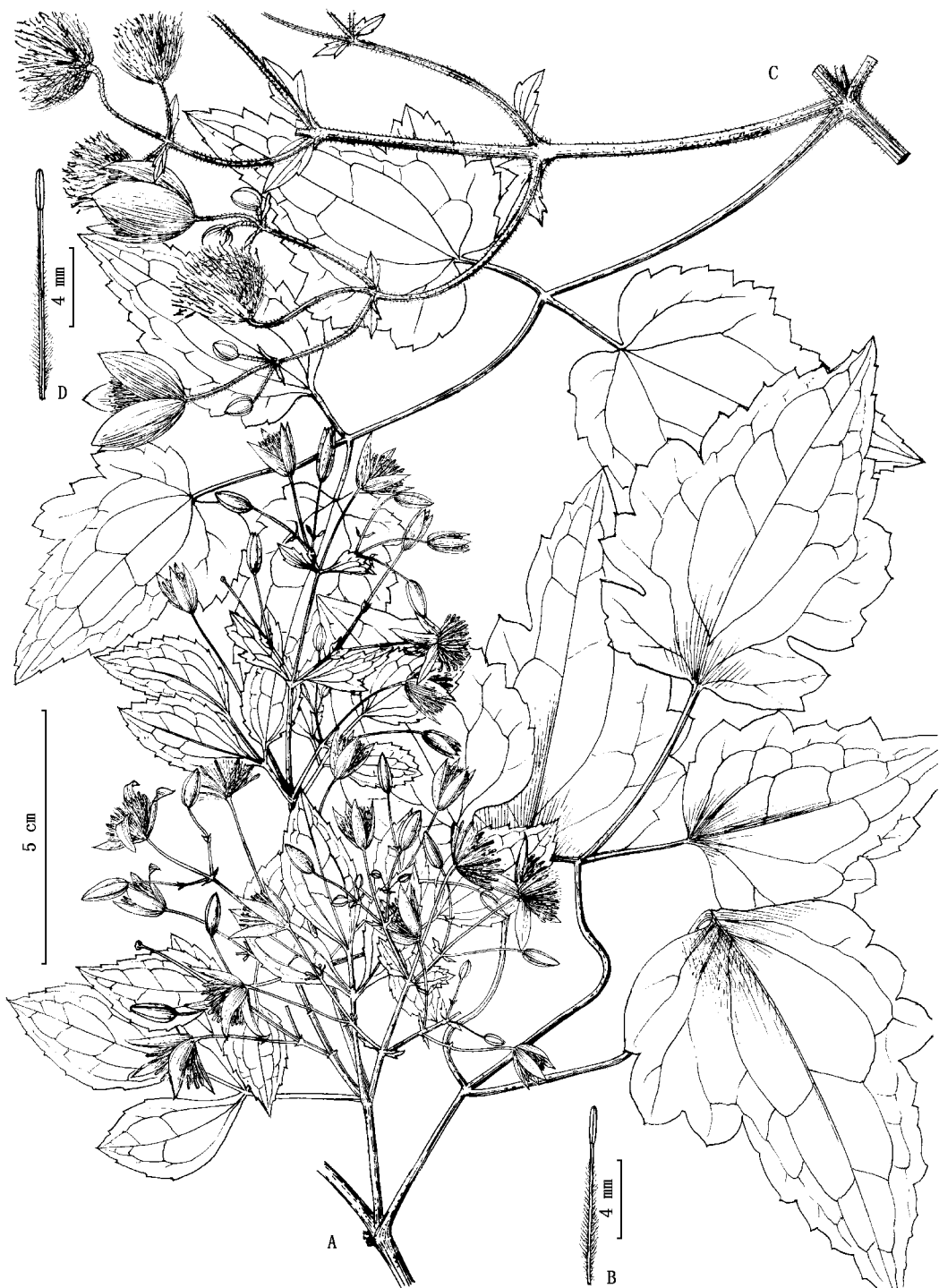


Fig. 9. A, B, *Clematis brachiata* Thunb. A, flowering branch; B, stamen (from Kemp 734). C, D, *C. wightiana* Wall. ex Wight & Arn. C, flowering branch; D, stamen (from Schmidt s. n.).

minutely apiculate. Ovaries densely pubescent ; styles 9 – 11 mm long , densely villous. Achenes compressed , elliptic or rhombic-obovate , 2 – 4 × 1.5 – 2.8 mm , densely pubescent ; persistent styles 2 – 2.5 cm long , plumose. Fl. Dec. – Feb.

S India. In evergreen forests ; alt. 800 – 2000 m.

Additional specimens examined.

India. Concan , Law s. n. (G , GH , K) ; Kadaikanal : Dindigul , Matthew 48243 (K) ; Pulney Hills , Anglade s. n. (GH) , 377 (G) , Bourne s. n. , Sauliere 532 , 556 (K) ; Karnataka : Bababudan Hills , Rao 246 (K) ; Mahableshwar Hills , Lush s. n. , Townsend 73-18 (K) ; Nilgiri Hills , C. B. Clarke 10546A (K) , 11234 (LE) , Gamble 3547 (K) , Perrotet 1 (G) , Schmidt s. n. (K) , Wallich 1486 (G , S , UPS) , Wight 2 (G , K , LE , S) ; Tamil Nadu , Maesen 3535 (K).

13. *Clematis hirsuta* Perr. & Guill. , Fl. Seneg. Tent. 1 : 1. 1830 ; Hutch. & Dalz. , Fl. W. Trop. Afr. 1 : 67. 1927 ; Exell & Mendonca in Carrisso , Consp. Fl. Angol. 1 : 3. 1937 ; Staner & Leonard in Bull. Soc. R. Bot. Belg. 82 : 331. 1950 , p. p. excl. syn. *C. inciso-dentata* A. Rich. et *C. oliveri* Kuntze ; et in Robyns , Fl. Congo Belg. & Ruanda-Urundi 192. 1951 ; Milne-Redhead & Turrill , Fl. Trop. E. Afr. 6. 1952 , p. p. excl. syn. *C. inciso-dentata* A. Rich. ; Key , Fl. W. Trop. Afr. , ed. 2 , 1 : 164. 1954 ; Lind & Tallan. , Flow. Pl. Uganda 44 , fig. 2. 1962 ; Berhaut , Fl. Seneg. , ed. 2 , 64. 1967 ; Agnew , Upland Kenya Wild Flow. 76. 1974 ; Troupin , Fl. Rwanda 1 : 271 , fig. 57 : 1. 1978 ; Troupin & Bridson , Fl. Pl. Lign. Rwanda 508 , fig. 172. 1982 ; Thulin , Fl. Somal. 1 : 14. 1993 ; Wood , Handb. Yemen Fl. 65. 1997 , excl. syn. *C. wightiana* Wall. ex Wight & Arn. ; M. Johnson , Klematis 459. 1997 , p. p. ; Grey-Wils. , Clematis 161. 2000 ; W. T. Wang in Acta Phytotax. Sin. 38 : 322. 2000. Type : Senegal. Cape Verde Peninsula , Leprieur s. n. (syntype ? , P) ; without precise locality , 1829-03-15 , Perrottet 1 (syntype ? , BM !).

C. glaucescens Fresen. in Beitr. , Fl. Abyss. Mus. Senckenb. 2 (3) : 268. 1837 ; Walp. , Repert. Bot. 1 : 4. 1843 ; A. Rich. , Tent. Fl. Abyss. 1 : 1. 1847 ; Prantl in Bot. Jahrb. 9 : 261. 1888 ; Durand & Schinz , Etud. Fl. Congo 55. 1896 ; et Consp. Fl. Afr. 1 (2) : 3. 1898 ; Durand , Syll. Fl. Congo. Phan. 13. 1909 ; Andrews , Flow. Pl. Anglo-Egypt. Sudan 1 : 10. 1950. — *C. orientalis* L. ssp. *wightiana* var. *typica* f. *glaucescens* (Fresen.) Kuntze in Verh. Bot. Ver. Brand. 26 : 125. 1885. — *C. orientalis* var. *glaucescens* (Fresen.) Engler in Hochgeb. Trop. Afr. 217. 1892. Type : Ethiopia. Without precise locality , Ruppell s. n. (holotype , FR ; phototype , K !).

C. petersiana Klotzsch in Peters , Nat. Reise Massamb. Bot. 170. 1862. Type : unknown.

C. wightiana Wall. ex Wight & Arn. var. *pilosissima* Engler in Bot. Jahrb. 30 : 309. 1902. Type : Tanzania. Livingston Mts. , 1900-01 , Goetze 1283 (holotype , B ; phototype , K !).

C. burgensis Engler in Bot. Jahrb. 45 : 272. 1910. Type : Gallahochland , Burgi , Riva 1348 (holotype , B).

C. antunesii Engler in l. c. 274. Type : Angola. Benguela : Huila , Antunes 56 (holotype , B).

C. wightiana Wall. ex Wight & Arn. var. *gallaensis* Engler in Wiss. Ergeb. Deutsch. Zent.-Afr. Exped. 1907 – 1908 , 2 : 207. 1914. Type : Gallahochland , Erlanger 1333 , Ellenbeck 1266 (syntypes , B). Seenzone , Mildbread 181 , 319 (syntypes , B).

C. friesiorum Ulbr. in Notizbl. Bot. Gart. Berl. 10 : 914. 1930. Type : S Kenya. between Jaracuma and Meru , 1922-02 , Fries 1598 (holotype , UPS ! ; isotypes , K ! , S !).

C. djalonensis Cheval. in Bull. Mus. Hist. Nat. Paris , ser. 2 , 4 : 1010. 1930 ; M. Johnson , Klematis 458. 1997 ; Grey-Wils. , Clematis 161. 2000. Type : Guinea. Laba dans le

Fouta-Djalou, 1930-11, Chevalier 34545 (holotype, P!).

C. djalouensis var. *latipaniculata* Cheval. in l. c.; M. Johnson, l. c. 459. Type: Guinea. Ymbo-Orobe, Fouta-Djalou, 1905-11, Caille 14814 (holotype, P!).

C. djalouensis var. *hirsutissima* Cheval. in l. c.; M. Johnson, l. c. Type: Guinea. Mali, Chevalier 34328 (syntype, P!); Mt. Loura, Chevalier 34329 (syntype, P!).

C. chariensis Cheval. in l. c. 1012; M. Johnson, l. c. 457. Type: Chad. Chari, 1902-11, Chevalier 6192 (holotype, P!; phototype, K!).

C. thunbergii auct. non Steud.: Oliv., Fl. W. Trop. Afr. 1:6. 1868.

C. orientalis L. var. *brachiata* auct. non (Thunb.) Kuntze: Hiern, Cat. Afr. Pl. Welwit. 3. 1896.

C. orientalis L. ssp. *wightiana* auct. non (Wall.) Kuntze: De Wild., Etud. Fl. Bos. Moyen-Congo 1:244. 1906; Durand, Syll. Fl. Congo. Phan. 14. 1909.

