CONVOLVULACEAE

Bonamia

Bonamia media

CONVOL

Bonamia oblongifolia

CONLUCL

Bonamia pannosa

CONVOL. Bonamia rosea

b. BKEWEKIA, K. Br.

(Prevostea, Chois.; Seddera, Hochst. and Steud.; Stylisma, Nutt.)

Corolla campanulate, angular or shortly and broadly 5-lobed, folded in the bud. Ovary 2-celled, with 2 ovules in each cell. Style bifid or divided to the base, with a capitate stigma to each branch. Fruit a dry capsule.—Herbs or undershrubs, with erect prostrate trailing or twining stems, often tomentose or silky. Leaves usually entire. Flowers axillary, solitary or rarely 2 or 3 together in the Australian species, the upper ones often forming a leafy spike, or in extra-Australian species the peduncles often several-flowered.

The genus, as at present constituted, includes several species from tropical Asia, Africa, and America, but the Australian ones appear to be all endemic. The habit is often that of some species of Convolvulus, but the style is very different. A. Gray (Proc. Amer. Acad. v. 336), relying only upon the characters given by R. Brown and by Choisy, thought that Breweria could not be separated from Bonamia, Thou.; the study, however, of Thouars' detailed description and figure (in the absence of authentic specimens) shows that the latter has neither the inflorescence nor probably the æstivation of the corolla nor the fruit of Convolvulaceæ, but appears to be more closely allied to Ehretia and Cordia, with the style of the former and the embryo of the latter. A. Gray appears, however, to be quite right in uniting Stylisma, Nutt., with Breweria; nor can I distinguish the African Seddera, Hochst., nor yet the tropical American Dufourea, H. B. and K., or Prevostea, Chois., for the sole character given for the latter, the enlarged outer sepals, occurs in a very marked way in B. pannosa, and to a slight degree in several other species.

Silky-pubescent or shortly hirsute. Bracteoles minute.

Stems prostrate. Leaves shortly petiolate, the lower ones ovate-oblong or ovate-lanceolate, obtuse or acute and often somewhat cordate at the base, the upper ones lanceolate, acute, rarely above 1 in. long. Peduncles 1-flowered, short, with small bracts at the base. Sepals ovate-lanceolate, subulate-acuminate, slightly unequal, 2 to 3 lines long. Corolla (white?) under  $\frac{1}{2}$  in long. Ovary hirsute at the top with long hairs. Styles cohering to the middle, but readily separable to the base.—Chois. in DC. Prod. ix. 438.

N. Australia. S. Arnhem Bay, R. Brown; Victoria river, F. Mueller. Queensland. Bowen river, Bowman.
N. S. Wales. Between Darling river and Cooper's Creek, Neilson.

Var.? parviflora. Stems very slender. Leaves more cordate. Flowers smaller.—Victoria river, F. Mueller.

Var.? villosa. Much more villous. Flowers small.—Victoria river, F. Mueller (the specimens very imperfect).

The circumscription of this species and of B. linearis and B. brevifolia may require considerable modification when a more complete series of specimens shall be obtained.

## 3. CUNVULVULUS, Linn.

(Calystegia, R. Br.; Jacquemontia, Chois.)

Corolla campanulate, entire, angular or rarely lobed. Ovary 2-celled, with 2 ovules in each cell. Style filiform, with 2 ovate oblong linear or subulate stigmatic lobes. Fruit a dry capsule, completely or sometimes incompletely 2-celled.—Twining prostrate creeping or erect herbs, or in species not Australian undershrubs or low shrubs. Leaves entire or rarely toothed, lobed or deeply divided. Flowers axillary, solitary or in corymbose or umbel-like cymes. Seeds glabrous, at least in the Australian species.

A large genus, distributed over the whole area of the Order, less numerous within the tropics than Ipom a, but extending far into the temperate and cooler regions both of the northern and the southern hemispheres. Of the six Australian species, two are spread over the extratropical regions of both hemispheres; two belong to the tropical Asiatic flora; the

remaining two extend only to New Zealand.

Convolvulus has no character to distinguish it from Ipomæa besides the more or less elongated stigmatic lobes of the style, the habit is usually but not always different. For the subdivision of the genus, the largely developed bracts or bracteoles, and the imperfect development of the septum of the ovary, characters which in *Ipomæa* are scattered and isolated, are so far associated in the group *Calystegia* as to constitute a well-marked section, which however appears to me to be still too artificial to adopt it as a genus after Brown and others. The shortness of the stigmatic lobes, upon which Choisy had founded the genus Jacquemontia as intermediate between Ipomoa and Convolvulus, is not nearly so decided in the typical West Indian Jacquemontias as in Convolvulus marginatus.

SECT. I.	Convolvulus.—Bracts	small or	none.	Dissepiment	of	the	ovary usually
perfect.				•			in the same of the

Flowers solitary or rarely 2 together. Sepals obtuse. Leaves eith	ner.	
very narrow or toothed or lobed		1. C. erubescens.
Flowers in cymes. Sepals acuminate. Leaves cordate, entire.		
Softly tomentose. Pedicels short		2. C. multivalvis.
Glabrous or pubescent. Pedicels rather long		3. C. parviflorus.

SECT. II. Calystegia. - Bracts or bracteoles 2, enlarged and enclosing the calyx. Dissepiment, of the ovary usually incomplete.

Leaves hastate, acuminate. Bracteoles broadly cordate, almost orbicu-

Leaves cordate or hastate, acute or acuminate. Bractcoles ovate, acute, longer than the calyx. Sepals 4 to 5 lines; corolla above 2 in. long Leaves fleshy, reniform or rounded-cordate, obtuse. Bractcoles ovate, very obtuse, shorter than the calyx. Scpals 4 to 6 lines; corolla above 11 in leave. about 1½ in. long . . . . . . . . . . . . . . . 6. C. Soldanella.

