

## THE CONVULVULACEAE OF MALAYSIA, III <sup>1)</sup>

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(Issued March 1st, 1940).

### The genus *Ipomoea*.

HALLIER <sup>2)</sup> subdivided the *Convolvulaceae* into two groups, viz. the *Psiloconiae*, with smooth pollen grains, and the *Echinoconiae* with spinose ones. The genera of the *Psiloconiae* occurring in Malaysia have been dealt with in parts I and II of the present paper, with exception of the genus *Erycibe*, which shall be treated in a special monograph.

The group of *Echinoconiae* contains two tribes, viz. 1. *Ipomoeae* and 2. *Argyreieae*, both represented in Malaysia. The genus *Ipomoea* belongs to the *Ipomoeae*.

The materials examined belong with a few exceptions to the herbaria of Buitenzorg (B), Leiden (L), Pasoeroean (Pa), Utrecht (U) and Wageningen (W). It seemed better not to ask for the loan of foreign collections during the war, broken out in the course of the year 1939.

### XVI. IPOMOEA L.

L., Spec. Pl. ed. 1 (1753) p. 159; BLUME, Bijdr. (1825) p. 708; CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 444; id. in Mém. Soc. Phys. Genève VIII (1838) p. 52; id. in DC., Prodr. IX (1845) p. 348; MIQ., Fl. Ned. Ind. II (1857) p. 601; BENTH., Fl. Austr. IV (1869) p. 412; BENTH. & HOOK., Gen. Plant. II (1876) p. 870; CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 196; BAILLON, Hist. Pl. X (1891) p. 321; PETER in ENGL. & PRANTL, Nat. Pfl. fam. IV, 3a (1891) p. 28;

<sup>1)</sup> Part I in Blumea III, 1 (1938) p. 62—94; part II in Blumea III, 2 (1939) p. 267—371.

<sup>2)</sup> Versuch einer natürlichen Gliederung der Convolvulaceen auf morphologischer und anatomischer Grundlage in ENGLER's Botanische Jahrbücher XVI (1893) p. 453—591.

HALL, f. in ENGL., Bot. Jahrb. XVI (1893) p. 583; id. in ENGL., Bot. Jahrb. XVIII (1893) p. 123; TRIMEN, Handb. Fl. Ceyl. III (1895) p. 210; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 503, 510; BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 128; PRAIN in Journ. As. Soc. Bengal LXXIV (1906) p. 310; KOORDERS, Exk. fl. Java III (1912) p. 116; GAGNEP. & COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 229; RIDLEY, Fl. Malay Penins. II (1923) p. 459; MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 364; BACKER, Onkruidfl. Jav. Suikerrietgr. (1931) p. 521 — *Quamoelit* MOENCH, Meth. (1794) p. 453 (*Quamoelit*); CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 433; id. in DC., Prodr. IX (1845) p. 335; MIQ., Fl. Ned. Ind. II (1857) p. 593; PETER in ENGL. & PRANTL, Nat. Pfl. fam. IV, 3a (1891) p. 27; HALL, f. in ENGL., Bot. Jahrb. XVI (1893) p. 584; id. in ENGL., Bot. Jahrb. XVIII (1893) p. 154; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 505, 513; BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 127; PRAIN in Journ. As. Soc. Bengal LXXIV (1906) p. 318; HOUSE in Bull. Torrey Bot. Club XXXVI (1909) p. 595; KOORDERS, Exk. fl. Java III (1912) p. 122; MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 370; BACKER, Onkruidfl. Jav. Suikerrietgr. (1931) p. 529 — *Batatas* CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 434; id. in Mém. Soc. Phys. Genève VIII (1838) p. 45; id., in DC., Prodr. IX (1845) p. 337; MIQ., Fl. Ned. Ind. II (1857) p. 598 — *Pharbitis* CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 438; id. in DC., Prodr. IX (1845) p. 341; MIQ., Fl. Ned. Ind. II (1857) p. 594; PETER in ENGL. & PRANTL, Nat. Pfl. fam. IV, 3a (1891) p. 31 — *Calonyction* CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 441; id. in DC., Prodr. IX (1845) p. 345; MIQ., Fl. Ned. Ind. II (1857) p. 596; PETER in ENGL. & PRANTL, Nat. Pfl. fam. IV, 3a (1891) p. 26; HALL, f. in ENGL., Bot. Jahrb. XVI (1893) p. 583; id. in ENGL., Bot. Jahrb. XVIII (1893) p. 153; id. in Bull. Herb. Boiss. V (1897) p. 1021; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 504, 512; BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 117; PRAIN in Journ. As. Soc. Bengal LXXIV (1906) p. 319; KOORDERS, Exk. fl. Java III (1912) p. 122; MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 369 — *Exogonium* CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 443; id. in Mém. Soc. Phys. Genève VIII (1838) p. 49; id. in DC., Prodr. IX (1845) p. 346; BAILLON, Hist. Pl. X (1891) p. 322; PETER in ENGL. & PRANTL, Nat. Pfl. fam. IV, 3a (1891) p. 27.