C. wightiana auct. non Wall. ex Wight & Arn.: De Wild. in Ann. Soc. Sci. Brux. 37 (2):74. 1913; et Pl. Bequert. 2:34. 1923; Robyns, Fl. Sperm. Parc. Nat. Albert 1:169. 1948; Migahid, Fl. Saudi Arabia, ed. 2, 1:33. 1978.

C. inciso-dentata auct. non A. Rich.: Collenette, Ill. Guide Fl. Saudi Arabia 416. 1985.

This species consists of four varieties widespread on African mainland with one variety extending northeastward to southern Arabia.

13a. var. *hirsuta*

Fig. 6: E-H (see p. 306)

Woody vine. Branches shallowly 6-8-sulcate, densely puberulous or velutinous, rarely sparsely puberulous. Leaves usually once pinnate, 5-7-foliolate, sometimes twice pinnate; leaflets papery, ovate or broadly ovate, 1.5-8(-11) × 1.2-6(-10) cm, apex acuminate or acute, base subcordate, cordate, or rounded, margin dentate or denticulate, usually 3-lobed or 3-lobulate, sometimes undivided, on both surfaces densely or sparsely appressed-puberulous, abaxially sometimes velutinous, more or less reticulate; petioles 1-5.4 cm long. Cymes axillary and terminal, 5-many-flowered, often panicle-like; peduncles 1-9 cm long; bracts ovate, 3-lobed or undivided. Flower 2-3.5(-4) cm in diam.; pedicel 1-2.5(-3.5) cm long, densely puberulous. Sepals 4, white, oblong-lanceolate, 1-19(-24) × 4-7(-8) mm, apex acute, inside more or less densely puberulous, outside densely puberulous, margin velutinous. Stamens 9-11 mm long; filaments narrowly linear, near base sericeous-puberulous; anthers oblong or narrowly oblong, (1-) 1.5-2(-2.5) mm long, glabrous, apex obtuse. Ovaries densely puberulous; styles 6-11 mm long, densely villous. Achenes compressed, broadly elliptic, 3-3.5 × 2.5-3 mm, puberulous; persistent styles 2.5-3.5 cm long, plumose. Fl. Feb. - Dec.

Africa (Angola, Benin, Burundi, Cameroon, Central Africa, Chad, Congo, Cote d'Ivoire, Ethiopia, Gabon, Ghana, Guinea, Kenya, Malawi, Mali, Mozambique, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, Sudan, Tanzania, Togo, Uganda, Zaire, and Zambia) and SW Asia (Saudi Arabia and Yemen). In bushes or thickets, along forest margins, in grassy places; alt. 600-3000 m.

Additional specimens examined.

Angola. Golungo Alto: Carengue, Welwitsch 1207 (G, P); Cazengo, Welwitsch 1213 (G, P).

Burundi. Bujumbura, Lewalle 5635 (G); Bukemba, Reekmans 10258 (K, UPS); Kigozi, Reekmans 10420 (K, UPS); Muyinga, Reekmans 10420 (PRE).

Cameroon. Adamawa, Daramola 28773 (K); Bamenda, Tamajong 22206 (K); Bambui, Baier 144 (K); Dikwa, McClintock 57 (K); Roumsik, Leeuwenberg 7561 (K); Soulede, Saxer

569 (G).

Central Africa. Boguila , Fay 5268 (K); Diadoulou , Fay 3534 (K).

Chad. Chari , Chevalier 6074 , 6400 (P); Oolaki , Fotius 1165 (P).

Cote d'Ivoire. Boundioili , Cesow 292 (P); Niakarahandougou , Gautier-Beguir 460 (G); Tonba , Roberty 11811 (K).

Ethiopia. Addis Ababa , Albers 61205 (K); Adoam , Schimper 212 (K , LE , S); Amogai , Schimper 955 (S , UPS , US); Axum , Schimper 1481 (LE); Debrasina , Sleudner 1210 (S); Eritrea , Ryding 1502 (UPS); Jimma , Stewart 23 (K).

Gabon. Pakozambi , Testu 1600 (P).

Ghana. Amezofe , Veldkamp 6108 (K); Anum , Morton 1018 (K); Ejura , Morton 9534 (K); Tonogo , Morton 3465 (K).

Guinea. Bcyala , Dam 7190 (P); Fouta Djallon , Chevalier 34423 (P); Kindi , Jacques s. n. (P); Kouroussa , Pobegun 1150 (P); Mali , Chevalier 34471 (P); Mt. Loura , Chevalier 34423b (P).

Kenya. Kabete , Williams 12321 (K , UPS); Katani , Gillett 16848 (K); Kitale , Napper 777 (K); Nairdvi , Vapier 257 (G); Nairobi , Smith & Paulo 916 (PRE), Williams 315 (K); Ngong Hills , Napier 257 (K); Prov. Forest Station , Fries 409 (K , UPS); Ruwenzori , Scott 6567 (K); Sirwan , Newbould 3406 (K); Soitik Hills , Greenway 7851 (K , US).

Malawi. Mizuzu , Chapman 322 (P); Zomba , Salubeni 3156 (P).

Mali. Dionbeba , Chavalier 15 (P); without precise locality , Ake Assi 14471 (G).

Mozambique. Revoue , Vasse 219 (P).

Nigeria. Abeokuta , Latilo 26743 (K); Awba Hills , Jones 7321 (K); Kagava , Meike 840 (K); Kalba , Keay 28092 (K , P); Lagos , Foster 143 (K); Mambulla Plateau , Chapman 197 (K).

Rwanda. Kigarama , Bouxin & Radoux 258 (K); Rubona , Michel 5469 (K).

Senegal. Daker , Adam 17747 (P); Gambie , Berhaut 687 (P); Haka , Diallo 21304 (P); Mt. Assirik , Tutin 91 (K); Mt. Roland , Chevalier 2537 (P).

Sierra Leone. Falaba , Morton 2843 (K); between Moria and Dumbaia , Gledhill 537 (K); Musaia , Deighton 4483 (K).

Somalia. Goda Mts. , Lavranos 11446 (K).

Sudan. Gilo , Friis & Velloso 427 (K); Jeber Marra , Robertson 7 (K).

Tanzania. Kibondo , Bullock 3081 (K); Kilimandscharo , Schlieben 4393 (G); Lemala , Herlocker 239 (K); Mbula , Burt 2212 (K); Mufindi , Lovett 2182 (UPS); Moshi , Wallace 1264 (K).

Togo. Dapoon , Ern et al. 1346 (P); without precise locality , Buttner 275 (P).

Uganda. Abe , Assi 18380 (G); Budongo , Loveridge 190 (GH , K); Butiti Toro , Thomas 2277 (K); Kampala , Brown 101 (K); Kawanda , Lind 72 (K); Kigezi , Puresglove 3248 , 3527 (K); Stauffer 608 (P); Lamuru , Scheffler 245 (G); Lendu , Eggeling 3890 (K); Mt. Morato , Hardy 10756 (G); Teso , Chandler 35 (G); Wasa , Fyffe 29 (K).

Zaire. Edouard , Humbert 8205 (P); Elisabethville , Humbert 15929 (P); Ituri , Lebrun 4025 (P); Katanga , Bulaima 25 (P), Witte 6976 (K); Kivu , Kassner 3188 , Stauffer 484 (P , UPS); Luofu , Fouis 4709 (US); Nioka , Bamps 28 (K , UPS).

Zambia. Abercorn , Richards 22294 (P).

Saudi Arabia. Asir , Hedberg 92181 (UPS); Bijurhi , Collentte 1324 (K).

13b. var. **glabrescens** Cheval. in Bull. Mus. Hist. Nat. Paris , ser. 2 , 4 : 1011. 1932 ; Staner

& Leonard in Robyns , Fl. Congo Belg. Ruanda-Urundi 2 : 194. 1951 ; M. Johnson , Klematis 461. 1997 ; Grey-Wils. , Clematis 161. 2000 ; W. T. Wang in Acta Phytotax. Sin. 38 : 324. 2000. Type : Senegal. Niayes , 1899-12 , Chevalier 2536 (holotype , P !).

? *C. orientalis* L. ssp. *thunbergii* var. *glabrescens* Kuntze in Verh. Bot. Ver. Brand. 26 : 125. 1885. — *C. thunbergii* Steud. var. *glabrescens* (Kuntze) Durand & Schinz , Consp. Fl. Afr. 1 (2) : 7. 1898. Type : “ Africa extratropica ” , no type specimen designated.

C. thunbergii Steud. var. *congensis* Cheval. in l. c. 1012. — *C. triloba* Thunb. var. *congensis* (Cheval.) M. Johnson , Klematis 469. 1997. Type : Moyen-Congo. Djoue , 1912-07 , Chevalier 27466 (holotype , P !).

This variety differs from var. *hirsuta* in the leaflets abaxially subglabrous or only on veins sparsely puberulous.

Angola , Burundi , Congo , Kenya , Senegal , Sudan , and Zaire. In thickets ; alt. 200 – 1750 m.

Additional specimens examined.

Angola. Chitato : Dundo , Gossweiler 13989 (US).

Burundi. Bukemba , Reekmans 10258 (UPS).

Kenya. Masai , Hedberg 1437 (UPS).

Sudan. Kulme , Lynes 529 (US).

Zaire. Kisantu , Touis 20 (US).

13c. var. **junodii** (Burt Davy) W. T. Wang in Acta Phytotax. Sin. 38 : 325. 2000. — *C. oweniae* Harvey var. *junodii* Burt Davy , Man. Flow. Pl. & Ferns Transv. 1 : 111. 1926. Type : South Africa. Transvaal : Shilouvane , Junod 1063 (holotype , K !).

This variety differs from var. *hirsuta* in the leaflets being thinner in texture , thinly papery , abaxially not reticulate , velutinous.

Kenya , Malawi , Mozambique , South Africa. Tanzania , Zambia , and Zimbabwe. In bushes or forests ; alt. 900 – 1500 m.

Additional specimens examined.

Kenya. Massabit , Oteke 45 (PRE).

Malawi. Chitipa , Philips 2823 (K) ; Kota-kota , Brass 17112 (K) ; Nyasaland , Buchanan 1022 (LE) , 1104 (K) , Stolz 206 (G) ; Rumphu , Pawek 5547 (K).

Mozambique. Chimoia , Chase 6923 (K) ; Tete , Macedo 5141 (K).

South Africa. Shilouvane , Junod 4893 (PRE).

Tanzania. Arusha , Gereau 1678 (PRE).

Zambia. Chalimbana , Robinson 2215 (K) ; Kawambwa , Richards 9421 (K) ; Lusaka , Angis 1610 (K) ; Namwala , White 2986 (K).

Zimbabwe. Mutare , Bayliss 10448 (PRE).

13d. var. **inciso-dentata** (A. Rich.) W. T. Wang in Acta Phytotax. Sin. 38 : 325. 2000. — *C. inciso-dentata* A. Rich. , Tent. Fl. Abyss. 1 : 2. 1847 ; Durand & Schinz , Consp. Fl. Afr. 1 (2) : 4. 1898 ; Andrews , Flow. Pl. Anglo-Egypt. Sudan 1 : 10. 1950. — *C. orientalis* L. ssp. *wightiana* var. *typica* f. *inciso-dentata* (A. Rich.) Kuntze in Verh. Bot. Ver. Brand. 26 : 125. 1885. Type : Ethiopia. Prov. Choa , 1846 , Richard s. n. (holotype , P ; isotype , K !).