5. C. sepium.

5. C. sepium, Linn. Sp. Pt. 218. A tall rather slender herbaceous twiner, quite glabrous or very slightly pubescent, with a creeping perennial rootstock. Leaves from broadly ovate-triangular to lanceolate-hastate, acutely acuminate, cordate with angular basal auricles or lobes, mostly 2 to 4 in. long but sometimes larger. Peduncles longer than the petioles and often as long as the leaves, bearing a single large flower of a pure white or more or less tinged with pink. Bracts large, ovate or ovate-lanceolate, leafy, acute or scarcely obtuse, longer than the calvx and enclosing it. Sepals ovate-lanceolate or lanceolate-acuminate, rather unequal, 4 to 5 lines long. Corolla 2 to Ovary incompletely 2-celled, surrounded by a cup-shaped disk. Stigmatic lobes ovate or oblong, obtuse. Capsule 1-celled.—Calystegia sepium, R. Br. Prod. 483; Chois. in DC. Prod. ix. 433; De Vr. in II. Preiss. i. 345; Hook. f. Fl. Tasm. i. 276.

N. S. Wales. Port Jackson to the Blue Mountains, R. Brown.
Victoria. Wilson's Promontory and Merriman's Creek, F. Mueller; Emu Creek,
Whan; Wendu Vale along rivers and springs, Robertson; Melbourne, Adamson.
Tasmania. Port Dalrymple, R. Brown; abundant in several parts of the island,

J. D. Hooker.

W. Australia. Swan River, Drummond, n. 219; Port Leschenault, Preiss, n. 1926; Tone river, Maxwell; Murchison river, Oldfield.

The species is abundant in the temperate and subtropical regions of the northern hemisphere, and is also in New Zealand. When on the seacoast the lower leaves are sometimes thicker, shorter, and more obtuse, but appear to me to be always very different from those of C. Soldanella.

Cerolvulus alšinoides

DECT. I. CONVOLVULUS .- Dracts small or none. Disseptment of the ovary usually perfect.

1. C. erubescens, Sims, Bot. Mag. t. 1067. A perennial, either glabrous, pubescent or densely tomentose, rarely villous, with a creeping rootstock and slender prostrate trailing or rarely twining stems. Foliage exceedingly variable, the leaves usually more or less sagittate-cordate, the lower ones ovate-lanceolate, the upper ones passing into narrow-lanceolate or linear, with diverging entire or lobed basal auricles and from \(\frac{3}{4}\) to \(\frac{1}{2}\) in. long, but sometimes nearly all small, cordate-ovate obtuse and slightly crenate, sometimes nearly all narrow-linear with either very minute or long and linear basal auricles or lobes. Peduncles often as long as the leaves, 1-flowered, with minute bracts at a distance from the calyx. Sepals 2 to nearly 3 lines long, ovate, obtuse or almost acute. Corolla pink or white, usually from \$\frac{1}{2}\$ to \$\frac{3}{4}\$ in. long. Ovary and fruit completely 2-celled. Stigmatic lobes linear.

—R. Br. Prod. 482; Chois. in DC. Prod. ix. 412; Hook. f. Fl. Tasm. i. 275; C. remotus, R. Br. Prod. 483; Chois. in DC. Prod. ix. 412 (a smallleaved form); C. angustissimus, R. Br. Prod. 482 (very narrow-leaved specimens); C. adscendens, De Vr. in Pl. Preiss. i. 346; C. subpinnatifidus, De Vr. l. c. 347.

Queensland. Moreton Bay, A. Cunningham, and Nerkool Creek, Bowman (both luxuriant specimens, with large leaves and sometimes 2 flowers on the peduncles); Rockhampton, O'Shanesy; Curriwillighi, Barton (both the common form).

N. S. Wales. Port Jackson to the Blue Mountains, R. Brown and many others; northward to New England, C. Stuart, C. Moore, and Clarence river, Beckler; in the interior to Bathurst Plains, A. Cunningham, and to the Barrier Range, Victorian and other Expeditions. Victoria.

Very common in pastures, etc., from the Glenelg to Gipps' Land, Adamson,

Victoria. Very common in pastures, etc., from the Gieneig to Gipps Land, Adamson, F. Mueller, and others; Wimmera, Dallachy.

Tasmania. Near Risden Cove, R. Brown (very narrow-leaved specimens); abundant in good soil, J. D. Hooker.

S. Australia. Spencer's Gulf, R. Brown (very small-leaved specimens); from the Murray to St. Vincent's and Spencer's gulfs, Behr, F. Mueller, and others; Lake Torrens, F. Mueller; in the northern interior, M. Douall Stuart.

W. Australia. Swan River, Drummond, 1st Coll. n. 652, 3rd Coll. n. 87, 4th Coll.

n. 164, Preiss, n. 1924, 1925; Murchison river, Oldfield.

Among the more remarkable forms or varieties are one with very small flowers from the Among the more remarkable forms or varieties are one with very small flowers from the Murray river, F. Mueller, and one with the leaves very densely tomentose and much-cut and crisped and the peduncles very short from Cudnaka, F. Mueller. The species is also in New Zealand, and appears to be the Australasian representative of the South African C. hastalus as well as of the C. arvensis of the northern hemisphere. Besides the synonyms given above, and those quoted by Choisy, it should also probably include C. acaulis, Chois. in DC. Prod. ix. 406, and C. Preissii and C. Huegelii, De Vr. in Pl. Preiss. T. 346, all referred here by F. Mueller, but of which I have seen no specimens. 1. CRESSA, Linn.

Corolla tubular-campanulate; lobes 5, contorted (or otherwise imbricate?) in the bud, not plicate. Ovary 2-celled, with 2 ovules in each cell; styles 2, distinct from the base, each with a capitate stigma. Capsule usually 2-valved and 1-seeded by abortion.—A small branching perennial. Leaves entire. Flowers small, in terminal leafy spikes or heads.

The genus is limited to a single species, common to the warmer regions of the New as well as the Old World.