Herbs or shrubs, usually twining, sometimes prostrate or floating or erect. Leaves very various in form and size, entire, lobed or divided. Inflorescences axillary, cymose, 1—few or many-flowered, the

cymes rarely paniculate; bracts various; flowers small, medium-sized or large. Sepals 5, herbaceous or subcoriaceous, very various in shape, often ovate to lanceolate, linear or elliptic, obtuse or acute to acuminate or aristate, unequal or equal, glabrous or hairy, persistent, often more or less enlarged in fruit. Corolla regular or rarely slightly zygomorphic, usually funnel-shaped or campanulate, more rarely salver-shaped, the limb plicate, shallowly or rarely deeply 5-lobed, midpetaline areas well defined by 2 distinct nerves. Stamens 5, generally inserted near the base of the corolla-tube, included or rarely exserted; filaments filiform or dilated at the base, often more or less unequal; anthers ovate, oblong or linear; pollen globular, spinulose. Disk annular. Ovary usually 2 or sometimes 4-celled, 4-ovuled, rarely 3-celled, 6-ovuled; style filiform, included, rarely exserted; stigma capitate, entire or often 2—3-globular. Capsule globose or ovoid, mostly 4 or rarely 6-valved, or splitting irregularly or indehiscent. Seeds glabrous or hairy, 4(—6) or less.

**Distribution:** Widely spread in the tropical and subtemperate regions of both hemispheres.

**Remarks.** HALLIER in his paper entitled *Convolvulaceae africanae*, published in ENGLER's *Botanische Jahrbücher* XVIII (1893) p. 81—160, gives a subdivision of the genus *Ipomoea* into 6 sections. These sections have been characterized by HALLIER as follows:

Sect. 1. *Calycanthemum* (KLOTSCH) HALL. f., l. c. p. 123. Small, mostly annual or rarely perennial, pilose herbs, with prostrate, erect or rarely twining stems; leaves cordate, subhastate, oblong, elliptic, or rarely pinnately lobed; flowers small or moderate; sepals ovate or lanceolate, acute, the base often broadened or auriculate; corolla white or pale pink, mostly small, rarely larger; seeds mostly shortly tomentose.

Sect. 2. *Dasychaetia* HALL. f., l. c. p. 130. Plants mostly large, perennial, prostrate or erect, strigose or woolly; leaves petiolate or sessile, ovate; flowers large; sepals lanceolate or setaceous, long pilose or woolly; corolla large, pale pink.

Sect. 3. *Pharbitis* (CHOISY) HALL. f., l. c. p. 131<sup>1)</sup>. Annual or rarely perennial high-twining, rarely small herbs, mostly hispid or lanate, very rarely glabrous; leaves distinctly cordate or three-lobed or palmately 5—7-lobed, rarely oblong or lanceolate, hispid or villose or green above and white-lanate beneath, very rarely glabrous; flowers

<sup>1)</sup> The sectional name *Pharbitis* was already used by GRISEBACH, *Fl. Brit. West Indian Isl.* (1864) p. 473.

mostly showy; sepals lanceolate or linear, hirsute, very rarely glabrous; corolla mostly reddish, funnel-shaped or rarely tubular, subentire; seeds glabrous or shortly arachnoid.

This section includes:

a. *Cephalanthae* CHOISY emend. HALL. f., l. c. p. 131. Flowers in dense capitate, pedunculate inflorescences; outer bracts mostly large, involucrent.

b. *Chorisanthae* HALL. f., l. c. p. 135. Flowers axillary, solitary or in lax dichasia, rarely aggregate; leaves distinctly cordate or three-lobed or palmately 5-lobed, never oblong or lanceolate.