C. oliveri Kuntze in l. c. 165 ; Durand & Schinz , Consp. Fl. Afr. 1 : 5. 1898. Type : Ethiopia , Schimper s. n. (holotype , K !).

This variety differs from var. *hirsuta* in the leaflets being abaxially densely lanate , and the sepals inside glabrous.

Ethiopia. Alt. 1350 – 2300 m.

Additional specimens examined.

Ethiopia. Saganeiti, Schweinfurth & Riva 1718 (US), Ryding & Sileshi 1836 (UPS).

14. *Clematis brachiata* Thunb., Prodr. Pl. Cap. 2 : 94. 1800 ; et Fl. Cap. 441. 1823 ; Harv. & Sond., Fl. Cap. 1 : 2. 1859 ; Prantl in Bot. Jahrb. 9 : 261. 1888 ; Durand & Schinz, Consp. Fl. Afr. 1 (2) : 1. 1898 ; Marloth, Fl. S. Afr. 221. 1913 ; Adamson in Adamson & Salter, Fl. Cap. Penin. 401. 1950 ; Exell & Milne-Redhead in Fl. Zambes. 1 : 91. 1960 ; Letty, Wild Flow. Transv. 140. 1962 ; White, For. Fl. N. Rhodesia 46. 1962, excl. syn. ; Merxm., Prodr. Fl. Südwestafr. 37. Ranunculac. 2. 1968 ; Exell et al. in Fernand., Fl. Mocamb. 4. Ranunculac. 4. 1973 ; Campton, Fl. Swazil. 206. 1976 ; M. Johnson, *Clematis* 456. 1997 ; Grey-Wils., *Clematis* 158. 2000 ; W. T. Wang in Acta Phytotax. Sin. 39 : 330. 2001. — *C. orientalis* L. ssp. *brachiata* (Thunb.) Kuntze in Verh. Bot. Ver. Brand. 26 : 125. 1885 ; Viguier & Perrier in Mém. Inst. Sci. Madag., ser. B, 2 (2) : 223. 1949, p. p. quoad Perrier 4910, 4925 et 4927. Type : South Africa. Without precise locality, UPS no. 13000 (holotype, UPS!).

C. brachiata Ker-Gawl. in Edwards, Bot. Reg. 2 : t. 97. 1816 ; DC., Syst. 1 : 150. 1818 ; et Prodr. 1 : 6. 1824. — *C. kerri* Steud., Nom. Bot., ed. 2, 379. 1840. Type : no type specimen designated.

C. stewartiae Burt Davy, Man. Flow. Pl. Ferns Transv. 1 : 111. 1926 ; Compton, Fl. Swazil. 206. 1976. Type : Swaziland. Without precise locality, Stewart 100 (holotype, K!).

C. stewartiae var. *wilmsii* Burt Davy, l. c. Type : South Africa. Transvaal : Lydenbury, 1893-02, Wilms 1 (holotype, K!).

C. brachiata Thunb. var. *burkei* Burt Davy, l. c. Type : South Africa. Bay Sprint, Burke s. n. (holotype, K!).

Fig. 9 : A, B

Woody vine. Branches ca. 8-sulcate, glabrous or puberulous. Leaves once to twice pinnate ; leaflets subcoriaceous, ovate, rarely lanceolate, 1.4 – 4(– 8) × 0.8 – 3(– 5.5) cm, apex acute or acuminate, base truncate, rounded, or broadly cuneate, margin dentate or denticulate, 3-lobed, sometimes undivided, on both surfaces subglabrous or puberulous, abaxially not reticulate, basal veins abaxially slightly prominent ; petioles 2 – 5 cm long. Cymes axillary and terminal, (3 – 5 – 20)-flowered, often panicle-like ; peduncles 1.2 – 3.2 cm long ; bracts narrowly ovate or rhombic, 4 – 8 mm long, usually 3-lobulate. Flower 2 – 2.4 cm in diam. ; pedicel 1 – 1.8 cm long, puberulous. Sepals 4, white, narrowly oblong or lanceolate-oblong, 9 – 13(– 16) × 3 – 4.5(– 6) mm, apex obtuse or slightly acute, on both surfaces appressed-puberulous, margin velutinous. Stamens 7 – 10 mm long ; filaments narrowly linear, pubescent ; anthers oblong or narrowly oblong, 1.6 – 3 mm long, glabrous, apex obtuse. Ovaries densely puberulous ; styles 6 – 7 mm long, densely villos. Achenes compressed, elliptic, 3 – 3.5 × 2 – 2.5 mm, puberulous, narrowly rimmed ; persistent styles ca. 2.5 cm long, plumose. Fl. Jan. – Jul.

Angola, Botswana, Madagascar, Malawi, Mozambique, South Africa, Swaziland, Zambia, and Zimbabwe. On slopes, along forest margins, or in forests ; up to 1600 m.

Additional specimens examined.

Angola. Humpata, Pearson 2631 (K).

Botswana. Guborone, Hansen 3383 (K) ; Northern Distr., Lambrecht 215 (K).

Madagascar. Hutrizabe, Perrier 4927 (P) ; Hutrizuli, Perrier 4925 (P) ; Kissamby, Morat 1110 (P) ; Skopu, Perrier 4910 (P).

Malawi. Manyochi, Pawek 11639 (K).

Mozambique. Gaza , Barbosa 7164 (K).

South Africa. Barberton , Williams 7669 (PRE) ; Cape , Allardice 1572 , Brink 596 , Brynard 193 , Comins 1637 , Cooper 582 , 1517 , Foorcade 3651 , Galpin 9980 , Gill s. n. , Harvey s. n. , Hutchinson 3148 , Kuntze s. n. , Meeuse 9667 , Rogers 27772 (K) ; Natal , Halliwell 5126 , Killick 1414 , McClean 554 , Mogg 7172 , Stray 11263 , Venter 3881 , Wylie s. n. (K) , Codd 9648 , Gerard s. n. , McClean 28685 (P) ; Pretoria , McClean 213 , Schieben 7880 (G , US).

Swaziland. Without precise locality , Kemp 734 (US) , Pierce 10 (G).

Zambia. Livinstone , Gilges 632 (K) ; Mbala , Sanane 714 (K).

Zimbabwe. Belingwe , Simon 2446 (K) ; Fort Victoria , Leach 11673 (K) ; Inyanga , Edwards 938 (K) ; Wankie , Mshasha 66 (K).

C. brachiata is closely related to *C. hirsuta* , but differs by having thicker subcoriaceous leaflets. For elucidating the relationships between them , further study is needed.

15. Clematis viridiflora Bertol. , Misc. Bot. 19 : 7 , t. 3. 1858 ; Milne-Redhead & Turrill , Fl. Trop. E. Afr. Ranunculac. 5. 1952 ; Exell & Milne-Redhead in Fl. Zambes. 1 : 90. 1960 ; Exell et al. in Fernand. , Fl. Mocamb. 4. Ranunculac. 3. 1973 ; M. Johnson , Klematis 469. 1997 ; Grey-Wils. , Clematis 160. 2000 ; W. T. Wang in Acta Phytotax. Sin. 38 : 322. 2000. Type : East Africa. Inhambane , Fornasini s. n. (holotype , BO).

C. zanzibarensis Bojer ex Loud. , Hort. Brit. 228. 1830 , nom. nud.

C. stolzii Engler in Bot. Jahrb. 45 : 272. 1910 ; Staner & Leonard in Bull. Soc. R. Bot. Belg. 82 : 338. 1950. Type : Malawi. Nyasaland : Kymbila , alt. 1000 m , 1907-06-04 , Stolz 161 (holotype , B ; isotypes , BM ! , G ! , GH ! , K ! , S ! , UPS !).

Fig. 10 : A , B

Woody vine. Branches shallowly 8 - 10-sulcate , sparsely puberulous. Leaves once to twice pinnate ; leaflets papery or herbaceous , ovate or narrowly ovate , 2 - 10 × (1 -) 1.8 - 8 cm , apex acuminate or long acuminate , base subcordate , rounded , or broadly cuneate , margin sparsely coarsely dentate , 2 - 3-lobed or undivided , on both surfaces puberulous , basal veins abaxially slightly prominent or nearly flat ; petioles 1.5 - 6.8 cm long. Cymes axillary and terminal , 5 - 10-flowered ; peduncles 2.2 - 5 (- 9) cm long ; bracts ovate , 0.8 - 3 cm long. Flower 2 - 3 (- 4) cm in diam. ; pedicel 1.2 - 2.4 cm long , puberulous. Sepals 4 , white , elliptic-oblong or narrowly oblong , 9 - 15 (- 21) × 3 - 6 (- 10) mm , apex acute or slightly obtuse , inside glabrous or puberulous , outside puberulous , margin velutinous. Stamens 8 - 10 (- 12) mm long ; filaments lanceolate-linear , pubescent ; anthers narrowly oblong or oblong , (1 -) 1.2 - 1.8 (- 2) mm long , glabrous , apex obtuse. Ovaries puberulous ; styles 8 - 12 mm long , densely villous. Achenes compressed , elliptic , 3.5 - 4 × 2.2 - 3 mm , puberulous , narrowly rimmed ; persistent styles 3 - 5 cm long , plumose. Fl. Jun. - Jul.

Angola , Kenya , Malawi , Mozambique , Namibia , Tanzania , Zaire , and Zambia. On slopes ; alt. 10 - 2000 m.

Additional specimens examined.

Angola. Huila , Menezes 3262 (K).

Kenya. Kichich , Newbould 3560 (K) ; Loliondo , Williams 690 (K) ; Marok , Glover & Samuel 3056 (K).

Malawi. Liwonde National Park , Dudley 1969 (K) ; Mt. Chiradzulu , Chapman et al. 6263 (K) ; Mt. Mulanje , Brass 16836 , Chapman 5714 , 7496 , 9008 (K).