1. U. cretica, Linn.; Unois. in DU. Prod. 1x. 440. An erect or diffuse, much-branched perennial, sometimes almost woody at the base, rarely exceeding 6 in., hoary silky-pubescent or villous all over. Leaves sessile or the lower ones shortly petiolate, ovate-lanceolate, or in specimens not Australian linear, entire, rarely exceeding  $\frac{1}{4}$  in. Flowers sessile in terminal leafy spikes or heads, rarely reduced to a single flower. Sepals broadly obovate, very obtuse, ciliate, about 2 lines long. Corolla very shortly exceeding the calyx, hairy outside. Anthers large, oblong. Ovary villous. Capsule ovoid, exceeding the calyx, rarely ripening more than one smooth seed. - C. australis, R. Br. Prod. 490.

N. Australia. Islands of the Gulf of Carpentaria, R. Brown; mouth of the Victoria river, F. Mueller; Albert river, Henne.
Queensland. Broad Sound, R. Brown; sandy flats, Port Deuison, W. Hill.
N. S. Wales. Murray and Darling deserts, Victorian Expedition.
S. Australia. Subsaline pastures, Murray river to St. Vincent's Gulf, F. Mueller.
W. Australia, Drummond, n. 131.

The species is abundantly spread over sandy maritime or saline districts in the warmer regions of the Old and New World, extending to the Mediterranean region of Europe. The flowers in some of the tropical Australian specimens are larger than usual, but not otherwise different.

o. EVULVULUS, Linn.

Corolla campanulate or tubular at the base, the limb 5-angled or 5-lobed. Ovary 2-celled, with 2 ovules in each cell. Styles 2, filiform, distinct from the base, each divided into 2 branches; stigmas linear, terminating each branch. Fruit a capsule, with 4 seeds or fewer by abortion.—Herbs, not twining, annual or with a short perennial stock. Leaves entire, usually small. Flowers small, on axillary peduncles or in terminal spikes or racemes.

A considerable tropical American genus, of which one or two species are spread also over the warmer regions of the Old World. The only Australian species is the one-most common over the whole area.

1. E. alsinoides, Linn.; Onois. in Do. 1700. ix. 441. A perennal, with a short almost woody stock, but often flowering the first year so as to appear annual, with numerous slender prostrate or erect stems, 6 in. to 1 ft. long, the whole plant more or less silky-hairy. Leaves usually oblong or lanceolate, sessile or nearly so, 3 to 6 lines long, but varying from ovate to almost linear, obtuse or acute. Flowers small, pale blue or white, 1 to 3 together on slender axillary peduncles mostly longer than the leaves, but the lower ones sometimes shorter and the upper ones often long and filiform, forming a loose terminal leafy raceme or narrow panicle. Bracts small under each pedicel. Sepals narrow, acute. Corolla pale blue and white or entirely of one of these colours, very open or almost rotate, about 3 lines diameter.-R. Br. Prod. 489; E. linifolius, Linn.; R. Br. Prod. 489; Chois. in DC. Prod. ix. 449; E. desumbens, R. Br. Prod. 489; E. villosus, R. Br. Prod. 489, but perhaps not of Ruiz and Pav.; E. heterophyllus, Labill. Sert. Austr. Caled. t. 29; Chois, in DC. Prod. ix. 449, and probably some others enumerated by Choisy; E. pilosus, Roxb. Fl. Ind. ii. 106.

N. Australia. Islands of the Gulf of Carpentaria, R. Brown; N.W. coast, Bynoe, Gregory's Expedition, etc.; Victoria river and Arnhem's Land, F. Mueller; Port Essington, Armstrong, A. Cunningham; in the interior, M. Douall Stuart's Expedition.

Queensland. Abundant along the whole coast, R. Brown and many others; and in

the interior, Mitchell, Bowen, and others.

N. S. Wales. Clarence river, Beckler; New England, C. Stuart; from Darling river to Cooper's Creek, Victorian and other Expeditions.

S. Australia. Cooper's Creek, Howitt's Expedition.

W. Australia. Port Walcott, C. Harper (the following variety only).

Var. sericeus. Leaves thicker and very white, with long silky hairs.—E. argenteus, R. Br. Prod. 489, not of Pursh.—Islands of the Gulf of Carpentaria, R. Brown; Port Walcott, C. Harper.

Linnæus originally distinguished the broad, obtuse-leaved form as an Asiatic, and the narrow acute-leaved as an American species, and since both have been found to be abundant in both the New and the Old World, the distinction has been kept up by Choisy, dant in both the New and the Old World, the distinction has been kept up by Choisy, Grisebach, and others; but the two run so much one into the other that it has appeared to me impossible to separate them in any long series of specimens. Many have the lower leaves of the one and the upper ones of the other, and often the difference appears to arise from soil and station. I had accordingly in the 'Niger Flora,' as well as in the 'Flora Hongkongensis,' proposed to unite the two under the name of E. linifolius. Amongst other supposed Asiatic species, E. angustifolius, Roxb. Fl. Ind. ii. 107, and E. gracillimus, Miq. Fl. Ind. Bat. ii. 629, appears to be a very narrow-leaved state which also occurs in Australia; the African synonyms have been already given by Choisy, and to these ought probably to be added several American ones requiring further investigation. E. villosus, Raiz and Pavon appears however to differ in its flowers much larger than in Brown's spe-Ruiz and Pavon, appears however to differ in its flowers much larger than in Brown's spe(Pharbitis, Batatas, Calonyction, Quamoclit, Aniseia, and Skinneria, Chois.)

Corolla campanulate or with a cylindrical tube; the limb spreading, entire, angular or rarely deeply lobed, folded in the bud. Ovary 2- or 3-celled, with 2 ovules in each cell, or more or less perfectly 4-celled by the addition of a spurious dissepiment between the ovules. Style filiform; stigma capitate, entire, or with 2 short globular or rarely almost ovate lobes. Fruit a dry capsuler-Twining prostrate creeping or rarely low and erect herbs or woody climbers. Leaves entire lobed or divided into distinct segments or leaflets. Flowers often large and showy, axillary, solitary or in dichotomous cymes or rarely in irregular racemes.

cymes or rarely in irregular racemes.