Sect. 4. *Batatas* (CHOISY) HALL. f., l. c. p. 138<sup>1)</sup>. Leaves petiolate, distinctly cordate or pandurate or three-lobed or palmately 5-lobed, glabrous, or appressed-hairy; flowers mostly small, axillary, in long- or short-pedunculate umbellate cymes, rarely solitary; flower buds conical, mostly very acute; sepals oblong, subcoriaceous, mostly lanceolate, very acute with ciliate margins, further glabrous, often attenuate from a stiff pale base into a herbaceous green, recurved acumen, rarely obtuse or entirely glabrous; corolla funnel-shaped, entire, pink or white, 1.5—5 cm long, glabrous; ovary mostly hirsute; seeds glabrous.

Sect. 5. *Leiocalyx* HALL. f., l. c. p. 139. Plants mostly entirely glabrous, rarely with hairy stems, more rarely with hairy leaves, most rarely with hairy sepals; leaves mostly petiolate, their form very various; flowers pedunculate, axillary, solitary or in subumbellate dichasia; sepals very various, mostly oblong or lanceolate, often verrucose or cristate on the back; corolla mostly bright red or purple, rarely white, glabrous or very rarely farinose or pubescent without, mostly subentire; seeds mostly entirely glabrous, rarely velutinous or with bearded outer edges.

Sect. 6. *Eriospermum* HALL. f., l. c. p. 149. Perennial plants, very variable in habit, pubescence, leaves and flowers; flower buds rarely acute, mostly obtuse, very often globular; sepals mostly obtuse, often orbicular, convex, rarely flat or acute; seeds with long-bearded edges, further glabrous or rarely the whole surface villose.

*Calonyction* and *Quamoclit* are treated by HALLIER l. c. as separate genera.

In 1922 in the Mededeelingen van 's Rijks Herbarium, Leiden, No. 46, p. 19 and 20, HALLIER mentions *Calonyction* and *Quamoclit* as subsections of the section *Leiocalyx*: *Ipomoea* sect. *Leiocalyx* subsect.

<sup>1)</sup> The sectional name *Batatas* was already used by GRISEBACH, Fl. Brit. West Indian Isl. (1864) p. 468.

*Calonyction* (CHOISY) HALL. f., l. c. p. 19 and sect. *Leiocalyx* subsect. *Quamoclit* (MOENCH) HALL. f., l. c. p. 20.

BAKER & RENDLE in their revision of the Convolvulaceae in THISELTON-DYER's Flora of Tropical Africa IV, 2 (1905) have partly accepted HALLIER's subdivision. They have introduced, however, some alterations and have added some new sections. The name *Pharbitis* (CHOISY) HALL. f. has been suppressed and instead of it there occur three sections, viz. sect. *Involucratae* BAKER & RENDLE, l. c. p. 130, containing part of HALLIER's subsection *Cephalanthae*, with species possessing flowers in a dense head subtended by a leafy boat-shaped bract; sect. *Cephalanthae* l. c. p. 131 identic with HALLIER's subsection, with the exception of the *Involucratae*, and sect. *Chorisanthae* l. c. p. 131 identic with HALLIER's subsection *Chorisanthae*. The sections *Batatas* and *Leiocalyx* have been united under the name, though youngest name, of the latter (l. c. p. 132). New sections created by BAKER & RENDLE are the *Xerophyta* l. c. p. 135, the *Argyrophyllae* l. c. p. 135, the *Floriferae* l. c. p. 135 and *Phyllocalyx* l. c. p. 135. Of these the species of the *Xerophyta* and the *Argyrophyllae* were inserted by HALLIER in *Eriospermum*; the section *Floriferae* consists of species which HALLIER placed partly in the section *Eriospermum*, partly in the genus *Rivea*. The section *Phyllocalyx* contains two species, both placed by HALLIER in *Leiocalyx*.

The arrangement of the species in the present paper is in accordance with that of HALLIER.

I must emphasize that some of the sectional names used by HALLIER are not quite in accordance with the principles of priority. In an eventual monographical treatment of the genus one has to take into account the manner in which several authors before HALLIER have tried to subdivide the large and difficult genus (CHOISY, BENTHAM, CLARKE, MEISSNER, PETER, HOUSE and several others).