Mozambique. Chipenhe , Lemos & Balsinhas 37 (K) ; Chwaka , Williams 42 , 62 , 96 (K) ; Delagoa Bay , Junod 370 (G , G-Bois , US) ; Gaza , Barbosa 8549 (K) , Lemos & Balsinhas 237

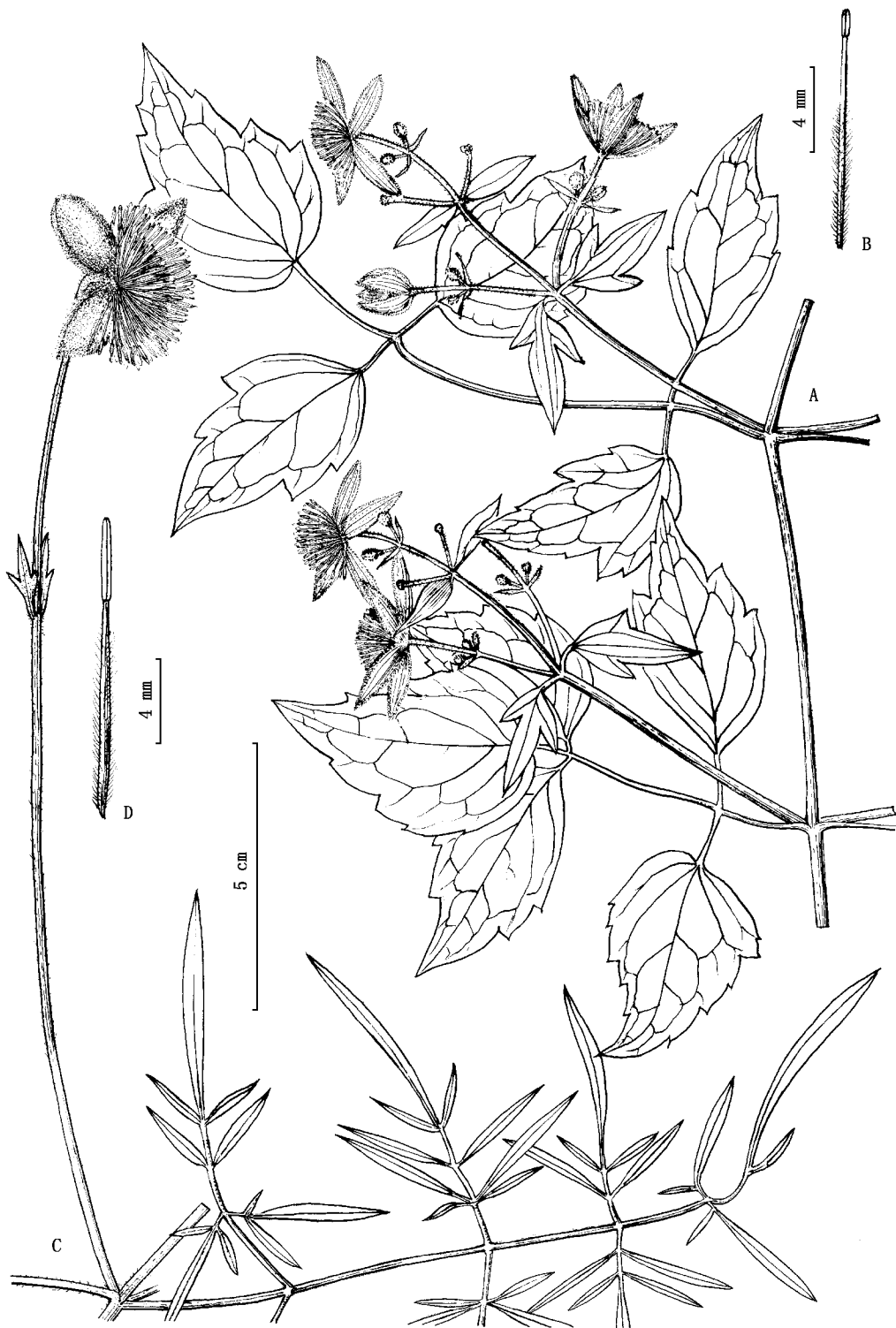


Fig. 10. A, B, *Clematis viridiflora* Bertol. A, flowering branch; B, stamen (from Faulkner 2611). C, D, *C. thalictrifolia* Engler. C, flowering branch; D, stamen (from Richards 4817).

(PRE); Makunduchi, Williams 38 (K).

Namibia. Otjiwaronya, de Winter 2769 (K).

Tanzania. Amani, Hornby 246, Luchman 1 (K); Cheminda, Braun 1243 (K); Kilosa, Abberley 1314 (K); Kondoa, B. D. Burt 2255 (K); Lemuta, Newbould 6150 (K); Lushoto, Ngaundai 444 (K); Mukuyuni, Koritschoner 957, 1432 (K); Zanzibar: Chwaka, Faulkner 2611 (K).

Zambia. Chisamba, Michelmores 659 (K); Mbala, Sanane 520 (K).

16. Clematis commutata Kuntze in Verh. Bot. Ver. Brand. 26:128. 1885; Durand & Schinz, Consp. Fl. Afr. 1(2):2. 1898; Exell & Mendoca in Carriso, Consp. Fl. Angol. 1:2. 1937; Staner & Leonard in Bull. Soc. R. Bot. Belg. 82:326. 1950; et in Robyns, Fl. Congo Belg. Ruanda-Urundi 187. 1951; Milne-Redhead & Turrill, Fl. Trop. E. Afr. 5. 1952; Merxm., Prodr. Fl. Südwestaf. 37. Ranunculac. 2. 1968; M. Johnson, Klematis 457. 1997; Grey-Wils., Clematis 159. 2000. Type: Angola. Huila, between Lopolo and Nene, Welwitsch 1215a (holotype, B, destroyed; lectotype, K!, here designated).

C. iringaensis Engler in Bot. Jahrb. 28:388. 1900; Exell & Milne-Redhead in Fl. Zambes. 1:90. 1960; White, For. Fl. N. Rhodesia 46. 1962; Troupin, Fl. Rwanda 1:271. 1978. Type: Tanzania. Uhehe, Iringa, Kilima Plateau, alt. 1600 m, 1899-02, Goetze 705 (holotype, B; isotype, K!).

C. antunesii Engler in Bot. Jahrb. 32:130. 1902 et 45:274. 1910. Type: Angola. Huila, Antunes A56 (holotype, B).

C. keilii Engler in Bot. Jahrb. 45:273. 1910. Type: Zaire. Kagera, near Usumbura, alt. 2500 m, 1905-05, Keil 110 (holotype, B).

C. orientalis L. var. *thunbergii* auct. non (Steud.) Kuntze: Hiern, Cat. Afr. Pl. Welwit. 3. 1896.

Fig. 5: A, B (see p. 304)

Woody vine. Branches shallowly 10-sulcate, sparsely puberulous. Leaves 1-2-pinnate; leaflets papery, ovate, narrowly ovate, or elliptic, rarely lanceolate, 2-14 × 1.2-8.5 cm, apex acuminate or attenuate, base rounded, subcordate, or broadly cuneate, margin sparsely dentate or denticulate, 3-lobed or undivided, on both surfaces usually sparsely puberulous, basal veins nearly flat; petioles 4-6 cm long. Cymes axillary, 3-18-flowered, often panicle-like; peduncles 4.5-25 cm long; bracts petiolate, ovate, 3-lobed, or lanceolate, entire, 1.5-7.5 cm long. Flower 3.6-6 cm in diam.; pedicel 2.7-4.5 cm long, densely puberulous. Sepals 4(-5), white, lanceolate-oblong or broadly lanceolate, rarely elliptic, 15-32 × 6.5-13 mm, apex attenuate, acuminate, or acute, inside puberulous, outside densely tawny or yellow puberulous, margin velutinous. Stamens 11-16 mm long; filaments lanceolate-linear, pubescent; anthers linear or oblong, 2-3 mm long, glabrous, apex obtuse, rarely inconspicuously minutely apiculate. Ovaries pubescent; styles 11-14 mm long, densely villous. Fl. Jan. - Jun.

Angola, Burundi, Malawi, Tanzania, Uganda, Zaire, and Zambia. In thickets, along forest margins, or by river; alt. 1400-2100 m.

Additional specimens examined.

Angola. Sambusu, de Winter & Marais 4942 (K, PRE).

Burundi. Mayuyu, Lewalle 380 (K).

Malawi. Chitipa, Pawek 6255 (K).

Tanzania. Iringa, Polhill & Paulo 1346 (K, P), Carmichael 169, Procter 1757 (K); Mbeya, Bidgood & Congdon 150 (K); Ufipa, Richards 8465 (K).

Uganda. Luhiza, Purselove 2349, 3177, 3681 (K).

Zambia. Abercorn , Richards 689 , 1425 , 8203 , 14366 , 19724 , Lawton 681 (K) ; Chilon-gowelo , Richards 4323 (K) ; Kasama , Richards 12637 (K).

17. *Clematis comorensis* W. T. Wang in Acta Phytotax. Sin. 38 : 32b , fig. 3 : 1 – 4. 2000 et 39 : 330. 2001. Type : Comoros. Without precise locality , 1886 , Humbolt 1518 (holotype , P ! ; isotype , LE !) , 1884-09-14 , Humbolt 1217 (paratype , P ! ; isoparatype , LE !) ; Moheli , 1847-09 , Boivin s.n. (paratype , P !).

C. orientalis L. ssp. *simensis* auct. non (Fresen.) Kuntze : Viguier & Perrier in Mém. Inst. Sci. Madag. , ser. B , 2 (2) : 223. 1949 , p. p. quoad pl. Comores. ; Perrier in Humbert , Fl. Madag. Comor. 76^e Fam. Renonculac. 13. 1950 , p. p. quoad pl. Comores.

C. orientalis L. ssp. *brachiata* auct. non (Thunb.) Kuntze : Viguier & Perrier in l. c. , p. p. quoad pl. Comores. ; Perrier in Humbert , l. c. , p. p. quoad pl. Comores.

Fig. 2 : A – D (see p. 296)

Subwoody vine. Branches subterete , shallowly 6 – 8-sulcate , puberulous. Leaves 2-pinnate , 11 – 13-foliolate ; leaflets herbaceous , ovate or narrowly or broadly ovate , 3.5 – 5.8 × 2.2 – 5 cm , apex acuminate or caudate-acuminate , base cordate or rounded , margin dentate , 3-lobed or undivided , adaxially appressed-puberulous , abaxially on veins appressed-puberulous , basal veins abaxially slightly prominent ; petioles 3.8 – 6 cm long , puberulous. Cymes axillary and terminal , many-flowered , panicle-like ; peduncles 3.4 – 7.5 cm long , puberulous ; bracts simple , ovate , or ternate. Flower 1.4 – 1.8 cm in diam. ; pedicel 1.5 – 2.6 cm long , puberulous. Sepals 4 , ovate- or obovate-oblong , 7 – 10 × 2 – 5 mm , apex slightly acute , on both surfaces puberulous , outside on margin velutinous. Stamens 5 – 7.5 mm long ; filaments narrowly linear , pubescent ; anthers oblong , 1.4 – 1.6 mm long , glabrous , apex obtuse. Ovaries puberulous ; styles 5 – 6 mm long , densely villous. Achenes compressed , ovate , ca. 3 × 2.6 mm , pubescent ; persistent styles ca. 4.6 cm long , plumose. Fr. Sept.

Comoros.

18. *Clematis oweniae* Harvey in Harvey & Sonder , Fl. Cap. 1 : 2. 1859 ; Burt Davy , Man. Flow. Pl. Ferns Transv. 1 : 111. 1926 ; Exell & Milne-Redhead in Fl. Zambes. 1 : 92. 1960 ; Letty , Wild Flow. Transv. 140. 1962 ; Merxm. , Prodr. Fl. Südwestaf. 37. Ranunculac. 2. 1968 ; Compton , Fl. Swazil. 206. 1976 ; M. Johnson , Klematis 465. 1997 ; Grey-Wils. , Clematis 157. 2000. — *C. orientalis* L. ssp. *thunbergii* (Steud.) Kuntze var. *oweniae* (Harvey) Kuntze in Bull. Herb. Boiss. 2 : 182. 1894. — *C. brachiata* Thunb. var. *oweniae* (Harvey) Durand & Schinz , Consp. Fl. Afr. 1 (2) : 2. 1898. Type : South Africa. Port Natal , Owen s.n. (holotype , not seen ; phototype , K !).

