

Wang, W.T. et al. 1992c

+ Pan, K.Y. + Li, Z.F.

Keys to the Gesneriaceae of China.

Edinburgh J. Bot. 49: 5-74. [Translated from Chinese by
W.T. Wang, with introduction and notes by B.L. Burtt]

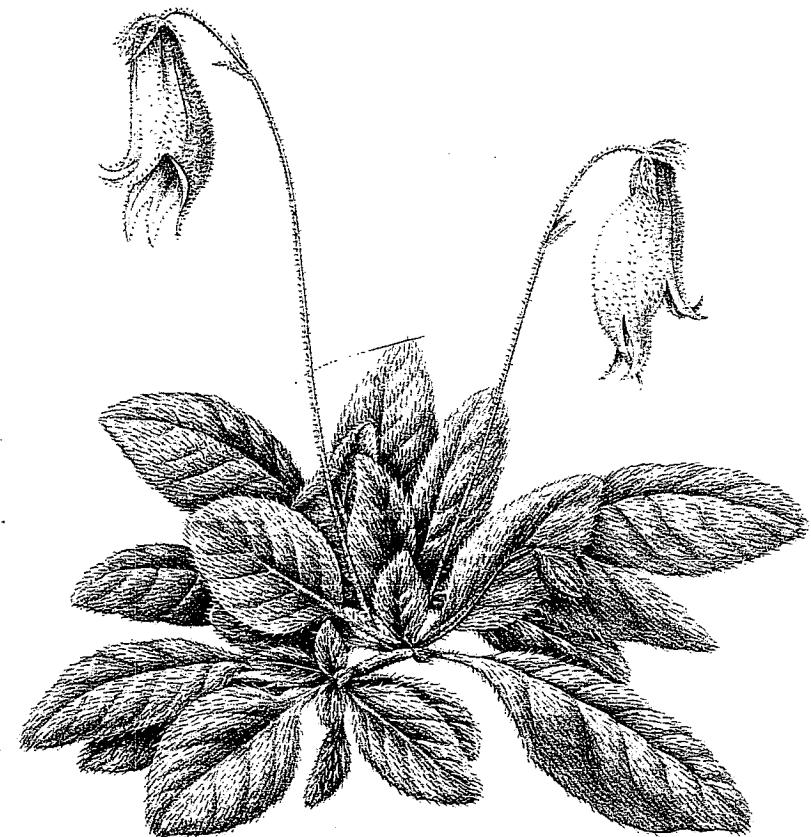
REFNO: 1405

KEYWORDS:

Aeschynanthus, Allocheilos, Allostigma, Ancylostemon, Anna, Beccarinda,
Boea, Boeica, Bournea, Briggsia, Briggsiopsis, Calcareoboea, Cathayanthe,
China, Chirita, Chiritopsis, Conandron, Corallodiscus, Cyrtandra, Dayaoshania,
Deinocheilos, Didissandra, Didymocarpus, Didymostigma, Dolicholoma,
Epithema, Gyrocheilos, Gyrogyne, Hemiboea, Hemiboeopsis, Isometrum,
Lagarosolen, Leptoboea, Loxostigma, Lysionotus, Metabriggsia,
Metapetrocosmea, Opithandra, Oreocharis, Ornithoboea, Paraboea, Petrocodon,
Petrocosmea, Platystemma, Primulina, Pseudochirita, Rhabdothamnopsis,
Rhynchoglossum, Rhynchotechum, Schistolobos, Stauranthera, Tengia,
Thamnocharis, Titanotrichum, Tremacron, Trisepalum, Whytockia

L. SKOG

KEYS TO THE
GESNERIACEAE OF CHINA



Briggia agnesiae

Translated from the Chinese of Wang Wen-Tsai
Pan Kai-yu and Li Zhen-yu
by Wang Wen-Tsai

Cover donated by
Edinburgh Botanic Garden
(Sibbald) Trust
(see back cover)

KEYS TO THE GESNERIACEAE OF CHINA

WANG WENTSAI*, PAN KAIYU* & LI ZHENYU*

The keys to the genera of Gesneriaceae, and to the species within each genus, prepared for *Flora Reipublicae Popularis Sinicae* are here presented in English translation. The keys are prefaced by a discussion on the phytoogeography of Gesneriaceae within China and a note on the recognition of the evolutionary tendencies that underlie the revision; both are by Wang Wentsai. The keys have been translated by Professor Wang and edited, with a few supplementary notes and references, by B. L. Burtt, who also contributes an Introduction.

INTRODUCTION by B. L. Burtt

It is due to the kindness and co-operation of Professor Wang Wentsai, Miss Pan Kaiyu and Dr Li Zhenyu, authors of the account of Gesneriaceae in *Flora Reipublicae Popularis Sinicae*, that we are able to publish these English translations of their keys. The *Flora* account summarizes the vast amount of work that they have devoted to the family over the last two decades: work that has raised the tally of Chinese Gesneriaceae to 56 genera and about 413 species. To have an organized account of such a large component of the Old World Gesneriaceae is a huge step forward. We owe Professor Wang a great debt of gratitude for the time he has given to the translation of these keys.

I have converted the original indented keys to the bracketed form, not only for ease of printing, but because many users, especially those not familiar with the group, will find it much easier if they have the alternative sets of characters side by side.

One comment on the terminology of the keys is necessary. Plants are referred to as having one or two stigmas; western writers have habitually spoken of the stigmas as being simple (capitate) or bilobed. The Chinese authors may have some morphological justification in regarding each carpel as having one stigma. Then if the stigma of the upper carpel is aborted and that of the lower one has the form of a fish-tail (as it often has), the situation is correctly described as 'stigma one, bilobed', not simply as stigma bilobed - which refers equally (in western terminology) to the condition of two stigmas. However, the morphology is not yet perfect: the capitate stigma of a genus such as *Didymocarpus* is described as 'stigma one', whereas it really represents the stigmas of both carpels fused together. The whole study of stigmatic form in Gesneriaceae needs re-investigation. Nothing comprehensive has been done since the classic memoir by Robert Brown (in *Cyrtandreae*, p. 107, 113 (1839), a preprint from J. J. Bennett, *Plantae Javanicae Rariores* published in 1840) in which he clarified for the first time the structure of the stigma of *Chirita*.

I have, with Professor Wang's consent, added a few notes and references to illustrations. These appear in square brackets [] at the end of the genus. In the *Flora* authorities

* Institutum Botanicum Academiae Sinicae, Beijing

Cover illustration:
Briggsia agnesiae from the painting by
Lilian Snelling made at Edinburgh in
1910

only the effective author, the one whose name follows 'ex' (ICBN Art. 46.3).

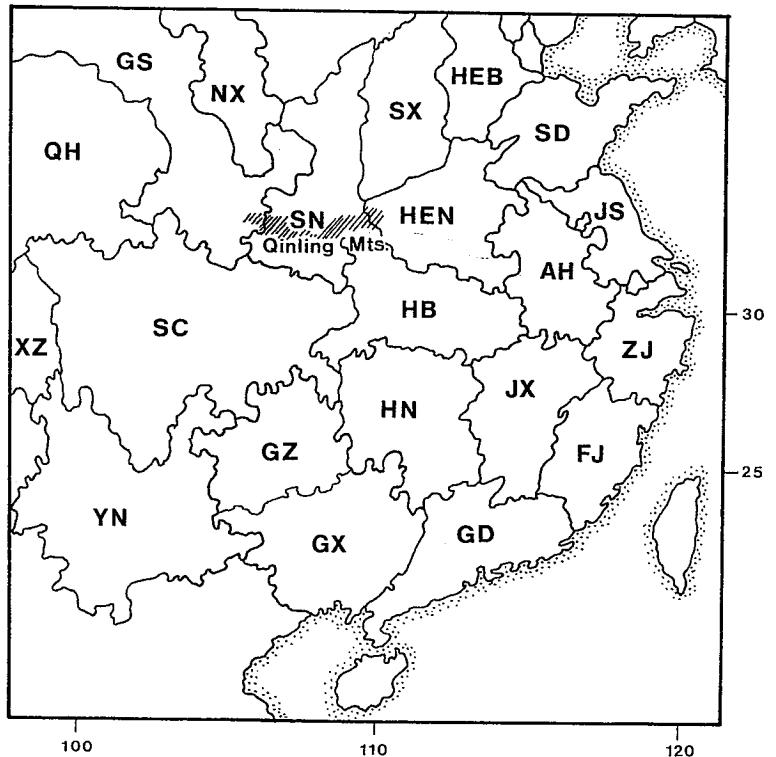


FIG. 1. Map showing regions of China. AH, Anhui (Anhwei); FJ, Fujian (Fukien); GD, Guangdong (Kwangtung); GS, Gansu (Kansu); GX, Guangxi (Kwangsi); GZ, Guizhou (Kweichow); HB, Hubei (Hupeh); HEB, Hebei (Hopeh); HEN, Henan (Honan); HN, Hunan (Hunan); JS, Jiangsu (Kiangsu); JX, Jianxi (Kiangsi); NX, Ningxia (Ningsia); QH, Qinghai (Chinghai); SC, Sichuan (Szechwan); SD, Shandong (Shantung); SN, Shaanxi (Shansi); SX, Shanxi (Shensi); XZ, Xizang (Sikang); YN, Yunnan (Yunnan); ZJ, Zhejiang (Chekiang).

THE PHYTOGEOGRAPHY OF GESNERIACEAE WITHIN CHINA by W.T. Wang

There are 56 genera and about 413 species of the Gesneriaceae in China, all belonging to the subfamily Cyrtandroideae. Most of them are found in the warm parts of the country, particularly in the provinces of Guangxi and Yunnan, distributed in hilly or low-mountainous regions and often growing on cliffs of limestone. A few genera (*Tremacron*, *Isometrum* and *Corallodiscus*) occur in the alpine regions of southwestern

diminishes strongly northward. From southern Yunnan, *Hainan* and *Guangdong* northward to central Guizhou and southern Jiangxi there are 51 genera with about 270 species and from central Guizhou and southern Jiangxi to northern Sichuan and northern Hubei 26 genera with about 110 species. Further northward in the Qinling Mountains only 7 genera (*Isometrum*, *Ancylostemon*, *Corallodiscus*, *Hemiboea*, *Petrocosmea*, *Boea* and *Lysionotus*) with 9 species occur. Of them *Corallodiscus cordatus* and *Boea hygrometrica* are able to extend even further northward across the Qinling Mountains, the former reaches the northern part of the Taihang Mountains and the latter attains the Yenshan Mountains at about 41° north lat., where it forms the northern demarcation of the distribution area of the Gesneriaceae in Asia.

Of the 56 genera occurring in China 28 (i.e. 50%) are endemic; of these, 3 belong to tribe *Ramondieae*, 23 to tribe *Didymocarpeae* and 2 to tribe *Klugieae*. Of the 413 species 252 (i.e. 61%) are endemic. Most of these endemic taxa are distributed in the southern provinces of China.

The majority of the species of 10 genera (*Oreocharis*, *Briggsia*, *Corallodiscus*, *Beccarinda*, *Opithandra*, *Hemiboea*, *Petrocosmea*, *Anna*, *Loxostigma* and *Lysionotus*) is concentrated in China, and the greater part of their range of distribution lies within this country.

There are 43 genera, of which 16 are endemic, with about 210 species in the karst region of southeastern Yunnan, Guangxi, southern Guizhou and western Guangdong. Of the 43 genera three belong to tribe *Ramondieae*, 30 to tribe *Didymocarpeae*, four to tribe *Trichosporeae*, one to tribe *Cyrtandroideae* and five to tribe *Klugieae*. Thus, this karst region is the only region in the world, where all of the five tribes occur. Judging from the very great floristic richness and the occurrence of various primitive groups of the subfamily Cyrtandroideae (e.g. *Thamnocharis*, *Bournea* and *Tengia*) and some genera (e.g. *Oreocharis*, *Opithandra*, *Hemiboea*, *Chirita*, *Anna*, *Loxostigma* and *Lysionotus*) here, I consider this karst region the primary centre of diversity for the subfamily Cyrtandroideae.

The alpine regions of southwestern China, to which three tetrandrous genera (*Tremacron*, *Isometrum* and *Ancylostemon*), are endemic and in which the majority of the species of *Corallodiscus* is concentrated, may be considered a centre of distribution of the tribe *Didymocarpeae*.

The genus *Whytockia* and the variety *Rhynchoglossum obliquum* var. *hologlossum*, are both disjunctly distributed in China, in the southwestern part and on the island of Taiwan. This peculiar pattern of distribution is also found in *Taiwania* (Taxodiaceae), *Calathodes* (Ranunculaceae), *Chrysoplenium delavayi* (Saxifragaceae), *Pouzolzia elegans* (Urticaceae), *Teucrium bidentatum* (Labiatae) and *Bletilla formosana* (Orchidaceae); it may have been caused by the strong influence of the Quaternary glaciers on the continental part of southeastern China. (See W. T. Wang, Notes on disjunction in the flora of China. *Bull. Bot. Res.* 9(1): 1–16, 1989.)

ON THE EVOLUTIONARY TENDENCIES AND THE CLASSIFICATION OF
THE CHINESE GENERA
by W.T. Wang

On the basis of my analysis of the external morphology of the Chinese Gesneriaceae several evolutionary tendencies of the subfamily *Cyrtandroideae* are recognized as follows.

1. The normally developed stem is primitive, and the strongly abbreviated stem more advanced.
2. The simple entire leaf is primitive, and the lobed or compound leaf more advanced.
3. The dichasial pair-flowered cyme is primitive, and the monochasial or singly-flowered cymes more advanced.
4. The chorisepalous and actinomorphic calyx precedes that with connate sepals or becoming zygomorphic.
5. The actinomorphic corolla precedes the bilabiate one. The short corolla-tube is primitive, and the longer one more advanced.
6. The flower with stamens all fertile precedes that with 1 or 3 staminodes. The free stamens precede those variously coalescent. The stamen with 2 parallel and not confluent anther-thecae precedes that with 2 divaricate and confluent anther-thecae.
7. The oblong ovary may be primitive, and the ovoid or globose ovary more advanced. The ovary with 2 parietal placentae is primitive, and that with 1 parietal placenta or with an axile placenta more advanced. The pistil with 2 stigmas is primitive, and that with 1 stigma more advanced.
8. The dry capsule precedes the berry.
9. The exappendiculate seed precedes the appendiculate one.

The tribes and genera of Chinese Gesneriaceae are arranged in the present text according to the evolutionary tendencies mentioned above.

KEY TO GENERA OF GESNERIACEAE IN CHINA

- 1a. Flowers actinomorphic; stamens all fertile; inflorescence cymose; seeds exappendiculate (Tribe 1, *Ramondeae* Fritsch, emend.) 2
- 1b. Flowers zygomorphic; stamens 1 or 3 sterile 5
- 2a. Anthers free, connective without terminal appendage; disc present 3
- 2b. Anthers connate into a tube surrounding style, connectives with long appendage at apex; disc absent; flowers pentamerous; corolla rotate; stigma 1
4. *Conandron* Sieb. & Zucc.
- 3a. Bracts 2, opposite; stamens inserted near the base of corolla tube; anthers hasfixed stigma 1

KEYS TO THE GESNERIACEAE OF CHINA

- 3b. Bracts about 7, subverticillate and forming an involucre; stamens inserted in mouth of corolla tube; anthers dorsifixated, with thecae not confluent; stigmas 2; flowers tetramerous or pentamerous; corolla campanulate *at or above middle of limb* 2. *Bournea* Oliv.
- 4a. Flowers tetramerous or pentamerous; corolla rotate, with tube shorter than limb; anthers oblong, not apiculate at apex, with thecae not confluent at apex
1. *Thamnocharis* W.T. Wang
- 4b. Flowers pentamerous; corolla urceolate, with tube longer than limb; anthers subreniform, apiculate at apex, with thecae confluent at apex 3. *Tengia* Chun
- 5a. Inflorescence cymose, sometimes racemose but then flowers in 2 rows with fertile bracts displaced to pedicels 6
- 5b. Inflorescence a raceme, flowers borne in bract axils; corolla tubular; fertile stamens 4; seeds with scale-like appendages at both ends (Tribe 6, *Titanotrichae* W.T. Wang) 56. *Titanotrichum* Solereder
- 6a. Ovary oblong or linear, seldom ovoid, more or less attenuate at apex; inflorescence cymose; leaves all basal or opposite or verticillate when stem present, seldom alternate 7
- 6b. Ovary globose or ovoid, abruptly contracted into the style at apex; inflorescence a cyme or a raceme, and then the fertile bracts of the flowers displaced onto the pedicels; leaves opposite, often very unequal in size in a pair, or alternate, often very oblique at base (Tribe 5, *Klugieae* Fritsch) 55
- 7a. Fruit a dehiscent capsule 8
- 7b. Fruit not dehiscent, often fleshy (Tribe 4, *Cyrtandreae* G. Don) 54
- 8a. Seeds exappendiculate (Tribe 2, *Didymocarpeae* Endl.) 9
- 8b. Seeds with subulate or hair-like appendages at both ends (Tribe 3, *Trichosporeae* Nees) 50
- 9a. Fertile stamens 4 10
- 9b. Fertile stamens 2 23
- 10a. Anthers free 11
- 10b. Anthers coherent in pairs or all together 15
- 11a. Anthers oblong, with thecae parallel and not confluent at apex, occasionally subreniform and with thecae divaricate and confluent at apex 5. *Oreocharis* Benth.
- 11b. Anthers ovate-orbicular, with thecae divergent 12
- 12a. Corolla tubular, with upper lip extremely short; stamens exserted; anthers longitudinally dehiscent, with thecae confluent at apex 6. *Tremacron* Craib
- 12b. Corolla campanulate, with conspicuous upper lip; stamens included; ovary ovoid 13
- 13a. Anthers longitudinally dehiscent, with thecae confluent at apex; ovary

small shrub or subshrub, rarely herbs, caulescent, seldom acaulescent (<i>Boeica guileana</i>)	14	lobes _____	18. Opithandra Burtt
14a. Small shrub; leaves opposite; corolla limb slightly shorter than tube; anthers dehiscent by pores, with thecae not confluent at apex	16	Corolla cylindric, with all lobes divided at margin	19. Schistolobos W.T. Wang
14b. Subshrub or perennial herb, caulescent or acaulescent; leaves alternate when caulescent; corolla limb slightly longer than tube; anthers dehiscent by pores or transversely dehiscent, with thecae confluent at apex	17	Anther thecae parallel, not confluent at apex (except in some species of <i>Petrocosmea</i>)	26
15a. Anthers coherent in pairs	16	Anther thecae divaricate, confluent at apex (except <i>Metapetrocosmea</i>)	33
15b. Anthers all coherent, with thecae confluent at apex; small, perennial herbs		Bracts large, connate into a globular involucre; corolla with a hairy ring above base inside (except <i>H. flaccida</i>), with tube longer than limb; ovary 2-celled with the anterior sterile; caulescent herb with opposite leaves	25. <i>Hemiboea</i> Clarke
16a. Calyx not bilabiate, with 5 lobes subequal in size; stigmas 2 or 1; capsule oblong, oblanceolate or linear, if short, then oblique and not dehiscent to base (<i>Briggsiopsis</i>)	17	Bracts small, free; corolla without a hairy ring; ovary usually 1-celled and with parietal placentae, if 2-celled, then both cells fertile	27
16b. Calyx bilabiate, with upper lip entire and lower lip 4-lobed, stigma 1; capsule short, narrow-ellipsoid	14. <i>Cathayanthe</i> Chun	Corolla tube as long as or slightly shorter than limb; stamens inserted near corolla base; acaulescent herb	28
17a. Tall or dwarf herbs or small shrub; leaves several or more, all basal or caulin	18	Corolla tube twice or more longer than limb; stamens inserted in middle of corolla tube; anthers coherent	29
17b. Low herbs with only 1(–2) leaf at top of stem	13. <i>Platystemma</i> Wall.	Stamens exserted; anthers dorsifixed, free; disc present; ovary and capsule linear; parietal placentae not divided; stigmas 2	20. <i>Dayaoshania</i> W.T. Wang
18a. Corolla tubular, campanulate or hypocrateriform, up to 2cm long, 1cm in diameter (in <i>Isometrum lungshangense</i> and <i>Ancylotemon ronganensis</i> 3.5–3.75cm long)	19	Stamens included; anthers basifix, coherent at apex; disc absent; ovary ovoid; parietal placentae 2-lobed; stigma 1; capsule ovoid or long-ellipsoid	27. <i>Petrocosmea</i> Oliv.
18b. Corolla broadly-tubular, ventricose, or tubular-infundibuliform, 3–7cm long, 1–2.2(–2.6)cm in diameter (in <i>Didissandra sinica</i> 1.2cm long)	21	Stigmas 2; caulescent herb; leaves opposite	30
19a. Corolla with lower lip glabrous or sparsely pilose inside	20	Stigma 1	32
19b. Corolla with lower lip densely bearded inside	12. <i>Corallodiscus</i> Batalin	Calyx 5-sect to base, without a tube; filaments undulate-curved in the upper part, equally wide through whole length; stigmas equal in size; ovary with 2 parietal placentae	21. <i>Didymostigma</i> W.T. Wang
20a. Corolla purple or purple-red, with upper lip longer than or as long as lower lip	7. <i>Isometrum</i> Craib	Calyx 5-lobed, not to base, with a tube; filaments straight; stigmas 2 unequal in size	31
20b. Corolla orange, yellow or white, rarely pink, with upper lip usually shorter than or rarely nearly as long as lower lip	8. <i>Ancylotemon</i> Craib	Calyx 5-lobed; filaments equally wide through whole length; ovary with 2 parietal placentae	22. <i>Pseudochirita</i> W.T. Wang
21a. Corolla broadly tubular, ventricose	22	Calyx 5-fid; filaments widest at middle, narrowed towards both ends; ovary 2-celled with axile placentae	23. <i>Allostigma</i> W.T. Wang
21b. Corolla tubular-infundibuliform, not ventricose	11. <i>Didissandra</i> Clarke	Caulescent herb; leaves opposite; upper corolla lip 2-lobed; stamens included; ovary with 1 parietal placenta	24. <i>Metabriggsia</i> W.T. Wang
22a. Ovary 1-celled, with 2 parietal placentae; capsule linear, straight, 3–7 cm long, dehiscent to base	9. <i>Briggsia</i> Craib	Acaulescent herb; leaves fasciculate at top of rhizome; upper corolla lip undivided; stamens exserted; ovary with 2 parietal placentae	29. <i>Deinocheilos</i> W.T. Wang
22b. Ovary 2-celled, with the anterior cell sterile; capsule obliquely oblong, not dehiscent to base	10. <i>Briggsiopsis</i> K. Y. Pan	Valves of capsule straight	34
23a. Two posterior stamens fertile	24		
23b. Two anterior stamens fertile	25		

- 33b. Valves of capsule spirally twisted _____ 46
 34a. Leaves peltate, all basal; disc absent; anther thecae not confluent; capsule subglobose; stigma 1 _____ 28. *Metapetrocosmea* W.T. Wang
 34b. Leaves not peltate; disc present; anther thecae confluent at apex; capsule linear, oblong or ellipsoid _____ 35
 35a. Stigmas 2 _____ 36
 35b. Stigma 1 _____ 37
 36a. Caulescent herb; leaves opposite; cyme dense, with a globose involucre formed by 2 large navicular-orbicular bracts; corolla tube tubular, lobes rotundate at apex; filaments widest at middle, narrowed towards both ends; anthers appendiculate; ovary 2-celled; stigmas 2, unequal in size
 26. *Hemiboeopsis* W.T. Wang
 36b. Acaulescent herb; leaves all basal; cyme lax, with small narrow bracts not forming an involucre; corolla tube cylindric, lobes attenuate at apex; filaments equally wide through whole length; anthers exappendiculate; ovary 1-celled; stigmas 2 equal in size _____ 30. *Lagarosolen* W.T. Wang
 37a. Stigma lamelliform, anterior _____ 38
 37b. Stigma depressed-globose or disciform _____ 40
 38a. Corolla hypocrateriform, with horizontal limb; disc *deeply cleft on one side* formed by 2 lobes; filaments equally wide through whole length _____ 31. *Primulina* Hance
 38b. Corolla infundibuliform-tubular or tubular-campanulate, with limb obliquely spreading upwards; disc usually annular _____ 39
 39a. Ovary and capsule linear; capsule usually several times longer than persistent calyx; filaments usually widest at middle, often geniculate _____ 32. *Chirita* D. Don
 39b. Ovary ovoid; capsule long-ellipsoid, as long as persistent calyx; filaments equally wide through whole length, not geniculate _____ 33. *Chiritopsis* W.T. Wang
 40a. Upper corolla lip 4-lobed, lower lip undivided _____ 41
 40b. Upper corolla lip 2-lobed or undivided, lower lip 3-lobed _____ 42
 41a. Cyme with an involucre consisting of 6 verticillate bracts; corolla infundibuliform-tubular, with limb shorter than tube; stamens inserted above middle of corolla tube _____ 38. *Calcareoboea* H.W. Li
 41b. Cyme with 2 opposite bracts; corolla subcampanulate, with limb longer than tube; stamens inserted near base of corolla _____ 39. *Allocheilos* W.T. Wang
 42a. Corolla suburceolate, with limb indistinctly bilabiate and upper lip 2-lobed
 34. *Petrocodon* Hance
 42b. Corolla tubular, campanulate or subhypocrateriform, with limb conspicuously bilabiate _____ 43

- 43a. Corolla tubular or campanulate, with limb spreading obliquely upwards and shorter than tube; capsule linear, oblong or lanceolate, twice or more longer than persistent calyx _____ 44
 43b. Corolla subhypocrateriform, with limb horizontal and slightly longer than tube; capsule long ellipsoid, as long as persistent calyx
 37. *Dolicholoma* D. Fang & W.T. Wang
 44a. Upper corolla lip 2-lobed _____ 45
 44b. Upper corolla lip undivided _____ 36. *Gyrocheilos* W.T. Wang
 45a. Leaves not arachnoid-pannose beneath; corolla tubular _____ 35. *Didymocarpus* Wall.
 45b. Leaves arachnoid-pannose beneath; corolla campanulate
 40. *Paraboea* (Clarke) Ridley
 46a. Flowers in cyme; corolla campanulate; anthers not bearded; stigma 1 _____ 47
 46b. Flowers single axillary; corolla tubular; anthers bearded; stigmas 2
 44. *Rhabdothamnopsis* Hemsl.
 47a. Calyx not bilabiate, with 5 lobes subequal in size _____ 48
 47b. Calyx bilabiate _____ 43. *Trisepalum* Clarke
 48a. Corolla upper lip slightly shorter than lower lip, which is not bearded inside _____ 49
 48b. Corolla upper lip extremely short, lower lip bearded inside 42. *Ornithoboea* Clarke
 49a. Leaves ferruginous-arachnoid-pannose beneath _____ 40. *Paraboea* (Clarke) Ridley
 49b. Leaves pubescent _____ 41. *Boea* Lam.
 50a. Fertile stamens 4 _____ 51
 50b. Fertile stamens 2, included; anthers coherent _____ 48. *Lysionotus* D. Don
 51a. Stamens included; corolla purple, yellow or white _____ 52
 51b. Stamens exserted; anthers coherent in pairs; corolla usually orange-red
 47. *Aeschynanthus* Jack
 52a. Bracts large, forming a globose involucre; corolla tube with 2 arcuate projections inside; anthers coherent in pairs; style shorter than ovary; stigma 1
 45. *Anna* Pellegr.
 52b. Bracts small, not forming an involucre; corolla without projections inside _____ 53
 53a. Leaves with distinct lateral veins; corolla purple; anthers coherent in pairs; style longer than ovary; stigmas 2 _____ 46. *Loxostigma* Clarke
 53b. Leaves with indistinct lateral veins; corolla yellow or white; anthers of 4
 stamens coherent at apices together; style shorter than ovary; stigma 1
 47. *Aeschynanthus* Jack (Sect. *Xanthanthes* W.T. Wang)
 54a. Calyx 5-sect to base; corolla campanulate-tubular; fertile stamens 4
 49. *Rhynchotechum* Bl.