A large genus, dispersed over all warm climates, very few species being found without the tropics, either in the New or the Old World. Of the thirty-eight Australiau species here enumerated, six or perhaps seven are dispersed over the tropical regions of the New as well as the Old World, five or perhaps six spread over Africa as well as Asia, six appear to be limited to tropical Asia, two extend from the Mascarene to the Pacific Islands, one only extends to the Pacific Islands, two are probably introduced only in Australia, and the remaining fourteen, fifteen, or sixteen, are, as far as hitherto known, endemic in Australia. The distribution of the numerous species into distinct genera has been frequently attempted, but has been practically unsuccessful. The separation of the species with a hypocrateriform corolla and exserted stamens is perhaps the most definite, but a very unnatural one, as it would associate I. Bona-nox with I. Quamoclit. Pharbitis with a 3-merous pistil, is quite as artificial, as it would include I. dissecta with I. hederacea and its allies besides that the character is sometimes inconstant in the same species. The spurious discepiments of Batatas are often very imperfect or disappear altogether. The ovary of Skinneria is not 1-locular, as had been supposed, although the dissepiment dries up as the fruit enlarges. The inequality of the sepals in some species of Aniseia is not greater than in several species retained in Ipomæa. The spiral twisting of the anthers after emitting their pollen, so characteristic of some of the large-calyxed species is but slight or uncertain in others. And notwithstanding great differences in the form of the corolla, in the dehiscence of the capsule, and indumentum of the seeds, no good natural groups founded upon any of these characters have as yet been proposed. As a whole, the genus Ipomæa itself can scarcely be said to be a very well marked nor a very natural one; it is distinguished from Argyreia by the dry capsular fr

Series I. <b>Digitatæ</b> . Leaves digitately divided into deep lobes or distinct segments or leaflets. Flowers of the Speciosæ, or rarely of the Campanulatæ.
Leaves palmately or almost pedately several-lobed. Flowers large in loose cymes
Flowers rathers large. Plant stellate-tomentose 2. I. Davenporti.  Leaves divided into 5 or 7 ovate or lanceolate entire segments.  Flowers large. Plant glabrous or hairy.
Sepals nearly equal. Seeds pubescent or hairy. Leaf-segments usually confluent at the base
brous. Leaf-segments quite distinct
Series II. Pharbitides.—Leaves entire or 3-lohed. Ovary usually 3-celled. Sepals usually long and narrow. Corolla of the Speciosæ.
Calyx acuminate, above ½ iu. long.  Leaves mostly 3-lobed. Flowers few on the peduncle. Calyx hairs usually spreading
Series III. Calycines.—Leaves entire or lobed at the base. Ovary 2-celled. Sepals large, obtuse (attaining $\frac{1}{4}$ to 1 in. after flowering). Corolla large (1½ to 3 in. long).
Glabrous or nearly so. Bracteoles small. Sepals very large. Corolla broadly campanulate, about 2 in. long.

. 12. I. Turpethum.

Series IV. Speciosæ.—Leaves entire toothed or lobed at the base. Ovary 2-celled or spuriously 4-celled. Sepals moderate or small (rargly attaining  $\frac{1}{2}$  in.). Corolla large (1½ to 3 in. long), often more or less tubular at the base, usually pink purple or white.

Stems prostrate or creeping and rooting at the lower nodes. Maritime plants. Seeds woolly-hairy.

Leaves rather thick, very obtuse or emarginate. Ovary more or less 4-celled.

Leaves broad, 2 to 3 in. long, the veins prominent . . . 15. I. Pes-capræ. Leaves small or narrow, the veins scarcely prominent . . . 16. I. carnosa. Leaves rather thin. Ovary 2-celled.

Leaves acute or acuminate. Seeds woolly-hairy . . . . 17. I. reptans.

Leaves obtuse or acute. Seeds glabrous . . . . . 21. I. denticul . . 21. I. denticulata. Stems twining (sometimes creeping in *I. denticulata*). Corolla 2½ to above 3 in. long.

Leaves linear-lanceolate, not cordate. Stems slender . . . 18. I. graminea. Leaves broadly ovate-cordate. Stems woody at the base. 

hastate.
Peduncles usually much shorter than the rather long pedicels.
Sanale obtuse or mucronate Leaves mostly obtusely auricu-
late
late
date.
Corolla above 1½ in. long. Seeds glabrous 23. I. sepiaria. Corolla scarcely 1½ in. long. Seeds villous 24. I. Muelleri.
SERIES V. Campanulatee.—Leaves entire toothed or lobed at the base. Ovary 2-celled. Corolla moderate or small (rarely exceeding 1 in.), usually broadly campanulate, yellow white or pink.
Stems twining. Flowers several together in pedunculate cymes or
racemes the pedicels usually short.
Leaves cordate-ovate or lanceolate. Cymes many-flowered.
Sepals obtuse, coriaceous. Corolla 1 in. long, white. Capsule
acuminate
Leaves narrow, not cordate. Racemes or cymes loose, lew-
flowered. Sepals acute. Corolla small, yellow. Capsule 1 celled 26. I. linifolia.  Leaves cordate. Cymes dense or few-flowered. Sepals obtuse.
Leaves cordate. Cymes dense or few-nowered. Sepais outuse.
Corolla yellow. Capsule globular, at length rugose.  Sepals squarrose. Corolla small. Seeds pubescent 27. I. chryseides.
Sepals not squarrose. Corolla nearly 1 in, long. Seeds gla-
brone 28. I. flava.
brons
duncles and pedicels mostly longer than the calyx.
Leaves petiolate.
Leaves cordate-ovate, entire. Sepals small, obtuse 29. I. obscura.
Leaves ovate-lanceolate, deeply toothed or lobed below the
middle. Sepals narrow, acute
Leaves oblong or linear, not cordate, entire. Sepals large,
acute, the outer ones broad and decurrent
Leaves sessile, narrow, toothed at the base or hastate 52. 1. unyastyotta.
Stems twining. Flowers small, solitary or several together, sessile or with very short peduncles and pedicels. Leaves from cordate
to lanceolate.  Pedicels mostly about as long as the calyx. Capsule glabrous . 33. I. plebeia.
Flowers nearly sessile. Capsule pubescent or villous 34. I. eriocarpa.
Stems erect or ascending, not twining. Leaves not cordate, usually
narrow. Flowers small.
Plant hairy. Leaves entire toothed or lobed. Flowers nearly
sessile
solitary or in small cymes on a more or less elongated peduncle 36. I. erecta.
Series VI. Urceolatæ Leaves entire. Ovary 2-celled. Corolla small, urceolate,
the tube broad, contracted at the throat.
Stems twining, villous. Leaves cordate. Flowers in dense almost sessile cymes
Series VII. <b>Hypocrateriformes.</b> —Leaves entire or pinnatifid. Ovary 2-celled or spuriously 4-celled. Corolla with a cylindrical narrow tube, and spreading nearly flat limb.
Stems twining. Leaves pinnatifid, with linear-subulate lobes.  Flowers red. Ovary 4-celled