Fig. 11 : C – E

Woody vine. Branches shallowly 6 – 8-sulcate , densely puberulous. Leaves 2-pinnate , upper leaves sometimes pinnate ; leaflets thinly coriaceous or papery , usually narrowly ovate or lanceolate , sometimes ovate , 1 – 4.5 × 0.5 – 2 (– 2.5) cm , apex long acuminate or acuminate , base broadly cuneate or subtruncate , margin dentate , often incised , undivided or 3-lobed , on both surfaces appressed-puberulous , abaxially more or less reticulate ; petioles 1 – 4.8 cm long. Cymes axillary , usually 5 – 15-flowered ; peduncles 1.5 – 3.5 cm long ; bracts leaflet-like. Flower 2 – 3.2 cm in diam. ; pedicel 1 – 2 cm long , densely puberulous. Sepals 4 , white , oblong-lanceolate , (7 –) 10 – 16 × (3 –) 4 – 6 mm , apex acuminate , on both surfaces puberulous , outside on margin velutinous. Stamens 6 – 7 mm long ; filaments narrowly linear , below the middle or near base pubescent ; anthers broadly ellipsoid or oblong , 0.8 – 1.1 mm long , glabrous , apex obtuse. Ovaries densely puberulous ; styles ca. 6 mm long , densely villous. Achenes compressed , narrowly ovate , ca.

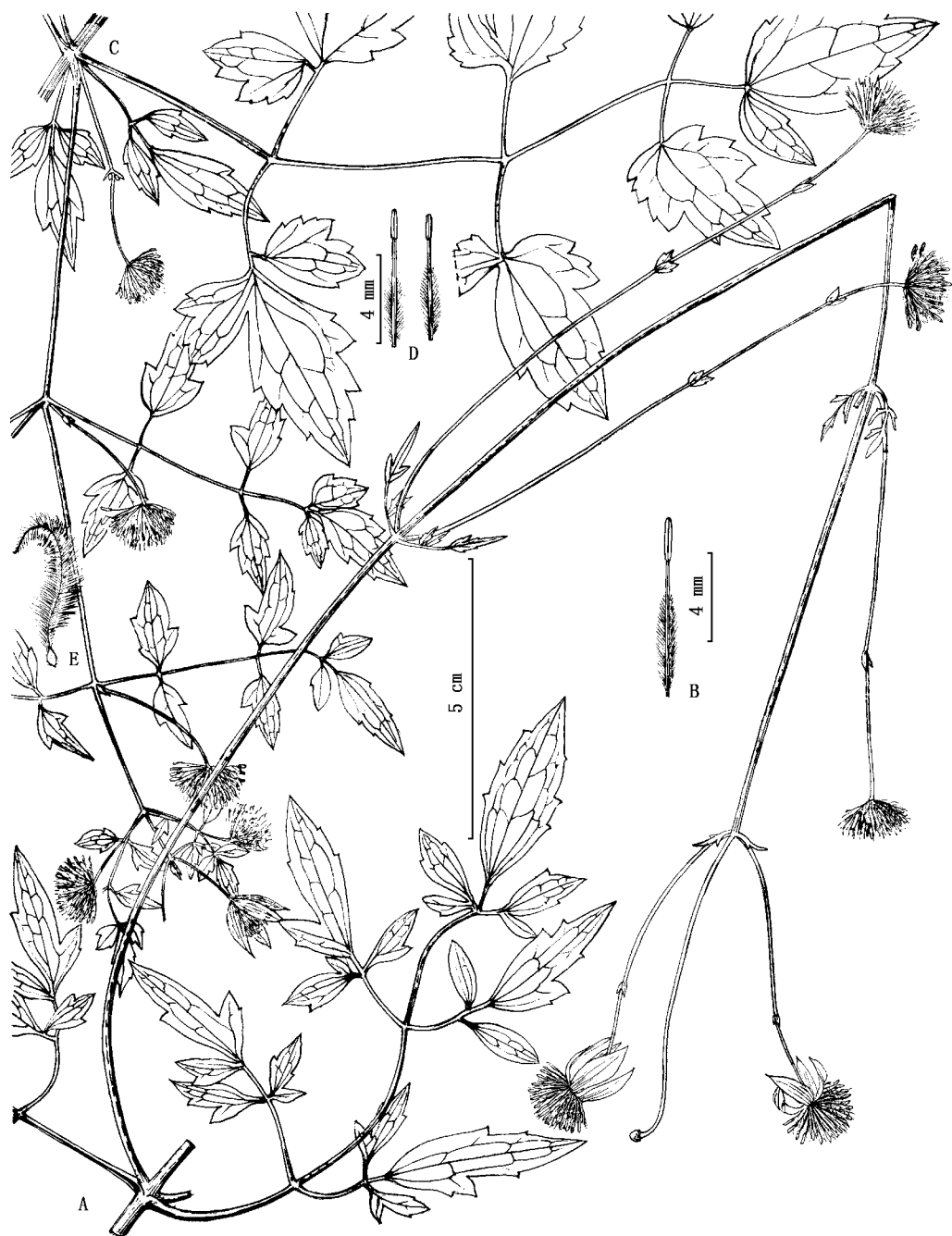


Fig. 11. A, B, *Clematis triloba* Thunb. A, flowering branch; B, stamen (from Barbosa & Coresia 9050). C - E, *C. ouenii* Harvey. C, flowering branch; D, two stamens (from Kemp 864); E, achene (from Schlieben 78030).

2.5 × 1 mm , puberulous ; persistent styles ca. 2 cm long , plumose. Fl. Feb. – Aug.

Botswana , Mozambique , Namibia , South Africa , Swaziland , and Zimbabwe. In bushes or on grassy slopes ; alt. 50 – 1500 m.

Specimens examined.

Botswana. Ghanzi , Skarpe s-284 (PRE) ; Molepolole , Mott 234 (K).

Mozambique. Guija , Pedrogad 1262 (K) ; Inhamussua , Sousa 1761 (K) ; Maputo , Zunguze & Boane 62 (K).

Namibia. Grootfontein , Seydel 2150 (GH , K , US) , Merxmüller 2766 (PRE) , Wanntorp 497 (K).

South Africa. Cape , Acocks 110 , 1857 (K) ; Natal , Kuntze s. n. , Morris 976 , Nelson 7 , Sanderson s. n. (K) ; Pretoria : Roodeplaatdam , Balsinhas 3416 (UPS) ; Transvaal , Letty 427 , Mason 80 , Meeuse 9277 , Moss 16581 , Nation 147 , Rehmann 4202 , Swart 487 , Wilman 6322 (K) , Balsinhas 3416 (K , UPS) , Bayliss 1188 , Schlieben 78030 (G , US).

Swaziland. Compton 27691 (G) , 29915 (K) , Kemp 864 (US).

Zimbabwe. Metabeleland , Davies 338 (K).

19. *Clematis bowkeri* Burt Davy in herb. , sp. nov. Type : South Africa. Somerset , Bowker s. n. (holotype , here designated , K) ; juxta Port Elizabeth , in sylvis humilibus , sub 100 ped. , 1897-07 , West 1801 (K).

C. commutata Kuntze var. *glabrisepala* W. T. Wang in Acta Phytotax. Sin. 38 : 423. 2000 , syn. nov. Type : South Africa. Eastern Province , Cummings 218 (holotype , US !) ; near Port Elizabeth , West 1801 (paratype , GH !).

Fig. 7 : A , B (see p. 308)

Affinis *C. commutatae* Kuntze et *C. welwitschii* Hiern ex Kuntze , ab illa differt pedicellis glabris vel subglabris , sepalis extus glabris , ab hac ramis glabris , foliolis ovatis , sepalis late lanceolatis vel anguste ovatis apice attenuatis extus glabris.

Liana lignosa. Rami homotini vadose longitudinaliterque 4-sulcati , glabri. Folia bipinnata , raro pinnata ; foliola chartacea , ovata , rhombica vel anguste rhombico-ovata , 1 – 5 cm longa , 0.9 – 3 cm lata , apice attenuata vel acuta , basi late cuneata vel cuneata , margine utrinque 1 – 3-denticulata , 2 – 3-lobata vel indivisa , supra glabra vel subglabra , subtus ad nervos basales fere planos sparsissime puberula ; petioli 2 – 4.2 cm longi. Cymae axillares , 3 (– 4)-florae ; pedunculi circ. 2.5 cm longi , glabri ; bracteae anguste ellipticae , 4 – 6 mm longae. Flos 3.6 – 4.2 cm diam. ; pedicellus 2.5 – 4 cm longus , glaber. Sepala 4 , late lanceolata vel anguste ovata , 18 – 22 mm longa , 7 – 9 mm lata , apice attenuata , intus dense adpresseque puberula , extu glabra , ad marginem velutina. Stamina circ. 30 , 12 – 13 mm longa , filamentis anguste linearibus inferne pubescentibus , antheris anguste oblongis vel late linearibus 2 – 2.4 mm longis glabris apice obtusis. Carpella circ. 25 , ovariis dense puberulis , stylis circ. 10 mm longis dense villosis.

Woody vine. Homotinous branches shallowly 4-sulcate , glabrous. Leaves 2-pinnate , rarely pinnate ; leaflets chartaceous , ovate , rhombic , or rhombic-ovate , 1 – 5 × 0.9 – 3 cm , apex attenuate or acute , base broadly cuneate or cuneate , margin 1 – 3-denticulate per side , 2 – 3-lobed or undivided , adaxially glabrous or subglabrous , abaxially on basal veins very sparsely puberulous , basal veins nearly flat ; petioles 2 – 4.2 cm long. Cymes axillary , 3 (– 4)-flowered ; peduncles ca. 2.5 cm long , glabrous ; bracts narrowly elliptic , 4 – 6 mm long. Flower 3.6 – 4.2 cm in diam. ; pedicel 2.5 – 4 cm long , glabrous. Sepals 4 , broadly lanceolate or narrowly ovate , 18 – 22 × 7 – 9 mm , apex attenuate , inside densely appressed-puberulous , outside on margin velutinous , elsewhere glabrous. Stamens 12 – 13 mm long ; filaments narrowly linear , below pubescent ; anthers narrowly

oblong or broadly linear, 2 – 2.4 mm long, glabrous, apex obtuse. Ovaries densely puberulous; styles ca. 10 mm long, densely villous. Fl. Jul.

South Africa (Port Elizabeth). In low forests; alt. ca. 30 m.