#### Key to the species.

- 1a. Sepals distinctly awned at or below the top; awn straight or curved. Corolla salver-shaped with long and narrow tube. Stamens mostly exserted . . . 41
- b. Sepals obtuse, acute or acuminate, sometimes mucronulate but never distinctly awned. Corolla mostly funnel-shaped or campanulate, sometimes salver-shaped. Stamens mostly included, rarely exserted . . . . . 2
- 2a. Corolla white, large, 10 cm long or longer, salver-shaped with long and narrow tube. Sepals obtuse. Seeds hairy. Large woody twiners . . . . 39
- b. Corolla large, medium-sized or small, mostly funnel-shaped or campanulate, 10 cm long or mostly shorter; rarely salver-shaped, in the latter case never

- longer than 7 cm. Sepals obtuse, acute or acuminate. Seeds hairy or glabrous. Herbaceous or sometimes woody twiners, or prostrate or erect plants . . . 3
- 3a. Sepals entirely glabrous (sometimes mucronate) . . . . . 19
- b. Sepals not entirely glabrous . . . . . 4
- 4a. Flowers sessile in the leaf-axils or very shortly pedunculate. Corolla less than 1.5 cm long . . . . . 5
- b. Peduncle mostly longer. Corolla 1.5 cm or mostly longer . . . . . 7
- 5a. Erect or ascending herb. Leaves acute at the base, attenuate into the petiole, narrow-elliptic, elliptic-oblong, elliptic-obovate or oblanceolate, margin entire, undulate to coarsely dentate or irregularly pinnatifid. Flowers solitary in the leaf-axils; corolla glabrous, 1¼ cm long . . . . . **3. I. polymorpha**
- b. Twining or prostrate herbs. Leaves with cordate base. Corolla with pilose midpetaline bands without . . . . . 6
- 6a. Ovary and capsule hairy. Pedicels very short. Outer sepals linear-acuminate from an ovate base. Corolla pink or purple, 7—9 mm long . . . . . **1. I. hispida**
- b. Ovary and capsule glabrous. Pedicels longer. Outer sepals linear-acuminate from a broad-triangular, slightly cordate to truncate base. Corolla white, 9—13 mm long . . . . . **2. I. plebeia**
- 7a. Flowers aggregate at the end of the peduncle, involucre by large bracts . . . 16
- b. Flowers whether of not aggregate at the end of the peduncle, not distinctly involucre . . . . . 8
- 8a. Hairs of the sepals stellate (see key n. 37a) . . . . . **32. I. asterophora**
- b. Hairs of the sepals not stellate . . . . . 9
- 9a. Sepals 4 mm long or less (outer sepals not orbicular) (see key n. 31b) . . . . . **14. I. obscura**
- b. Sepals 5 mm long or longer . . . . . 10
- 10a. Outer sepals orbicular, broadly rounded at the top . . . . . 38
- b. Outer sepals narrower, mostly acute, sometimes subobtusate . . . . . 11
- 11a. Corolla glabrous without. Seeds puberulent or glabrous . . . . . 12
- b. Corolla with sericeous midpetaline bands. Seeds villose . . . . . **34. I. fragrans**
- 12a. Sepals long-attenuate or long and linear-acuminate at the top, herbaceous . . 13
- b. Sepals acute or subobtusate, sometimes mucronulate, not long-attenuate towards the top, herbaceous, membranaceous or coriaceous . . . . . 15
- 13a. Sepals nearly linear, attenuate into an acute point, hirsute at the base, glabrous at the top, 8—15 mm long. Corolla not exceeding 3 cm. Stems and peduncles thin, filiform . . . . . **7. I. Decaisnei**
- b. Sepals lanceolate or linear-lanceolate at the base with long and linear acumen or long-attenuate. Corolla larger, 5—8 cm long. Stems and peduncles thicker . . . . . 14
- 14a. Outer sepals lanceolate at the base with long and linear acumen, patently hirsute in the basal portion, 17—25 mm long; corolla 5—6 cm long . . . . . **5. I. Nil**
- b. Outer sepals lanceolate to broad-lanceolate at the base, gradually attenuate towards the top; hairs of the sepals mostly appressed, not patent (or sepals entirely glabrous); sepals 14—22 mm long, corolla 5—8 cm long . . . . . **6. I. congesta**
- 15a. Outer sepals herbaceous, oblong, acute, with bristly patent hairs in the basal