11. I. alata, R. Br. Prod. 484. A tall twiner, quite glabrous. Leaves petiolate, cordate-ovate or ovate-lanceolate, acuminate with the point usually long and fine, sometimes angular or lobed at the base, 3 to 4 in. long, the petiole often winged. Peduncles rather longer than the petiole, often winged, bearing each a single rather large white flower. Sepals very broad, obtuse, coloured, nearly 1 in. long at the time of flowering. Corolla campanulate, about 2 in. long. Fruit not seen.—Chois. in DC. Prod. ix. 369; Convolvulate Spans Suct. 1808 lus alatus, Spreng. Syst. i. 596.

M. Australia. Islands off Cape Wilberforce, R. Brown.

The S. American I. altissima, Mart., and the Central American I. codonantha, Benth., cannot in the dried state, when in flower, be distinguished from I. alata. There may, however, be differences in the seeds, and we have no similar species either from Asia or Africa.

CONVOL

Ipomoea brasiliensis

CONUOS.

Ipomoea coptica

14. 1. costata, F. Muell. in Herb: Hook. Stems apparently woody and probably twining, our specimens quite glabrous. Leaves petiolate, cordate, orbicular or reniform, very obtuse and sometimes emarginate, 1 to 3 in. broad. Peduncles very short, bearing 1 to 3 large flowers, on pedicels much longer than the peduncles, the bracts very small or none. Sepals  $\frac{1}{2}$  to  $\frac{3}{4}$  in. long, lengthening to nearly 1 in. when in fruit, almost acute, the outer ones usually rugose and rather shorter. Corolla nearly 3 in. long. Ovary 2-celled, with 2 ovules in each cell. Capsule globular, apparently indehiscent or circumsusses about the middle. Seeds pubescent.

N. Australia. Sturt's Creek, F. Mueller; Attack Creek, M'Douall Stuart. The species requires further investigation. The fruit shows some approach to that of Argyreia, but the plant has not at all the aspect of that genus.

6. **I. dissecta,** Willd. Phytogr. 5. t. 2. Stems annual, slender, trailing or twining, glabrous as well as the foliage. Leaves digitate, with 3, 5 or or twining, glabrous as well as the foliage. Leaves digitate, with 3, 5 or rarely 7 linear or linear-cuneate segments, acute and once or even twice pinnatifid and toothed. Peduncles 1- or rarely 2-flowered, short in the Australian specimens, but often longer than the leaves in Indian ones. Sepals ovate or lanceolate, obtuse or shortly acuminate, all nearly equal, 2 to  $2\frac{1}{2}$  lines long, often muricate on the midrib. Corolla white, campanulate, about twice as long as the calyx. Anthers oval-oblong, slightly twisted when fading. Ovary 3-celled; stigma capitate, 3-lobed.—R. Br. Prod. 487; Chois. in DC. Prod. in 363 (nearly). Leaving Roth. Chois in DC. Prod. in 363 (nearly). Leaving Roth. Chois in DC. Prod. in 364 in DC. Prod. ix. 363 (partly); I. coptica, Roth; Chois. in DC. Prod. ix. 384.

N. Australia. Islands off Cape Wilberforce, R. Brown; Victoria river, F. Mueller Port Essington, Armstrong.
Queensland. Burdekin river, Bowman.

The species extends over tropical Asia and Africa.

hirsute with rigid hairs, mostly reflexed on the stem, scattered on the under side of the leaves or confined to the margins and principal veins. Leaves petiolate, from deeply cordate-ovate to lanceolate or hastate, acuminate, 1 to 3 in. long, the upper surface usually glabrous. Peduncles exceedingly short, bearing 1, 2 or rarely more small flowers either quite sessile or very shortly pedicellate. Sepals ovate or ovate-lanceolate, acuminate, hirsute, 2 to 3 lines long. Corolla scarcely exceeding the calyx or sometimes not so long in Australian specimens, rather larger in some extra-Australian ones, slightly hirsute outside. Stigma with 2 globular lobes. Capsule globular, pubescent or hirsute, but becoming nearly glabrous when ripe. Seeds glabrous.—Chois. in DC. Prod. ix. 369; Convolvulus exiocarpus, Spreng. Syst. i. 598; Ipomæa sessiliflora, Roth; Chois. in DC. Prod. ix. 366; Wight, Ic. t. 169 (a remarkably luxuriant large-leaved specimen, apparently with an 8-seeded fruit, probably by a mistake of the artist); I. Horsfieldiana, Miq. Fl. Ind. Bat. ii. 611.

N. Australia. Upper Victoria river, F. Mueller.
Queensland. Endeavour river, Banks and Solander; Burdekin river, Bowman, Fitzalan.

The species is common in tropical Africa and Asia, and is also (probably introduced) in the West Indies.

CONVOL.

Ipomoea flora

or scabrous-pubescent. Leaves on long petioles, lanceolate-hastate or triangular-cordate, acute, mostly 1 to 2 in. long, the basal lobes or auricles usually acute long and divergent or curved inwards towards the end, but varying in breadth and sometimes but rarely almost obtuse. Peduncles, including the pedicel, as long as the petioles, bearing a single rather large white flower, the bracts very small. Sepals broadly lanceolate, acute or acuminate or rarely obtuse, 4 to 5 lines long or 6 lines when in fruit. Corolla about 2 in. long. Capsule globular, smooth, 5 to 6 lines diameter. Seeds shortly pubescent, with a tuft of longer hairs at the hilum.—Chois. in DC. Prod. ix. 370; Convolvulus gracilis, Spreng. Syst. i. 604.