20. *Clematis triloba* Thunb., Prodr. Pl. Cap. 2:94. 1800; et Fl. Cap. 441. 1823; Williams in Bull. Herb. Boiss. 7:197. 1907; Staner & Leonard in Bull. Soc. R. Bot. Belg. 82:329, photo 1. 1950; M. Johnson, *Clematis* 468. 1997; Grey-Wils., *Clematis* 160. 2000. — *C. thunbergii* Steud., Nom. Bot., ed. 2, 1:380. 1840; Harv. & Sond., Fl. Cap. 2. 1859; Oliv., Fl. Trop. Afr. 1:6. 1868; Prantl in Bot. Jahrb. 9:261. 1888; Durand & Schinz, Consp. Fl. Afr. 1(2):7. 1898, excl. syn. *C. hirsuta* Perr. & Guill.; Lynch in Gard. Chron., ser. 3, 50:253, fig. 12. 1911; Pellegrin, Fl. Mayombe 5. 1924. — *C. orientalis* L. ssp. *thunbergii* (Steud.) Kuntze in Verh. Bot. Ver. Brand. 26:124. 1885, p.p. min. Type: South Africa. Without precise locality, UPS no. 13030 (holotype, UPS!).

C. welwitschii Hiern ex Kuntze in Verh. Bot. Ver. Brand. 26:171. 1885; Hiern, Cat. Afr. Pl. Welwit. 3. 1896; Durand & Schinz, Consp. Fl. Afr. 1(2):8. 1898; Exell in J. Bot. 64, Suppl. Polypet. 1. 1926; Exell & Mendonco in Carrisso, Consp. Fl. Angol. 1:3. 1937; Staner & Leonard in Bull. Soc. R. Bot. Belg. 82:327, fig. 2. 1950; et in Robyns, Fl. Congo Ruando-Urundi 188, pl. 15. 1951; Milne-Redhead & Turrill, Fl. Trop. E. Afr. Ranunculac. 3, fig. 1. 1952; Exell & Milne-Redhead in Fl. Zambes. 1:92. 1960; White, For. Fl. N. Rhodesia 47. 1962; M. Johnson, *Clematis* 470. 1997; Grey-Wils., *Clematis* 157. 2000, syn. nov. Type: Angola. Near the river Cuanza in Sobato de Bumba, 1857-03-28, Welwitsch 1217 (holotype, K!; isotypes, BM!, G!).

C. orientalis L. ssp. *thunbergii* var. *pauciflora* Kuntze in l. c. 125. — *C. thunbergii* Steud. var. *pauciflora* (Kuntze) Durand & Schinz, Consp. Fl. Afr. 1(2):7. 1895. Type: Africa aequatorialis, Malange, Mechow & Teusz 454 (holotype, B).

? *C. orientalis* ssp. *thunbergii* var. *bolusiana* Kuntze in Bull. Herb. Boiss. 2:182. 1894. Type: Kapkolonie, Bolus s.n. (holotype).

C. thunbergii Steud. var. *angustisecta* Engler in Bot. Jahrb. 30:309. 1901; Durand, Syll. Fl. Congol. 15. 1909; De Wild. in Ann. Mus. Congo Belg. Bot., ser. 4, 2:37. 1913. Type: Usafua: Utengule, alt. 1600 m, 1899-06-14, Goetze 1033 (holotype, B; isotype, K!).

C. kassneri Engler in Bot. Jahrb. 45:274. 1910; De Wild. in Ann. Soc. Sci. Brux. 37(2):74. 1913; et in Ann. Mus. Congo Belg. Bot., ser. 4, 2:37. 1913. Type: Zaire. Katanga: Kasanga, 1908-03, Kassner 2663 (holotype, B; isotype, K!).

C. prostrata Hutch., A Botan. S. Afr. 484. 1946, nom. nud.

Fig. 11: A, B

Woody vine. Branches shallowly 6 – 8-sulcate, puberulous. Leaves once or twice pinnate; leaflets papery or subcoriaceous, oblong, narrowly oblong, elliptic, or narrowly ovate, 1 – 4(– 8.5) × 0.5 – 1.5(– 3.5) cm, apex acute or obtuse, base cuneate or rounded, margin few-dentate or denticulate, undivided or 2 – 3-lobed or 2 – 3-parted, adaxially sparsely appressed-puberulous or subglabrous, abaxially on veins puberulous, basal veins abaxially slightly prominent; petioles 2 – 5 cm long. Cymes axillary and terminal, 3 – 11-flowered, often panicle-like; peduncles (1 – 9) – 12 cm long, sparsely puberulous; bracts shortly petiolate, simple, ovate, or ternate, 0.7 – 2 cm long. Flower 2 – 2.8 cm in diam.; pedicel 2 – 5(– 7.5) cm long, sparsely puberulous or glabrous. Sepals 4, white, oblong or oblong-elliptic, 10 – 15 × 4 – 8 mm, apex obtuse or slightly acute, on both surfaces sparsely or densely puberulous, outside on margin velutinous. Stamens 6 – 13 mm long; filaments narrowly linear, pubescent; anthers narrowly oblong or linear, 1.5 – 3.2 mm long,

glabrous, apex obtuse or minutely apiculate. Ovaries puberulous; styles 6–9 mm long, densely villos. Achenes compressed, ovate or elliptic, 3–4 × 2–3 mm, pubescent; persistent styles 2.4–3.5 cm long, plumose. Fl. Mar. – Jun.

Angola, Botswana, Kenya, Malawi, Mozambique, Tanzania, Zaire, Zambia, and Zimbabwe. In bushes; alt. 1000–1500 m.

Additional specimens examined.

Angola. Alto Catumbella Ganda, Faulkner 300 (K); Benguella, Gossweiler 2636 (BM, K); Hila, Barbosa & Correia 9050 (K); Huila, Barbosa & Coresia 9050 (UPS), Borges 163 (K, PRE); Lunda: Dala, Exell & Mendonca 1141 (BM), Gossweiler 11836 (US).

Botswana. Salisbury, Humbert 15483 (P).

Kenya. Ulenje, Eggeling 6098 (K, S).

Malawi. Champira, Pawek 16696 (K); Chitipa, Pawek 7151 (K); Chowo, Phillips 1704 (K); Fork Hills, Whyte 3500 (K); Kasunga, Jackson 1569 (K); Mlanje, Richards 16696 (K); Nichisi, Brummitt et al. 15579 (K); Masula, Sackson 2211 (K); Nyasaland, Brass 16106 (K); Rumphu, Pawek 5008 (K); Uipua, Moriaty 239 (K).

Mozambique. Caborra Bassa, Edwards & Vahrmeyer 4281 (PRE).

South Africa. Joburg, Mogg et al. 18631 (K).

Tanzania. Amami, Greenway H16 (K); Chunya, Richards 20438 (K); Iringa, Greenway 3646 (K); Kiborioni, Honnby 790 (K); Mbeya, Milne-Redhead & Taylor 790 (K); Njombe, Procter 2111 (K); Pungwe, Davies 416 (K); Wota Mts., Savile 27 (K).

Zambia. Abercorn, B. D. Burt 6262 (K, P); Chilanga, Angus 2230 (K, P); Chiwefwe, Stohr 811 (K, P, PRE); Chukwenga, Robinson 6509 (K); Kasama, Richards 15033 (K); Katete, Wright 93 (K); Kitawe, Fanshawe 3155 (K); Livingstone, Hutchinson & Gillett 3504 (K); Lusaka, King 17 (K); Mozabuka, White 2340 (K); Pemba, Robinson 713 (K); Solwezi, Milne-Redhead 495 (K); Twambo, Nutt 1896 (K).

Zimbabwe. Banket, Wild 1894 (K); Harare, Bayliss 10086 (PRE); Lundi River, Hutchinson & Gillett 3255 (K); Marandellas, Corby 62 (K); Mazol, Eyles 281 (K); Sarisbury, Craster 205 (K); Shamva, Biegel 2969 (K); Urungwe, Goodier 235 (K); without precise locality, Robin 4369 (P, S, US).

C. triloba is widespread in southern Africa, and variable in leaf division and leaflet shape and size. The type specimen of *C. triloba* Thunb. (UPS no. 13030) has smaller, once pinnate leaves with long elliptic leaflets 1–3 cm long, and the type specimen of *C. welwitschii* Hiern ex Kuntze (Welwitsch 1217) was made from a luxuriant plant, with larger 2-pinnate leaves and larger oblong leaflets 4–8 cm long. From the herbarium material examined I saw that between the two type specimens different in leaf size there are intermediate ones in leaf morphology. In 1949, in an annotation label on the sheet of the type specimen of *C. welwitschii* deposited in the herbarium at Kew, J. Léonard made the reduction of *C. welwitschii* Hiern ex Kuntze to the synonymy of *C. triloba* Thunb. In the present revision, his treatment is adopted.

21. *Clematis thalictrifolia* Engler in Bot. Jahrb. 45 : 270. 1910; Staner & Leonard in Bull. Soc. R. Bot. Belg. 82 : 326. 1950; et in Robyns, Fl. Congo Belg. & Ruanda-Urundi 187. 1951; Exell & Milne-Redhead in Fl. Zambes. 1 : 93. 1960; White, For. Fl. N. Rhodesia 46. 1962; M. Johnson, Klematis 467. 1997; Grey-Wils., Clematis 160. 2000. Type: Zaire. Katanga: Kundelungu, open plain, 1908-03, Kassner 2589 (holotype, B, destroyed; lectotype, K!, here designated; isolectotypes, BM!, P!).

Suffrutescent vine. Branches slender, shallowly 6-8-sulcate, puberulous. Leaves 2-pinnate or 2-pinnatisect; pinnae 2-3 pairs, stalked, the secondary divisions usually shortly stalked; leaflets or ultimate lobes chartaceous or coriaceous, long elliptic, narrowly oblong, lanceolate or linear, $1.6-6 \times 0.2-1.4$ cm, apex acute and mucronate, base cuneate, margin entire, rarely 1-2-dentate, adaxially nearly glabrous or sparsely pilose, abaxially on veins sparsely pilose, midrib adaxially slightly impressed, abaxially slightly prominent; petioles 2-4.5 cm long, pubescent. Cymes axillary and terminal, 1-3-flowered; peduncles 7-20 cm long, puberulous; bracts simple, 3-sect, or ternate, 1-5 cm long. Flower 3-5.5 cm in diam.; pedicel (3-7)-19 cm long, puberulous. Sepals 4, white, subcoriaceous, narrowly ovate or oblong-ovate, $1.6-3 \times 0.7-1.5$ cm, apex obtuse, slightly acute or attenuate, on both surfaces more or less densely puberulous, outside along margin velutinous. Stamens 10-13 mm long; filaments narrowly linear, densely pubescent; anthers linear, 2.8-4 mm long, glabrous, apex obtuse. Ovaries densely pubescent; styles 10-13 mm long, densely villous. Fl. Mar.

Tanzania, Zaire, and Zambia. In grassy places along bush margins or among stones in woodland; alt. 1300-1650 m.

Additional specimens examined.

Tanzania. Ufipa: Chapota, Richards 8517 (K).

Zambia. Chilino Village, Richards 4817 (K).