- portion, 10—15 mm long; corolla mostly purple-blue with reddish midpetaline bands, the tube much paler to white; length of corolla 5—6 cm . . . . . 4. *I. purpurea*
- b. Sepals coriaceous or membranaceous, not patently hirsute in the basal portion; margins of sepals fimbriate; corolla smaller . . . . . 17
- 16a. Leaves palmately divided nearly to the base. Bracts foliaceous. Outer sepals lanceolate, acute. Corolla funnel-shaped, white . . . . . 8. *I. Pestigridis*
- b. Leaves entire. Bracts boat-shaped. Outer sepals oblong-spathulate to oblong, obtuse. Corolla salver-shaped, pink or purple . . . . . 9. *I. pileata*
- 17a. Plant cultivated for its edible subterraneous tubers, sometimes escaped from culture. Stems mostly prostrate, thick. Leaves broad-ovate to orbicular in outline, cordate or truncate at the base, entire or angular to palmately 3—5 (—7)-lobed; corolla pale violet, 3—4.5 cm long . . . . . 12. *I. Batatas*
- b. Stems mostly twining, thinner. No tubers. Corolla pink or red-purple . . . . . 18
- 18a. Corolla small, 18—20 mm long; flowers aggregate, branches of the cyme very short. Peduncles rather stout. Sepals mucronulate . . . . . 10. *I. triloba*
- b. Corolla larger, to 3 cm long; inflorescences lax, branches of the cyme longer. Peduncles thinner. Mucro of the sepals longer . . . . . 11. *I. commutata*
- 19a. Outer sepals with lanceolate to broad-lanceolate base, long and gradually attenuate towards the top; length of sepals 14 mm or more (see key n. 14b) . . . . . 6. *I. congesta*
- b. Sepals not so long and gradually attenuate towards the top . . . . . 20
- 20a. Ovary densely to very sparsely hairy (see key n. 17a) . . . . . 12. *I. Batatas*
- b. Ovary entirely glabrous . . . . . 21
- 21a. Stamens exserted . . . . . 33
- b. Stamens included . . . . . 22
- 22a. Leaves palmately lobed to palmately compound . . . . . 34
- b. Leaves not palmately cut . . . . . 23
- 23a. Corolla 7 cm high or more. At least the inner orbicular sepals 7 mm long or longer . . . . . 37
- b. Corolla smaller . . . . . 24
- 24a. Large woody, glabrous twiner; stems stout; flowers in axillary panicles, the primary branches racemose, the ultimate partial inflorescences cymose. Leaves large, ovate, base slightly cordate to truncate; lateral nerves 11—14 on each side of midrib. Outer sepals broadly ovate, obtuse, c. 3.5—4.5 mm long, inner ones orbicular 4.5—5 mm long; corolla tubular to funnel-shaped, c. 3—3.5 cm long. Seeds with long silky hairs . . . . . 37. *I. sumatrana*
- b. Smaller mostly herbaceous twiners with thinner stems or prostrate plants; glabrous or hairy. Flowers in few- or several-flowered axillary cymes or solitary in the leaf axils . . . . . 25
- 25a. Corolla small, up to 2.5 cm long . . . . . 31
- b. Corolla 3 cm long or longer . . . . . 26
- 26a. Plants of marshy places or aquatic with trailing and rooting or floating, thick, soft and fistulose or spongy stems. Leaves herbaceous with truncate, cordate, sagittate or hastate base. Pedicels 2—6.5 cm long; sepals equal or the outer ones a little shorter; outer sepals ovate-oblong, 7—8 mm long; corolla pink or pale-lilac, often with a purple eye, rarely white, 3—5 cm long; seeds pubescent . . . . . 18. *I. aquatica*