N. Australia. Islands of the Gulf of Carpentaria and off Cape Wilberforce, R. Brown.

Queensland. Bowen river and Brawl Greek, Bowman; Rockingham Bay, Dallachy. Although, generally speaking, this species is readily distinguished by its aspect from I. denticulata, it is difficult to assign any positive limits between the two. The more twining habit, acutely hastate leaves, and acute sepals of I. gracitis, are none of them without exceptions, and the seeds have been observed in too few specimens to judge of the constancy of the character derived from their hairs.

18. L. grammea, R. Br. Prod. 485. A stender glabrous twiner. Leaves on short petioles, linear-lanceolate or linear, entire, 4 to 8 in. long. Peduncles 1-flowered,  $\frac{1}{2}$  to  $1\frac{1}{2}$  in. long (including the pedicel), with very small distant bracts. Sepals oblong, obtuse,  $\frac{1}{2}$  in. long or rather more, the outermost one shorter. Corolla  $2\frac{1}{2}$  to 3 in. long, contracted into a slender tube.—Chois. in DC. Prod. ix. 367; Convolvulus gramineus, Spreng. Syst. i. 607.

**N.** Australia. Islands off Cape Wilberforce, R. Brown (Herb. R. Br.). This species is unlike any other one known to me. The corolla is nearly that of I. longiflora, but more slender.

twiner, more or less hirsute, the hairs of the stem reflexed. Leaves petiolate, broadly cordate, more or less 3- or 5-lobed, the lobes acuminate, the middle one broad or narrow, (but not linear), contracted or dilated at the base, the lateral ones shorter and broader, the whole leaf from  $1\frac{1}{2}$  to 4 in. long. Peduncles short or rarely longer than the petioles, with 2 or 3 nearly sessile flowers at the end. Bracts linear. Sepals lanceolate, acuminate, broader and hispid with long hairs at the base, from  $\frac{1}{2}$  in. to nearly 1 in. long. Corolla blue or purple, often above 2 in. long. Ovary almost always 3-celled.

—R. Br. Prod. 486; Bot. Reg. t. 85; I. Nil, Roth, Catal. Bot. i. 36; Pharbitis Nil and P. hederacea, Chois. Conv. Or. and in DC. Prod. ix.2343, 344, with most, if not all, of the synonyms quoted.

N. Australia. Victoria river, F. Mueller.

Queensland. Booby Island, Banks and Solander; Suttor and Burdekin rivers,

Leichhardt, Bowman; Cape and Flinders rivers, Bowman; Rockingham Bay, Dallachy;

Rockhampton, Thozet; Moreton Bay, Backhouse.

Var. limbata, Hook. f. Bot. Mag. t. 5720. Flowers of a deep blue, with a pale or white margin.—Pharbitis limbata, Lindl. in Journ. Hort. Soc. v. 33; Henfr. in Gard. Mag. Bot. ii., with a fig. copied into Fl. des Serres, t. 608, and Lem. Jard. Fleur. t. 97.—Raised from N. Australian as well as from Javanese seeds.

The species is common in most tropical and subtropical regions of the New as well as the Old World, in some places, perhaps, escaped from cultivation.

CONVOL

Ipomoea Hispida

Ipomoea lon chophylla

CONVOL.

Ipomoea longiflora

24. I. Muelleri, Benth. A glabrous rather slender twiner. Leaves on rather long petioles, very broadly cordate-ovate, obtuse, with rounded basal auricles, entire, 1 to 2 in. long. Peduncles shorter or at length longer than the petioles, bearing 1 to 3 flowers on very short pedicels. Bracts very small. Sepals broad, obtuse or scarcely acuminate, 4 to 5 lines long. Corolla apparently pink, rather above 1 in. long. Capsule globular, smooth, as long as the calyx. Seeds villous.

N. Australia. Nichol Bay, Walcott; Sturt's Creek, F. Mueller; in the interior, lat. 18° 30', M'Douall Stuart's Expedition. Evidently nearly allied to I. sepiaria, but the flowers are smaller and the seeds villous.

with long prostrate creeping or trailing stems. Leaves on long petioles, oval obovate or orbicular, broadly emarginate or very obtusely 2-lobed, rather thick, with nearly parallel oblique veins, the lower ones converging at the base of the leaf, mostly 2 to 3 in long. Peduncles often as long as the leaves, bearing 1 or 2 rather large pink flowers on rather long pedicels. Sepals obtuse, about 3 lines long or the inner ones rather longer. Corolla broadly campanulate, somewhat tubular at the base, about 11 in. long. Ovary more or less perfectly 4-celled, at least at the time of flowering. Capsule 2-celled, ovoid or nearly globular, coriaceous,  $\frac{1}{2}$  to  $\frac{3}{2}$  in. long. Seeds hairy.—Convolvulus Pes-capræ, Linn. Spec. Pl. 226; C. maritimus, Desr. in Lam. Dict. iii. 550; Ipomæa maritima, R. Br. Prod. 486; Bot. Reg. t. 319, and probably all the synonyms adduced by Choisy in DC. Prod. ix. 349, under I. Pes-capræ except I. carnosa.

M. Australia. Glenelg river and Brecknock Harbour, N.W. coast, Marten; Nichol Bay, Ridley's Expedition; N. coast, R. Brown; Sweers and other islands, and Albert river, Henne; Escape Cliffs, Hulls.

Queensland. Torres Straits, F. Mueller; Harvey Bay, Sandy Cape, R. Brown; Port Denison, Fitzalan; Edgecombe Bay, Dallachy; Mackenzie Island, Sutherland.