- 54b. Calyx with a tube; corolla infundibuliform-tubular; fertile stamens 2
50. Cyrtandra J.R. & G. Forst.
- 55a. Calyx plicate between lobes; fertile stamens 4; leaves opposite _____ 56
 55b. Calyx not plicate between lobes _____ 57
- 56a. Leaves of a pair subequal in size; corolla upper lip half as long as lower lip;
 stamens free; anther thecae not confluent at apex _____ 51. **Gyrogyne** W.T. Wang
- 56b. Leaves of a pair extremely unequal in size; corolla upper lip nearly as long as
 lower lip; anthers all coherent at apices; anther thecae confluent at apex
52. Stauranthera Benth.
- 57a. Leaves opposite, those of a pair very unequal; cyme without bracts; calyx
 5-sect to base, segments round at apex, imbricate; stamens 4; ovary 2-celled
 with axile placentae _____ 53. **Whytockia** W.W. Sm.
- 57b. Leaves alternate or opposite; calyx 5-lobed or divided to the middle, segments
 triangular, acute, valvate; stamens 4 or 2; ovary 1-celled with 2 parietal
 placentae _____ 58
- 58a. Leaves alternate, distichous, very oblique at base; inflorescence a unilateral
 raceme with flowers in two ranks, fertile bracts usually displaced onto pedicel;
 fertile stamens 4 or 2 (the anterior pair); capsule loculicidal
54. Rhynchoglossum Blume
- 58b. Lowest caudine leaf unpaired, upper ones usually opposite, symmetrical or
 slightly oblique at base; inflorescence a dense scorpioid cyme, ± embraced by
 subtending bract; fertile stamens 2, the posterior pair; staminodes 2, large,
 anterior; capsule circumscissile _____ 55. **Epithema** Blume

ENUMERATION OF GENERA AND KEYS TO SPECIES

1. **Thamnocharis** W.T. Wang in Acta Phytotax. Sinica 19: 485, cum fig. (1981), trans.
 & reimp. in Contr. New York B.G. 16: 485 (1986).
 Monotypic, endemic to SW Guizhou _____ **T. esquierolii** (Lévl.) W.T. Wang
 (*Oreocharis esquierolii* Lévl.)
2. **Bournea** Oliv. in Hooker's Icones Plantarum 23, tab. 2254 (1893).
 2 spp., endemic to Guangdong and W Fujian.
- 1a. Leaf blade up to 8cm long, crenate, glabrous, petioles with dense spreading
 hairs; flowers pentamerous (Liancheng County in W Fujian)
1. B. leiophylla (W.T. Wang) W.T. Wang & K.Y. Pan
 (*Oreocharis leiophylla* W.T. Wang)
- 1b. Leaf blade up to 18cm long, entire, hairy on both surfaces, petioles with
 appressed hairs; flowers tetramerous (Guangdong) _____ **2. B. sinensis** Oliv.

3. **Tengia** Chun in Sunyatsenia 6: 279, fig. 34 & pl. 46 (1946).
 Monotypic, endemic to Guiding County in S Guizhou _____ **T. scopulorum** Chun
 [Looking like *Petrocodon*, but with 5 fertile stamens and free anthers.]
4. **Conandron** Sieb. & Zucc. in Abhandl. Akad. Wiss. München, 3: 729, tab. 5 (1843).
 Monotypic, in E China (N Fujian, Taiwan, Zhejiang, NE Jiangxi, S Anhui) and
 S Japan _____ **C. ramondioides** Sieb. & Zucc.
 [The illustration in Botanical Magazine (tab. 6484, 1880) is of a white-flowered form,
C. ramondioides var. *leucanthum*.]
5. **Oreocharis** Benth. in Benth. & Hook. f., Gen. Pl. 2: 1021 (1876); C.B. Clarke in
 DC., Mon. Phan. 5(1): 62 (1883); K.Y. Pan in Acta Phytotax. Sin. 25: 264-293 (1987).
- 1a. Anthers oblong, with 2 parallel thecae, longitudinally dehiscent; cyme with
 (1-)4-10 or more flowers _____ 2
- 1b. Anthers hippocrepiform, with one theca, transversely dehiscent; cyme
 subumbelliform (Sect. 4 *Platanthera* K.Y. Pan) (Hainan) _____ 26. **O. flava** Merr.
- 2a. Corolla-tube cylindric, slightly contracted at throat, slightly tumid at base, as
 long as or slightly longer than the limb; limb bilabiate, 5-lobed, lobes oblong or
 oblong-lanceolate; seed-coat reticulate, smooth; pollen exine fine-reticulate,
 tectum partial and smooth, luminae slightly unequal in size (Sect. 1 *Stomactin*
 (Clarke) Fritsch: type *O. auricula*) _____ 3
- 2b. Corolla-tube campanulate, campanulate-tubular or tubular, rarely broadly
 tubular, not contracted at throat, 1-5 times longer than limb, limb bilabiate or
 slightly bilabiate, lobes suborbicular, rarely oblong _____ 15
- 3a. Leaves pubescent above (except *O. sericea* & *O. minor*), sericeous-lanate
 beneath at least on the nerves; corolla yellow or purple, with upper lip as long as
 the lower lip; filaments glabrous _____ 4
- 3b. Leaves pubescent on both surfaces; corolla yellow, with the upper lip shorter
 than the lower one; filaments puberulous (subglabrous in *O. georgei*) _____ 12
- 4a. Peduncles and pedicels sericeous-lanate _____ 5
- 4b. Peduncles and pedicels glandular-pubescent _____ 8
- 5a. Tall herbs; peduncles 6-18cm long; leaf blades longer than the petioles _____ 6
- 5b. Low herbs; peduncles 6-10cm long; leaf blades shorter than the petioles
 (Heugyang County in Hunan) _____ 4. **O. nemoralis** Chun
- 6a. Leaves puberulous above, brownish-sericeous-lanate on the nerves beneath _____ 7
- 6b. Leaf blades sericeous-villous on both surfaces (NW Guangdong, NE Guangxi,
 Fujian, Jiangxi, Anhui, Hubei, Hunan, Guizhou) _____ 3. **O. sericea** (Lévl.) Lévl.
- 7a. Leaf blades oblong, 3-12cm long, 1-3.5cm wide, irregularly serrulate at margin
 (Mile County in SE Yunnan) _____ 1. **O. amabilis** Dunn

- 7b. Leaf blades oblong-elliptic, 2–8cm long, 1–5cm wide, crenate or entire at margin (Guangdong, N Guangxi, Jiangxi, Hunan, NE Guizhou, SE Sichuan) 2. *O. auricula* (S. Moore) Clarke
- 8a. Leaf blades long-elliptic, 4–15cm long, 3–7cm wide, sericeous-lanate only on the nerves beneath; corolla purplish (NE Guangxi) 5. *O. magnidens* K. Y. Pan
- 8b. Leaf blades narrow-ovate, oblong or oblong-lanceolate, 1.6–5.2(–15)cm long, 0.6–2.5cm wide, ferruginous-sericeous-lanate beneath; corolla yellow or orange 9
- 9a. Peduncles 10–16cm long; leaves pubescent above 10
- 9b. Peduncles 6–8cm long; leaf blades glabrous above (NW Yunnan) 9. *O. minor* (Craib) Pellegr.
- 10a. Pistil glabrous 11
- 10b. Pistil brownish-glandular-puberulous (NW Yunnan, SW Sichuan) 8. *O. cordatula* (Craib) Pellegr.
- 11a. Bracts 2, linear, 1.5–2mm long; peduncles and calyx brownish-glandular-pubescent outside; corolla 1–1.5cm long (NW Yunnan) 6. *O. cinnamomea* Anthony
- 11b. Bracts wanting; peduncles and calyx purple-glandular-pubescent outside; corolla 1.7–2.1cm long (NW Yunnan) 7. *O. aurantiaca* Franch.
- 12a. Leaf blades lanceolate, 2–7cm long, 1–2cm wide, cuneate at base, fulvous-villous on both surfaces; filaments subglabrous (NW Yunnan, SW Sichuan) 10. *O. georgei* Anthony
- 12b. Leaf blades elliptic-ovate, cordate-ovate or suborbicular, cordate or widely cuneate at base, slightly oblique, puberulous or villous above, puberulous beneath; filaments puberulous 13
- 13a. Leaf blades suborbicular, 1.2–2.4cm long, 1.4–2.2cm wide, rounded at apex; style puberulous (Pingbian County in SE Yunnan) 11. *O. rotundifolia* K. Y. Pan
- 13b. Leaf blades 5–15cm long, 3.4–8cm wide, acute at apex; style glabrous 14
- 14a. Leaf blades cordate-ovate, 5–13cm long, 4–8cm wide, crenate at margin; calyx-lobes entire (Xichou County in SE Yunnan) 12. *O. cordato-ovata* H. W. Li
- 14b. Leaf blades elliptic-ovate, 8–15cm long, 3.4–7cm wide, double-serrate at margin; calyx-lobes 2–4 denticulate at margin (SE Yunnan) 13. *O. aurea* Dunn
- 15a. Corolla-tube campanulate-tubular, rarely campanulate, 1.5–2 times longer than limb; seed-coat fine-reticulate, muri smooth, rarely spinulose; pollen exine fine-reticulate, tectum smooth, rarely minutely tuberculate (Sect. 2 *Orthoanthera* K. Y. Pan: type *O. henryana*) 16
- 15b. Corolla-tube tubular, rarely broadly tubular, 3–5 times longer than limb; seed-coat mostly spinulose, rarely minutely tuberculate; pollen-exine insular, densely spinulate, rarely fine-reticulate, luminae unequal in size (Sect. 3

- 16a. Corolla distinctly bilabiate; filaments glabrous, if puberulous at base, then with 2 stigmas; style puberulous 17
- 16b. Corolla slightly bilabiate; filaments puberulous or glandular-puberulous 19
- 17a. Leaf blades oblong or lanceolate-ovate, 2–11cm long, 1.5–6.7cm wide, serrate or double-serrate at margin; peduncle and pedicels glandular-pubescent; filaments glabrous; stigma 1 18
- 17b. Leaf blade suborbicular, 2–3.2cm long, 1.8–2cm wide, crenate at margin; peduncles and pedicels ferruginous-villous; filaments puberulous at base; stigmas 2 (Lungli County in S Guizhou) 16. *O. cavalierii* Lévl.
- 18a. Leaf blades lanceolate-ovate, crenate or serrate at margin, puberulous above, brown-pannose beneath; peduncles and calyx purple-glandular-pubescent outside (NE Yunnan, Sichuan, S Gansu) 14. *O. henryana* Oliv.
- 18b. Leaf blades ovate-oblong, double-serrate at margin, ferruginous-villous and glandular-puberulous outside (Lijiang County in NW Yunnan) 15. *O. forrestii* (Diels) Skan
- 19a. Corolla yellow; stamens exserted, with glandular-puberulous filaments; stigma disciform; seed-coat reticulate (NW Yunnan, SW Sichuan) *O. deloyai*
17. *[O. elliptica]* Anthony
- 19b. Corolla yellow-red; stamens included, with puberulous filaments; stigmas 2, suborbicular; seed-coat spinulose (Hainan) 18. *O. dasyantha* Chun
- 20a. Corolla purple, with the tube slightly narrower than the limb; disc entire 21
- 20b. Corolla yellow, with the tube nearly as broad as the limb; filaments puberulous; disc lobulate to deeply lobed 26
- 21a. Leaf blades appressed-villous; corolla 2–2.3cm long, 7mm in diam.; filaments glabrous; pedicels villous (Guangxi, N Guangdong) 19. *O. argyrea* K. Y. Pan
- 21b. Leaf blades puberulous above, ferruginous-sericeous-lanate beneath at least on the nerves 22
- 22a. Leaf blades ferruginous-sericeous-lanate only on the nerves and puberulous on the other part beneath; stamens included 24
- 22b. Leaf blades densely ferruginous-lanate beneath 25
- 23a. Peduncles, pedicels and calyx densely sericeous-lanate outside (S Hunan, NE Guangxi) 20. *O. xiangguiensis* W. T. Wang & K. Y. Pan
- 23b. Peduncles & pedicels glandular-puberulous; calyx puberulous outside (Fujian) 21. *O. tubiflora* K. Y. Pan
- 24a. Corolla larger, 2–2.5cm long, 8–9cm in diam., lobes acute at apex; stamens included (Fujian, Jiangxi) 22. *O. maximowiczii* Clarke
- 24b. Corolla smaller, 7–11mm long, 4–6mm in diam., lobes rotundate at apex;

- 25a. Cyme twice branched; stamens exserted as long as the corolla, connectives hispid on dorsal surface (NE Yunnan, SW Sichuan) _____ 24. *O. bodinieri* Lévl.
 25b. Cyme not branched; stamens included, connectives glabrous on dorsal surface (NE Yunnan, SW Sichuan) _____ 25. *O. tubicella* Franch.

[*Oreocaris* is nearly endemic to China, the exceptions being *O. aurea*, which is found both in China and in N Vietnam, and *O. hirsuta* Barnett, from Doi Nang Ka, Chiengmai, N Thailand. These two are closely allied: *O. hirsuta* has orange-yellow flowers and was included in the purple-flowered group of sect. *Oreocaris* by Miss Pan (1987) in error. The last two species in the key represent the genus *Dasydesmus* Craib. Miss Pan is justified in reducing *Dasydesmus* to *Oreocaris*, but these two species seem out of place in sect. *Oreocaris*. They have orange-yellow flowers (the remainder of the section has purple or mauve flowers) and a divided disc. They probably come closer to *O. aurea*, but should perhaps form a separate section. *O. aurantiaca* (as *Perantha*) and *O. forrestii* have been figured in Botanical Magazine at tab. 8915 and 8719 respectively.]

6. *Tremacron* Craib in Notes RBG Edinb. 10: 217 (1918).

- 1a. Corolla yellow, orange or white; pistil glabrous, rarely puberulous; leaf blades less than twice as long as broad _____ 2
 1b. Corolla red; pistil glandular-puberulous; leaf blades 3–5 times longer than broad (Dayas County in C Yunnan) _____ 7. *T. rubrum* Hand.-Mazz.
 2a. Cymes twice or thrice branched, with 6–10 or more flowers; corolla tubular; peduncles and pedicels villous and glandular-puberulous _____ 3
 2b. Cyme not branched, with 1–3 flowers; corolla tubular or cylindric; peduncles and pedicels puberulous, without glandular hairs _____ 6
 3a. Leaf blades 3–7cm long, 2–4.5cm wide, narrow elliptic or narrow-rhomboid-elliptic, double-dentate at margin, appressed-white-puberulous & sparsely ferruginous-villous above (NW Yunnan, SW Sichuan)
 1. *T. forrestii* Craib
 3b. Leaf blades 2–6cm long, 1.5–3.5cm wide, with simple teeth at margin, densely white-villous or white-puberulous, without ferruginous hairs above _____ 4
 4a. Corolla 6–7mm in diam.; calyx-lobes oblong, about 2.5mm long, 1.1mm wide, puberulous outside; leaf blades wide-ovate, densely white-villous above (Muli County in SW Sichuan) _____ 2. *T. urceolatum* K. Y. Pan
 4b. Corolla 3–5mm in diam., calyx-lobes linear or linear-lanceolate, with longer hairs outside _____ 5
 5a. Leaf blades ovate, appressed-villous on both surfaces, nerves obscure above, petioles 1–2.5cm long; corolla white; pistil puberulous or subglabrous (Dongchuan County in NE Yunnan) _____ 3. *T. mairei* Craib

5b. Leaf blades narrow-ovate, appressed-white-puberulous on both surfaces, nerves distinct above; petioles 1–4cm long; corolla yellow; pistil glabrous (Miyi and Yanyuan Counties in SW Sichuan) _____ 4. *T. obliquifolium* K. Y. Pan

- 6a. Corolla tubular, white, with lower lip purplish; leaf blades widely cordate-ovate or cordate-orbicular, 1.3–3.5cm long, 1–3cm wide, white-puberulous above (Jingdong County in C Yunnan) _____ 5. *T. begoniifolium* H. W. Li
 6b. Corolla cylindric, orange; leaf blades ovate-orbicular, 3–4cm long, 2–3cm wide, white-villous above (Mabian & Pingshan Counties in SW Sichuan) _____ 6. *T. aurantiacum* K. Y. Pan

[*T. forrestii* is figured in Botanical Magazine (tab. 9224. 1930).]

7. *Isometrum* Craib in Notes RBG Edinb. 11: 250 (1919); Burtt in Notes RBG Edinb. 33: 91–93 (1960); Pan in Acta Bot. Yunnan. 8(1): 23–36 (1986) & in Acta Phytotax. Sin. 26(6): 432 (1988).

- 1a. Corolla hypocrateriform, purple-black when drying; stamens 4 free, anther thecae confluent (Sect. 1. *Chorianthera* W. T. Wang & K. Y. Pan) (SW Sichuan)
 1. *I. eximium* K. Y. Pan
 1b. Corolla campanulate or cylindric, purple or purple-red, rarely white; stamens 4, coherent in pairs, anther thecae not confluent _____ 2
 2a. Corolla campanulate, tube broad, 6–15mm long, 5–9mm in diam., pubescent or subglabrous outside (Sect. 2. *Pachysiphon* K. Y. Pan) _____ 3
 2b. Corolla cylindric, tube narrow, 8–14(–23)mm long, 2.7–3.6(–8)mm in diam., glandular-puberulous outside, if puberulous, then leaf blades pinnately lobed (Sect. 3. *Isometrum*) _____ 4
 3a. Leaf blades lanceolate-ovate, 1.5–3.5cm wide, crenate, bullate above, subglabrous and foveolate beneath; corolla purple-red, pubescent outside (NW Sichuan, S Gansu) _____ 2. *I. glandulosum* (Batalin) Craib
 3b. Leaf blades oblong, 2–2.7cm long, 1.3–3cm wide, serrate at the upper margin, plane and grey-appressed-puberulous above; corolla purple, subglabrous outside (NE Sichuan) _____ 3. *I. fargesii* (Franch.) Burtt
 4a. Leaves not divided _____ 5
 4b. Leaves pinnately lobed _____ 12
 5a. Corolla 8–14mm long, tube 2.7–3.6mm diam., purple, purplish, purple-red or white; filaments glabrous _____ 6
 5b. Corolla 25–37mm long, tube c.11mm diam., pink; filaments glandular-puberulous in upper part
 10. *I. lungshengense* (W. T. Wang) W. T. Wang & K. Y. Pan
 6a. Corolla white, 23mm long, 8mm in diam., pilose outside (W Sichuan)
 4. *I. leucanthum* (Diels) Burtt

- 6b. Corolla red, purple or white, 11–13(–20)mm long, 3–4mm in diam. 6
 7a. Leaves rotundate-dentate or serrate; disc irregularly 5-lobed 7
 7b. Leaves subentire or irregularly serrulate at margin; disc 5-lobed or undulate 9
 8a. Corolla-limb up to one quarter as long as the tube, lobes suborbicular; ovary glabrous (NW Sichuan, S Gansu, S Shaanxi) 5. *I. farreri* Craib
 8b. Corolla-limb longer, half as long as the tube, lobes oblong or obovate; ovary squamous or hairy 8
 9a. Leaf blades oblong-ovate, 3–5.5cm long, 2–3cm wide; corolla glandular-puberulous, not constricted at throat; pistil shorter than calyx, ovary squamous (S Shaanxi) 6. *I. giraldii* (Diels) Burtt
 9b. Leaf blades narrow-elliptic, smaller, 2–3cm long, 1–1.6cm wide; corolla puberulous outside, constricted at throat; pistil longer than calyx, ovary puberulous (Zhuxi County in NW Hubei) 7. *I. crenatum* K. Y. Pan
 10a. Pedicels ferruginous-villous and glandular-puberulous; corolla glandular-puberulous outside; petioles 1.5–7cm long; leaf blades pubescent or subglabrous 10
 10b. Pedicels ferruginous-villous only, not glandular-hairy; corolla subglabrous outside; leaves sessile, obovate-oblong, brown-villous or subglabrous (Shizhu County in SE Sichuan) 9. *I. villosum* K. Y. Pan
 11a. Corolla 8–12mm long, upper lip distinctly longer than the lower lip 11
 11b. Corolla 16–20mm long, upper lip nearly as long as the lower lip (Guanxian County in S Sichuan)
 8c. *I. lancifolium* var. *tsingchengshanicum* W. T. Wang & K. Y. Pan
 12a. Cymes 9–20cm long, leaves oblong, oblong-lanceolate or ovate-elliptic, 3.5–14cm long, 2–3.7cm wide (S Sichuan)
 8. *I. lancifolium* (Franch.) K. Y. Pan var. *lancifolium*
 12b. Cymes about 9cm long; leaves smaller, oblong, 2–4cm long, 9–11mm wide (Wenchuan County in W Sichuan) 8b. *I. lancifolium* var. *mucronatum* K. Y. Pan
 13a. Leaf blades narrow-rhomboid-elliptic, 5–9.5cm long, 2.7–5.5cm wide, bullate above; upper lip of the corolla nearly as long as the lower one; pistil as long as or slightly shorter than the calyx, style 0.7mm long (NW Sichuan)
 11. *I. primuliflorum* (Batalin) Burtt
 13b. Leaf blades oblong or lanceolate, plane above; upper lip of the corolla longer than the lower one; pistil longer than calyx, style 1.5–2.5mm long 13
 14a. Leaf blades oblong, 2.7–10cm long, 2.3–4.5cm wide; corolla outside and pistil glandular-puberulous (Maowen County in NW Sichuan)
 12. *I. sichuanicum* K. Y. Pan
 14b. Leaf blades lanceolate, smaller, 1.5–5cm long, 0.8–1.5cm wide; corolla pilose

- [*I. farreri* was illustrated in Botanical Magazine (tab. 8917). *I. lancifolium* was previously placed as *Acylostemon lancifolius* (Franch.) Burtt (=*A. purpureus* Burtt & Davidson).]
8. *Acylostemon* Craib in Notes RBG Edinb. 11: 234 (1919).
- 1a. Corolla conspicuously bilabiate, with upper lip shorter than the lower lip, puberulous outside 2
 1b. Corolla inconspicuously bilabiate, with upper lip about as long as the lower lip, the upper lip 2-lobed, villous outside 9
 2a. Flowers yellow-white, 11–15mm long; only anterior stamens exserted; low herbs (W. Hubei, E Sichuan) 1. *A. humilis* W. T. Wang
 2b. Flowers orange or pink, 28–35mm long; both posterior and anterior stamens exserted; herbs taller 3
 3a. Calyx 5-sect nearly to base, with lobes oblong and subentire; upper corolla-lip 2-lobulate or 2-partite 4
 3b. Calyx 5-fid to the middle or slightly beyond the middle, with lobes ovate or ovate-triangular and 2–4-denticulate at margin; corolla upper lip entire or 2-lobulate 6
 4a. Leaf blades beneath, petioles and peduncles densely fulvous-pannose; leaf blades oblong, 3–12cm long, 1–3.2cm wide, petioles 2.7–8cm long (S Guizhou)
 2. *A. notochlaena* (Lévl. & Van.) Craib
 4b. Leaf blades beneath, petioles and peduncles pubescent 5
 5a. Flowers orange; leaf blades ovate or rhomboid-ovate, 1.5–2.5cm long, 0.9–1.9cm wide, densely brown-villous on the nerves beneath (NE Yunnan)
 3. *A. mairei* (Lévl.) Craib
 5b. Flowers pink; leaf blades narrow-elliptic or elliptic, 2.5–7.5cm long, 1.8–4.2cm wide, brownish-villous on the nerves beneath (Rongan County in C Guangxi)
 4. *A. ronganensis* K. Y. Pan
 6a. Pistil glabrous; lobes of the lower corolla-lip subequal in length 7
 6b. Pistil densely puberulous; central lobe of the lower corolla-lip much longer than the lateral ones (SE & E Sichuan, W Hubei, S Shaanxi)
 8. *A. saxatilis* (Hemsl.) Craib
 7a. Leaf blades 3.5–14cm long, 2–7.5cm wide, mostly ovate-oblong or oblong-ovate, rarely wide-ovate or obovate, rounded, subcordate or wide-cuneate at base; upper corolla-lip entire or 2-lobulate 8
 7b. Leaf blades 2.2–4cm long, 2–3cm wide, ovate, cuneate at base; upper corolla-lip 2-lobulate (SW Sichuan) 7. *A. gamosepalus* K. Y. Pan
 8a. Calyx 5-fid slightly beyond the middle, with lobes ovate-lanceolate about 4mm