- b. Terrestrial plants with twining or trailing stems, not as in 26a . . . 27
- 27a. Stems trailing, rarely twining, mostly thick. Leaves subcoriaceous or fleshy, mostly obtuse to broadly rounded or emarginate at the apex. No subterraneous tubers<sup>1)</sup> . . . 28
- b. Stems mostly twining, thinner. Leaves mostly herbaceous, attenuate towards the apex, acute or acuminate, sometimes obtuse . . . 30
- 28a. Corolla white or yellowish. Sepals slightly unequal, oblong, acutish or obtuse, not mucronate on the back, inner sepals 10—15 mm long. Leaves small, fleshy, very variable, linear, lanceolate, oblong or ovate, obtuse or emarginate at the apex, obtuse or truncate or shallowly cordate at the base, or leaves 3—5-lobed . . . 21. *I. stolonifera*
- b. Corolla pink or red purple. Leaves larger, subcoriaceous, kidney-shaped, orbicular, elliptic, ovate or quadrangular to oblong, broadly rounded or emarginate at the apex . . . 29
- 29a. Leaves kidney-shaped with broadly rounded apex; base cordate. Sepals unequal, the outer ones shorter, all elliptic-oblong . . . 20. *I. asarifolia*
- b. Leaves orbicular, elliptic, ovate or quadrangular to oblong, emarginate at the apex; base truncate, rounded, subcuneate or sometimes shallowly cordate. Sepals subequal or the outer ones shorter; outer sepals ovate to elliptic, interior ones broader . . . 19. *I. Pes-caprae*
- 30a. Corolla yellow. Sepals oblong or ovate-oblong, obtuse to truncate or slightly emarginate at the apex, subequal, 5—6.5 mm long. Seeds tomentose . . . 15. *I. ochroleucea*
- b. Corolla pink or purple. Seeds puberulent or glabrous . . . 32
- 31a. Peduncles stout, thickened towards the top, often applanate. Pedicels  $\frac{3}{4}$ —1 cm long. Outer sepals verruculose, elliptic-oblong, obtuse, minutely mucronate, 4—6 mm long. Corolla pale lilac or nearly white, with purple centre. Seeds short-tomentose and with longer arachnoid hairs along the edges . . . 17. *I. maxima*
- b. Peduncles thin, filiform, not thickened towards the top, not applanate. Pedicels 1—2 cm long. Outer sepals verruculose, ovate, acutish, mucronulate, 3—4 mm long. Corolla white or pale yellow with a purple eye. Seeds puberulent . . . 14. *I. obscura*
- 32a. Peduncles fistulose. Sepals subequal, 4.5—6 mm long, not very concave, narrow-triangular to ovate-lanceolate, acute, with white margins, carinate. Corolla red-purple with a white tube, 4—6 cm long; capsule ovoid; seeds puberulent. Leaf margin entire . . . 22. *I. violacea*
- b. Peduncles thinner. Sepals slightly unequal, outer ones 6—10 mm, inner ones 8—12 mm, concave, outer ones oblong-elliptic or elliptic, acute or obtuse, inner ones elliptic to orbicular, obtuse, not carinate, margins not white. Corolla pink or pink-purple, often darker near base inside, 3—4.5 cm long; capsule depressed-globose; seeds glabrous. Leaf margin entire, or undulate to angular or 3-lobed . . . 13. *I. gracilis*

<sup>1)</sup> Stems trailing, rarely twining, thick. Leaves herbaceous, attenuate towards an acute or obtuse apex; leaf margin entire or angular (or lobed). Subterraneous tubers. See 12. *I. Batatas*.