M. S. Wales. Richmond river, Fawcett, Henderson.

The species is common on the seacoasts of most tropical countries in the New as well as the Old World. Atthough placed by Choisy in *Ipomæa*, there is generally a more or less developed, spurious, transverse dissepiment between the ovules and young seeds, subdividing each cell into two.

and sprinkled with rather long hairs, which are reflexed on the branches, scattered on the leaves or sometimes wanting. Leaves on slender petioles, cordate-lanceolate or the lower ones broadly ovate-cordate, acuminate, entire or obscurely 3-lobed, with the basal auricles rounded,  $1\frac{1}{2}$  to 3 in. long. Peduncles slender, 1-flowered, articulate and minutely bracteate near the base (the peduncle much shorter than the pedicel). Outer sepals ovate-lanceolate, subulate-acuminate, hispid, about 4 lines long; the inner ones smaller. Corolla campanulate, fully  $\frac{1}{2}$  in. long, often pubescent at the top. Stigma with 2 globular lobes. Capsule shorter than the calyx, glabrous, 2-celled. Seeds pubescent.—Convolvulus plebeius, Spreng. Syst. i. 604; Chois in DC. Prod. ix. 412.

Queensland. Bay of Inlets, Banks and Solander; islands of Moreton Bay, F. Mueller; Walloon and Comet river, Bowman. It does not appear for what reason Choisy removed this plant to the genus Convolvulus; the stigma is certainly that of Ipomæa, where Brown placed it.

CONVOL

Ipomoea polymorpha

perennial, with long, prostrate, trailing or floating and hollow stems, often rooting at the nodes and sometimes bearing short ascending branches. Leaves on long petioles, from ovate to linear-lanceolate, acuminate, always cordate or hastate at the base, the angles rounded or produced into broad or narrow acute auricles, the leaf usually 2 to 4 in long, but rarely on the smaller branches a few small ovate-cordate and obtuse ones. Peduncles 1- or few-flowered. Sepals rather obtuse, 3 to 4 lines long. Corolla not so broad as in the two preceding species, more tubular at the base, pink purplish or white, about  $1\frac{1}{2}$  in long. Filaments hairy at the base. Ovary 2-celled. Capsule globular, coriaceous, apparently indehiscent or bursting irregularly. Seeds large, woolly, often reduced to 2.

N. Australia. Upper Victoria river, F. Mueller; Adams Bay, Hulls. Queensland. Flinders river, Sutherland; Cape river, Bowman.

The species is found in marshy or wet sandy places, or floating in water, in many parts of tropical Asia and Africa.

foliage, and inflorescence softly pubescent, the old stems often bordered by narrow longitudinal wings. Leaves petiolate, mostly broadly cordate-ovate and acuminate, but sometimes obtuse or angular at the base, 2 to 4 in. long, or when luxuriant twice that size. Peduncles usually shorter than the leaves, bearing a short raceme of few rather large white flowers, but sometimes 1-flowered. Bracts ovate, thin, coloured, \(\frac{1}{2}\) to 1 in. long, very deciduous. Pedicels at first short and thick, but lengthening to 1 in. Outer sepals broadly ovate, often \(\frac{3}{4}\) in. at the time of flowering and lengthening to 1 in., the inner ones rather smaller. Anthers large, much twisted when fading. Ovary 2-celled. Capsule much shorter than the calyx, globular, membranous. Seeds glabrous.—Chois. in DC. Prod. ix. 360; Bot. Reg. t. 279; Convolculus Turpethum, Linn.; Bot. Mag. t. 2093; Wight in Hook. Bot. Misc. iii. t. Suppl. 38; I. anceps and I. triquetra, Roem. and Schult.; Chois. in DC. Prod. ix. 360; Argyreia alulata, Miq. Fl. Ind. Bat. ii. 587.

Queensland. Broad Sound, R. Brown; Lizard Island, M'Gillivray; Sir Charles Hardy's Island, Henne; Suttor river, Bowman; Flinders river, Sutherland; Rockhampton, O'Shanesy. The species extends from the Mauritius and Ceylon over the peninsula of India, the Himalayas, and the Eastern Archipelago, as far north as Formosa, and is also said to be in the West Indies, probably introduced from Asia.

CONVOL.

Jacquemontia browniana

CONVOL.

Jacquemontia paniculata

CONUOL ..

Merremia quinata

CONVOL

Merremia tridentata SSP. hastata

CONDOL

Operculina

CONUOL.

T. FULLHERIA, R. Dr.

Corolla very broadly campanulate, entire or angular. Ovary 2-celled, with 1 ovule in each cell. Style filiform, with several (4 to 8) or very rarely only 2 linear stigmatic lobes. Fruit a dry capsule with 1 or 2 seeds.—Erect prostrate or trailing herbs, rarely twining. Leaves usually entire. Peduncles axillary, bearing 1 to 3 flowers. Bracts very small.

The genus is limited to Australia. Closely allied to Convolvulus in habit as well as in character, it differs in the ovules reduced to 2 (1 only in each cell of the ovary), whilst the stigmatic lobes, in all the species except *P. distigma*, are increased in number, probably by their division. Several of the species here enumerated run much one into the other, and they might all well be reduced to two or three.

6. F. ampigua, R. Br. Frod. 488. An annual (or sometimes perennial r), with long, slender, creeping or trailing stems, occasionally rooting at the lower nodes and sometimes shortly twining at the extremities. Leaves petiolate, ovate or oblong, obtuse, often mucronate, cordate at the base, usually rugose, glabrous, sparingly pubescent or rarely villous above, more or less villous or silky-hairy underneath, mostly about 1 in long, but variable in size. Peduncles usually longer than the petioles, bearing 1 to 3 flowers with minute bracts at the base of the pedicels, and usually 2 small bracteoles on the pedicels. Sepals nearly equal, acuminate, about 3 lines long. Corolla not twice as long, very open. Stigmatic branches 4 to 6. Capsule nearly as long as the calyx. Seeds glabrous or very minutely hoary-pubescent.—Chois. in DC. Prod. ix. 432.

N. Australia. Islands of the Gulf of Carpentaria, R. Brown; Victoria river and Sturt's Creek, F. Mueller.

Queensland. Thirsty Sound, R. Brown.