- length, 1cm long; filaments pubescent below (Dali County in NW Yunnan)
5. *A. convexus* Craib
- 8b. Calyx 5-fid to the middle or to above the middle, with lobes triangular-lanceolate 2–2.5mm long; upper corolla-lobe emarginate or entire 1.2–2mm long; the central lobe of the lower corolla-lip 6 mm long, the lateral ones 5 mm long; filaments glabrous (Weixi & Heding Counties in NW Yunnan)
6. *A. aureus* (Franch.) Burtt
- 9a. Leaf blades rhomboid or rhomboid-ovate, 1.5–3cm long, 1.2–1.8cm wide; corolla 4–5 times longer than calyx; calyx-lobes ovate-lanceolate, entire (Meigu County in SW Sichuan) 9. *A. rhombifolius* K. Y. Pan
- 9b. Leaf blades ovate or wide-ovate, 3.5–5.5cm long, 2–4.7cm wide; corolla 2–3 times longer than calyx; calyx-lobes triangular, sometimes denticulate at margin 10
- 10a. Corolla twice as long as calyx; corolla-tube not ventricose (Dayas County in C Yunnan) 10. *A. vulpinus* Burtt & Davidson
- 10b. Corolla 3 times longer than calyx; corolla-tube slightly ventricose (Dayas County in C Yunnan) 11. *A. trichanthus* Burtt & Davidson
9. *Briggsia* Craib in Notes RBG Edinb. 11: 236 (1919)
- 1a. Caulescent herbs; leaves all cauline 2
- 1b. Acaulescent herbs, with leaves all basal 4
- 2a. Leaves congested at the top of the stem, obovate or narrowly ovate, 4–14cm long, dentate or serrate on upper half of margin; pistil hairy (NW Yunnan, SW Sichuan) 1. *B. amabilis* (Diels) Craib
- 2b. Leaves opposite, elliptic or ovate-elliptic, 4–16cm long, serrulate at margin; pistil glabrous or only style hairy 3
- 3a. Leaves ovate-elliptic, 4–10cm long, 2.4–6cm wide, cuneate at base; corolla white with purple spots; pistil glabrous (Butuo County in SW Sichuan) 2. *B. longicaulis* W. T. Wang & K. Y. Pan
- 3b. Leaves narrow-elliptic, 4.5–16cm long, 2.5–6.5cm wide, oblique at base; corolla yellow, not maculate; style glandular-puberulous (Dongxing & Jinxiong Counties in S & E Guangxi) 3. *B. dongxingensis* K. Y. Pan
- 4a. Leaves glabrous on both surfaces 5
- 4b. Leaves pubescent or lanate 6
- 5a. Leaf blades elliptic, lanceolate-elliptic or suborbicular, 5–12cm long, 3–7.2cm wide, entire; corolla not striate (SE Yunnan, NW Guangxi) 4. *B. longipes* (Hemsl.) Craib
- 5b. Leaf blades obovate or obovate-elliptic, 2–10cm long, 1–6cm wide, undulate-dentate or denticulate; corolla brownish-striate inside (S Sichuan, Guizhou, W Hunan) 5. *B. mihieri* (Franch.) Craib

- 6a. Pistil glabrous (style sparsely puberulous in *B. chienii*; corolla not maculate except in *B. aurantiaca* and *B. muscicola*) 7
- 6b. Pistil glandular-pubescent; corolla maculate inside (except *B. agnesiae* & *B. forrestii*) 14
- 7a. Corolla yellow or orange 8
- 7b. Corolla purple 10
- 8a. Leaf blades wide-elliptic, 2–8cm long, crenate at margins, ferruginous-lanate and appressed-villous on both surfaces (E Xizang) 6. *B. aurantiaca* Burtt
- 8b. Leaf blades longer, lanceolate or oblong, 5–16cm long, dentate at margin, white or brown-pubescent, not lanate, on both surfaces 9
- 9a. Leaf blades white-puberulous on both surfaces, ferruginous-villous on nerves beneath; corolla purple-striate inside, lobes oblong (SE Xizang, NW Yunnan) 8. *B. muscicola* (Diels) Craib
- 9b. Leaf blades puberulous only, not villous; corolla not striate, lobes orbicular (Ruili & Jingdong Counties in SW & C Yunnan) 7. *B. longifolia* Craib
- 10a. Leaves appressed-pubescent on both surfaces, and ferruginous-villous on nerves beneath and on petioles, not lanate 11
- 10b. Leaves ferruginous-lanate on nerves beneath and on petioles, appressed-puberulous and villous on both surfaces 13
- 11a. Leaves sessile or with short petioles 1–2.5cm long; bracts wanting; filaments glabrous (Sanjiang County in N Guangxi) 9. *B. stewardii* Chun
- 11b. Leaves long-petioled; bracts 2; filaments hairy 12
- 12a. Leaf blades ovate-elliptic, 1.5–2.2cm long, 0.8–1.2cm wide; corolla about 1.8cm long, 7mm in diam., pilose outside; filaments glandular-puberulous (Lichuan County in SW Hubei) 11. *B. humilis* K. Y. Pan
- 12b. Leaf blades ovate or oblong-ovate, 4–14cm long, 3.8–4.2cm wide; corolla longer, 3–4.1cm long, 1–1.4cm in diam., glandular-puberulous outside; filaments pubescent (Dongchuan County in NE Yunnan) 10. *B. mairei* Craib
- 13a. Calyx-lobes broadly ovate, 8mm long, 4–5mm wide, caudate at apex, ferruginous-lanate on mid-rib outside, entire; filaments and style glabrous (Yunhe County in W Zhejiang) 12. *B. latisepala* K. Y. Pan
- 13b. Calyx-lobes ovate-oblong, 5mm long, 3–4mm wide, acuminate at apex, denticulate or subentire at margin, densely ferruginous-lanate outside; filaments and style puberulous (NE Jiangxi, NW Zhejiang, S Anhui) 13. *B. chienii* Chun
- 14a. Corolla not maculate or striate inside 15
- 14b. Corolla maculate or striate inside 17

- 15a. Leaf blades 5–10cm long, 2.5–6cm wide sparsely ferruginous-villous or subglabrous above; corolla-lobes ovate-orbicular, rounded at apex; anther-thecae confluent (Ruili County in SW Yunnan) _____ 14. *B. forrestii* Craib
 15b. Leaf blades smaller, 1.5–6cm long; 0.8–2.2cm wide, densely pubescent or puberulous on both surfaces; corolla-lobes narrow-triangular, attenuate; anther-thecae not confluent _____ 16
- 16a. Cyme 1-flowered, leaf blades rhomboid-ovate, 1.5–4.5cm long, 0.8–2.2cm wide, crenate at margin, grey-appressed-puberulous above, ferruginous-pubescent beneath (Aluli County in SW Sichuan, Yungsheng County in NW Yunnan) _____ 20. *B. agnesiae* (Forrest) Craib
 16b. Cyme 4-flowered; leaf blades oblong, 3–6cm long, 1–2.2cm wide, rotundate-serrate, puberulous and sparsely ferruginous-villous above, ferruginous-villous on nerves and sparsely puberulous on the other part beneath (Yuxi County in C Yunnan) _____ 16. *B. acutiloba* K.Y. Pan
 17a. Corolla 2–2.6 long, c.7–1cm in diam., lobes of lower lip 3mm long; leaf blades 1–2cm long, 0.7–1.2cm wide (S Guizhou) _____ 21. *B. parvifolia* K.Y. Pan
 17b. Corolla larger, 3–5.3cm long, 1.6–1.8cm wide, lobes of lower lip 4–8mm long; leaf-blades larger, 2–13cm long, 0.8–7cm wide _____ 18
 18a. Leaf blades oblong or elliptic-oblong, 3–8cm long, 0.8–3.2cm wide, dentate at margins (W Hubei, N Hunan) _____ 17. *B. speciosa* (Hemsl.) Craib
 18b. Leaf blades ovate or wide-elliptic, 2–13cm long, 1.2–7cm wide, crenate at margins _____ 19
 19a. Leaves white-puberulous, glabrous or subglabrous on nerves above, ferruginous-villous on nerves and puberulous on the other part beneath (S Sichuan, SW Hubei, Guizhou) _____ 18. *B. rosthornii* (Diels) Burtt
 19b. Leaves densely villous and puberulous on both surfaces, not ferruginous-villous on nerves beneath _____ 20
 20a. Leaves brownish-sericeous-villous on both surfaces; bracts 1cm long; lobes of the lower corolla-lip entire (Pinfa County in S Guizhou) _____ 19. *B. elegantissima* (Lévl. & Van.) Craib
 20b. Leaves grey-appressed-puberulous on both surfaces; bracts 4–6mm long; lobes of the lower corolla-lip denticulate (Pinfa County in S Guizhou) _____ 20. *B. pinfaensis* (Lévl.) Craib
- [*Briggsia agnesiae* was illustrated in *Botanical Magazine* tab. 8896 (publ. 1938) and *B. amabilis* at tab. 9181 (1929). The latter was transferred to *Loxostigma* (as a syn. of *L. kurzii* = *Briggsia kurzii*) by Burtt. Other caulescent species have since been added to *Briggsia* and it is best to reinstate it in that genus at present.]
10. *Briggsiopsis* K. Y. Pan in *Acta Phytotax. Sin.* 23: 216, fig. 1 (1985).
 (NE Yunnan, SW to SE Sichuan) _____ B. *delavayi* (Franch.) K. Y. Pan

[This plant was originally described in *Didissandra* and later transferred to *Briggsia*. However Miss Pan discovered that only the posterior carpel was fertile; the placentae meet in the middle, so that the ovary is bilocular, but the anterior loculus is reduced in size and empty. The plant has a rosette habit and flowers 3cm long, white with purple stripes inside.]

11. *Didissandra* Clarke in A. & C. DC., *Mon. Phan.* 5(1): 65 (1883)
- 1a. Shrubs, glabrous or glabrescent; flowers 1–4cm long, white or yellow _____ 2
 1b. Perennial herbs, villous; flowers larger, 3–7cm long, purple, purple-blue or orange-red, hairy outside _____ 3
- 2a. Stem and leaves glabrous; corolla white, about 1.2cm long, glabrous outside (S Guangxi) _____ 1. *D. sinica* (Chun) W. T. Wang (Based on *Raphiocarpus sinicus* Chun in *Sunyatsenia* 6: 273–276, fig. 32, pl. 44. 1946)
 2b. Stem appressed-villous when young, later glabrescent; leaves strigose above, villous on nerves beneath; corolla yellow, larger, 3.5–4cm long, villous outside (Pingbian County in SE Yunnan) _____ 2. *D. longipedunculata* H. W. Li
 3a. Cauline leaves 2–4 pairs, slightly unequal in each pair; calyx 5-sect nearly to base; stigmas 2, equal _____ 4
 3b. Cauline leaves only one pair, strongly unequal in size; calyx 5-lobed about to $\frac{1}{3}$ of its length; stigmas 2, very unequal (Huidong, Leipo, Omei & Guanxian Counties in SW Sichuan) _____ 5. *D. sesquifolia* Clarke
 4a. Cyme 1–3-flowered; corolla orange-red, sparsely pubescent outside; pistil glabrous (W & SW Guangdong, E Guangxi) _____ 3. *D. macrosiphon* (Hance) W. T. Wang
 4b. Cyme 3–10-flowered; corolla purplish, glandular-pubescent outside; pistil pubescent and glandular-puberulous (SE Yunnan, NW Guangxi, SW Guizhou) _____ 4. *D. begoniifolia* Lévl.

[*Didissandra* has always been an artificial genus comprising species with 4 fertile stamens that do not obviously belong elsewhere. Many species once placed here have been segregated to such genera as *Acylostemon*, *Briggsia*, *Corallodiscus* etc. The type of *Didissandra* is the Sumatran *D. elongata* (Jack) Clarke. It seems to me unlikely that any of the Chinese species will eventually be retained in *Didissandra*. Similarly in Malesia, although we refer many species to the genus I am doubtful if more than a few are strictly congeneric with *D. elongata*.]

12. *Corallodiscus* Batalin in *Acta Hort. Petrop.* 12: 176 (1892); Burtt in *Gard. Chron.* ser. 3, 122: 212 (1947).
- 1a. Herbs 7–18cm high; cymes twice to many times branched, 3- to many-flowered, if 1-flowered, then leaves ferruginous-lanate on nerves only beneath _____ 2

- 1b. Herbs about 3cm high; cymes not branched, 1(-2)-flowered (SE Xizang, NW Yunnan, W Sichuan, S Gansu) **9. *C. conchifolius*** Batalin
(incl. *C. forrestii* (Anth.) Burtt)
- 2a. Leaves coriaceous, villous or subglabrous above, lanate at least on nerves beneath, crenulate or denticulate at margin **3**
- 2b. Leaves thin, subpaper, ovate-orbicular or obovate-orbicular, 3–3.5cm long, 2.8–3.5cm wide, sparsely white-villous above, ferruginous-villous beneath, subentire or repand at margin (S Xizang; Nepal, Sikkim, Bhutan, N India)
8. *C. lanuginosus* (DC.) Burtt
- 3a. Leaf blades densely villous, rarely sparsely villous or subglabrous above, ferruginous- or grey-lanate beneath; peduncles, pedicels and calyx outside densely ferruginous-lanate, seldom pilose; calyx slightly longer than ovary **4**
- 3b. Leaf blades glabrous or subglabrous above, lanate only on nerves beneath; calyx slightly shorter than ovary **6**
- 4a. Leaf blades rhomboid-ovate, ovate-lanceolate, seldom ovate-orbicular, 2–9cm long, 1.4–3cm wide, glabrous above; peduncles, pedicels and outside of calyx ferruginous-lanate (S Xizang) **1. *C. kingianus*** (Craib) Burtt
- 4b. Leaves blades broadly obovate, flabellate, oblanceolate or ovate-oblong, 1–3cm long, 1–2cm wide, villous or pilose above; peduncle, pedicels and calyx brownish-lanate when young, afterwards glabrescent **5**
- 5a. Leaf blades broadly obovate or flabellate, seldom subovate, 1–2.5cm long, 1–2cm wide, crenulate at margin; calyx-lobes 3–4-nerved; central lobe of the lower corolla-lip about as long as the lateral ones, 2–2.2mm long (C & NW Yunnan, SE Xizang, W Sichuan) **2. *C. flabellatus*** (Craib) Burtt
- 5b. Leaf blades oblanceolate or ovate-oblong, 2–3cm long, 1–1.5cm wide, denticulate or rotundate-serrulate at margin; calyx-lobes 5-nerved; central lobe of the lower corolla-lip much longer than the lateral ones, about 6mm long (NE Yunnan, SW Sichuan) **3. *C. bullatus*** (Craib) Burtt
- 6a. Cymes many times branched, 10–30-flowered; leaf blades ovate-lanceolate or elliptic, about 8cm long, 3.7cm wide (Zhungdian County in NW Yunnan)
4. *C. patens* (Craib) Burtt
- 6b. Cymes twice or thrice branched, seldom not branched, (1–)3–10-flowered; leaf blades 1.2–4cm long, 0.5–2.2cm wide **7**
- 7a. Leaf blades plane or slightly bullate, with nerves raised and ferruginous-lanate beneath **8**
- 7b. Leaf blades flabellate-plicate, rhomboid-ovate or rhomboid-oblong, 1.2–1.9(–3.5)cm long, 8–10(–16)mm wide, glabrous above, sparsely puberulous beneath, with nerves strongly raised beneath (NW Yunnan, W Guizhou; SW Sichuan) **7. *C. plicatus*** (Franch.) Burtt

- 8a. Herbs, 3.5–5.5cm high; leaves oblong-spathulate or elliptic-spathulate, 0.9–2.6cm long, 0.5–1.5cm wide (Dali County in NW Yunnan)
5. *C. taliensis* (Craib) Burtt
- 8b. Herbs, 5.5–15cm high; leaves ovate or oblong, 2–4cm long, 1–2.2cm wide (N Yunnan, Guizhou, Guangxi, Hunan, Sichuan, Hubei, Shaanxi, Henan, Shanxi, Hebei) **6. *C. cordatulus*** (Craib) Burtt
(*C. labordei* (Craib) Burtt)
- 13. *Platystemma*** Wall., Pl. As. Rar. 2: 41, t. 151 (1829–31).
(S Xizang; Nepal, N India) **P. violoides** Wall.
[Ranges as far west as Himachal Pradesh (Simla etc) in N India. Bears a few *Saintpaulia*-like flowers on a 2-leaved stem from a creeping rhizome.]
- 14. *Cathayanthe*** Chun in Sunyatsenia 6: 282–295, pl. 47 (1946)
(Hainan island) **C. biflora** Chun
- 15. *Beccarinda*** Kuntze, Rev. Gen. 2: 470 (1891); Burtt in Notes RBG Edinb. 22: 61 (1955).
- 1a. Herbs pilose with long hairs; leaf blades 2.5–8.4cm long, 1.5–6.5cm wide; peduncles 7–15cm long; pistil glabrous **2**
- 1b. Dwarf puberulous herbs; leaf blades elliptic or ovate, 1–3.5cm long 0.6–2cm wide; peduncles 2–4cm long; pistil sparsely puberulous (Jinxiu & Xiangzhou Counties in NE Guangxi) **5. *B. minima*** K. Y. Pan
- 2a. Leaf blades ovate or ovate-orbicular, cordate at base **3**
- 2b. Leaf blades elliptic, rounded or wide-cuneate at base **4**
- 3a. Leaf blades 3.5–7cm long, 2.5–6.5cm wide, rather densely villous on both surfaces (W Guangdong, Guangxi, SE Yunnan, S Sichuan; N Vietnam)
1. *B. tonkinensis* (Pellegr.) Burtt
(*B. sinensis* (Chun) Burtt)
- 3b. Leaf blades 2.5–4cm long, 3–3.5cm wide, sparsely villous or subglabrous above, pubescent on the nerves only beneath (Jinping County in SE Yunnan)
2. *B. paucisetulosa* H. W. Li
- 4a. Leaf blades obtuse at apex, crenate at margin; brownish-villous herbs (SE Yunnan) **3. *B. argentea*** (Anthony) Burtt
- 4b. Leaf blades ovate at apex, denticulate at upper margin; red-villous herbs (Pingbian County in SE Yunnan) **4. *B. erythrotricha*** W. T. Wang
- 16. *Leptoboea*** Benth. in Benth. & Hook. f., Gen. Pl. 2: 1025 (1876); Clarke in A. & C. DC., Mon. Phan. 5(1): 164 (1883).
(SW & S Yunnan; Nepal, Sikkim, Bhutan, Assam, Burma)
L. multiflora (Clarke) Gamble

[There is one other species in NE India and probably another in Thailand. *Boeica ferruginea* Drake (see below) belongs in *Leptoboea*, as is shown by its alternate leaves. All small shrubs with characteristic "spongy" branches.]

17. *Boeica* Clarke, Comm. & Cyrt. Bengal. 118 pt. 85–87 (1874) & in A. & C. DC., Mon. Phan. 5(1): 134 (1883)

- 1a. Style thin, terete, inappendiculate (Sect. 1. *Boeica*) _____ 2
- 1b. Style with wing-like appendage (Sect. 2. *Boeicopsis* (H. W. Li) K. Y. Pan
(Maguan County in SE Yunnan) _____ 7. *B. yunnanensis* (H. W. Li) K. Y. Pan
- 2a. Plant villous; anthers longitudinally dehiscent or porous _____ 3
- 2b. Plant fulvous-lanate; anthers dehiscent by transverse slits _____ 5
- 3a. Perennial acaulescent herbs; leaves rosulate; corolla 1–1.3cm long, about 1cm in diam., blue-purple, 1–2 times longer than calyx; anther-thecae confluent, longitudinally dehiscent (Hongkong) _____ 3. *B. guileana* Burtt
- 3b. Caulescent herbs or subshrubs; leaves alternate, congested at the apex of stem; corolla smaller, 3–5mm long, 4–5mm in diam., white, pinkish or purplish, nearly as long as calyx or slightly shorter than it; anthers porous _____ 4
- 4a. Stolon wanting; stem 10–20cm high; leaves oblong, 4.5–15cm long, 3.5–5.5cm wide (SE Yunnan; N Burma, N Vietnam) _____ 1. *B. porosa* Clarke
- 4b. Stolon elongate, 10–30cm long; stem 0.5–2cm high; leaves wide-elliptic, 4.5–10cm long, 2.8–5.5cm wide (Mount Shiwanashan in S Guangxi; N Vietnam) _____ 2. *B. stolonifera* K. Y. Pan
- 5a. Leaves ovate-elliptic or narrow-elliptic, 7–20cm long, 3–11cm wide, crenate or obtuse-denticulate at margin, pubescent above _____ 6
- 5b. Leaves lanceolate-elliptic, 10–15cm long, 4.5–6.5cm wide, irregularly denticulate at margin, yellowish-lanate above when young, later glabrescent (Chayu County in SE Xizang; Bhutan, Assam) _____ 6. *B. fulva* Clarke
- 6a. Leaves ovate-elliptic, 10–20cm long, 3–11cm wide, crenate at margin, sparsely puberulous above, lateral nerves 10–13 at each side; peduncles, bracts and calyx villous, pedicels pubescent (Jinping County in SE Yunnan; N Vietnam)
4. *B. ferruginea* Drake
- 6b. Leaves narrow-elliptic, 5.5–11cm long, 2.5–5.2cm wide, obtuse-denticulate at margin, densely puberulous above, lateral nerves 18–20 at each side; peduncles, bracts and calyx puberulous, pedicels puberulous and glandular-puberulous (Yingjiang County in SW Yunnan) _____ 5. *B. multinervia* K. Y. Pan
[*B. ferruginea* Drake is more properly placed in *Leptoboea*.]

18. *Opithandra* Burtt in Baileya 4: 162 (1956) & in Notes RBG Edinb. 22: 302 (1958); Wang in Bull. Bot. Res. 7(2): 1–16 (1987).

9 spp., 8 in C and SE China and 1 in Japan.