- 33a. Leaves ovate to orbicular, entire. Corolla funnel-shaped, yellow. Outer sepals not very concave, ovate to oblong, subacute, 5—6 mm long. Pedicels thick . . . . . 16. *I. stibaropoda*
- b. Leaves deeply palmately lobed. Corolla more or less salver-shaped, red or red-purple. Outer sepals very concave, elliptic or ovate-elliptic, obtuse, 7—9 mm long. Pedicels thinner . . . . . 33. *I. Horsfalliae*
- 34a. Segments of the leaves entire . . . . . 36
- b. Segments of the leaves dentate to coarsely and irregularly pinnatifid . . . . . 35
- 35a. Corolla less than 1.5 cm long. Sepals c. 4 mm long, the back mucronate . . . . . 24. *I. coptica*
- b. Corolla c. 5 cm long. Sepals 6—10 mm long, the back carinate and mucronate . . . . . 25. *I. diversifolia*
- 36a. Leaves palmately cut to the base. Pseudostipules (small leaves of the axillary shoot) often present. Sepals 4—6 mm long, not very concave, the exterior ones ovate, obtuse or acutish, mucronulate, the interior ones broader, obtuse, mucronulate. Stems and peduncles rather thin . . . . . 23. *I. cairica*
- b. Leaves palmately lobed to or mostly beyond the middle, not to the base<sup>1)</sup>. Pseudostipules wanting. Sepals 6—11 mm long, concave, all orbicular or the exterior ones oblong to broad-elliptic, obtuse. Stems and peduncles stout. Plant entirely glabrous or very sparsely pubescent with simple hairs (in the closely related *32. I. asterophora* with stellate hairs) . . . . . 31. *I. digitata*
- 37a. Leaves ovate<sup>2)</sup>, with 3—4 nerves on each side of the midrib. Plant more or less tomentose with stellate hairs, often glabrescent or *nearly* glabrous. Corolla c. 7 cm long . . . . . 32. *I. asterophora*
- b. Leaves ovate, with 10—15 nerves on each side of the midrib. Plant glabrous or pubescent with simple hairs. Corolla up to 10 cm long . . . . . 35. *I. illustris*
- 38a. Outer sepals 7—10 mm long, occasionally pubescent, mostly glabrous. Corolla glabrous. Ovary glabrous . . . . . 35. *I. illustris*
- b. Outer sepals 5—6 mm long, puberulent. Corolla with puberulent tube and midpetaline bands. Ovary puberulent . . . . . 36. *I. crassicaulis*
- 39a. Stamens inserted near the mouth of the corolla tube. Sepals subequal or outer slightly longer than inner, 12—18 mm long . . . . . 38. *I. aculeata*
- b. Stamens inserted near the base of the corolla tube. Outer sepals slightly or much shorter than inner ones . . . . . 40
- 40a. Sepals very unequal; outer sepals much shorter than inner ones. Leaves mostly (3—)5(—7) lobed, rarely entire. Corolla white with reddish mid-petaline bands, 11—14 cm long. Stamens exserted . . . . . 40. *I. trichosperma*
- b. Outer sepals only slightly shorter than inner ones. Leaves mostly entire. Corolla white with greenish bands, 9—12 cm long. Stamens included . . . . . 39. *I. tuba*
- 41a. Corolla rather small, scarlet, rarely white. Outer sepals 2—4.5 mm long (awn exclusive), inner ones 3—6 mm (awn exclusive) . . . . . 43
- b. Corolla large, white or purple. Outer sepals 5—10 mm long (awn exclusive), inner ones 7—15 mm (awn exclusive) . . . . . 42

<sup>1)</sup> See also 12. *I. Batatas* and 21. *I. stolonifera*.

<sup>2)</sup> Leaves linear. See 26. *I. graminea*.

- 42a. Corolla salver-shaped with subrotate limb, white; the tube not or slightly widened above, 7—12 cm long . . . . . 27. *I. alba*  
 b. Corolla salver-shaped with funnel-shaped to rotate limb, lilac; the tube distinctly widened above, 3—6 cm long . . . . . 28. *I. muricata*  
 43a. Leaves pinnately partite into numerous linear or filiform segments . . . . . 30. *I. Quamoclit*  
 b. Leaves not pinnately partite, ovate to orbicular, cordate at the base, the margin entire or lobed . . . . . 29. *I. angulata*

Section 1. *Calycanthemum* (KLOTZSCH) HALL. f.

HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 123; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 510 (*Calycanthum*); BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 129 — genus *Calycanthemum* KLOTZSCH in PETERS, Naturw. Reise Mossamb., Bot. I (1861) p. 243, t. 40. Description see p. 483.