22. Clematis graveolens Lindl. in J. Hort. Soc. Lond. 1:307, cum fig. 1846; Hook. f. & Thoms. in Hook. f., Fl. Brit. Ind. 1:4. 1872; Aitch. in J. Linn. Soc. Bot. 28:29. 1881; Schneid., Ill. Handb. Laubh. 1:294, fig. 185:U-V². 1906; Conventry, Wild Flow. Kashm., ser. 2, 3, pl. 2. 1927; Mukerjee in Bull. Bot. Surv. Ind. 1:139. 1959; Tamura in Kitam., Fl. Afghan. 123. 1960; Gupta in Bull. Nat. Bot. Gard. Lucknow 54:pl. 11. 1961; Kapoor in l. c. 78:34. 1962; Stewart, Fl. West Pakist. 265. 1972; Hara in Hara & Williams, Enum. Flow. Pl. Nepal 2:15. 1979; Grey-Wils. in Kew Bull. 44:50, fig. 1:x, y, 4:G-J. 1989; Riedl & Nasir in Ali & Nasir, Fl. Pakist. 193:92. 1991; Rau in Sharma et al., Fl. Ind. 1:65. 1993; M. Johnson, Clematis 335. 1997; Grey-Wils., Clematis 166. 2000; Brandenb., Meclatis in Clematis 147, fig. 2. 2000.—*C. orientalis* L. ssp. *graveolens* (Lindl.) Kuntze in Verh. Bot. Ver. Brand. 26:124. 1885. Type: "Chinese Tartary", Wm. Munro s.n. (CAMB-Lindley Herb. — Grey-Wilson, 1989, not seen).

C. parvifolia Edgew. in Trans. Linn. Soc. Lond. 20:25. 1851; Hook. f. & Thoms., Fl. Ind. 9. 1855. Type: India. Kundau & Beas Valleys, Edgeworth 1051 (holotype, K).

C. orientalis ssp. *graveolens* var. *aitchisonii* Kuntze in l. c. Type: Afghanistan. Kuram Valley, Aitchison 614 (syntypes, GH!, S!), 718 (syntype, K!).

C. orientalis ssp. *graveolens* var. *subtripinnata* Kuntze in l. c. Type: India. Garhwal, Falconer herb. E. Ind. Comp. 6 (holotype, K!).

C. orientalis ssp. *thunbergii* (Steud.) Kuntze var. *intricata* (Bunge) Kuntze in l. c. 125, p. p., quoad specim. sub nom. *C. parvifolia* Edgew. e Himalaya lectum.

Fig. 12: A-D

Woody vine. Branches usually 6-angulate, shallowly 6-sulcate, sparsely puberulous or subglabrous. Leaves (1-2)-3-pinnate, with 2-3 pairs of stalked pinnae, glabrous or subglabrous; leaflets papery or herbaceous, narrowly ovate, ovate, lanceolate, or elliptic, $0.5-2.8 \times 0.2-1.6$ cm, apex attenuate or acute, base cuneate or broadly cuneate, margin entire, rarely few-dentate, undivided or unequally 2-lobed, basal veins flat; petioles slender, 3.5-5.5 cm long. Cymes axillary, (1-3)-5-flowered; peduncles slender, 4.5-9 cm long, glabrous; bracts foliaceous,

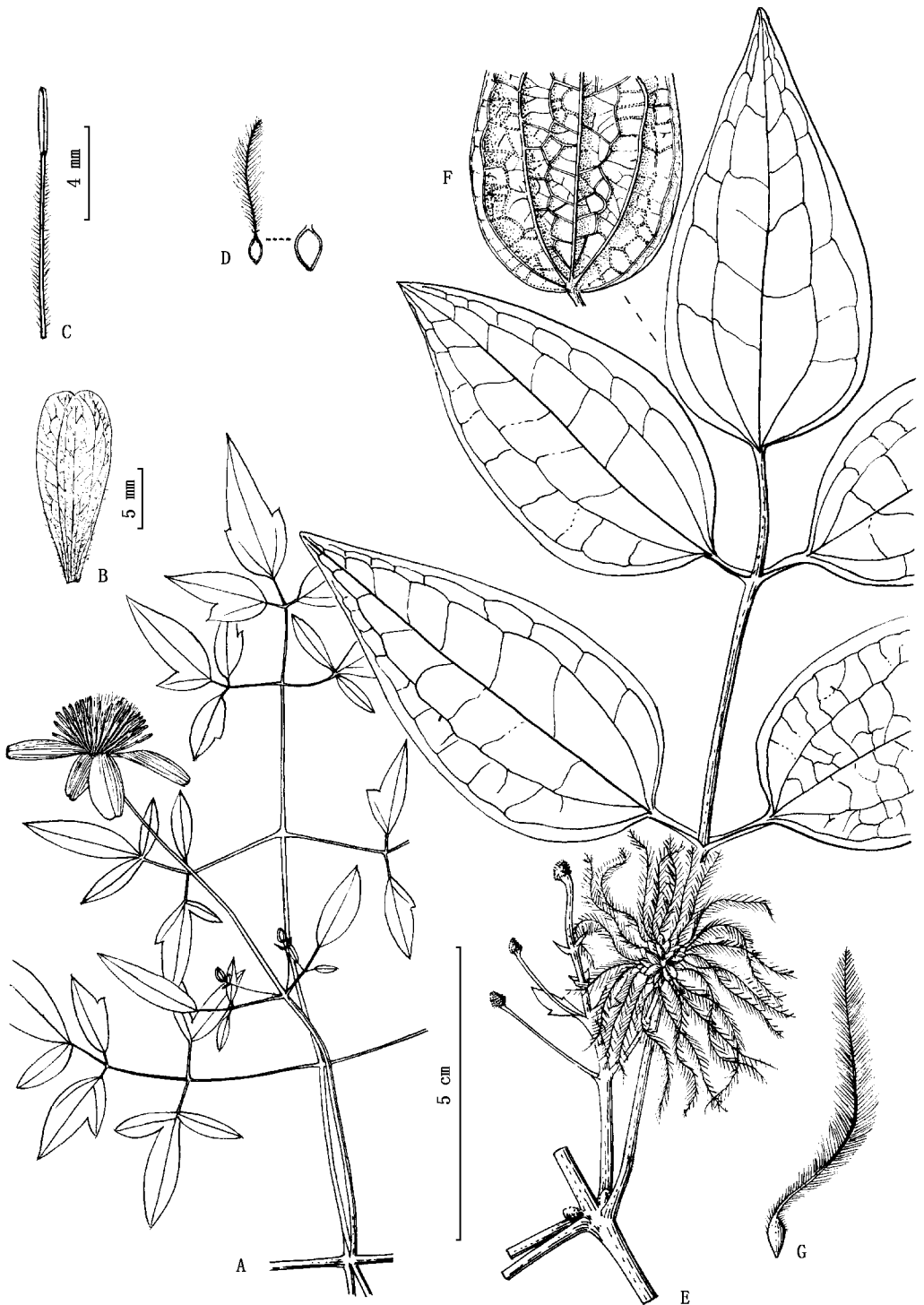


Fig. 12. A - D. *Clematis graveolens* Lindl. A, flowering branch; B, sepal; C, stamen (from Khan s. n.); D, achene (from Stewart 23548). E - G, *C. hoffmannii* Vatke ex Prantl. E, fruiting branch; F, lower part of a leaflet, showing the abaxial surface; G, achene (from Hildebrandt 3062).

(-2)-pinnate. Flower 2.5–3 cm in diam. ; pedicel slender, 3–10 cm long, glabrous or subglabrous. Sepals 4, white, oblong-elliptic or obovate-oblong, 11–16 × 5–8 mm, apex usually truncate and more or less emarginate, sometimes rounded, inside puberulous, outside sparsely puberulous or subglabrous, margin velutinous. Stamens 7–10 mm long; filaments narrowly linear, pubescent; anthers narrowly oblong or linear, 2.2–3.2 mm long, apex obtuse. Ovaries densely puberulous; styles 7–9 mm long, densely villous. Achenes compressed, broadly elliptic or broadly ovate, ca. 3 × 2.5–2.8 mm, puberulous, narrowly rimmed; persistent styles 2–4 cm long, plumose. Fl. Jun. – Oct.

Afghanistan, China (? W Xizang), NW India, Kashmir, W Nepal, and N Pakistan. On slopes; alt. 900–2850 m (Grey-Wilson, 1989).

Additional specimens examined.

Afghanistan. Kurrum Valley, Aitchison 614 (GH, S).

India. Garhwal, Strachey & Winterbottom 14 (GH); Kangra: Larji, Parker 3363 (GH); Kawai, Hafirthan s. n. (GH); Kumaon, Thomson s. n. (G); Kunawar, Drummond 1137 (LE), Nanah 1138 (K), Thomson s. n. (P); Pangi, Lawrie 5396 (GH); Salasar, Drummond 14503, 14565 (K).

Kashmir Region. Kishtwar, Clarke 3150A (K, LE); Murree, Saunders s. n. (K), Stewart 23548 (K, US); without precise locality, Jacquemont 1160, 1315 (P).

Nepal. Chong: Tibrikot, Polunin et al. 3339 (GH); Lete, Stainton et al. 7708 (GH); Tonebook, Dhwoj 206 (MO).

Pakistan. Balacot Nallah, Ajab 1271 (GH); Chitral, Shah et al. 2636 (G); Gohik, Shah et al. 2799 (G); Hamidgarh, Ajab & Afzal 1187 (G); Hazara, Duthie 7423 (LE), Khan s. n. (K), Stewart 27748 (G); Hazura, Deane s. n. (K); Rawalpindi: Karol, Siddiqi & Nasir 6101 (US); Rawalpindi: Tret, Stewart 7113 (K).

C. graveolens, occurring in the southern part of the distribution area of sect. *Meclatis* and bearing the similar habit of *C. orientalis*, the nomenclatural type of the section, has long been misplaced in sect. *Meclatis* as mentioned above. In the present revision, it is returned to its home, sect. *Brachiatae*, at length.

Ser. 2. **Dissectae** (W. T. Wang) W. T. Wang, comb. nov. —Sect. *Meclatis* (Spach) Tamura subsect. *Wightianae* (Prantl) W. T. Wang ser. *Dissectae* W. T. Wang in Acta Phytotax. Sin. 38: 423. 2000. Type: *C. dissecta* Baker.

Leaves 3–4-pinnatisect; ultimate lobes linear-lanceolate, linear, or narrowly triangular. Axillary cymes 1-flowered. Sepals broadly elliptic.

Two species, endemic to Madagascar.

While publishing *C. falciformis*, the two authors, Viguier and Perrier (1949), compared their new species with *C. anethifolia* Hook., and in their account of the *Clematis* of Madagascar did place it near to *C. anethifolia*. However, in *C. falciformis*, the plants are woody vines, and the sepals are valvate, covered with velutinous strips along margins outside. *C. falciformis*, with these characters, should belong to sect. *Brachiatae*. On the other hand, *C. anethifolia* is a member of sect. *Pseudanemone* which is characterized by having erect habit and imbricate aestivation of sepals and having no velutinous marginal strips outside. The second species of ser. *Dissectae*, *C. dissecta*, is related to *C. falciformis* in having similar habits, leaves, and floral structures. It was misplaced in sect. *Pseudanemone* by Prantl as mentioned above, and treated as a synonym of *C. pimpinellifolia* Hook., another member of sect. *Pseudanemone*, by Viguier & Perrier (1949) and Perrier (1950). In recent works on *Clematis* published by Johnson (1997) and Grey-Wilson

(2000), *C. falciformis* and *C. dissecta* were not included.