- 1a. Anthers oblong, with straight slits _____ 2
- 1b. Anthers orbicular-ovate, coherent at apices, with arcuate slits _____ 5
- 2a. Corolla funnelform-tubular; staminodes present; leaf blade plane above _____ 3
- 2b. Corolla subhypocrateriform, with a cylindric tube; staminodes wanting; leaf blade strongly bullate above; stigma 1 (E Sichuan) _____ 4. *O. fargesii* (Franch.) Burtt
- 3a. Petioles and leaf blade lanate beneath; corolla upper lip slightly shorter than the lower lip; stamens included, free; stigmas 2 _____ 4
- 3b. Petioles and leaf blades pubescent; corolla upper lip about one third as long as the lower lip; stamens exserted; anthers coherent at apices; staminodes 3; stigma 1 (Zengcheng County in C Guangdong) _____ 3. *O. acaulis* (Merr.) Burtt
- 4a. Leaf blade densely lanate on the whole lower surface (Shiwanashan mountain in S Guangxi) _____ 1. *O. sinohenryi* (Chun) Burtt
- 4b. Leaf blade lanate only on the veins beneath (Lungnan County in S Jiangxi) 2. *O. sp.*
- 5a. Leaves denticulate _____ 6
- 5b. Leaves entire; stamens inserted below the middle part of corolla tube; ovary puberulous (Dinghushan Mountain in S Guangdong)
6. *O. dinghushanensis* W. T. Wang
- 6a. Petioles with hairs up to 5mm long, spreading, brown; leaf blade 11–19cm long; stamens inserted near corolla base; ovary glandular-puberulous; corolla 3.2–3.6cm long (E Guangdong, S Fujian) _____ 5. *O. dalzielii* (W. W. Smith) Burtt
- 6b. Petioles with hairs up to 2mm long; leaf blade up to 9.5cm long; stamens inserted near the middle part of corolla tube; pistil glabrous _____ 7
- 7a. Petioles with hairs spreading, brown; leaf blade 4–9.5cm long; corolla about 3.2cm long; staminodes 3 (Qianyang County in C Hunan)
7. *O. obtusidentata* W. T. Wang
- 7b. Petioles with hairs appressed, grey; leaf blade 1.5–3.5cm long; corolla 1–2cm long; staminodes 2 (Jianhe County in E Guizhou) _____ 8. *O. cinerea* W. T. Wang
- 19. *Schistolobos* W. T. Wang in Botanical Res. 1: 15 (1983).
Monotypic, endemic to Daxin County in SW Guangxi _____ 9. *S. pumilus* W. T. Wang
- 20. *Dayaoshania* W. T. Wang in Acta Phytotax. Sin. 21: 319 (1983).
Monotypic, endemic to Jinxiou County in E Guangxi _____ 10. *D. cotinifolia* W. T. Wang
- 21. *Didymostigma* W. T. Wang in Acta Phytotax. Sin. 22: 188, fig. 2 (1984).
Monotypic, endemic to Guangdong and S Fujian _____ 11. *D. obtusum* (Clarke) W. T. Wang
(*Chirita obtusa* Clarke)
- 22. *Pseudochirita* W. T. Wang in Botanical Res. 1: 21 (1983).
Monotypic, endemic to C & W Guangxi _____ 12. *P. guangxiensis* (S. Z. Huang) W. T. Wang
(*Chirita guangxiensis* S. Z. Huang)

23. *Allostigma* W. T. Wang in *Acta Phytotax. Sin.* 22(3) 185, fig. 1 (1984).
Monotypic, endemic to Daxin County in SW Guangxi — *A. guangxiense* W. T. Wang
24. *Metabriggsia* W. T. Wang in *Guizhaia* 3: 1 (1983).
2 spp., endemic to W Guangxi
- 1a. Leaves ovate, widest below the middle, obliquely rounded at base, not purple beneath, with lateral veins spreading out from midrib at an obtuse or right angle; staminodes 3 (Napo County in SW Guangxi) — 1. *M. ovalifolia* W. T. Wang
- 1b. Leaves elliptic or oblong, widest at the middle, widely cuneate or cuneate at base, purple beneath, with lateral veins spreading out from midrib at an angle of 45°; staminodes 2 (Nandan County in NW Guangxi)
 2. *M. purpureotincta* W. T. Wang
25. *Hemiboea* Clarke in Hook., Ic. Pl. 18: tab. 1798 (1888); Z. Y. Li in *Acta Phytotax. Sin.* 25: 81–92 & 220–230 (1987).
21 spp., in S China, N Vietnam and S Japan.
- 1a. Sepals free or only posterior ones connate (Sect. 1. *Subcapitatae* Clarke) — 2
 1b. Sepals connate (Sect. 2. *Hemiboea*) — 22
- 2a. Sepals glabrous — 3
 2b. Sepals glandular-puberulous outside and at margin — 17
- 3a. Involucre glabrous outside — 4
 3b. Involucre puberulous outside — 13
- 4a. Corolla glabrous outside — 5
 4b. Corolla sparsely glandular-puberulous outside — 7
- 5a. Leaves entire, chartaceous, glabrous, without sclereids; sepals 7–8mm long, 2mm wide (SE Yunnan) — 1. *H. integra* H. W. Li
 5b. Leaves repand-crenate, papery or herbaceous, puberulous above, with vermiciform sclereids around vascular bundles — 6
- 6a. Sepals 19–20mm long, 2.5mm wide; stem subterete, without brown spots (Dongxing County in S Guangxi) — 2. *H. longisepala* Z. Y. Li
 6b. Sepals 8–9mm long, 3–4mm wide; stem with 4 obtuse angles and sparse brown spots (Taiwan, Riu Kiu Archipelago) — 3. *H. bicornuta* (Hayata) Ohwi
- 7a. Leaves often with vermiciform sclereids; leaves and involucre herbaceous; pollen grains 20–30 x 16.4–24.7μm — 8
 7b. Leaves with sparse astrosclereids; leaves and involucre thickly succulent; pollen grains 35.3–38.8 x 23.5–28μm (Longzhou County in SW Guangxi)
 10. *H. lungzhouensis* Z. Y. Li
- 8a. Vermiform sclereids around leaf vascular bundles, tubercle-like when drying — 9
 8b. Vermiform sclereids dispersed in leaf mesophyll, bacilliform when drying — 11

KEYS TO THE GESNERIACEAE OF CHINA

- 9a. Sepals 4.5–8(–12)mm long; anthers 1.1–3.2mm long; pollen grains foveolate — 10
 9b. Sepals 15–18mm long; anthers 3.5–4mm long; pollen grains finely reticulate (Omei and Tianguan Counties in W Sichuan) — 6. *H. omeiensis* W. T. Wang
- 10a. Stems with 6–15 nodes; leaf lateral veins 6–14 at each side; peduncle 0.5–6.5cm long; cyme (1–)3–12-flowered; anther (2.5–)3–3.2mm long; staminodes 3 or 2 (Fujian, S Jiangxi, S Hunan, Guangdong, Guangxi, S Guizhou, S Sichuan) — 4. *H. cavaleriei* Lévl.
- 10b. Stem with 3–5 nodes; leaf lateral veins 4–6 at each side; peduncle 0.2–1.2cm long; cyme 1–3-flowered; anther 1.1–2.5cm long; staminodes 2 (Sichuan, W Hunan, Guizhou, Hunan, W Jiangxi) — 5. *H. gracilis* Franch.
- 11a. Sepals free; disc 1–1.2mm high — 12
 11b. Posterior sepals connate; disc 1.8mm high (SE Yunnan) — 9. *H. latisepala* Z. Y. Li
- 12a. Petioles not connate at base; sepals 5–9mm long (SE Yunnan, Guangxi, Guangdong, Zhejiang, Jiangxi, Hunan, Guizhou, Hubei, Sichuan, S Gansu, S Shaanxi) — 7. *H. subcapitata* Clarke
- 12b. Petioles connate at base; sepals 10–12mm long (Guangxi, N Guangdong, Fujian, Jiangxi, Zhejiang, S Jiangsu, S Anhui, Hubei, Hunan, Guizhou, Sichuan, S Gansu, S Shaanxi, S Hunan) — 8. *H. henryi* Clarke
- 13a. Stem glabrous; petioles slender — 14
 13b. Stem puberulous; petiole wide and flat — 15
- 14a. Stem with up to 12 nodes, much branched; leaves densely puberulous above, with lateral veins 7–11 at each side; petioles glabrous; pedicels puberulous (SE Yunnan) — 11. *H. pingbiensis* Z. Y. Li
 14b. Stem with 3–5 nodes, simple; leaves sparsely puberulous above, with lateral veins 4–6 at each side — 5. *H. gracilis* Franch.
- 15a. Petioles not connate at base; stolons usually many, 0.5–1.8mm thick (N Guangxi, E Guizhou, Hunan) — 12. *H. subacaulis* Hand.-Mazz.
 15b. Petioles connate at base; stolons often 1–3, 2.5–3.5mm thick — 16
- 16a. Flowers about 2.2cm long; leaves with ~~vermiciform~~^{surrounding vascular bundles} sclereids (Longzhou County in SW Guangxi) — 13. *H. parviflora* Z. Y. Li
 16b. Flowers 3.5–4cm long; leaves with vermiciform sclereids — 8. *H. henryi* Clarke
- 17a. Ovary and capsule glabrous — 18
 17b. Ovary and capsule sparsely glandular-puberulous — 21
- 18a. Petioles not winged, free at base; sepals 11–15mm long, 2.5–5mm wide — 19
 18b. Petioles winged, those of upper caudine leaves connate at base; sepals 7–9mm long, 1.2–2.2mm wide (N Guangdong, W and S Hunan, S Jiangxi)
 17. *H. strigosa* W. T. Wang

- 19a. Leaves sparsely puberulous above, glabrous or subglabrous beneath, petioles glabrous 20
 19b. Leaves densely puberulous on both surfaces, repand, petioles with spreading hairs; disc 1.2mm high (E Guizhou, W Hunan, SW Hubei)
 16. *H. mollifolia* W. T. Wang
- 20a. Leaves entire; disc 0.8mm high (Pingbian County in SE Yunnan)
 14. *H. glandulosa* Z. Y. Li
- 20b. Leaves dentate or crenate; disc 1.4mm high (Omei and Luoshan Counties in W Sichuan) 15. *H. fangii* Z. Y. Li
- 21a. Stems with 3–6 nodes, densely puberulous; leaves with 5–8 lateral veins at each side; corolla tube glabrous inside; anthers narrow-oblong, coherent at apices (W Guangxi, S Guizhou) 18. *H. flaccida* Z. Y. Li
- 21b. Stems with 10–15 nodes, sparsely villous in the upper part; leaves with 8–12 lateral veins at each side; corolla tube with a hairy ring inside; anthers suborbicular, coherent face to face (Longzhou County in SW Guangxi)
 19. *H. longgangensis* Z. Y. Li
- 22a. Sepals connate to the middle; corolla 3.8–4cm long, pink, exserted from involucle; style longer than ovary; capsule linear-lanceolate, 1.8–2.4cm long (SW Guizhou) 20. *H. gamosepala* Z. Y. Li
- 22b. Sepals connate above the middle; corolla 1.5–1.8cm long, greenish-white, included in involucle; style shorter than ovary, capsule long-elliptic-lanceolate, 1(–1.5)cm long (N Guangdong, Guangxi, Guizhou) 21. *H. follicularis* Clarke
26. *Hemboeopsis* W. T. Wang in Acta Bot. Yunnan. 6: 397 (1984).
 Monotypic, endemic to Hekou and Jinping in SE Yunnan
 H. longisepala (H. W. Li) W. T. Wang
 (*Lysionotus longisepalus* H. W. Li)
 [Now known to occur also in Laos]
27. *Petrocosmea* Oliv. in Hook., Ic. Pl. 18: t. 1716 (1887); Craib in Notes RBG Edinb. 11: 269–275 (1919); Wang in Acta Bot. Yunnan. 7: 49–68 (1985).
 27 spp., in S China, NE India, Burma, Thailand, Vietnam. 24 spp. in China.
- 1a. Anthers not constricted; calyx actinomorphic, 5-sect to base 2
 1b. Anthers constricted below apex, forming a short robust rostrum (Sect. 3)
 Deinanthera W. T. Wang 23
- 2a. Corolla upper lip as long as lower lip (Sect. 1. *Petrocosmea*) 3
 2b. Corolla upper lip half as long as lower lip (Sect. 2. *Anisochilus* Hemsl.) 8
- 3a. Stamens glabrous 4
 3b. Filaments and connectives puberulous (Mengzi County in SE Yunnan)
 6. *P. grandiflora* Hemsl.

- 4a. Calyx glabrous or subglabrous outside (Muli County in SW Sichuan)
 2. *P. oblata* Craib
- 4b. Calyx puberulous outside 5
- 5a. Leaf veins conspicuous beneath (NW Yunnan, SW Sichuan) 1. *P. nervosa* Craib
 5b. Leaf veins not conspicuous beneath 6
- 6a. Leaf blade up to 4cm long, 5cm wide, mostly oblate (Yungning County in NW Yunnan, Muli County in SW Sichuan) 3. *P. flaccida* Craib
 6b. Leaf up to 3cm long, 1.8–2.8cm wide, mostly orbicular-ovate 7
- 7a. Corolla glabrous inside; style appressed-puberulous (N Yunnan, Sichuan, W Hubei) 4. *P. sinensis* Oliv.
 7b. Corolla puberulous on the upper lip and below lower lip inside; style with spreading long hairs (Mienyang County in S Shaanxi) 5. *P. qinlingensis* W. T. Wang
- 8a. Upper lip of corolla 2-fid to the middle or nearly to base (Sect. 1. *Barbatae* W. T. Wang) 9
 8b. Upper lip of corolla indistinctly 2-lobed or emarginate or nearly undivided (Sect. 2. *Iodiooides* W. T. Wang) 20
- 9a. Leaves not peltate at base 10
 9b. Leaves peltate at base (Jinping County in SE Yunnan) 17. *P. caerulea* W. T. Wang
- 10a. Filaments glabrous 11
 10b. Filaments puberulous 16
- 11a. Corolla glabrous inside 12
 11b. Corolla puberulous inside 13
- 12a. Leaf blade up to 4cm long, 3cm wide, with 4 lateral veins at each side; calyx 5mm long (Jingdong County in C Yunnan) 10. *P. rosettifolia* H. W. Li
- 12b. Leaf blades up to 0.6cm long, 0.9cm wide, with 2 lateral veins at each side; calyx up to 2.9mm long (Wangmo County in S Guizhou)
 16. *P. confluens* W. T. Wang
- 13a. Style with short hairs, about 0.2mm long; leaf blade up to 2.8cm long, widely cuneate at base (N Yunnan, SW Sichuan) 9. *P. forrestii* Craib
 13b. Style with hairs about 1mm long 14
- 14a. Leaves obtuse-denticulate, petioles up to 3.7–6cm long 15
 14b. Leaves repand, petioles up to 2cm long; anthers 0.6mm long, longer than wide (Suijiang County in NE Yunnan) 12. *P. longipedicellata* W. T. Wang
- 15a. Leaf blade up to 2.8(–5)cm long; anthers 1–1.5mm long, longer than wide (C Yunnan) 11. *P. barbata* Craib
 15b. Leaf blade up to 1.5cm long; anthers up to 0.6mm long, wider than long (Guizhou) 13. *P. cavaleriei* Lévl.

- 16a. Corolla puberulous inside (NE Yunnan, Ebian County in SW Sichuan)
8a. *P. mairei* Lévl. var. *mairei* 17
- 16b. Corolla glabrous inside _____ 17
- 17a. Upper lip corolla 2-fid nearly to base; anthers 3.2mm long, more than twice as long as filaments; leaf blade up to 2cm long (C Yunnan) ____ 7. *P. duclouxii* Craib
- 17b. Upper lip corolla 2-fid nearly to the middle; anthers up to 2.5mm long ____ 18
- 18a. Leaves denticulate, up to 1.5cm long; anthers 0.8mm long (Huidong County in SW Sichuan) ____ 8b. *P. mairei* var. *intraglabra* W. T. Wang
- 18b. Leaves subentire or denticulate only at upper margin; anthers slightly shorter or longer than filaments _____ 19
- 19a. Leaf blades up to 4cm long, 3cm wide, sparsely denticulate at upper margins; calyx 3–5mm long; corolla 1.3–1.5cm long; anthers 2.5mm long, slightly shorter than filaments; staminodes present (Jingdong County in C Yunnan)
14. *P. begoniifolia* H. W. Li
- 19b. Leaf blades up to 1.7cm long, 1.2cm wide, entire; calyx 2mm long; corolla 9mm long; anthers 1.8mm long, longer than filaments; staminodes wanting (Yuozi County in SW Sichuan) _____ 15. *P. sichuanensis* W. T. Wang
- 20a. Leaf blade cordate or rounded at base, denticulate or crenate; lobes of corolla upper lip 0.4–0.6mm long _____ 21
- 20b. Leaves cuneate or widely cuneate at base, entire or repand-crenate _____ 22
- 21a. Leaf blades up to 3.6–4.8cm long, 3–4.5cm wide; calyx 5–6mm long; filaments puberulous (SE Yunnan, SW Guangxi) _____ 18. *P. iodoides* Hemsl.
- 21b. Leaf blades up to 2cm long, 1.5cm wide; calyx 2.5–4mm long (S Guizhou, SE Yunnan) _____ 19. *P. martinii* Lévl.
- 22a. Peduncle, petioles and lower surface of leaf blade yellow-velutinous; lobes of corolla upper lip about 0.5mm long (Pingbian and Malipo Counties in SE Yunnan) _____ 20. *P. sericea* H. W. Li
- 22b. Peduncle, petioles and leaf margin villous; lobes of corolla upper lip up to 0.2mm long (SE Yunnan) _____ 21. *P. minor* Hemsl.
- 23a. Calyx actinomorphic, 5-sect to base, usually entire; corolla upper lip nearly as long as lower lip (Subsect. 1. *Menglienenses* W. T. Wang) _____ 24
- 23b. Calyx zygomorphic, 3-fid to or near base, with the posterior lobe larger, 3-lobed, often denticulate; corolla upper lip slightly shorter than lower lip (Subsect. 2. *Kerriana* W. T. Wang) (SW Yunnan; NE Burma, N Thailand)
24. *P. kerrii* Craib
- 24a. Leaf blades up to 8.5cm long, denticulate; bracts subulate or ovate-lanceolate, 3–4mm long; corolla black at mouth, not purple at base, puberulous outside, furfuraceous inside (Menglien County in S Yunnan)
22. *P. menglienensis* H. W. Li

- 24b. Leaf blade up to 17.5cm long, dentate; bracts ovate, narrow-ovate or lanceolate, 5–12mm long; corolla purple at posterior part of base, glabrous outside, densely glandular and puberulous below lower lip inside (Zhenkang County in SW Yunnan) _____ 23. *P. grandifolia* W. T. Wang
28. *Metapetrocosmea* W. T. Wang in Bull. Bot. Research 1(4): 38 (1981); trans. & reimp. in Contr. N.Y.B.G. 16: 58, 82 (1986).
 Monotypic, endemic to Hainan Island _____ **M. peltata** (Merr. & Chun) W. T. Wang
(Petrocosmea peltata Merr. & Chun)
 [Differs from *Petrocosmea* in the corolla-tube being longer than the lobes and in the villous anthers with widely divaricate thecae.]
29. *Deinocheilos* W. T. Wang in Guihaia 6: 1–5, figs 1 & 2 (1986).
 2 spp., endemic to C & S China.
 1a. Leaf blades up to 4cm long, coriaceous, with simple teeth at margin and 4 lateral veins at each side; calyx segments entire; upper lip of corolla slightly erose; anthers coherent at apices; staminodes 3 (Wuxi County in W Sichuan)
1. *D. sichuanense* W. T. Wang (Fig. 3)
- 1b. Leaf blades up to 8cm long, herbaceous or thin-papery, duplicate-dentate and with 6–8 lateral veins at each side; calyx segments denticulate; upper lip of corolla entire; anthers free from each other; staminodes wanting (Xunwu County in S Jiangxi) _____ 2. *D. jiangxiense* W. T. Wang (Fig. 2)
- [This genus has a superficial resemblance to *Tremacron*, but, amongst other things, differs in having only two fertile stamens.]
30. *Lagarosolen* W. T. Wang in Acta Bot. Yunnan. 6(1): 11, fig. 1 (1984).
 Monotypic, endemic to Xichou County in SE Yunnan _____ **L. hispidus** W. T. Wang
31. *Primulina* Hance in J. Bot. 21: 169 (1883).
 Monotypic, endemic to Lian-xian and Yangshan Counties in N Guangdong
P. tabacum Hance
 [Illustrated in Botanical Magazine tab. 7117 (1890). The glandular leaves were said to give off a strong smell of tobacco.]
32. *Chirita* D. Don in Edinb. Phil. J. 7: 83 (1822); D. Wood in Notes RBG Edinb. 31: 129–205 (1974); W. T. Wang in Bull. Bot. Research, 5(2): 71–97 & 5(3): 37–86 (1985).
 About 130 spp., in Nepal, Bhutan, India, Burma, S China, Malesia, Indonesia. About 80 spp. in China.
 1a. Peduncle not adnate to petiole; anthers coherent face to face; perennial herbs, with rhizome, rarely annuals _____ 2
 1b. Peduncle adnate to petiole; anthers coherent by the projections of connective apices; annuals; corolla white, 1.2–1.9cm long (S & SW Yunnan, W &

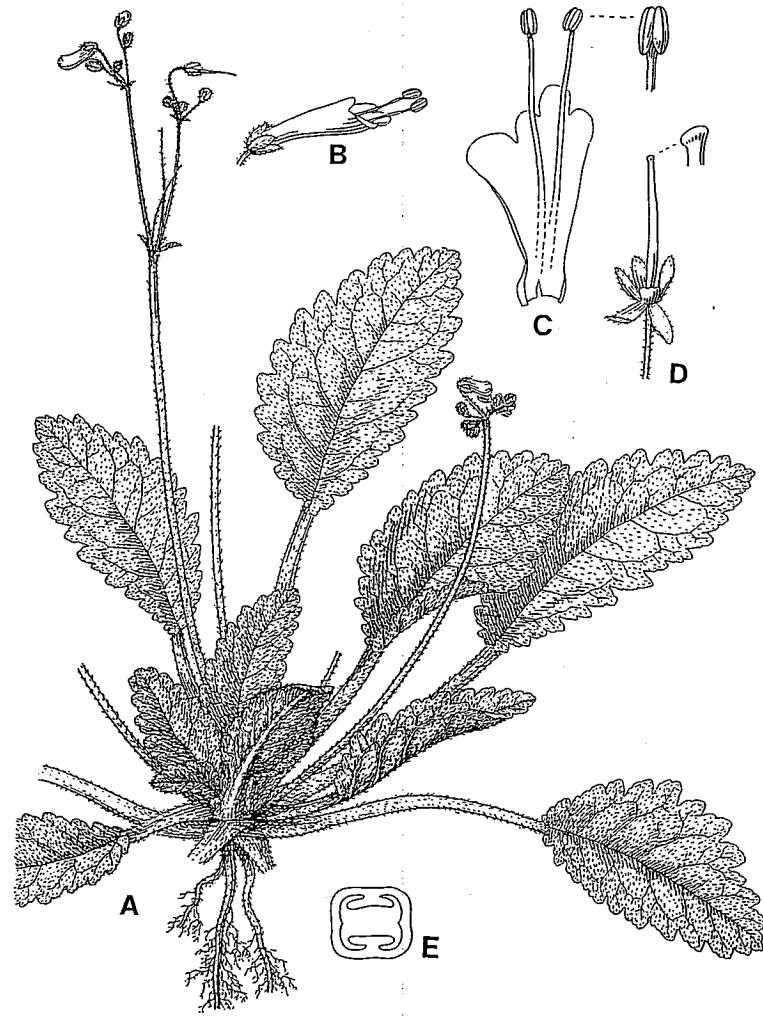


FIG. 2. *Deinocheilos jiangxiense* W T Wang. A, habit; B, flower; C, corolla, opened out; D, calyx, disc and gynoecium; E, diagram of cross-section of ovary.

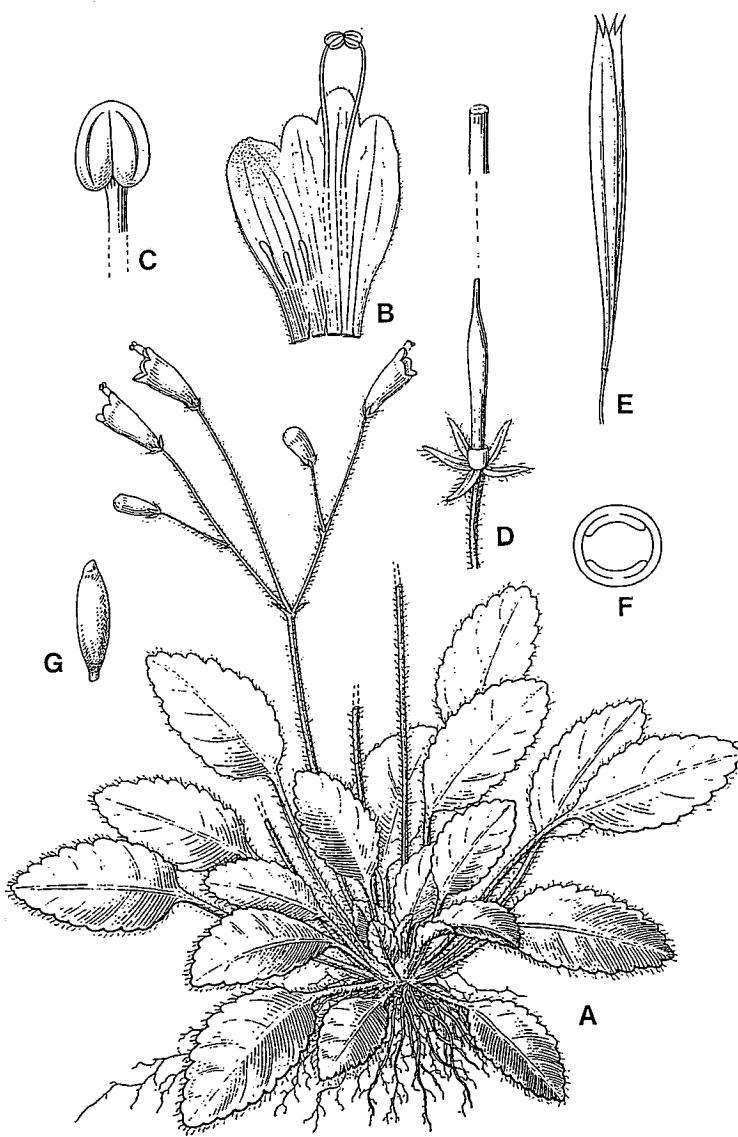


FIG. 3. *Deinocheilos sichuanense* W T Wang. A, habit; B, corolla opened out; C, anther; D, calyx, disc and gynoecium; E, fruit; F, cross-section of ovary; G, seed.

S Guangxi; N Vietnam, Laos, Thailand, Burma, Malay peninsula)

80. *C. hamosa* R. Br.