P. lanata, R. Br. l. c. and Choisy, l. c., from the same N. Australian localities, appears to be a very densely silky-villous variety, the leaves much smaller, broad in R. Brown's specimens, narrow in F. Mueller's, the flowers rather smaller, mostly solitary.

P. quadrivalvis, R. Br. l. c. and Chois. l. c. (the above-quoted specimens from Thirsty Sound, R. Brown), appears to the to be another variety, nearly glabrous, with rather small solitary flowers, connecting P. ambigua with P. pusilla.

s. F. angusta, F. Muett. Fragm. vi. 100 (partty). A perennial apparently diffuse or prostrate, softly and densely silky-hairy, otherwise very near P. longifolia and perhaps a variety. Leaves mostly nearly sessile and lanceolate or linear, the lower ones more distinctly petiolate and cordate at the base, all silky on both sides. Flowers much smaller than in P. longifolia. Sepals lanceolate, acute,  $2\frac{1}{2}$  to 3 lines long, slightly unequal. Corolla apparently scarcely  $\frac{1}{2}$  in long. Style-branches 6 to 8.

N. Australia. Sturt's Creek, F. Mueller; and possibly also in N. S. Wales, between Darling river and Cooper's Creek, Neilson. F. Mueller included P. longifolia under his P. angusta, having accidentally overlooked Lindley's older name. I have ventured to retain F. Mueller's name for the N. Australian form, which at present appears to me distinct, although it is not unlikely that further specimens may show that it is a variety only. F. Mueller describes the ovary as 1-celled. In the flowers examined, I have always found a dissepiment between the 2 ovules in this as in all other species of the genus.

5. **P. calycina,** R. Br. Prod. 488. A glabrous or slightly pubescent annual (or sometimes with a perennial creeping rootstock?). Stems slender, prostrate or creeping. Leaves on slender petioles, the lower ones ovate, obtuse or emarginate, deeply cordate, under 1 in. long, the upper ones oblong linear or lanceolate, obtuse, slightly cordate or rarely hastate at the base, often above 1 in. long. Peduncles slender, shorter than the leaves, 1-flowered, with minute bracts at or below the middle. Outer sepals very broadly ovate or cordate, about 3 lines long, the inner ones shorter, ovate-lanceolate or lanceolate, acuminate. Corolla 5 to 6 lines long, broadly campanulate, slightly silky-pubescent outside. Anthers rather long. Stigmatic lobes about 6. Capsule shorter than the calyx. Seeds pubescent or silkyvillous in the specimens seen, glabrous according to R. Brown.—Chois. in DC. Prod. ix. 432; Endl. Iconogr. t. 67.

Queensland. Keppel Bay, R. Brown, Thozet; Rockhampton, O'Shanesy; Gracemere,

Neman; Moreton Bay, C. Stuart.

N. S. Wales. Port Jackson to the Blue Mountains, R. Brown and others; Richmond river, Fawcett.

Var.? mollis. The whole plant softly pubescent, the characters otherwise the same as in the Eastern form.

W. Australia. Port Walcott, C. Harper (Herb. F. Muell.).

Some of the narrow-leaved Eastern specimens might very well, without close examination, be mistaken for some varieties of *Convolvulus erubescens*. The outer sepals, although variable in breadth, are, however, always broader than in the latter species, independently of the generic character.

- 4. **P. distigma,** Benth. Stems erect, hoary-tomentose, with the stature and general aspect of some specimens of P. longifolia. Leaves linear, entire, narrowed into a short petiole, glabrous or nearly so. Peduncles slender, shorter than the leaves, mostly 2-flowered. Sepals ovate-lanceolate, acuminate-acute, nearly equal, about 3 lines long. Corolla fully \(\frac{1}{4}\) in. long. Stigmatic lobes 2, linear-cuneate, obtuse.
- **N. Australia.** Glenelg district, N.W. coast, *Martin*. This is evidently allied to *P. longifolia*, and has the 2-ovulate ovary of the genus; but the style, as observed by F. Mueller as well as by myself, is that of *Convolvulus*.

o. PUMANA, Linn.

(Duperreya, Gaudich.)

Bepals much enlarged after flowering, and horizontally spreading under the fruit. Corolla campanulate or tubular-campanulate, angular or 5-lobed, folded in the bud. Ovary 1-celled, with 2 or 4 ovules; style entire or bifid; stigma globular, single or 1 on each branch. Capsule usually 1-seeded by abortion, indehiscent (or 2-valved?).—Tall twiners, often woody at the base. Leaves entire. Flowers usually small, axillary and solitary in the Australian spacies, paniculate in the Indian ones. Bracts small.

The genus extends over tropical Africa and Asia to the Indian Archipelago. The only Amstralian species is endemic and extratropical; and, although possessing the essential characters of the Asiatic ones, is very different in foliage and inflorescence. The remarkable fruiting calyx distinguishes this from all other Convolvulaceous genera.

1. P. sericea, F. Muell. Fragm. vi. 100. A tall but slender twiner, shrubby at the base, the branches and foliage silky-pubescent. Leaves very shortly petiolate, linear or linear-lanceolate, obtuse or scarcely acute, 1 to 1½ in. long. Peduncles axillary, 1-flowered, shorter than the leaves, with 2 small bracts or bracteoles close under the calyx. Sepals broadly ovate, obtuse, silky-pubescent, 2 to 2½ lines long at the time of flowering. Corolla very open, not twice as long as the calyx, said by some to be blue, by others pale pink. Ovary 1-celled, with 2 ovules; style undivided, with a large globular stigma. Fruiting sepals broadly ovate, rigidly scarious, elegantly veined, ¾ in. long or even more. Capsule small, ovoid or oblong, membranous, indehiscent, 1-seeded.—Duperreya sericea, Gaudich in Freyc. Vov. Bot. 452. t. 63; Chois. in DC. Prod. ix. 436; Ipomæa modesta, F. Muell. Fragm. ii. 22.

W. Australia. Between Moore and Murchison rivers, Drummond, 6th Coll. n. 223; Blackwood and Murchison rivers, Oldfield.