23. *Clematis falciformis* Viguier & Perrier in Mém. Inst. Sci. Madag., ser. B, 2(2): 230, cum pl. 1949; Perrier in Humbert, Fl. Madag. Comor. 76^e Fam. Renonculac. 22, cum fa. *normalis* Perrier, fig. 7: 1–4. 1950. Type: Madagascar. Finanrantsoa, 1912-03, Perrier 4919 (holotype, P!).

Fig. 13: A–C

Woody vine. Branches terete, very shallowly 8-sulcate, only on nodes sparsely pilose, elsewhere glabrous. Leaves 3–4-pinnate, glabrous; leaf blade triangular in outline, ca. 8 × 7 cm; pinnae 3–4 pairs; ultimate lobules subcoriaceous, linear to narrowly linear, 4–35 × 1–2 mm, straight or slightly falcate-curved, margin entire; petioles ca. 5 cm long. Axillary cymes 1-flowered, terminal ones 3-flowered; peduncles up to 10 cm long, with pedicels glabrous; bracts foliaceous. Flower 5–6 cm in diam.; pedicel up to 18 cm long. Sepals 4, broadly elliptic, ca. 3 × 1.8 cm, apex acuminate, inside appressed-puberulous, outside glabrous, margin velutinous, with marginal velutinous strips 2–3 mm broad. Stamens 12–17 mm long; filaments narrowly linear, densely pubescent; anthers narrowly oblong, 2.8–3 mm long, glabrous, apex obtuse. Ovaries densely pubescent; styles ca. 15 mm long, densely villous. Fl. Dec. to Mar. of next year.

Madagascar.

Additional specimen examined.

Madagascar. Amboasary, Peltier 4528 (P).

24. *Clematis dissecta* Baker in J. Linn. Soc. Bot. 20: 87. 1882; Raynal in Adansonia 18(1): 7. 1978; W. T. Wang in Acta Phytotax. Sin. 38: 423, fig. 4: 8–10. 2000 et 39: 331. 2001. Type: Central Madagascar. Without precise locality, Baron 2037 (holotype, K!; isotypes, BM!, P!).

C. pimpinellifolia Hook. fa. *normalis* Perrier in Humbert, Fl. Madag. Comor. 76^e Fam. Renonculac. 24, fig. 9: 1, 2. 1950.

C. pimpinellifolia auct. non Hook.: Viguier & Perrier in Mém. Inst. Sci. Madag., ser. B, 2(2): 232. 1949, p.p. quoad syn. *C. dissecta* Baker; Perrier in Humbert, l.c., fig. 9: 1–3, p.p. quoad syn. *C. dissecta* Baker.

Fig. 13: D–F

Suffrutescent vine. Branches slender, subterete or 4-angulate, 1–1.6 mm in diam., shallowly 6-sulcate or not sulcate, puberulous. Leaves 3–4-pinnatisect, rarely simple, palmately 3-sect, lobes dissect; leaf blade broadly ovate in outline, 2–3.5 × 2.2–4 cm, with 2–4 pairs of stalked pinnae, on rachis and stalks puberulous; ultimate lobes subcoriaceous, linear-lanceolate, linear, or narrowly triangular, 1.5–4 × 0.4–0.8 mm, apex pungent, margin entire or 1–2-denticulate, on both surfaces glabrous, midrib flat; petioles 1.5–3.2 cm long, puberulous. Cymes axillary, 1-flowered; peduncles 6–10 mm long, glabrous; bracts 6–9 mm long, petiolate, rhombic in outline, 3-lobed or 3-parted. Flower 2.5–3 cm in diam.; pedicel slender, 1.5–4 cm long, glabrous. Sepals 4, broadly ovate or broadly elliptic, 12–16 × 8–11 mm, apex rounded-obtuse or emarginate, inside very shortly puberulous, outside glabrous, margin velutinous. Stamens 7–10 mm long; filaments narrowly linear, densely spreading-pubescent; anthers narrowly oblong or oblong, 2.2–3 mm long, glabrous, apex obtuse. Ovaries densely puberulous; styles 7–8 mm long, densely villous.

Madagascar. In bushes in valley; alt. 1100–2100 m.

Additional specimens examined.

Madagascar. Bwune, Perrier 14531H (P); Massif d'Hdungotra, Perrier 14532H (P);



Fig. 13. A - C, *Clematis falciformis* Viguier & Perrier. A, apical part of flowering branch; B, sepal outside; C, stamen (from Peltier 4528). D - F, *C. dissecta* Baker. D, flowering branch; E, sepal outside; F, stamen (from Baron 2037).

Tnafajavona , Perrier 13423 (P) ; Ranomafana , Malcomber et al. 1390 (BR , MO , UPS) ; without precise locality , Baron 5253 (K).

Species unclear in systematic position :

Clematis hoffmannii Vatke ex Prantl in Bot. Jahrb. 9 : 260. 1888. — *C. orientalis* L. ssp. *wightiana* (Wall.) Kuntze var. *hoffmannii* Kuntze in Verh. Bot. Ver. Brand. 26 : 126. 1885. Type : Madagascar. Beravi inferior : Vorbergebei Murulefu , 1879-07 , J. M. Hildebrandt 3062 (lectotype , here designated , K ! ; isolectotypes , G-Bois ! , P !).

C. ibarensis Baker ssp. *edentata* (Baker) Viguier & Perrier in Mém. Inst. Sci. Madag. , ser. B , 2 (2) : 222. 1949 , p. p. min , quoad syn. *C. hoffmannii* Vatke ex Prantl ; Perrier in Humbert , Fl. Madag. Comor. 76° Renonculac. 10. 1950 , p. p. min , quoad syn. *C. hoffmannii* Vatke.

Fig. 12 : E – G

Liana lignosa. Rami subteretes , vadosae 8-sulcati , ad nodos dense puberuli , alibi glabri vel subglabri. Folia 5-foliolatum pinnata ; foliola crasse papyracea , anguste ovata , 4.5 – 7.8 cm longa , 2 – 4 cm lata , apice acuta vel attenuata , basi rotundata , margine integra , supra ad nervos basales sparse puberula , subtus subtiliter reticulata , ad nervulorum retem densiuscule sericeo-puberula , nervis basalibus 5 supra impressis subtus prominentibus ; petioli 4.5 – 6.6 cm longi , glabri. Flores ignoti. Infructescentiae axillares circ. 5 cm longae , 7-florae , pedunculis circ. 2.2 cm longis robustis adpresse puberulis , bracteis subulatis circ. 5 mm longis densissime fulvo-puberulis ; infructescentia terminalis circ. 24 cm longa , multiflora , paniculiformis , bracteis foliaceis. Achenia compressa , anguste obovata vel elliptica , 3 – 3.5 mm longa , 1.5 – 1.8 mm lata , puberula , irregulariter longitudinaliterque rugosa ; styli persistentes 2.6 – 3 cm longi , plumosi.

Madagascar.

Kuntze (1885) treated this taxon as a variety of *C. orientalis* ssp. *wightiana*. Prantl (1888) recognized it as an independent species , and placed it in his ser. *Saxicolae* under sect. *Flammula* subsect. *Vitalbae* together with the Madagascan unisexual species *C. saxicola* Bojer (= *C. insidiosa* Baill.). However , because *C. hoffmannii* is only known from a fruiting collection , and its floral structure is unknown , its systematic position in the genus *Clematis* remains unclear.

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铁线莲属对枝铁线莲组修订

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摘要 对毛茛科铁线莲属 *Clematis* L. 的对枝铁线莲组 sect. *Brachiatae* 进行了全面修订, 确定此组共含 24 种和 4 变种(包括 2 新种), 写出了此组的分类学简史和地理分布, 对其在铁线莲属中的系统位置和起源以及组下分类进行了讨论, 还写出了组下分类群检索表, 以及每系和每种植物的形态描述、地理分布、生长环境等, 并附有多幅插图。本组各种的花构造相当一致: 萼片 4, 镊合状排列, 水平开展, 白色, 通常呈长圆形、卵形或披针形, 只在 2 进化种呈宽椭圆形, 外面边缘上密被短绒毛; 雄蕊花丝狭条形, 被柔毛, 花药通常长圆形或狭长圆形, 无毛, 药隔顶端通常不突出; 心皮密被柔毛。上述花构造与威灵仙组欧洲铁线莲亚组 sect. *Clematis* subsect. *Clematis* 的花构造极为相似, 与后者的区别仅在于本组被毛的雄蕊花丝。本组是在 1992 年由黄花铁线莲组 sect. *Meclatis* (萼片 4, 通常向斜上方开展, 黄色, 卵形、长圆形或披针形; 花丝由于下部变宽而呈狭披针形, 被柔毛) 中分出建立的, 可能与黄花铁线莲组有亲缘关系, 并可能同自威灵仙组欧洲铁线莲亚组演化而出。本组的叶变异较大, 自单叶至三出复叶、1–3 回羽状复叶, 最后到 3–4 回羽状细裂, 表现出一明显演化趋势。根据叶的上述特征, 以及萼片形状, 本组被划分为 2 系。第 1 系, 对枝铁线莲系 ser. *Wightianae*: 叶为单叶、三出复叶或 1–(2–3) 回羽状复叶, 萼片呈长圆形至披针形, 含 22 种, 其中 20 种分布于科摩罗、马达加斯加、毛里求斯、非洲大陆和阿拉伯半岛西南部, 另 2 种分别分布于印度南部和喜马拉雅山区西部。第 2 系, 细裂铁线莲系 ser. *Dissectae*: 叶 3–4 回羽状全裂, 萼片呈宽椭圆形, 含 2 种, 特产马达加斯加。本组各种植物中具单叶的只有 1 种, 即盒子草铁线莲 *C. actinostemmatifolia* (特产科摩罗)。特产马达加斯加的伏毛铁线莲 *C. strigillosa* 和特产毛里求斯及马达加斯加的毛里求斯铁线莲 *C. mauritiana* 的叶全部为三出复叶。特产非洲大陆中部的扎伊尔铁线莲 *C. zaireensis* 的叶多数为三出复叶, 有少数叶为具 5 枚小叶的羽状复叶; 此种与产马达加斯加的伏毛铁线莲相近缘, 但比后者进化, 可能系由后者或后者的近缘种演化而来, 并代表了非洲大陆对枝铁线莲组的原始类型, 因为非洲大陆该组的其他 13 种均具 1–2 回羽状复叶。此外, 特产印度南部的怀特铁线莲 *C. wightiana* 具 1 回羽状复叶, 特产喜马拉雅山区西部的浓香铁线莲 *C. graveolens* 则具 2–3 回羽状复叶。根据上述, 推测科摩罗、马达加斯加和毛里求斯这一群岛地区可能是对枝铁线莲组的起源中心。

关键词 铁线莲属; 对枝铁线莲组; 分类学修订