- 2a. Calyx 5-sect to base, without a tube _____ 3
- 2b. Calyx 5-fid to the middle or 5-lobed, with a distinct tube _____ 66
- 3a. Leaves simple, pinnatifid, or pinnate; perennial, acaulescent herbs _____ 4
- 3b. Leaves simple, undivided _____ 6
- 4a. Leaves simple, pinnatilobed _____ 5
- 4b. Leaves pinnate; ovary bilocular, with the anterior cell sterile (Rongshui County in C Guangxi) _____ 53. *C. pinnata* W. T. Wang (Fig. 4)
- 5a. Leaves lobed at lower margin; calyx segments 8–13 mm long, entire; ovary 4–8 mm long, unilocular, with 2 fertile parietal placentae; capsule 1–1.3 cm long (N Guangdong, SE Hunan, NE Jiangxi) _____ 38. *C. juliae* Hance
- 5b. Leaves pinnatilobed along whole margin; sepals 4–7 mm long, denticulate; ovary about 11 mm long, bilocular, with the anterior cell sterile; capsule 3–4 cm long (N Guangxi, N Guangdong, SE Guizhou, S Hunan, Jiangxi, W Fujian, S & W Zhejiang) _____ 52. *C. pinnatifida* (H.-M.) Burtt
- 6a. Leaves glabrous, spinulose-denticulate, linear, 8–12 mm wide, coriaceous, usually fasciculate on apex of rhizome (SW Guangxi) _____ 7
- 6b. Leaves more or less pubescent, not spinulose-denticulate, ovate, elliptic or oblong, rarely linear, herbaceous or papery, rarely coriaceous _____ 8
- 7a. Bracts narrow-triangular, 2–2.5 mm long; pedicels 1.5–6 mm long; sepals triangular, 1.5 mm long; corolla 1.3 cm long; ovary glabrous (Fusuei County in SW Guangxi) _____ 60. *C. spinulosa* D. Fang & W. T. Wang (Fig. 5A)
- 7b. Bracts narrow-linear, 9–13 mm long; pedicels 2–2.5 cm long; sepals linear, 4–5 mm long; corolla 2 cm long; ovary glandular-puberulous (Fusuei County in SW Guangxi) _____ 61. *C. ophiopogoides* D. Fang & W. T. Wang (Fig. 5B–D)
- 8a. Acaulescent herbs _____ 9
- 8b. Caulescent herbs; leaves opposite or alternate _____ 64
- 9a. Calyx segments denticulate _____ 10
- 9b. Calyx segments entire _____ 18
- 10a. Leaves coriaceous, undulate or entire _____ 11
- 10b. Leaves herbaceous or papery, dentate _____ 12
- 11a. Leaf blade up to 10 cm long, with hairs up to 2 mm long and with veins white above; cyme to twice branched, 7–11-flowered; bracts 1.3–2 cm long; corolla about 2.7 cm long (Libo County in SE Guizhou) _____ 42. *C. liboensis* W. T. Wang & D. Y. Chen

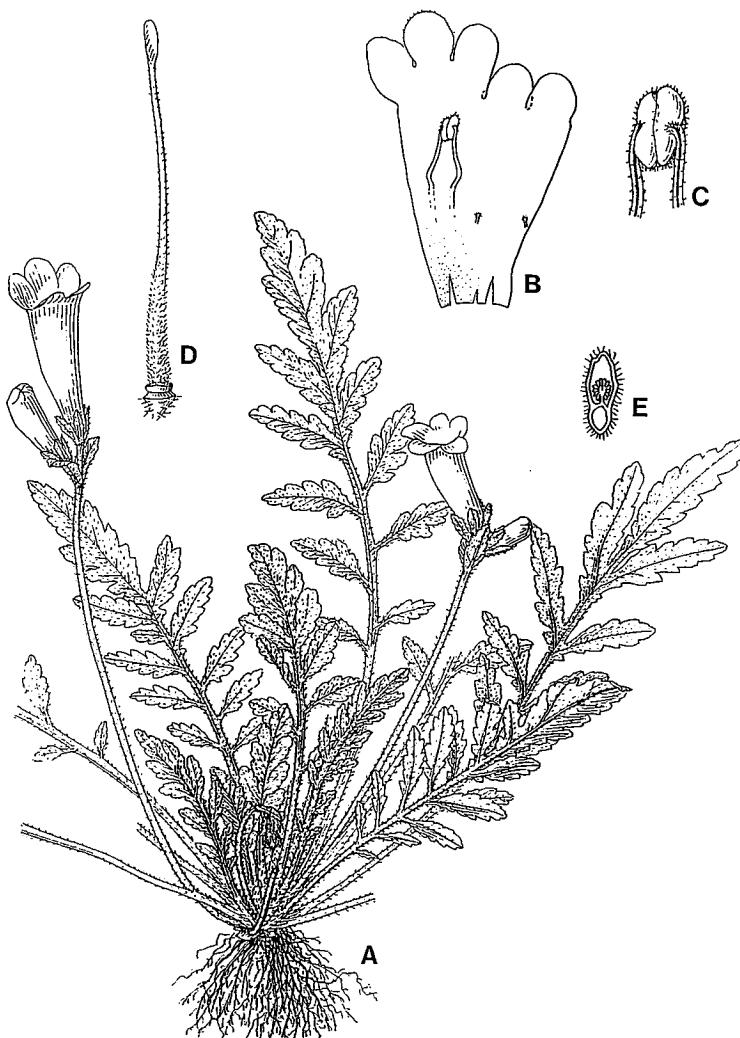


FIG. 4. *Chirita pinnata* W. T. Wang. A, habit; B, corolla opened out; C, anthers; D, disc and gynoecium; E, cross-section of ovary.

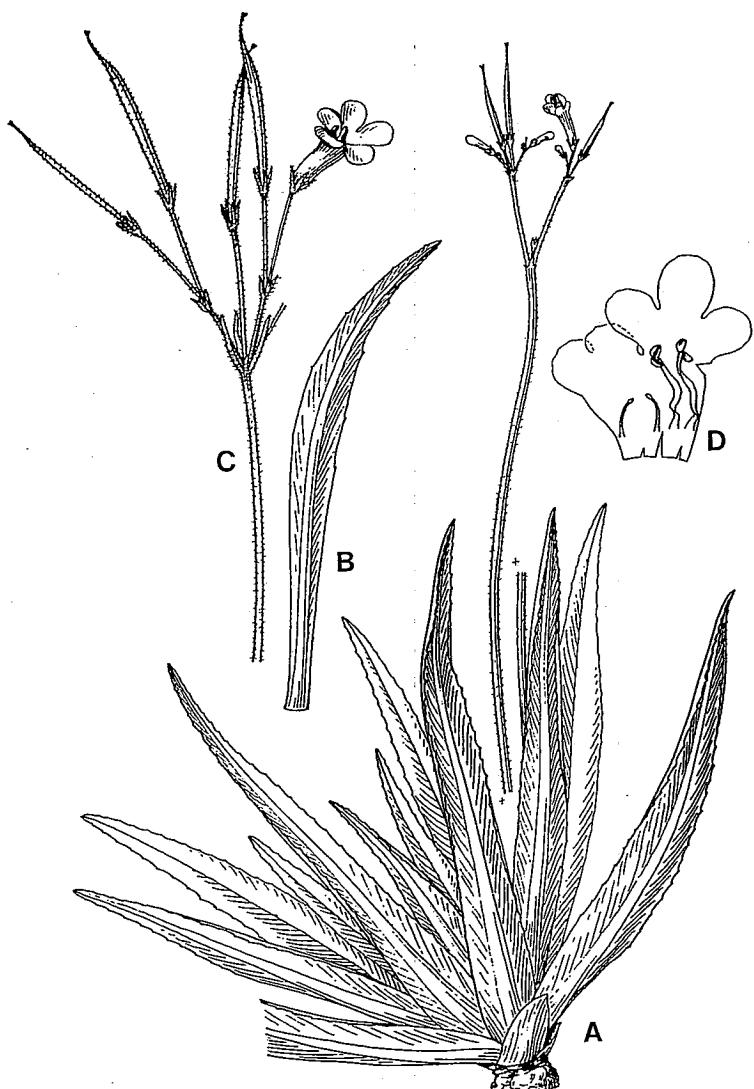


FIG. 5. *Chirita spinulosa* D Fang & W T Wang. A, habit. *Chirita ophiopogoides* D Fang & W T Wang. B, leaf; C, inflorescence; D, corolla opened out.

KEYS TO THE GESNERIACEAE OF CHINA

11b. Leaf blade up to 7cm long, with hairs up to 0.7mm long and with veins green above; cyme once-branched, 1–3-flowered; bracts up to 6mm long; corolla 4.5–5cm long (Guilin City in N Guangxi) _____ 44. *C. subrhomboidea* W. T. Wang

12a. Corolla tube funnel-form-tubular, 8–14mm diam. at mouth; filaments 1.6–5.5mm long, geniculate; leaf blade up to 8–15cm long _____ 13

12b. Corolla tube tubular or cylindric, 2–5mm diam. at mouth; filaments 1.6–5.5mm long, not geniculate; leaf blades up to 2.2–5.4cm long _____ 16

13a. Calyx segments 4–5mm long; corolla up to 3.6cm long _____ 14

13b. Calyx segments 7–17mm long; corolla (3.5–)4.2–8mm long _____ 15

14a. Leaf blade 6.5–13cm long; cyme twice branched, 6–12-flowered; bracts broadly ovate or suborbicular, 9–11mm long; staminodes with empty anther (Fanjingshan Mountain at NE Guizhou) _____ 20. *C. obtusidentata* W. T. Wang

14b. Leaf blade 2.7–4cm long; cyme once branched, 1–3-flowered; bracts narrow-ovate or oblong, 4–6mm long; staminodes without empty anther (Laifeng County in SW Hubei) _____ 21. *C. laifengensis* W. T. Wang) *is now a syn. of 20.*
C. obtusidentata

15a. Pedicel 0.5–3.8cm long; flowers lax; calyx segments lanceolate-linear, linear or oblong, 7–11mm long (Guangxi, W & N Guangdong, SE Guizhou, Hunan, Jiangxi, C Fujian) _____ 26. *C. fimbrisepala* H.-M.

15b. Pedicel up to 0.5mm long; flowers dense; calyx segments linear-lanceolate, 12–17mm long (NE Guangxi) _____ 27. *C. verecunda* (Chun) W. T. Wang

16a. Cyme with 1 bract; corolla about 1.2cm long; stigma undivided (NE Yunnan) _____ 58. *C. speluncae* (H.-M.) Wood

16b. Cyme with 2 opposite bracts; corolla 2.2–3.4cm long; stigma 2-lobed or 2-parted _____ 17

17a. Corolla up to 3.4cm long, glabrous inside; filaments glandular-puberulous; stigma 2-lobed (S Guizhou) _____ 55. *C. vestita* Wood

17b. Corolla about 2.2cm long, puberulous at the upper part inside; stamens glabrous; stigma 2-parted (Qingzhen County in S Guizhou) _____ 56. *C. secundiflora* (Chun) W. T. Wang

18a. Leaves elongate, narrow-oblong or linear, rarely oblong (*C. glabrescens*) _____ 19

18b. Leaves ovate, elliptic or oblong, rarely narrowly ovate _____ 22

19a. Leaves puberulous only near margin above, papery, narrowly oblong or oblong; petiole up to 5cm long (Libo County in SE Guizhou) _____ 43. *C. glabrescens* W. T. Wang

19b. Leaves densely puberulous on the whole upper surface _____ 20

20a. Leaves petiolate, narrow-oblong, up to 3cm wide; cyme 2-flowered; filaments arcuate (Yunfu County in W Guangdong) _____ 48. *C. bicolor* W. T. Wang

- 20b. Leaves sessile, linear or oblong-linear; cyme 4–12-flowered; filaments geniculate 21
- 21a. Rhizome with internodes 0.4–2cm long at apex; leaves oblong-linear 1.5–2.9cm wide, papery; bracts 1.2–2cm long, 3–6mm wide, calyx segments narrow-linear, 8mm long; corolla about 3.4cm long, glabrous outside; staminodes 3, glabrous (Longgang County in SW Guangxi) 49. *C. longgangensis* W. T. Wang
- 21b. Rhizome with internodes very short at apex; leaves linear, 4–8mm wide, coriaceous; bracts 4–6mm long, 1.6–2.1mm wide; calyx segments narrowly lanceolate, 3.2–4mm long; corolla 2.4cm long, puberulous outside; staminodes 2, pilose (S Guangxi) 50. *C. linearifolia* W. T. Wang
- 22a. Bracts 3, verticillate (Fengshan County in C Guangxi) 25. *C. tribracteata* W. T. Wang
- 22b. Bracts 2 or 1 23
- 23a. Bract 1 24
- 23b. Bracts 2, opposite 25
- 24a. Leaf blades thin, herbaceous; bracts subulate, 1.2mm long; stigma undivided (Donglan County in N Guangxi) 6. *C. tenuifolia* W. T. Wang
- 24b. Leaf blades papery; bracts narrowly ovate, 15–20mm long, amplexicaul at base; stigma 2-lobed (S Guangxi) 31. *C. spadiciformis* W. T. Wang
- 25a. Leaves coriaceous 26
- 25b. Leaf blades herbaceous or papery 31
- 26a. Leaves crenate (Duan and Yishan Counties in C Guangxi) 40. *C. sclerophylla* W. T. Wang
- 26b. Leaves entire 27
- 27a. Leaf blade up to 2–3cm long and wide, elliptic or suborbicular, rounded both at apex and base; cyme 1–2-flowered; stigma 2-lobed (Guixian County in Guangxi) 46. *C. parvifolia* W. T. Wang
- 27b. Leaf blade up to 4–13cm long, ovate or oblong, obtuse or acutish at apex, cuneate at base; cyme 2–5-flowered 28.
- 28a. Leaf blade up to 4cm long; bracts 1.6–2mm broad; stigma undivided 29
- 28b. Leaf blade up to 11–13cm long; bracts 5–12mm wide; stigma 2-lobed 30
- 29a. Peduncle and bracts with dark-purple hairs; calyx segments lanceolate, 5mm long, 1.5–2mm wide; stigma ligulate linear, 6mm long (Guilin County in N Guangxi) 4. *C. atropurpurea* W. T. Wang
- 29b. Peduncle and bracts with purple hairs; calyx segments narrowly linear, 6.5–7mm long, 1–1.2mm wide; stigma orbicular-ovate, about 0.5mm long (Hechi County in NW Guangxi) 3. *C. brachystigma* W. T. Wang

- 30a. Leaves not maculate beneath; calyx segments 11mm long, subulate-acuminate at apex (Tiandong County in SW Guangxi) 18. *C. pseudoeburnea* D. Fang & W. T. Wang
- 30b. Leaves densely purple-maculate beneath; calyx segments 5.5mm long, attenuate at apex (Lungzhou County in SW Guangxi) 19. *C. minutimaculata* D. Fang & W. T. Wang
- 31a. Sucker present; peduncle shorter than petioles; ovary with axile placenta (N Guangdong) 24. *C. depressa* Hook. f.
- 31b. Sucker wanting; peduncle longer than petioles; ovary with 2 parietal placentae, if with axile placenta, then the anterior cell sterile 32
- 32a. Bracts ovate, elliptic or suborbicular, often larger, up to (0.8–)1.6–2.8cm wide 33
- 32b. Bracts linear, narrow-lanceolate or narrow-triangular, up to 6mm wide 42
- 33a. Calyx segments ovate, 4–5mm long, obtuse or rounded at apex, ovary 2-celled, with the anterior cell sterile (W & N Guangdong, Hongkong) 51. *C. sinensis* Lindl.
- 33b. Calyx segments narrow-lanceolate, narrow-triangular or triangular, acute at apex; ovary 1-celled, with 2 parietal placentae 34
- 34a. Leaves entire 35
- 34b. Leaves dentate 36
- 35a. Leaves narrowly ovate or oblong, acutish at apex (C & N Guangxi, N Guangdong, S & W Hunan, Guizhou, S & E Sichuan, W Hubei) 14. *C. eburnea* Hance
- 35b. Leaves broadly ovate or suborbicular, obtuse or rounded at apex (N Guangdong) 22. *C. polypephala* (Chun) W. T. Wang
- 36a. Stigma ligulate, undivided (SE Sichuan, SW Hubei) 2. *C. subulatisepala* W. T. Wang
- 36b. Stigma 2-lobed 37
- 37a. Leaf blade up to 2.5cm long; bracts up to 5mm wide, entire; corolla 2.7cm long (N Guangdong) 15. *C. lienxienensis* W. T. Wang
- 37b. Leaf blade up to 10–18cm long; bracts up to 2.2–2.8cm wide, denticulate 38
- 38a. Filaments linear, nearly equally wide through whole length, slightly arcuate 39
- 38b. Filaments widest below the middle, narrowed towards both ends, geniculate 40
- 39a. Leaves multi-denticulate at margin, with 5–6 lateral veins on each side; cyme 2–8-flowered; bracts about 0.5cm long, 0.3cm wide; corolla 2.2–2.7cm long, anthers glabrous (Liannan County in N Guangdong) 12. *C. orthandra* W. T. Wang
- 39b. Leaves with few crenations at margin, with 3–4 lateral veins on each side; cyme 1–4-flowered; bracts 0.9–2.1cm long, 0.5–1.2cm wide; corolla 4cm long; anthers pilose (SE Sichuan) 13. *C. sichuanensis* W. T. Wang

- 40a. Bracts long-elliptic, 0.8–0.9cm long, 0.3cm wide, entire (Lungzhou County in SW Guangxi) 23. *C. leiophylla* W. T. Wang
 40b. Bracts ovate or broadly elliptic, 1–3.8cm long, 0.9–2.8cm wide, denticulate 41
- 41a. Leaves dentate; corolla 4.8cm long; staminodes 3 (Lungzhou County in SW Guangxi) 17. *C. lungzhouensis* W. T. Wang
 41b. Leaves repand-crenate; corolla 3–3.8cm long; staminodes 2 (NW Guangxi, S Guizhou) 16. *C. lunglinensis* W. T. Wang
- 42a. Leaves cordate at base 43
 42b. Leaves cuneate or wide cuneate, rarely rounded at base 45
- 43a. Leaf blade orbicular-ovate or orbicular-reniform, rounded at apex, entire, up to 5cm long; corolla up to 2.6cm long (N Guangdong) 45. *C. rotundifolia* (Hemsl.) Wood
 43b. Leaf blade cordate or broadly elliptic, acute at apex, dentate 44
- 44a. Leaf blade broadly elliptic, up to 15.5cm long, 14cm wide; corolla up to 2.8cm long; disc glabrous; stigma undivided (Lungzhou County in SW Guangxi) 5. *C. brassicoides* W. T. Wang
 44b. Leaf blades cordate, up to 6.8cm long and wide; corolla 4–4.5cm long; disc puberulous; stigma 2-lobed (Yangshuo County in NE Guangxi) 47. *C. cordifolia* W. T. Wang
- 45a. Leaf blade up to 4.7cm long 46
 45b. Leaf blade more than 5cm long; corolla funnelliform-tubular, rarely tubular or campanulate 48
- 46a. Hairs of upper leaf surface 6–8mm long; corolla 3cm long, with the tube funnelliform-tubular; filaments geniculate, anthers hairy (Zhaoging County in S Guangdong) 29. *C. villosissima* W. T. Wang
 46b. Hairs of upper leaf surface 0.6–3.5mm long; corolla up to 2.8cm long, with the tube tubular or cylindric 47
- 47a. Petiole 1.2–3.8cm long; peduncle 3–5cm long; filaments 13mm long, slightly geniculate; anthers hairy; stigma emarginate (Kaixian County in E Sichuan) 54. *C. fangii* W. T. Wang
 47b. Petiole 0.3–0.9cm long; peduncle 0.6–1.4cm long; filaments about 5.5mm long, not geniculate; anthers glabrous; stigma 2-parted (NW Hunan, SE Sichuan, W Hubei) 57. *C. tenuituba* W. T. Wang (*Deltoscheilos tenuitubum* W. T. Wang; *Chirita shenlungjiaensis* W. T. Wang)
- 48a. Leaves about 4 pairs, with petioles broad and short, up to 10mm long (Hengyang City in E Hunan) 39. *C. cruciformis* (Chun) W. T. Wang
 48b. Leaves distinctly petiolate (petiole up to (2)–2.5–10cm long) 49
- 49a. Rhizome with internodes 1–2.2cm long near apex 50

- 49b. Rhizome with internodes near apex very short 51
- 50a. Corolla blue-purple, with a yellow spot below upper lip; stigma undivided (? Guangxi) 9. *C. flavimaculata* W. T. Wang
 50b. Corolla purplish or white, with a purple spot below upper lip; stigma 2-lobed (Hainan Island) 32. *C. heterotricha* Merr.
- 51a. Corolla up to 2.1–2.2cm long 52
 51b. Corolla up to (3.3)–3.5–6cm long; filaments geniculate 55
- 52a. Filaments narrow-linear, equally wide for whole length, not geniculate; leaves entire; stigma 2-lobed (Pingluo County in Guangxi) 11. *C. medica* W. T. Wang
 52b. Filaments widest below the middle, attenuate towards both ends, more or less geniculate; leaves dentate; stigma undivided 53
- 53a. Leaves with many crenulations; stigma trapeziform (Guangxi) 10. *C. floribunda* W. T. Wang
 53b. Leaves remotely dentate; stigma linear or oblong 54
- 54a. Leaves 9–20cm long, broadly cuneate at one side and cuneate at the other side at base; corolla pubescent below upper lip inside; stigma ligulate-linear, 2.2mm long (Anlong County in SW Guizhou) 7. *C. liguliformis* W. T. Wang
 54b. Leaves up to 6–9.6cm long, obliquely wide-cuneate at base; corolla glabrous inside; stigma oblong, 1.5mm long (Lingyun County in NW Guangxi) 8. *C. laxiflora* W. T. Wang
- 55a. Corolla tube subcampanulate; stigma undivided (S Guangdong, S Guangxi; N Vietnam) 1. *C. swinglei* (Merr.) W. T. Wang
 55b. Corolla tube funnelliform-tubular or subtubular; stigma 2-lobed 56
- 56a. Capsule linear, 1–1.3cm long, as long as or slightly longer than the fruiting calyx; corolla tube subtubular (N Guangdong, SE Hunan, NE Jiangxi) 38. *C. juliae* Hance
 56b. Capsule narrow-linear, exceeding 1.8cm long, at least twice as long as the fruiting calyx 57
- 57a. Leaves with hairs on the upper surface all similar 58
 57b. Leaves with hairs on the upper surface of two kinds (short and long) 61
- 58a. Leaves entire; cyme 2–3 times branched, about 10-flowered (Malipo County in SE Yunnan) 35. *C. carnosifolia* H. W. Li
 58b. Leaves crenate or dentate; cyme 1–6-flowered 59
- 59a. Leaves sparsely pubescent above; bracts 10–13mm long; corolla white or tinged with pink 60
 59b. Hairs of the upper leaf surface dense, covering the whole upper surface, 0.2–0.5mm long; bracts 2–4mm long; corolla purple (NE & E Guangxi) 30. *C. guilinensis* W. T. Wang

- 60a. Leaf blade up to 12.5cm long, 8cm wide, with hairs 0.5–1mm long above and 3–4 lateral veins at each side; calyx segments 4–6mm long; corolla without purple spot (Dayong County in N Hunan) 36. *C. roseoalba* W. T. Wang
- 60b. Leaf blade up to 24cm long, 16cm wide, with hairs 1–2.2mm long above and 6 lateral veins at each side; calyx segments 10–12mm long; corolla with a purple spot below upper lip (? Guangxi) 37. *C. pteropoda* W. T. Wang
- 61a. Leaves with sparse hairs above, the shorter ones 0.15–0.25mm and the longer ones 0.8–1mm long; leaf blade broadly ovate; corolla 3.2cm long (Libo County in SE Guizhou) 41. *C. brachytricha* W. T. Wang & D. Y. Chen
- 61b. Leaves with dense hairs above, the shorter ones 0.8–0.9mm and the longer ones 2.5–4mm long 62
- 62a. Leaves repand-crenate; calyx segments 3.5–5mm long; corolla 2.3–3.3cm long; anthers glabrous (N Guangdong, W Guangxi) 33. *C. fordii* (Hemsl.) Wood
- 62b. Leaves dentate or denticulate; calyx segments 7–9mm long; corolla 3.5–5cm long; anthers pilose 63
- 63a. Leaves suborbicular, rounded at apex, dentate; corolla tube funnelform-tubular, 1.4–1.8cm diam. at mouth (Lingling County in S Hunan)
28. *C. linglingensis* W. T. Wang
- 63b. Leaves elliptic or ovate, acute or shortly acuminate at apex, denticulate; corolla tube tubular, about 0.8cm diam. at mouth (NW Hunan, NE Guizhou, E Sichuan) 34. *C. longistyla* W. T. Wang
- 64a. Leaves opposite 65
- 64b. Leaves alternate; rhizome terete, elongate, with many scars spirally arranged (S Guangxi; Vietnam) 64. *C. minutihamata* Wood
- 65a. Perennial herbs; leaves entire or repand; corolla white; filaments pilose; stigma 2-lobed (NE Yunnan, SW Sichuan) 62. *C. tibetica* (Franch.) Burtt
- 65b. Annuals; leaves denticulate or dentate; corolla purple; stamens glabrous; stigma 2-parted (NW Yunnan, SW Sichuan) 63. *C. forrestii* Anthony
- 66a. Acaulescent herbs; leaves fasciculate at tip of rhizome 67
- 66b. Caulescent herbs 73
- 67a. Leaves oblong-lanceolate; calyx about 15mm long; corolla 1.2–1.4cm long; stigma about 1mm wide (SW Guangxi) 59. *C. hedyotidea* (Chun) W. T. Wang
- 67b. Leaves ovate, elliptic or suborbicular; calyx 10–28mm long; corolla 4–6cm long; stigma 4–6mm wide 68
- 68a. Leaves with 4–5 lateral veins on each side, often cordate at base 69
- 68b. Leaves with 6–11 lateral veins on each side 71
- 69a. Hairs of upper leaf-surface up to 1.2mm long; ovary glandular-puberulous (Sangzhi County in NW Hunan) 66. *C. monantha* W. T. Wang

KEYS TO THE GESNERIACEAE OF CHINA

- 69b. Hairs of upper leaf-surface up to 3–6.5mm long 70
- 70a. Hairs of upper leaf-surface 1–3mm long; calyx 2–3cm long; stamens pilose; style glandular-pilose (Hefeng County in SW Hubei)
65. *C. briggsioides* W. T. Wang
- 70b. Hairs of upper leaf surface up to 3–6.5mm long; calyx 1–1.7cm long; stamens and pistil glabrous (C & NW Yunnan) 67. *C. dielsii* (Borza) Burtt
- 71a. Leaves cuneate or one side and broadly cuneate or rounded on other side at base; with 7–11 lateral veins on each side; calyx lobes hollow and horn-like in the upper part (S Guangxi) 69. *C. ceratoscyphus* Burtt
- 71b. Leaves obliquely cordate at base, with 6–9 lateral veins on each side; calyx lobes subulate in the upper part, not hollow 72
- 72a. Leaf blade cordate, lower surface and petiole yellowish-pubescent, with 9 lateral veins at each side; calyx 5-fid to about $\frac{3}{5}$ of its length; filaments pilose; anthers glabrous (Jinping County in SE Yunnan) 68. *C. fruticola* H. W. Li
- 72b. Leaf blade ovate, lower surface and petiole ferruginous-pubescent, with 6–7 lateral veins at each side; calyx 5-fid to the middle; filaments glabrous; anthers densely puberulous (S & W Yunnan; N Vietnam, Thailand, Burma, NE India)
72. *C. speciosa* Kurz
- 73a. Leaves 3–4 pairs crowded at top of stem; flowers 2–10 fasciculate in leaf axils; stigma undivided; calyx 5-lobed (Mengzhe County in S Yunnan)
79. *C. fasciculiflora* W. T. Wang
- 73b. Leaves opposite or alternate, separate from each other; flowers in pedunculate cymes; stigma 2-lobed, seldom nearly undivided 74
- 74a. Bracts large, connate into a wide-funneliform involucle; filaments geniculate and tumid at the middle (Medog County in SE Xizang)
78. *C. infundibuliformis* W. T. Wang
- 74b. Bracts smaller, free; filaments not tumid 75
- 75a. Leaves alternate 76
- 75b. Leaves opposite 77
- 76a. Stem more or less elongate and prostrate; bracts 3–4mm long; calyx 5-parted to $\frac{3}{4}$ of its length; corolla white or pinkish, about 3cm long; filaments pilose; anthers glabrous (Medog County in SE Xizang; N Burma, NE India, Bhutan, Sikkim) 70. *C. lachenensis* Clarke
- 76b. Stem very short, about 2cm long, not prostrate; bracts 6–11mm long; calyx 5-fid to the middle; corolla blue-purple, 4.8–6cm long; filaments glabrous; anthers densely brown-puberulous 72. *C. speciosa* Kurz
- 77a. Basal leaves 2, large, long-petioled, the cauline ones small; corolla white (C & S Yunnan; Thailand, N Burma, NE India, Bhutan, Nepal)
73. *C. macrophylla* Wall.

- 77b. Leaves all caulinne 78
- 78a. Leaves orange-glandular-punctate beneath; calyx 5-lobed; filaments not geniculate (Gungshan County in NW Yunnan, SE Xizang; N Burma, NE India, Bangladesh) 71. *C. oblongifolia* (Roxb.) Sinclair
- 78b. Leaves not glandular-punctate; calyx 5-fid to the middle or below; filaments geniculate 79
- 79a. Perennial herbs; calyx up to 3cm long, 5-parted to below the middle (SE Yunnan; N Burma, NE India, Bhutan, Nepal) 74. *C. urticifolia* D. Don
- 79b. Annuals; calyx up to 1.8cm long, 5-fid to about the middle 80
- 80a. Leaves without purple spots; calyx glabrous or subglabrous outside, not horn-like nor curved outward at apex 81
- 80b. Leaves with purple spots; calyx pubescent outside, with lobes horn-like and curved outward at apex (SE Xizang, NW & S Yunnan, NW Guangxi, SW Guizhou; N Vietnam, Thailand, N Burma, Bhutan, Sikkim, Nepal, N India) 77. *C. pumila* D. Don
- 81a. Leaves glabrous on the veins of upper surface; corolla purplish or white (S Yunnan, Guangxi, S Hunan, Guangdong, Taiwan; N Burma, N Thailand, Laos, N Vietnam) 75. *C. anachoreta* Hance
- 81b. Leaves hairy on the veins of upper surface; corolla blue-purple (Medog County in SE Xizang; Sikkim, NE India) 76. *C. dimidiata* Clarke
33. *Chiritopsis* W. T. Wang in Bull. Bot. Res. 1(3): 23 (1981); trans. & reimp. in Contr. N.Y.B.G. 16: 5, 25 (1986).
7 spp., endemic to S China.
- (*C. subulata*)
- 1a. Leaves undivided; staminodes 2 2
- 1b. Leaves pinnately divided; staminodes 1 or 3; corolla white; stamens inserted below the middle of corolla tube; stigma 2-lobulate 6
- 2a. Leaves suborbicular, densely puberulous on both surfaces, with hairs covering the whole leaf surface; corolla purplish, 7.5–9mm long; stamens inserted near corolla base; stigma linear, 1–1.5mm long, undivided (Yishan County in C Guangxi) 1. *C. mollifolia* D. Fang & W. T. Wang (Fig. 6)
- 2b. Leaves elliptic, ovate or cordate, somewhat densely or sparsely puberulous, with hairs not covering the whole leaf surface; corolla yellowish or white; stamens inserted at the middle or near the base (*C. subulata*) of corolla tube; stigma flabellate or obtrapeziform, 0.3–0.6mm long, 2-lobulate 3
- 3a. Leaves wide-cuneate at base; petioles 2.5–11mm long; corolla 7.5–9mm long 4
- 3b. Leaves cordate at base 5

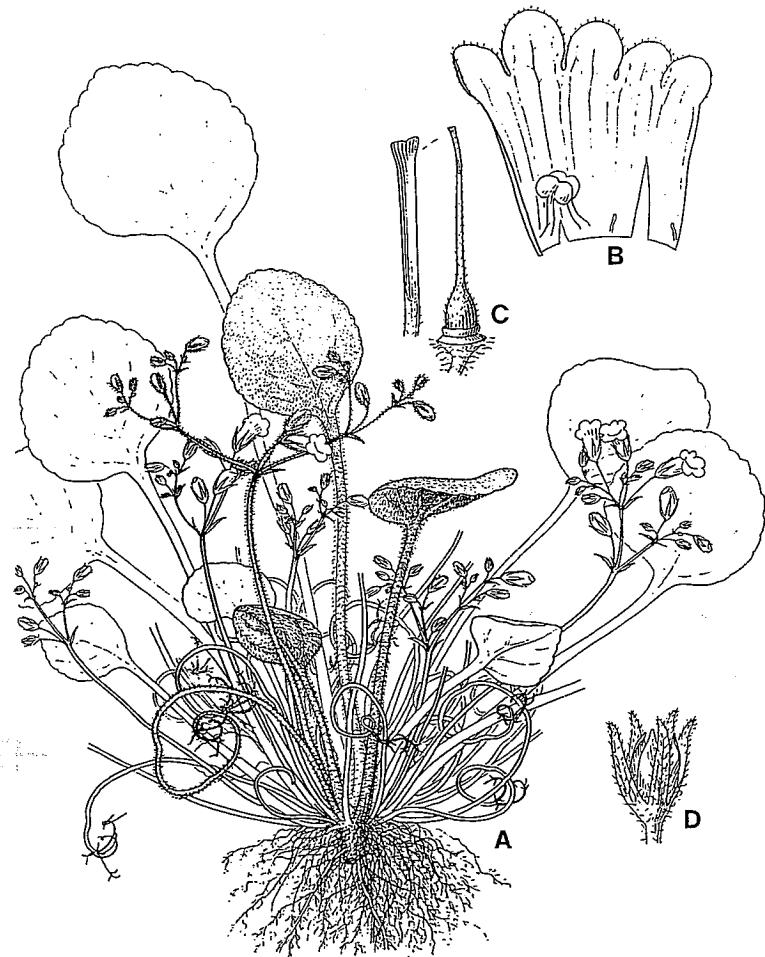


FIG. 6. *Chiritopsis mollifolia* D Fang & W T Wang. A, habit; B, corolla opened out; C, disc and gynoecium, and stigma; D, fruiting calyx and capsule.

- 4a. Flowers crowded, pedicels 0.5–2mm long; corolla distinctly bilabiate, with the lower lip 2.5 times longer than the upper lip; disc annular (Yanshan County in NW Guangdong) **2. *C. confertiflora*** W. T. Wang
- 4b. Flowers lax, pedicels 2–8mm long; corolla indistinctly bilabiate, with the upper lip nearly as long as the lower lip; disc interrupted (Tianes, Guilin & Shanglin Counties in Guangxi) **4. *C. repanda*** W. T. Wang
- 5a. Leaf blade 4–8.5cm long, obtusely dentate, petioles 5.5–16.5cm long; corolla 1.4cm long; stamens inserted below the middle of corolla tube, filaments narrow-linear, nearly equally wide along the whole length; staminodes 2 (Liujiang County in Guangxi) **3. *C. cordifolia*** D. Fang & W. T. Wang
- 5b. Leaf blade 3–4cm long, denticulate or subentire, petioles 3–7cm long; corolla 1cm long; stamens inserted near corolla base, filaments subulate; staminodes wanting (Zhaoging County in S Guangdong) **5. *C. subulata*** W. T. Wang
- 6a. Leaves cordate-orbicular, cordate at base, pinnately lobed; staminode 1 (Yangshan County in NW Guangdong) **6. *C. lobulata*** W. T. Wang (Fig. 7G)
- 6b. Leaves ovate or rhomboid, widely cuneate at base, pinnately divided; staminodes 3 (Lingui County in N Guangxi) **7. *C. bipinnatifida*** W. T. Wang (Fig. 7A–F)

34. *Petrocodon* Hance in J. Bot. 21: 167 (1883).

Monotypic, endemic to C & S China.

- 1a. Leaves crenulate on upper margin, repand or entire (N Guangdong, N Guangxi, Guizhou, S & W Hunan, SW Hubei) ***P. dealbatus*** Hance var. ***dealbatus***
- 1b. Leaves dentate (W Hunan, SE Guizhou)
P. dealbatus var. ***denticulatus*** (W. T. Wang) W. T. Wang
(*P. denticulatus* W. T. Wang)

35. *Didymocarpus* Wall. in Edinb. Philos. J. 1: 378 (1819).

About 180 spp., mostly in subtropical and tropical Asia, two in Madagascar. 31 spp. in China.

- 1a. Caulescent herbs **2**
- 1b. Acaulescent herbs; leaves all basal **22**
- 2a. Calyx divided to base **3**
- 2b. Calyx not divided to base **8**
- 3a. Calyx 5-sect **4**
- 3b. Calyx 3-sect **6**
- 4a. Stem 7–15cm long; leaves elliptic or elliptic-ovate **5**
- 4b. Stem up to 2cm long; leaves suborbicular, cordate or orbicular-rhomboïd, up to 6cm long (Simao County in S Yunnan) **3. *D. margaritae*** W. W. Smith

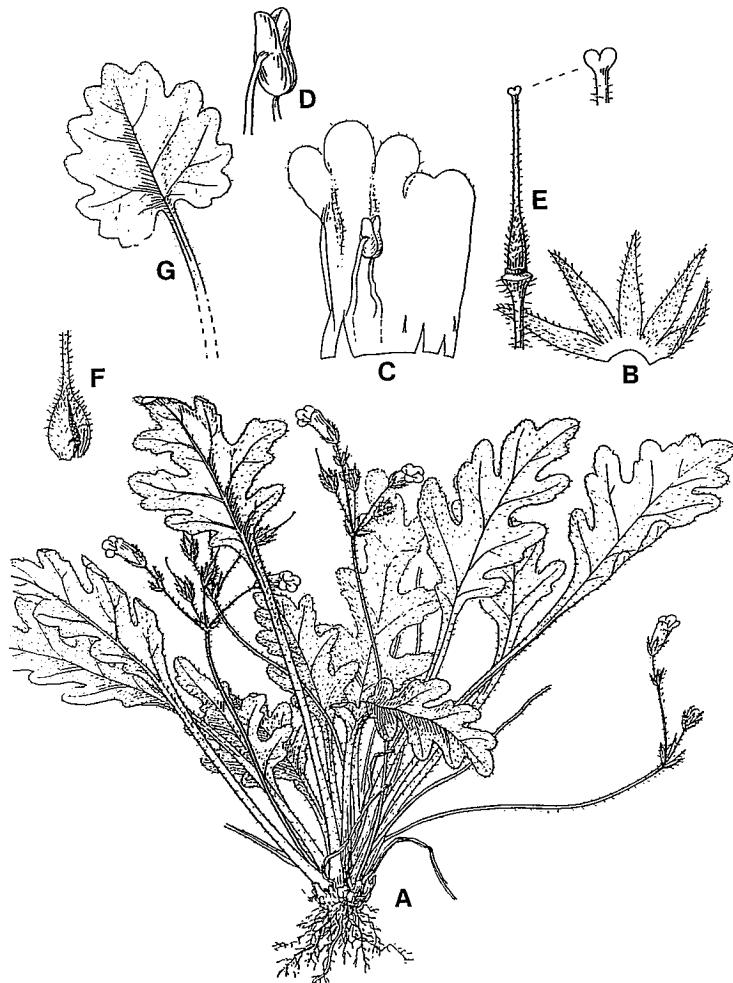


FIG. 7. *Chiritopsis bipinnatifida* W T Wang. A, habit; B, calyx opened out; C, corolla opened out; D, anthers; E, disc and gynoecium, and stigma; F, young capsule. *Chiritopsis lobulata* W T Wang. G, leaf.

- 5a. Cyme glabrous; corolla 2.5–3cm long (Medog County in SE Xizang)
1. D. medogensis W. T. Wang
- 5b. Cyme glandular-puberulous; corolla 1.6–2.2cm long (SE Yunnan)
2. D. glandulosus (W. W. Smith) W. T. Wang
- 6a. Upper segment of calyx 3-fid to or beyond the middle; stamens glabrous;
 staminodes wanting (SW Yunnan) **4. D. zhenkangensis** W. T. Wang
- 6b. Upper segment of calyx 3-lobed to 1/4 of its length **7**
- 7a. Leaves obliquely elliptic or rhomboid-elliptic, up to 9cm long, with 6–8 lateral
 veins at each side; calyx upper segment 3mm wide, its lobules deltoid, the
 2 lower segments oblong, 1.5mm wide; anthers hairy; staminodes 2
 (SW & C Yunnan) **5. D. pseudomengtze** W. T. Wang
- 7b. Leaves oblong, up to 4.3cm long, with 6–10 lateral veins at each side; calyx
 upper segment 1.5mm wide, its lobules lanceolate-linear, the 2 lower segments
 narrow-lanceolate, 0.8–0.9mm wide; stamens glabrous; staminodes wanting
 (Yingjiang County in SW Yunnan) **6. D. stenocarpus** W. T. Wang
- 8a. Calyx 2mm long, actinomorphic, 5-fid nearly to the middle with lobes nearly
 equal in size; staminodes wanting; ovary hairy (Simao County in S Yunnan)
8. D. silvarum W. W. Smith
- 8b. Calyx exceeding 3mm long, more or less bilabiate; staminodes 1–3; ovary
 glabrous (only in *D. adenocalyx* glandular-puberulous) **9**
- 9a. Corolla (2.5–)3–4.5cm long **10**
- 9b. Corolla up to 2.4cm long, glabrous (unknown in *D. nanophyton*) **14**
- 10a. Calyx 10–12mm long **11**
- 10b. Calyx up to 6mm long; anthers hairy **12**
- 11a. Cyme glandular-puberulous; corolla 3cm long, glabrous; anthers glabrous;
 ovary glandular (Pianma County in W Yunnan; N Burma)
20. D. praeteritus Burtt & Davidson
- 11b. Cyme glabrous; corolla 3.2–4.5cm long, glabrous; anthers hairy; ovary not
 glandular (SE Yunnan) **21. D. purpureobracteatus** W. W. Smith
- 12a. Corolla puberulous outside (NW & C Yunnan, SW Sichuan)
19. D. yunnanensis (Franch.) W. W. Smith
- 12b. Corolla glabrous outside **13**
- 13a. Cauline leaves 3-verticillate, subcordate at base, with 5–6 lateral veins at each
 side; calyx 4.5mm long (Cuona County in SE Xizang; Nepal, Sikkim, Bhutan)
12. D. pulcher Clarke
- 13b. Cauline leaves opposite, obliquely cuneate at base, with 6–11 lateral veins at
 each side; calyx 5–6mm long (Leibo County in SW Sichuan)
17. D. leiboensis Z. P. Soong & W. T. Wang

- 14a. Stem with spreading hairs **15**
- 14b. Stem strigose **17**
- 15a. Stem white-villous; cyme glabrous (Zhangmu County in S Xizang; Nepal)
11. D. villosus D. Don
- 15b. Stem brownish-puberulous; cyme glandular-puberulous **16**
- 16a. Leaves orbicular-ovate, up to 10.5cm long, 15cm wide, coarsely
 duplicate-dentate (Mengzhe County in S Yunnan)
14. D. grandidentatus (W. T. Wang) W. T. Wang
- 16b. Leaves ovate, up to 4.5cm long, 3cm wide, denticulate (Yuenjiang County in
 S Yunnan) **15. D. nanophyton** H. W. Li
- 17a. Anthers hairy (W Sichuan, E Yunnan) **16. D. stenanthos** Clarke
- 17b. Anthers glabrous **18**
- 18a. Bracts connate at base; calyx glandular towards base inside; ovary densely
 glandular-puberulous (Bijiang County in NW Yunnan)
18. D. adenocalyx W. T. Wang
- 18b. Bracts distinct; calyx not glandular; pistil glabrous **19**
- 19a. Calyx 2-fid beyond the middle, white, the limb distinctly bilabiate (Mengzi
 County in SE Yunnan) **7. D. mengtze** W. W. Smith
- 19b. Calyx 2-fid at most to the middle, green or purple **20**
- 20a. Calyx 2-fid to the middle, with the limb distinctly bilabiate, the upper lip
 3-lobulate and the lower lip 2-fid to base; lowermost 2 caudine leaves alternate
 (Zhumulongma Mountain in S Xizang) **9. D. zhufengensis** W. T. Wang
- 20b. Calyx 2-lobed to 1/3–1/4 of its length **21**
- 21a. Calyx indistinctly bilabiate, with the 5 lobes nearly equal in size; lowermost
 2 caudine leaves alternate (Nielamu County in S Xizang; Nepal, N India)
10. D. aromaticus Wall.
- 21b. Calyx distinctly bilabiate with the upper lip 3-lobed and the lower lip 2-fid;
 caudine leaves 3–4 subverticillate on top of stem (Nielamu County in S Xizang;
 Nepal) **13. D. primulifolius** D. Don
- 22a. Leaves oblong, elliptic or narrowly ovate, not cordate at base, undivided; calyx
 5-sect to base **23**
- 22b. Leaves suborbicular, orbicular-ovate or deltoid, usually cordate at base, often
 lobed **26**
- 23a. Leaves appressed-puberulous with hairs sparse or dense, in the latter case not
 covering the whole leaf surface **24**
- 23b. Leaves tomentose or lanate, with hairs covering the whole surface at least
 beneath **25**

- 24a. Leaves up to 10.5cm wide, 20cm long, densely puberulous on both surfaces; inside of calyx, filaments and pistil puberulous (Zhenkang County in SW Yunnan) **22. *D. mollifolius*** W. T. Wang
- 24b. Leaves up to 3.6cm wide, 10cm long, sparsely appressed-puberulous on both surfaces; inside of calyx, stamens and pistil glabrous (N Guangdong, S Hunan, Jiangxi, Fujian) **23. *D. hancei*** Hemsl.
- 25a. Leaves long-elliptic, attenuate at base, densely appressed-tomentellous beneath (N & W Guangdong) **24. *D. demissus*** Hance
- 25b. Leaves narrowly ovate, broadly cuneate or almost rounded at base, white-lanate on both surfaces (Lunglin County in NW Guangxi) **25. *D. niveolanosus*** D. Fang & W. T. Wang
- 26a. Calyx 5-sect to base; anthers hairy **27**
- 26b. Calyx 5-lobed at most to the middle **28**
- 27a. Calyx segments lanceolate or oblanceolate-linear, acutish at apex, denticulate at margin (N Guangdong, Jiangxi, W Fujian, W Zhejiang, S Anhui) **26. *D. heucherifolius*** Hand.-Mazz. (Fig. 8)
- 27b. Calyx segments spatulate-linear, rounded at apex, entire (Qianyang County in C Hunan) **27. *D. sinoprimulinus*** W. T. Wang
- 28a. Calyx 13mm long, 5-fid to the middle; anthers glabrous (Yuenling County in NW Hunan) **28. *D. yuenlingensis*** W. T. Wang
- 28b. Calyx 7-9mm long, 5-lobed to $\frac{1}{5}$ - $\frac{1}{3}$ of its length; anthers hairy **29**
- 29a. Calyx lobes ovate-triangular, denticulate (SE Zhejiang) **29. *D. cortusifolius*** (Hance) Lévl.
- 29b. Calyx lobes entire **30**
- 30a. Calyx lobes deltoid, separate from each other; anthers pilose (SE Hunan) **30. *D. reniformis*** W. T. Wang
- 30b. Calyx lobes depressed-quadrata, overlapping each other at margin; anthers lanate (Lishui County in C Zhejiang) **31. *D. salviflorus*** Chun
- [The typical sect. *Didymocarpus* consists of herbaceous species and is found from N India and S China to Thailand, with a very few species in the Malay Peninsula. The majority of the Malesian species belong to other sections that are not found further north than southern Thailand and their relationship to sect. *Didymocarpus* is somewhat uncertain. Species 16-31 in the Flora are referred to sect. *Heteroboea* Benth., but that is a Malesian group typified by *D. crinitus* Jack. These Chinese species are of uncertain affinity and some (e.g. *D. cortusifolius*, *D. heucherifolius*) were included in *Chirita* by D. Wood when he revised that genus. They are, however, equally out of place there.]
- 36. *Gyrocheilos*** W. T. Wang in Bull. Bot. Res. 1(3): 28 (1981), trans. & reimp. in Contr. NYBG 16: 10 (1986).
4 spp., endemic to S China.

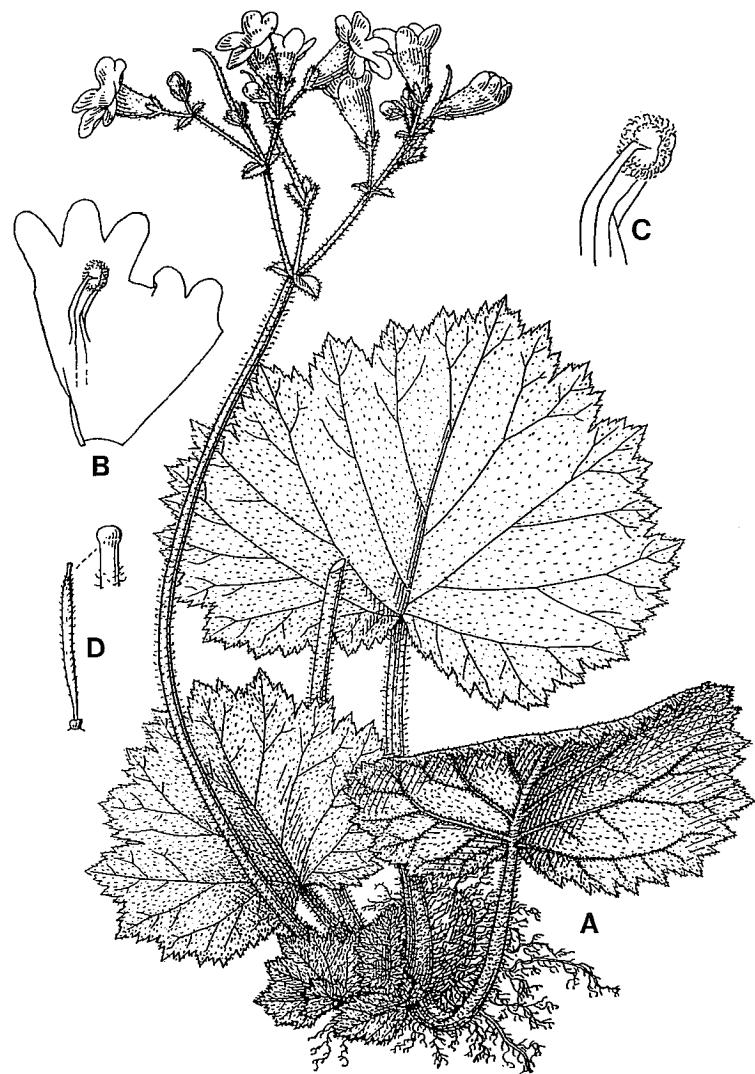


FIG. 8. *Didymocarpus heucherifolius* Hand.-Mazz. A, habit; B, corolla opened out; C, stamens; D, disc and gynoecium, and stigma.

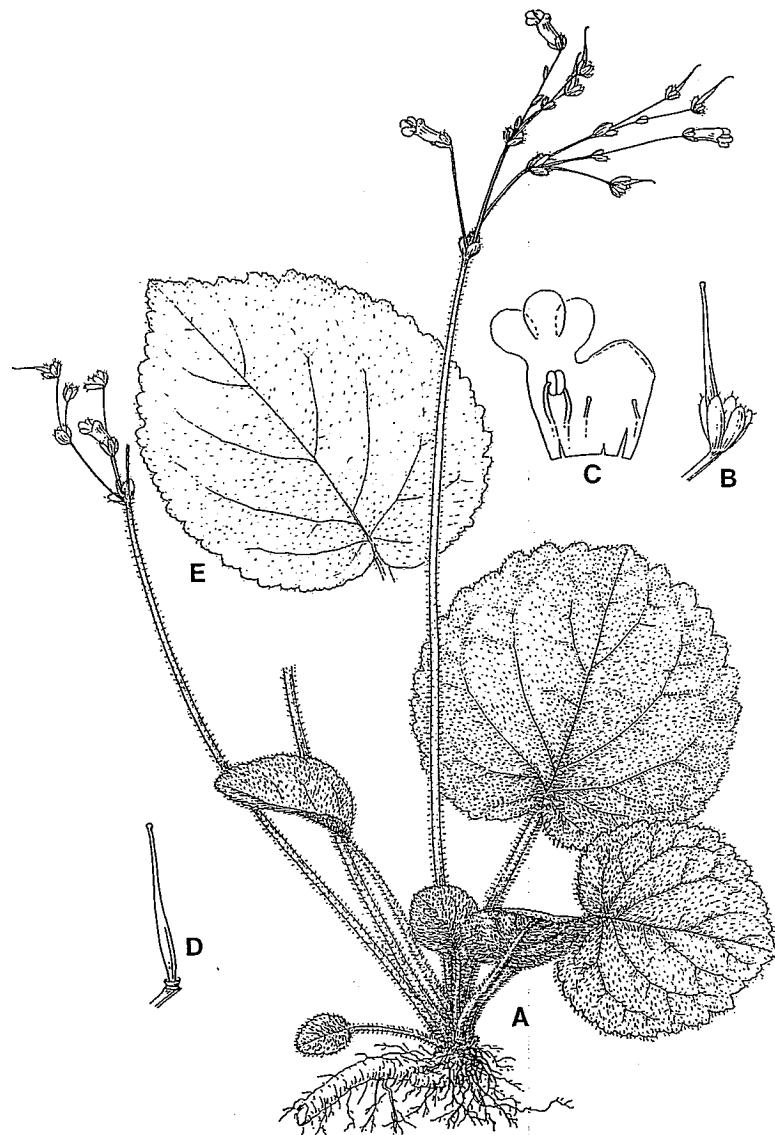


FIG. 9. *Gyrocheilos chlorisepalum* W.T.Wang. A, habit; B, flower, corolla removed; C, corolla opened out; D, disc and gynoecium. *Gyrocheilos retrotrichum* var. *oligolobum* W.T.Wang. E, leaf.

- 1a. Calyx puberulous from base to apex outside; leaves mostly broadly ovate, with short and long hairs above (Guiping & Xiangxian in E Guangxi)
 2. *G. lasiocalyx* W.T.Wang
- 1b. Calyx glabrous outside, sometimes with a few hairs at apex _____ 2
- 2a. Leaves mostly reniform, rounded at apex, with short and long hairs above; staminodes inserted 2.5mm above corolla base; peduncle with spreading hairs _____ 3
- 2b. Leaves cordate or cordate-ovate, acute at apex, with all hairs on upper surface nearly equal in length; staminodes inserted 3–5mm above corolla base _____ 4
- 3a. Calyx 5-sect to base (Wuming & Shanglin Counties in S Guangxi)
 1a. *G. chorisepalum* W.T.Wang var. *chorisepalum* (Fig. 9A–D)
- 3b. Calyx 4-fid to 1–1.5mm above its base (Beiliou County in E Guangxi, W Guangdong) _____ 1b. *G. chorisepalum* var. *synsepalum* W.T.Wang
- 4a. Leaves with hairs 0.1–0.2mm long above, strigulose only on the veins beneath; petioles and peduncles with hairs 0.2–0.6mm long and antorsely appressed; calyx 5-fid to or near base (Xinyi County in W Guangdong)
 3. *G. microtrichum* W.T.Wang
- 4b. Leaves more or less densely puberulous on both surfaces, with hairs 0.6–1.6mm long; petioles and peduncles with hairs 0.8–2mm long, horizontally or retrorsely spreading; calyx divided to 1.5–2mm above its base _____ 5
- 5a. Calyx 5-fid; staminodes clavate (Xinyi & Yunfu Counties in W Guangdong)
 4a. *G. retrotrichum* W.T.Wang var. *retrotrichum*
- 5b. Calyx 4–2-fid; staminodes narrow-linear (Luocheng & Rungshui Counties in C Guangxi, Maoming County in SW Guangdong)
 46. *G. retrotrichum* var. *oligolobum* W.T.Wang (Fig. 9E)
37. *Dolicholoma* D. Fang & W.T.Wang in Bot. Research 1: 18 (1983). Monotypic, endemic to Napo County in SW Guangxi
 D. *jasminiflorum* D. Fang & W.T.Wang
38. *Calcareoboea* H.W.Li in Acta Bot. Yunnan. 4(3): 241 (1982). Monotypic, endemic to SE Yunnan and W Guangxi _____ C. *coccinea* H.W.Li (Fig. 10)
39. *Allocheilos* W.T.Wang in Acta Phytotax. Sin. 21: 321 (1983). Monotypic, endemic to Xingyi County in SW Guizhou A. *cortusiflorum* W.T.Wang [There seems to be a second species, not yet described, in N Vietnam.]
40. *Paraboea* (Clarke) Ridley in J. Straits Br. Roy. As. Soc. 44: 463 (1905); Burtt in Notes RBG Edinb. 41: 422–441 (1984).
 - 1a. Capsules straight, not spirally twisted _____ 2
 - 1b. Capsules spirally twisted _____ 3



FIG. 10. *Calcareoboea coccinea* H W Li. A, habit; B, flower; C, corolla opened out; D, anthers; E, disc and gynoecium; F, dehisced capsule.

- 2a. Caulescent herbs; cauline leaves densely spirally arranged; leaf blades oblanceolate, 0.9–2.3cm long, 4–10mm wide (Fengshan County in N Guangxi) **1. *P. velutina* (W. T. Wang & C. Z. Gao) Burtt**
- 2b. Acaulescent herbs; leaves all basal, oblong-obovate, 4.1–11cm long, 1.5–3cm wide (Yun-fu County in N Guangdong) **2. *P. filipes* (Hance) Burtt**
- 3a. Small shrubs or subshrubs; stems 30–60cm tall; leaves opposite _____ 4
- 3b. Perennial herbs, with ligneous rhizomes _____ 5
- 4a. Cymes terminal and axillary, forming a panicle; flowers 4–6mm long, white; calyx-lobes small, oblong, about 1.2mm long, green (Guangxi, Taiwan; Philippines, Thailand) **3. *P. swinhoei* (Hance) Burtt**
- 4b. Cymes umbelliform, not forming panicle; flowers 1.5–2cm long, blue-purple; calyx-lobes longer, oblanceolate-spathulate, 8–13mm long, purplish (SW Guangxi, S Yunnan, Guizhou, Sichuan, W Hubei; N Vietnam) **4. *P. sinensis* (Oliv.) Burtt**
- 5a. Leaf blades strigose above; filaments dilated in the upper part (S Yunnan, W Guangxi, S Guizhou; N Vietnam, N Thailand) **5. *P. rufescens* (Franch.) Burtt**
- 5b. Leaf blades grey-lanate or subglabrous above; filaments dilated or not in the upper part _____ 6
- 6a. Caulescent herbs; leaves opposite _____ 7
- 6b. Acaulescent herbs, with thick rhizomes; leaves all basal _____ 8
- 7a. Stem about 40cm high; cauline leaves normal; corolla white; filaments tumid at the middle part, thinner below (SE Guizhou, N Guangxi) **6. *P. martinii* (Lévl.) Burtt**
- 7b. Stem about 10cm high; cauline leaves strongly reduced; corolla purplish; filaments geniculate, dilated at the upper part, orange-barbate on the bend (Nape County in SW Guangxi, Xichou County in SE Yunnan) **7. *P. barbatipes* K. Y. Pan**
- 8a. Filaments not tumid, rarely slightly tumid; leaves with long petioles, leaf blades usually grey-arachnoid-pubescent _____ 9
- 8b. Filaments tumid at the upper part, clavate below; leaves subsessile, leaf blades glabrous above, elliptic-obovate or narrowly obovate, 5–18cm long, 1.2–6cm wide (Hainan) **12. *P. hainanensis* (Chun) Burtt**
- 9a. Flowers small, white, 4–5mm long, 3–4mm diam.; ovary waxy (SE Guizhou, N Guangxi) **8. *P. thirionii* (Lévl.) Burtt**
- 9b. Flowers larger, purple-blue, more than 1cm long, 8–12mm diam.; ovary not waxy _____ 10
- 10a. Cyme shorter than leaves; leaf blades not decurrent at base, petioles 1–4.5cm long (C Yunnan) **9. *P. neurophylla* (Coll. et Hemsl.) Burtt**
- 10b. Cyme longer than leaves; leaf blades decurrent at base _____ 11

- 11a. Leaf blades oblong or narrow-oblong, 7–14cm long, 1.2–4.5cm wide, acute at apex, decurrent onto petiole at base (NW Guangdong, NE Guangxi)
10. P. dictyoneura (Hance) Burtt
- 11b. Leaf blades ovate or obovate-spathulate, 3.5–9cm long, 1.5–3.2cm wide, rounded or obtuse at apex, subsessile (Guizhou, SE Sichuan, W Hubei)
11. P. crassifolia (Hemsl.) Burtt

[A large genus of c. 90 species ranging from N India, S China and Philippines to Malay Peninsula, Sumatra and Borneo to Sulawesi. Many species (those with twisted fruits) were at one time included in *Boea*.]

41. Boea Lam., Encycl. Méth. 1: 401 fr. Béolle (1785); Burtt in Notes RBG Edinb. 41: 413–422 (1984).

- 1a. Flowers 2–2.2cm long, 1.2–1.8cm diam., calyx 5-fid to the middle; leaf blades broadly ovate, 3.5–7cm long, puberulous on both surfaces, more or less nigrescent after drying (N Yunnan, Sichuan, Hubei, Shaanxi, Zhejiang)
1. B. clarkeana Hemsl.
- 1b. Flowers smaller, 0.7–1.3cm long, 6–10mm diam.; calyx 5-sect nearly to base; leaves not nigrescent after drying **2**
- 2a. Leaf blades suborbicular, 1.8–7cm long, 1.2–5.5cm wide; calyx-lobes slightly unequal (Guangxi, N Guangdong, Fujian, Zhejiang, Jiangxi, Hunan, Hubei, Sichuan, Shaanxi, Henan, Shanxi, Shandong, Hebei)
2. B. hygrometrica (Bunge) R. Br.
- 2b. Leaf blades obovate or elliptic spathulate, 3–8cm long, 1–3cm wide; calyx-lobes equal (Guangdong, Guangxi, Guizhou; Vietnam, Philippines)
3. B. philippensis Clarke

Boea clarkeana was transferred, with considerable reservations, to *Streptocarpus* by Hilliard & Burtt (*Streptocarpus* p. 107, 388, 1971). Its tubular corolla is very different from that of *Boea* and it did not run down to *Boea* in keys then available. Like the other Asiatic species currently placed in *Streptocarpus*, its real affinity has yet to be established.]

42. Ornithoboea Clarke in A. & C. DC., Mon. Phan. 5(1): 148, tab. 16 (1883); Burtt in Notes RBG Edinb. 22: 287–299 (1958).

- 1a. Stems, petioles, leaf blades and pedicels arachnoid-lanate; filaments not furcate (W & C Yunnan) **1. O. arachnoidea** (Diels) Craib
- 1b. Stems, petioles, leaf blades and pedicels pubescent; filaments not furcate or furcate at the upper part **2**
- 2a. Filaments not furcate; calyx-lobes reflexed **3**
- 2b. Filaments furcate; calyx-lobes erect **4**

- 3a. Filaments straight, not tumid; corolla-lòbes barbate inside (Guanling and Zhenfeng in S Guizhou) **2. O. feddei** (Lévl.) Burtt
- 3b. Filaments curved at a right angle and tumid at the curved point; corolla only barbate on central lobe of the lower lip inside (S Yunnan) **3. O. henryi** Craib
- 4a. Stem with distinct and projecting leaf scars below; calyx 7–14mm long, upper lip of corolla suborbicular, emarginate or 4-denticulate at apex, lobes of the lower lip oblong, somewhat rounded at apex (SE Yunnan, W Guangxi; Thailand) **4. O. wildeana** Craib
- 4b. Stem with suberized petiole-bases below; calyx smaller, 6mm long; lobes of the upper and lower corolla-lips triangular, acute at apex or sometimes the lobes of the upper lip emarginate (Yiwu County in S Yunnan) **5. O. calcicola** H. W. Li
- 43. Trisepalum** Clarke in A. & C. DC., Mon. Phan. 5(1): 138 (1883); Burtt in Notes RBG Edinb. 41: 441–449 (1984).
(S Yunnan; Burma, N Thailand) **T. birmanicum** (Craib) Burtt
[*Trisepalum* is the genus of 14 species centred on Thailand & Burma; one species reaches northernmost Malaya (Perlis & Langkawi).]
- 44. Rhabdothamnopsis** Hemsl. in J. Linn. Soc. Bot. 35: 517 (1903).
(C Yunnan, W Guizhou, W Sichuan) **R. sinensis** Hemsl.
[A monotypic genus. Franchet described this plant independently as *Streptocarpus chinensis*: it has the tubular flower and twisted fruit of *Streptocarpus* but the flowers are axillary and the twiggy habit is quite distinctive.]
- 45. Anna** Pellegr. in Bull. Soc. Bot. France 77: 46 (1930) & in Lecomte, Fl. Gén. Indo-Chine 4: 506 (1930); Burtt & Davidson in Notes RBG Edinb. 21: 232 (1955); Wang & Pan in Bull. Bot. Research 2(2): 144 (1982).
- 1a. Leaves elliptic-lanceolate, long-elliptic or oblong, 7–20cm long, 3.2–9cm wide, acuminate at apex, entire at margin, with 10–17 pairs of lateral nerves **2**
- 1b. Leaves lanceolate or lanceolate-oblong, caudate-acuminate at apex, inconspicuously denticulate at margin, with 6–8 pairs of lateral nerves (S & W Sichuan, S Guizhou) **3. A. ophiorrhizoides** (Hemsl.) Burtt & Davidson
- 2a. Leaf blades subglabrous, only sparsely puberulous on the nerves beneath; peduncles 8–10cm long (SE Yunnan, SW Guangxi; N Vietnam)
1. A. submontana Pellegr.
(*Tumidinodus purpureoruber* H. W. Li)
- 2b. Leaf blades densely puberulous; peduncles 1.5–2cm long (Xichou & Malipo Counties in SE Yunnan, Napo County in SW Guanxi)
2. A. mollifolia (W. T. Wang) W. T. Wang & K. Y. Pan
(*Lysionotus mollifolius* W. T. Wang)

- 46. Loxostigma** Clarke in A. & C. DC., Mon. Phan. 5(1): 59 (1883).
- 1a. Bracts and calyx-lobes narrow, linear, lanceolate or ovate-oblong, entire; calyx-lobes valvate _____ 2
 - 1b. Bracts and calyx-lobes usually larger and wider, ovate-orbicircular or ovate-lanceolate, denticulate at margin; calyx-lobes imbricate _____ 6
 - 2a. Cyme umbelliform; leaves pubescent on both surfaces; calyx and pedicels villous and glandular-puberulous _____ 3
 - 2b. Cyme dichotomously branched; leaf blades only puberulous on the nerves beneath; calyx and pedicels puberulous _____ 5
 - 3a. Leaves thin in texture, sparsely pubescent on both surfaces; stolon present _____ 4
 - 3b. Leaves thick, densely pubescent on both surfaces; stolon wanting; corolla white and tinged with purple; ovary subglabrous, style pubescent (SW & NW Yunnan)
 3. *L. mekongense* (Franch.) Burtt
 - 4a. Corolla yellow or yellowish; pedicels thick, 10–15mm long; ovary glabrous, style pubescent (SE to NW Yunnan, S Guizhou, SW Sichuan)
 1. *L. griffithii* (Wight) Clarke
 - 4b. Corolla pink-white; pedicels thin, 8–17mm long; pistil densely puberulous (SE Yunnan, W Guangxi, S Guizhou) _____ 2. *L. cavaleriei* (Lévl. & Van.) Burtt
 - 5a. Leaves of the same pair distinctly unequal; petioles 0.5–3cm long; corolla white outside, purple inside (Hekou County in SE Yunnan, Napo County in SW Guangxi, Zhenfeng County in S Guizhou)
 4. *L. glabrifolium* D. Fang & K. Y. Pan
 - 5b. Leaves of the same pair subequal; petioles shorter, 0.5–1.5cm long; corolla purple (Malipo County in SE Yunnan)
 5. *L. brevipetiolatum* W. T. Wang & K. Y. Pan
 - 6a. Herbs sparsely pubescent or subglabrous; cyme branched four times, many flowered, peduncles up to 16cm long; leaves 4–20cm long, 1.5–9cm wide (Xichou & Malipo Counties in SE Yunnan) _____ 6. *L. fimbrisepalmum* K. Y. Pan
 - 6b. Herbs densely puberulous; cyme 2–3-flowered, peduncles 4.5cm long; leaves 4.5–9cm long, 1.5–4cm wide (Maguan County in SE Yunnan)
 7. *L. musetorum* H. W. Li
- 47. Aeschynanthus** Jack in Trans. Linn. Soc. 14: 42 (1823); Clarke in A. & C. DC., Mon. Phan. 5(1): 18–52 (1883).
About 140 spp., from Nepal, S India and Sri Lanka eastward to Taiwan Island, south-eastward through Malesia to New Guinea and Solomon Islands. 34 spp. in China.
- 1a. Corolla with a hairy ring above base inside; seeds with many hairs at one end and 1 hair at the other _____ 2
 - 1b. Corolla without a hairy ring; seeds with 1 or 2 linear-appendages or hairs at one end and 1 linear-appendage or hair at the other _____ 4

- 2a. Calyx up to 1.5cm long; corolla c. 2cm long _____ 3
- 2b. Calyx 3–3.3cm long; corolla 2.4–2.8cm long, red (Pingbiari County in SE Yunnan) _____ 34. *A. sinolongicalyx* W. T. Wang
- 3a. Calyx and corolla glabrous outside; seeds with about 25 hairs on one end (S Yunnan; Burma, Thailand, Vietnam, Malesia) _____ 32. *A. longicaulis* Wall. ex R. Br.
- 3b. Calyx and corolla hairy outside; seeds with about 50 hairs on one end (Jinping County in SE Yunnan; Vietnam) _____ 33. *A. poilanei* Pellegr.
- 4a. Flowers in pedunculate cyme; calyx 5-sect to base; leaves and corolla glabrous outside _____ 5
- 4b. Flowers 1 or several fasciculate in leaf axil _____ 12
- 5a. Calyx segments ovate or wide-linear, rounded at apex, up to 7mm long _____ 6
- 5b. Calyx segments oblong, linear or lanceolate, attenuate at apex _____ 7
- 6a. Leaves 4.5–9cm long; peduncles 0.8–3cm long; corolla 1.5–2.2cm long (SE Xizang, W & S Sichuan, S & SE Yunnan, Guangxi, Guangdong, Taiwan; Sikkim, Bhutan, NE India, Thailand, Laos, N Vietnam) _____ 1. *A. acuminata* A. DC.
- 6b. Leaves 7–12cm long; peduncles 3.5–11cm long; corolla about 3cm long (Hainan Island) _____ 2. *A. moningeriae* (Merr.) Chun
- 7a. Bracts and calyx not red, small; calyx segments linear _____ 8
- 7b. Bracts well-developed, red; calyx red too _____ 9
- 8a. Leaves 2.2–4.6cm long; peduncle 2.2–5cm long; bracts linear, 2–6mm long; calyx 5–7mm long; seed hairs 0.8–1.2mm long (SE Xizang, Fugong and Gungshan Counties in NW Yunnan) _____ 3. *A. stenosepalus* Anthony (*A. tenuis* Hand.-Mazz.)
- 8b. Leaves 5.5–9cm long; peduncle 0.25–1cm long; bracts narrow-ovate, 6–13mm long; calyx 7–12mm long; seed hairs 1.5–1.8mm long (Fugong and Gungshan Counties in NW Yunnan; N Burma) _____ 4. *A. wardii* Merr.
- 9a. Leaves 10–18cm long, oblong; bracts 4–5cm long; calyx 2–3cm long; corolla 5.5–8.5cm long; stem glabrous (SE Xizang, W & SE Yunnan; NE India, N Burma) _____ 6. *A. superbus* Clarke
- 9b. Leaves up to 9–12cm long; bracts up to 3cm long; calyx up to 1.9cm long; corolla about 4cm long _____ 10
- 10a. Stem glabrous; leaves not narrow-linear _____ 11
- 10b. Stem hairy; leaves narrow-linear or linear (Medog County in SE Xizang)
 8. *A. angustissimus* (W. T. Wang) W. T. Wang
- 11a. Leaves ovate, narrow-ovate or broadly lanceolate; bracts 2–3cm long (SE Xizang, NW Yunnan; Sikkim, Bhutan, NE India, N Burma)
 5. *A. bracteatus* A. DC.

- 11b. Leaves oblanceolate-linear or oblanceolate (Chayu County in SE Xizang, Gungshan County in NW Yunnan) 7. A. linearifolius C. E. C. Fisch.
- 12a. Stems and leaves hairy; leaves small 13
12b. Stem and leaves glabrous 17
- 13a. Leaves opposite or 3-verticillate, denticulate; corolla yellow or white, with the lower lip 3-fid to slightly below the middle; anthers of the 2 pairs of stamens coherent at apices (Xichou County in SE Yunnan; N Vietnam)
red 22. A. denticuliger W. T. Wang
- 13b. Leaves entire; corolla orange, with the lower lip 3-fid nearly or quite to base; anthers of the stamens coherent in pairs at apices 14
- 14a. Calyx 5-fid to slightly below the middle; corolla not oblique at mouth, with the limb erect and the upper lip as long as the lower one; leaves near top of stem fasciculate (C & SE Yunnan) 17. A. humilis Hemsl.
- 14b. Calyx 5-sect to base; corolla very oblique at mouth, with the lower lip longer than the upper one and spreading, lobes unequal in size, the median one often reflexed 15
- 15a. Leaves 4, aggregated near the top of stem, subverticillate, narrow-obovate (SW Yunnan) 18. A. andersonii Clarke
- 15b. Leaves opposite or 3-verticillate 16
- 16a. Leaves opposite, oblong or elliptic; seed hairs 1.5–2cm long (S Yunnan; Sikkim, Bhutan, NE India, N Burma) 20. A. gracilis Clarke (*A. novogracilis* W. T. Wang)
- 16b. Leaves 3-verticillate, ovate; seed hairs 0.65–1.2cm long (Cangyuen & Mengxing Counties in S Yunnan) 19. A. mengxingensis W. T. Wang
- 17a. Calyx 5-sect to base, without a tube 18
17b. Calyx 5-fid or 5-lobed, with a distinct tube 25
- 18a. Corolla glabrous outside 19
18b. Corolla hairy outside 23
- 19a. Leaves 5–9mm wide; corolla distinctly bilabiate, oblique at mouth, with the lower lip longer than the upper one, spreading and the lobes unequal; seeds with one flat linear appendage on each end (C & SE Yunnan, Guangxi; N Vietnam) 21. A. buxifolius Hemsl.
- 19b. Leaves exceeding 10mm wide; corolla indistinctly bilabiate, not oblique at mouth, with the lower lip nearly as long as the upper one and the lobes subequal in size; seeds with one hair-like appendage at each end or with two at one end and one at the other 20
- 20a. Leaves thinly coriaceous or papery, not foveolate beneath 21

- 20b. Leaves thickly coriaceous or coriaceous, foveolate beneath (Menghai County in S Yunnan) 12. A. planipetiolatus H. W. Li
- 21a. Leaves 5.8–7.4cm long, long-acuminate or caudate at apex (Xichou County in SE Yunnan) 9. A. acuminatissimus W. T. Wang
- 21b. Leaves up to 3–5cm long, obtuse or acutish at apex, seldom shortly acuminate 22
- 22a. Leaves up to 3cm long, 1.4cm wide; corolla 3.7cm long (Lincang County in SW Yunnan; N Burma) 11. A. tubulosus Anthony
- 22b. Leaves up to 5cm long, 2.4cm wide; corolla 2–2.2cm long (W Guangxi, Zhenfeng County in SW Guizhou) 14b. A. austroyunnanensis W. T. Wang
var. *guangxiensis* (W. T. Wang) W. T. Wang (*A. guangxiensis* W. T. Wang)
- 23a. Calyx glabrous or subglabrous outside 24
23b. Calyx puberulous outside (S Yunnan, Lungzhou County in SW Guangxi)
14. A. austroyunnanensis W. T. Wang
- 24a. Leaves narrow-oblong, 1–1.5cm wide (Gungshan County in NW Yunnan) 13. A. angustioblongus W. T. Wang
- 24b. Leaves elliptic or narrow-obovate, 2–4.2cm wide (Longling and Tengchung Counties in W Yunnan; N Thailand) 23. A. lineatus Craib
- 25a. Corolla 2–3cm long 26
25b. Corolla about 5cm long 31
- 26a. Calyx glabrous outside 27
26b. Calyx puberulous outside 29
- 27a. Flower solitary, axillary; calyx 7mm long, 5-fid to 2mm above base (Yamshan County in SE Yunnan) 10. A. lancilimbus W. T. Wang
- 27b. Flowers fasciculate at top of stem; calyx 1–1.8cm long, 5-lobed, sometimes divided to the middle 28
- 28a. Leaves long-elliptic, acuminate or long-acuminate at apex (NW & S Yunnan; Sikkim) 29. A. hookeri Clarke
- 28b. Leaves oblong-lanceolate, caudate or long-caudate at apex (S Xizang; Nepal, Bhutan) 30. A. maculatus Lindl.
- 29a. Leaves linear or oblanceolate-linear; calyx 0.5cm long (Tengchung & Gungshan Counties in NW Yunnan) 31. A. tengchungensis W. T. Wang
- 29b. Leaves ovate or oblong 30
- 30a. Leaves ovate or narrow-obovate, 3.7–6.5cm long; calyx 1–1.8cm long, 5-fid beyond the middle (Gungshan County in NW Yunnan) 15. A. lasianthus W. T. Wang
- 30b. Leaves oblong, 11–13cm long; calyx 0.4cm long, 5-fid to near the middle (Medog County in SE Xizang) 26. A. medogensis W. T. Wang

- 31a. Calyx puberulous outside, 7–8mm long, 5-fid to near or slightly beyond the middle (Medog County in SE Xizang) **25. A. lasiocalyx** W. T. Wang
 31b. Calyx glabrous outside _____ 32
- 32a. Corolla with subulate or filiform hairs 0.1mm thick in the lower part inside; calyx 1.2–1.5cm long, with lobes shorter than tube _____ 33
 32b. Corolla with hairs triangular in shape, 0.5–0.6mm wide in the lower part inside 34
- 33a. Calyx lobes triangular, 2–3mm long; seeds with one hair at each extremity (Maguan County in SE Yunnan; N Vietnam) **16. A. macranthus** (Merr.) Pellegr.
 33b. Calyx lobes narrow-triangular, 3–5mm long; seeds with one hair at one end and 2 hairs at the other (SE Xiang, W & S Yunnan; N India, N Burma)
27. A. mimetes Burtt
- 34a. Leaves shorter, up to 9.5cm long, cuneate or obtuse at base; calyx about 1.2cm long, with lobes as long as or longer than tube, acute at apex (Medog County in SE Xizang) **24. A. dolichanthus** W. T. Wang
 34b. Leaves up to 14.8cm long, attenuate at both ends; calyx 0.9–1cm long, with lobes shorter than tube, obtuse at apex (Yingjiang County in SW Yunnan)
28. A. pachytrichus W. T. Wang
- 48. Lysionotus** D. Don in Edinb. Phil. Journ. 7: 85 (1822); Wang in Guihaia 3(4): 249–284 (1983).
 About 30 spp., ranging from N India, Nepal eastward through Thailand, Vietnam and S China to S Japan. 28 spp. in China.
- 1a. Seed appendages subulate, shorter than seed proper, 0.1–0.2mm long; erect subshrub erect, often terrestrial, up to 80cm high, without phellem; leaves opposite, herbaceous or thinly papery; calyx 5-sect to base; anthers without appendages (Sect. 1. *Didymocarpoides* W. T. Wang) _____ 2
 1b. Seed appendages often hair-like, as long as or longer than seed proper, exceeding 0.3mm long; stamens inserted at the middle of corolla, with curved filaments _____ 4
- 2a. Lateral veins of leaf flat; corolla about 3cm long; stamens inserted slightly above the base of corolla, with straight filaments (Ser. 1. *Longipedunculati* W. T. Wang) (Pingbian County in SE Yunnan)
1. L. longipedunculatus (W. T. Wang) W. T. Wang
 2b. Lateral veins of leaf prominent beneath; corolla 1.7–2cm long; stamens inserted at the middle of corolla tube, with geniculate filaments (Ser. 2. *Oblongifolii* W. T. Wang) _____ 3
- 3a. Leaves subentire, with the small teeth reduced to glands; corolla glabrous inside (SW Guangxi) _____ **2. L. oblongifolius** W. T. Wang
 3b. Leaves densely denticulate; corolla puberulous inside (Malipo County in SE Yunnan, Napo & Nandan Counties in W Guangxi) **3. L. denticulosus** W. T. Wang

KEYS TO THE GESNERIACEAE OF CHINA

- 4a. Small shrub or subshrub, erect or ascending, often epiphytic, with the stem up to 1m long and without phellem; leaves often coriaceous, or papery, seldom herbaceous, with lateral veins rather indistinct (not prominent) and the veinlets obscure (Sect. 2. *Lysionotus*) _____ 5
 4b. Scandent shrub; stem up to 9m long, with phellem; leaves opposite, papery, with distinct lateral veins and the veinlets reticulate beneath; cyme 1-flowered; bracts broadly ovate; calyx 5-lobed; connective not appendaged (Sect. 3. *Cyathocalyx* W. T. Wang) (Jinping & Pingbian Counties in SE Yunnan, W & S Guangxi; N Vietnam) _____ **28. L. chingii** W. T. Wang
- 5a. Calyx 5-fid to or near base; bracts not cordate _____ 6
 5b. Calyx 5-lobed or 5-fid to the middle, with a distinct tube; anther connective 1-appendaged on the dorsal surface; leaves 3-verticillate or opposite (Ser. 3. *Gamosepali* W. T. Wang) _____ 35
- 6a. Anthers not appendiculate (Ser. 1. *Heterophylli* W. T. Wang) _____ 7
 6b. Anther connective with an appendage on the dorsal surface (Ser. 2. *Lysionotus*) _____ 23
- 7a. Leaves small, 3.5–11mm long, 3–6mm wide _____ 8
 7b. Leaves exceeding 15mm long _____ 9
- 8a. Leaves glabrous, with 1(–2) small teeth at each margin; calyx about 1.5mm long, with triangular lobes (Sangzhi County in NW Hunan, Xianfeng County in SW Hubei) _____ **17. L. microphyllus** W. T. Wang
 8b. Leaves puberulous near margin above, 1–2-crenate at each margin; calyx about 4mm long, with linear-triangular lobes (Omei Mountain in W Sichuan)
18. L. omeiensis W. T. Wang
- 9a. Leaf blade glabrous _____ 10
 9b. Leaf blade hairy; stem hairy too _____ 19
- 10a. Stem glabrous _____ 11
 10b. Stem puberulous _____ 17
- 11a. Leaves 4–8 crowded at top of stem _____ 12
 11b. Leaves 3-verticillate or opposite _____ 14
- 12a. Leaves 1.5–8.2cm long, 1–3.2cm wide, denticulate or subentire; bracts linear, 1–1.5mm long, 0.2mm wide _____ 13
 12b. Leaves smaller, 1.5–1.8cm long, 5–7mm wide, 3–6-dentate at each margin; bracts orbicular-ovate or suborbicular, 4mm long and wide; corolla about 2cm (NW Hunan, E Sichuan) _____ **8. L. involucratus** Franch.
- 13a. Calyx segments linear-triangular or triangular-linear, 4–8mm long; corolla 2.6–3.5cm long (NE Yunnan, W & S Sichuan)
6. L. heterophyllus Franch. var. *heterophyllus*

- 13b. Calyx segments linear or narrowly subulate, 12–15mm long; corolla about 6cm long (Jinping & Pingbian Counties in SE Yunnan; N Vietnam)
7. L. petelotii Pellegr.
- 14a. Leaves subentire; with the teeth reduced to glands 15
 14b. Leaves distinctly dentate 16
- 15a. Stem erect; leaves 3-verticillate, chartaceous, acuminate at apex; cyme 3–8-flowered; corolla yellow, about 1.7cm long (Malipo County in SE Yunnan, W Guangxi, Xingyi County in SW Guizhou) 4. *L. aeschynanthoides* W. T. Wang
- 15b. Stem ascending; leaves opposite, coriaceous, obtuse at apex; cyme 1–2-flowered; corolla white, 4–5.4cm long (W Sichuan) 5. *L. wilsonii* Rehd.
- 16a. Petiole 1–4mm long; bracts narrow-ovate; corolla purple with tube 5mm diam. in the upper part (Fugong & Gungshan Counties in NW Yunnan)
9. L. sessilifolius Hand.-Mazz.
- 16b. Petioles 5–8mm long; bracts linear; corolla dark-purple, with tube 8mm diam. in the upper part (Medog County in SE Xizang; Nepal, Sikkim)
10. L. atropurpureus Hara
- 17a. Corolla hairy, not dark-purple; leaves up to 5cm long, with lateral veins 3–4 on each side 18
 17b. Corolla glabrous, dark-purple, 3cm long; leaves oblong or narrow-elliptic, 8–14cm long, with dense small teeth at margins and 5–8 lateral veins at each side
10. L. atropurpureus Hara
- 18a. Leaves oblong or elliptic, up to 5cm long, 0.6–2cm wide, denticulate or subentire; corolla white, puberulous outside, glabrous inside (Longsheng County in N Guangxi) 6c. *L. heterophyllum* var. *lasianthus* W. T. Wang
- 18b. Leaves elliptic-ovate or ovate, 0.8–2.2cm long, 0.4–0.9cm wide with a few small teeth at margin; corolla yellow, glabrous outside, puberulous inside (Weixi to Gungshan County in NW Yunnan) 14. *L. sulphureus* Hand.-Mazz.
- 19a. Leaves elliptic, narrow-ovate or oblong, usually glabrous above, pilose beneath (somewhat densely puberulous in *L. wardii*); calyx 5-sect to base 20
 19b. Leaves broadly linear or lanceolate, densely puberulous on both surfaces, up to 7mm wide 22
- 20a. Calyx segments lanceolate-linear, 7–13mm long; corolla glabrous outside 21
 20b. Calyx segments narrowly elliptic, narrowly obovate or ovate, 2.5–4.5mm long; corolla puberulous outside (Medog County in SE Xizang, Gungshan County in NW Yunnan and Liuchun & Hekou Counties in SE Yunnan; N Burma, NE India)
13. L. wardii W. W. Smith
- 21a. Leaves papery or herbaceous, long elliptic, ovate-oblong or oblong, with 5–8 lateral veins at each side (W & NW Yunnan) 11. *L. forrestii* W. W. Smith

- 21b. Leaves coriaceous, narrow-oblong, with 4–6 lateral veins at each side (Lushui County in W Yunnan; NE Burma) 12. *L. gracilis* W. W. Smith
- 22a. Leaves lanceolate or linear-lanceolate, 1.5–2.2cm long, up to 4mm wide; calyx 5-sect to base, 7.5–8.5mm long; corolla purplish, pistil glabrous (Gungshan County in NW Yunnan, Linzhi County in SE Xizang)
15. L. angustisepalus W. T. Wang
- 22b. Leaves linear or broadly linear, 2.4–3.5cm long, 4–7mm wide; calyx 5-fid, 12–20mm long, with tube 3–3.5mm long; corolla white; pistil puberulous (Medog County in SE Xizang) 16. *L. metuoensis* W. T. Wang
- 23a. Leaves 3–7 subverticillate, coriaceous, glabrous; corolla glabrous (Taiwan Island) 24. *L. montanus* Kao & DeVol
- 23b. Leaves opposite or 3-verticillate 24
- 24a. Leaf blades puberulous beneath (Weining County in W Guizhou)
22b. L. pauciflorus var. *indutus* W. T. Wang
- 24b. Leaf blades glabrous 25
- 25a. Corolla glabrous; leaves coriaceous; stem glabrous (sometimes pilose in *L. pauciflorus*); disc annular or cupulate 26
- 25b. Corolla hairy outside; disc annular 32
- 26a. Calyx 9–12mm long; leaves opposite, oblong, 5–10mm long, indistinctly denticulate (Runghui County in C Guangxi) 19. *L. kwangsiensis* W. T. Wang
- 26b. Calyx up to 4(–5)mm long; leaves 3 verticillate or opposite 27
- 27a. Disc annular, obtuse-dentate at margin; leaves 3-verticillate 28
- 27b. Disc cupulate, dentate at margin; leaves 3-verticillate or opposite, sparsely denticulate; calyx 5-fid or 5-sect to base 29
- 28a. Stem glabrous; leaves oblong, 2.4–3.8cm wide, 4.5–9cm long; calyx 5-fid (Hainan Island) 20. *L. hainanensis* Merr. & Chun
- 28b. Stem appressed-puberulous; leaves linear, 0.4–0.8cm wide, 3.3–5.5cm long; calyx 5-sect to base (N Guangxi, Guiding County in S Guizhou)
22d. L. pauciflorus var. *linearis* Rehd.
- 29a. Leaves ovate (SE Yunnan) 21. *L. carnosus* Hemsl.
 29b. Leaves not ovate 30
- 30a. Leaves cuneate-linear, cuneate-oblong or linear, sparsely dentate at the upper margin or entire (E Yunnan, Guangxi, Guangdong, Fujian, Taiwan, Zhejiang, S Jiangsu, Anhui, Jiangxi, Hunan, Hubei, Guizhou, Sichuan, S Shaanxi)
22a. L. pauciflorus Maxim. var. *pauciflorus*
- 30b. Leaves with other shapes 31

- 31a. Leaves elliptic, narrow-elliptic or oblong, with a few teeth at upper margin (SE Yunnan, W Guangxi, S Guizhou) **22c. *L. pauciflorus* var. *latifolius* W. T. Wang**
- 31b. Leaves lanceolate-oblong or lanceolate, margin remotely denticulate from base to apex (Dongxing County in S Guangxi) **22e. *L. pauciflorus* var. *lanceifolius* W. T. Wang**
- 32a. Stem appressed-puberulous near apex (Xing'an County in NE Guangxi) **22f. *L. pauciflorus* var. *lasianthus* W. T. Wang**
- 32b. Stem glabrous _____ 33
- 33a. Leaves coriaceous, obtuse or acutish at apex, with obscure lateral veins; bracts broadly oblanceolate, about 2mm long, 1mm wide, puberulous (Taiwan) **23. *L. ikedae* Hatusima**
- 33b. Leaves herbaceous, acuminate at apex, with lateral veins slightly conspicuous; bracts ovate or elliptic, 3–8mm long, 8–16mm wide, glabrous _____ 34
- 34a. Stem not angled or with indistinct longitudinal angles, not winged (Medog County in SE Xizang, W & S Yunnan, NW Guangxi, SW Guizhou; Nepal, Bhutan, N India, N Burma, N Thailand, N Vietnam) **25a. *L. serratus* D. Don var. *serratus***
- 34b. Stem narrowly winged along longitudinal angles (Pingbian County in SE Yunnan) **25b. *L. serratus* var. *pterocaulis* C. Y. Wu**
- 35a. Leaves papery, long-elliptic or elliptic-ovate, 5–13cm long, 2.8–6cm wide, with 4–6 lateral veins at each side; flowers 2–11 in cyme; connective appendages 1.2–1.8mm long (Medog & Chayu Counties in SE Xizang) **26. *L. gamosepalus* W. T. Wang**
- 35b. Leaves coriaceous, oblanceolate or narrow-oblong, 0.9–3.1cm long, 3–7mm wide, with obscure lateral veins; flowers solitary, axillary; connective appendages 0.4mm long (Sangzhi County in NW Hunan) **27. *L. sangzhiensis* W. T. Wang**
- 49. *Rhynchotechum* Blume, Bijdr. 14: 775 (1826); Burtt in Notes RBG Edinb. 24: 35–39 (1962); Wang in Guihaia 4: 183–190 (1984).**
- 1a. Stem, petioles and cyme appressed-brown-lanate _____ 2
- 1b. Stem, petioles and cyme densely spreading-yellowish-villous; leaves oblong or elliptic, with 13–18 lateral nerves at each side (Medog County in SE Xizang, C S & SE Yunnan, W Guangxi; Sikkim, Bhutan, Assam, Vietnam) **6. *R. vestitum* Clarke**
- 2a. Leaves opposite _____ 3
- 2b. Leaves alternate or lower ones opposite (Hainan, E Guangdong, S Fujian, Taiwan; Ryukyu Islands, the Philippines) **5. *R. discolor* (Maxim.) Burtt**
- 3a. Leaves mostly elliptic, seldom obovate _____ 4

- 3b. Leaves oblanceolate or long-elliptic _____ 5
- 4a. Leaves with 10–17 lateral nerves on each side; ovary and berry glabrous (Medog County in SE Xizang; Bhutan, Assam) **1. *R. ellipticum* (Dietr.) A. DC.**
- 4b. Leaves with 9–14 lateral nerves on each side; ovary and berry puberulous (SE Yunnan, W & S Guangxi, Hainan, S Guangdong, Taiwan) **2. *R. formosanum* Hatusima**
- 5a. Leaves mostly oblanceolate, shortly acuminate or acuminate at apex, with 13–26 lateral nerves on each side; stamens inserted near to corolla base, anther 1.5mm in diam., ovary and berry glabrous (SW to SE Yunnan, S Sichuan, S Guangxi, S Guizhou, Hainan, Guangdong, S Fujian; Assam, Burma, Vietnam, Thailand) **3. *R. obovatum* (Griff.) Burtt**
- 5b. Leaves mostly long-elliptic, attenuate at apex, with 12–15 lateral nerves on each side; stamens inserted near the middle of the corolla-tube, anther 0.6–0.7mm diam., ovary and berry puberulous (Nanning & Shanglin Counties in S Guangxi) **4. *R. longipes* W. T. Wang**
- 50. *Cyrtandra* J. R. & G. Forst., Char. Gen. 5 (1776); Clarke in A. & C. DC., Mon. Phan. 5(1): 201–287 (1883).** (Taiwan; Philippines) **C. umbellifera** Merr.
[*Cyrtandra* is the largest genus of Gesneriaceae with c. 500 species ranging from Nicobar Islands and S Thailand through Malesia and S Pacific to Hawaiian Islands. This is the northernmost outlier of the genus in E Asia.]
- 51. *Gyrogyne* W. T. Wang in Bull. Bot. Res. 1: 41, 51 fig. 7 (1981), trans. & reimp. in Contr. NYBG 16: 21, 45, 55 fig. 7 (1986). (W Guangxi) **G. subaequifolia** W. T. Wang**
- 52. *Stauranthera* Benth., Scroph. Ind. 57 (1835). (SE Yunnan, SW Guangxi, Hainan; trop. Asia) **S. umbrosa** (Griff.) Clarke**
[A genus of perhaps 8 species, known at present from NE India and S China through Burma, Thailand, Vietnam, Malay Peninsula, Sumatra, Java, Borneo, Philippines to Sulawesi and with an outlying species in Papua New Guinea. *S. grandiflora* (as *grandifolia*) is illustrated in Botanical Magazine (tab. 5409.1863); it differs from *S. umbrosa* in having larger flowers with a spurred corolla.]
- 53. *Whytockia* W. W. Smith in Trans. Bot. Soc. Edinb. 27: 338 (1919); Weber in Notes RBG Edinb. 40: 359–367 (1982). (from A. Weber, 1982)**
- 1a. Plus-leaves c. 15cm long, 6cm broad, sessile; internodes (in the flowering region) rather short (up to 2cm); flowers c. 2.5cm long, pink; stigmas 2 (Mengzi County in SE Yunnan) **1. *W. chiritiflora* (Oliv.) W. W. Sm.**

- 1b. Plus-leaves up to 11cm long, less than 6cm broad, petiolate or sessile; internodes more extended; flowers at most 18mm long, pink, light violet-purple or white; stigmas 2 or 1 _____ 2
- 2a. Leaves sessile or subsessile; flowers 12–15mm long, corolla not pouched, white; upper part of the ovary unilocular; stigma 1; plant usually with branches from the creeping base (Taiwan) _____ 3. *W. sasakii* (Hayata) Burtt
- 2b. Leaves 7–11cm long, at least lower ones with distinct petiole (c. 0.5cm); flowers 14–18mm long, corolla somewhat pouched; ovary bilocular throughout, stigmas 2; plant usually not branched 2. *W. tsiangiana* (Hand.-Mazz.) A. Weber _____ 3
- 3a. Corolla white, with 2 yellow lines in the throat (SE Yunnan, NW Guangxi, NW Hunan, SW Hubei, Guizhou, S Sichuan) _____ 2a. *W. tsiangiana* var. *tsiangiana*
- 3b. Corolla pink or light violet-purple _____ 4
- 4a. Leaf margin with short teeth (0.5mm) (SE Yunnan)
 2b. *W. tsiangiana* var. *minor* (W. W. Sm.) A. Weber
- 4b. Leaf margin coarsely serrate (teeth 2mm) (S Sichuan)
 2c. *W. tsiangiana* var. *wilsonii* A. Weber

[The genus is endemic to China, but *W. sasakii* on Taiwan is widely disjunct from the other two species in Guizhou and Yunnan. Weber regards *Whytockia* as representing the group of plants from which the remarkable *Monophyllaea* of tropical Malesia arose. Ill.: *W. chiritiflora* in Hook., Ic. Pl. t. 2454 (1896); *W. sasakii* in *Taiwania* 17(2): pl. 14 (1972).]

54. Rhynchoglossum Blume, Bijdr. 14: 741 (1826).

- 1a. Perennial herbs; leaves up to 22cm long; flowers large, calyx 1.8–2cm long, corolla deep-purple, c. 2.1cm long; fertile stamens 4, anther-thecae divaricate (W Sichuan) _____ 1. *R. omeiene* W. T. Wang
- 1b. Annual herbs; leaves up to 12cm long; flowers smaller, calyx c. 5.5mm long, corolla purple, c. 1cm long; fertile stamens 2, anther-thecae subparallel
 2. *R. obliquum* Bl. _____ 2

- 2a. Lower corolla-lip 3-lobed (W & S Yunnan, S Guizhou; tropical Asia)
 2a. *R. obliquum* var. *obliquum*
- 2b. Lower corolla-lip entire (W and S Yunnan, SW Sichuan, SW Guizhou, W Guangxi, Taiwan) _____ 2b. *R. obliquum* var. *hologlossum* (Hayata) W. T. Wang

[*Rhynchoglossum* has perhaps 12 species in Asia, with 1(–3) in America (Mexico and Colombia). In Asia only annual species are found E of Borneo. The species with 4 stamens are found between India and Borneo and then in America. The morphological details of plant and flower are described by A. Weber (in Bot. Jahrb. Syst. 99: 1–47, 1978).]

55. Epithema Blume, Bijdr. 14: 737 (1826).

(SE Yunnan, S Guizhou, Guangxi, N Guangdong; Nepal, Bhutan, Assam)

E. carnosum Benth.

[A genus of 22 species (Hilliard & Burtt, revision in progress). One in tropical Africa (Sierra Leone to Uganda, the remainder in Asia from India, Sri Lanka and Nepal eastwards to the Solomon Islands. The pedunculate inflorescence, consisting of small flowers in tight pair-flowered cincinnus subtended by a single usually boat-shaped bract, is very characteristic. For structural details see A. Weber in Beitr. Biol. Pflanzen 63: 431–451, 1988.]

56. Titanotrichum Solereder in Ber. Deutsch. Bot. Ges. 27: 400 (1909).

(Fujian, Taiwan, S Japan) _____ 1. *T. oldhamii* (Hemsl.) Solereder [A monotypic genus of very uncertain affinity. The spectacular flowers, yellow blotched dark red, are often produced only at the base of the raceme, which then tails off into a long weak axis bearing tufts of gemmae (all capable of sprouting) in place of flowers. The plant is illustrated in the Botanical Magazine (N.S. t. 78, 1949) and in *Taiwania* (17: pl. 13, 1972). *T. parviflorum* X. B. Ye & W. T. Lin in J. S. China Agric. Univ. 9(4): 38–40 (1988), type Ye 35845 (SCAB) is a species of *Staurogyne* in Acanthaceae.]

INDEX TO GENERA (BY NUMBER)

(The index includes a number of synonyms not mentioned in the text.)

- Aeschynanthus, 47, p. 13, 62
Aikinia = *Epithema*, 55
Allocheilos, 39, p. 12, 57
Allostigma, 23 p. 11, 30
Ancylostemon, 8, p. 10, 21
Anna, 45, p. 13, 61
Beccarinda, 15 p. 27, 10
Boea, 41 p. 13, 60
Boeica, 17 p. 10, 28
Boeicopsis = *Boeica*, 17
Bournea, 2, p. 4, 14
Brachiosemon = *Ornithoboea*, 42
Briggsia, 9 p. 10, 22
Briggsiopsis, 10 p. 10, 24
Buxiphyllum = *Paraboea*, 40
Calcareoboea, 38
Cathayanthe, 14 p. 16, 27
Ceratoscyphus = *Chirita*, 32
Chirita, 32 p. 12, 35
Chiritopsis, 33, p. 12, 48
Conandron, 4, p. 8, 15
Corallodiscus, 12 p. 10, 25
Cyrtandra, 50, p. 14, 20, 71
Dasydesmus = *Oreocharis*, 5
Dayaoshania, 20 p. 11, 29
Deinocheilos, 29 p. 11, 35
Deltocheilos = *Chirita*, 32
Dichiloboea = *Trisepalum*, 43
Didissandra, 11 p. 10, 25
Didymocarpus, 35, p. 13, 50
Didymostigma, 21 p. 11, 29
Dolicholoma, 37, p. 13, 57
Dorcoceras = *Boea*, 41
Epithema, 55, p. 14, 73
Gyrocheilos, 36 p. 13, 54
Gyrogyne, 51, p. 14, 71

Hemiboea, 25 p. 11, 30
Hemiboeopsis, 26 p. 12, 32

Isanthera = Rhynchotechum, 49
Isometrum, 7 p. 9, 10, 19

Klugia = Rhynchoglossum, 54

Lagarosolen, 30, p. 12, 35
Leptoboea, 16 p. 10, 27
Loxostigma, 46, p. 13, 62
Lysionotus, 48, p. 13, 66

Matsumuria = Titanotrichum, 56
Metabriggsia, 24 p. 11, 30
Metapetrocosmea, 28, p. 12, 35

Opithandra, 18 p. 11, 28
Oreocharis, 5 p. 9, 15
Ornithoboea, 42, p. 13, 60
Oshimella = Whytockia, 53

Paraboea, 40 p. 13, 57
Perantha = Oreocharis, 5
Petrocodon, 34, p. 12, 50
Petrodoxa = Beccarinda, 15

Petrocosmea, 27 p. 11, 32
Platystemma, 13 p. 10, 27
Primulina, 31 p. 12, 35
Pseudochirita, 22 p. 11, 29

Raphiocarpus = Didissandra, 11
Rhabdothamnopsis, 44, p. 13, 61
Rhynchoglossum, 54, p. 14, 72
Rhynchotechum, 49, p. 13, 70

Schistolobos, 19 p. 11, 29
Sinoboea = Ornithoboea, 42
Slackia = Beccarinda, 15
Stauranthera, 52, p. 14, 71

Tengia, 3 p. 9, 15
Thamnocharis, 1 p. 9, 14
Titanotrichum, 56 p. 9, 73
Tremacron, 6 p. 9, 18
Trichosporum = Aeschynanthus, 47
Trisepalum, 43, p. 13, 61
Tuminodus = Anna, 45

Vaniotia = Petrocosmea, 27
Whytockia, 53, p. 14, 71

The Edinburgh Botanic Garden (Sibbald) Trust is an independent charitable Trust established in 1977 wholly for the purpose of supporting the work of the Royal Botanic Garden, Edinburgh.

Secretary: J. C. Hedge
Royal Botanic Garden
Edinburgh, EH3 5LR
U.K.

INDEX TO GENERA (BY PAGE)

- Aeschynanthus, p. 62
Allocheilos, p. 57
Allostigma, p. 30
Ancylostemon, p. 21
Anna, p. 61
- Beccarinda, p. 27
Boea, p. 60
Boeica, p. 28
Bournea, p. 14
Briggsia, p. 22
Briggsiopsis, p. 24
- Calcareoboea, p. 57
Cathayanthe, p. 27
Chirita, p. 35
Chiritopsis, p. 48
Conandron, p. 15
Corallodiscus, p. 25
Cyrtandra, p. 71
- Dayaoshania, p. 29
Deinocheilos, p. 35
Didissandra, p. 25
Didymocarpus, p. 50
Didymostigma, p. 29
Dolicholoma, p. 57
- Epithema, p. 73
- Gyrocheilos, p. 54
Gyrogyne, p. 71
- Hemiboea, p. 30
Hemiboeopsis, p. 32
- Isometrum, p. 19
- Lagarosolen, p. 35
Leptoboea, p. 27
Loxostigma, p. 62
Lysionotus, p. 66
- Metabriggsia, p. 30
Metapetrocosmea, p. 35
- Opithandra, p. 28
Oreocharis, p. 15
Ornithoboea, p. 60
- Paraboea, p. 57
Petrocodon, p. 50
Petrocosmea, p. 32
Platystemma, p. 27
Primulina, p. 35
Pseudochirita, p. 29
- Rhabdothamnopsis, p. 61
Rhynchoglossum, p. 72
Rhynchotechum, p. 70
- Schistolobos, p. 29
Stauranthera, p. 71
- Tengia, p. 15
Thamnocharis, p. 14
Titanotrichum, p. 73
Tremacron, p. 18
Trisepalum, p. 61
- Whytockia, p. 71