1. *Ipomoea hispida* (VAHL) R. & SCH., Syst. IV (1819) p. 238; HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 123; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 510; MERRILL & ROLFE in Philipp. Journ. Sc. III (1908) p. 122; DUTHIE, Fl. Upper Ganget. Pl. II (1911) p. 113; KOORDERS, Exk. fl. Java III (1912) p. 116; KOORDERS-SCHUM., Syst. Verz. I (1910—13) Conv. p. 4; GAMBLE, Fl. Pres. Madras V (1923) p. 915; MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 366; BACKER, Onkruidfl. Jav. Suikerrietgr. (1931) p. 523 — *Convolvulus hispidus* VAHL, Symb. Bot. III (1794) p. 29 — *Ipomoea eriocarpa* R. BR., Prodr. Fl. Nov. Holl. ed. 1 (1810) p. 484; CHOISY in DC., Prodr. IX (1845) p. 369; BENTH., Fl. Austr. IV (1869) p. 426; CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 204; WATT, Diet. Econ. Prod. India IV (1890) p. 485; PRAIN in Journ. As. Soc. Bengal LXIII (1894) p. 105; TRIMEN, Handb. Fl. Ceyl. III (1895) p. 217; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1066; BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 136; GAGNEP. & COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 245 — *I. sessiliflora* ROTH, Nov. Pl. Spec. (1821) p. 116; WIGHT, Icon. I (1840) t. 169; CHOISY in DC., Prodr. IX (1845) p. 366; ZOLL., Syst. Verz. 2. Heft (1854) p. 129; MIQ., Fl. Ned. Ind. II (1857) p. 610 — *Convolvulus eriocarpus* (R. BR.) SPRENG., Syst. I (1825) p. 598 — *C. sessiliflorus* (ROTH) SPRENG., Syst. I (1825) p. 599 — *Ipomoea Horsfieldiana* MIQ., Fl. Ned. Ind. II (1857) p. 611.

Herbaceous; stems twining or prostrate, 1—2 m long (BACKER), slender, terete, slightly striate, retrorsely to patently pilose. Leaves petiolate; petiole shorter than or as long as the blade, thin, pilose like the stems, 0.8—8 cm long; blade commonly lanceolate to oblong-lanceo-

late or linear-lanceolate, sometimes broader, lanceolate-ovate to ovate, long-attenuate to acuminate towards the apex, with acute or obtuse mucronulate point, the base cordate with rounded sinus and rounded auricles; sparsely pilose on both surfaces or more densely beneath; nerves 7—8 on each side of the midrib; narrow leaves  $2.5-6 \times 0.5-1.5$ , broader ones  $2.5-9 \times 1.5-5.5$  cm. Inflorescences axillary, sessile or with a very short peduncle, always much shorter than the petiole, cymosely 1—3- or sometimes more-flowered; peduncle rather densely pilose; flowers sessile or pedicels very short, to 3 mm; bracts pilose, linear or lanceolate, lower ones 3—8 mm, upper ones shorter; sepals pilose, linear-acuminate from an ovate base, the inner ones slightly narrower than the outer, all of about the same length, 7—8 mm; corolla open only in the morning (LÖRZING), little exceeding the sepals, 7—9 mm long, tubular to funnel-shaped, with 5 pilose midpetaline bands, pink or purple, darker inside, the tube and the midpetaline bands paler without (BACKER); stamens and style included; stamens inserted near the corolla base, unequal; filaments filiform, glabrous with exception of the somewhat dilated base; anthers elliptic, sagittate; ovary with long hairs; style filiform, hairy at the base; stigma biglobular, papillose; disk annular; capsule shorter than the sepals, about 5—6 mm in diam., broad-ovoid to globular, hairy, crowned by the hairy base of the style, opening by 4 valves, 2-celled; seeds 4, c. 2.5 mm long, glabrous, minutely reticulate.

SUMATRA, without locality, KORTIALS 131 (34) (L); East Coast, Karolands, near Tandjoeng, W. S. W. of Sinaboeng, LÖRZING 9001, May 1922 (B); Karo upland, near Koeta bangoen, W. of Kabandjahe, GALOENGI 269, Apr. 1919 (B); Tapanoeli, Toba, Haenatas, OUWELAND 84, March 1896 (B).

JAVA. From West to East Java, at low and medium altitudes, on periodically dry soil, in hedges, thickets, grasslands, in general rather rare (BACKER). Without locality, KUIJL & VAN HASSELT 65 (L); REINWARDT 36 (L); Batavia, Tandjong Priok, BACKER 35450, May 1904 (B); Kobajoran, BACKER 35449, July 1904 (B); Buitenzorg, Buitenzorg, introduced from British India, BACKER 31953 (B); Cheribon, between Cheribon and Linggadjati, BACKER 4770, Oct. 1912 (B); Semarang, Semarang, DE VISSER SMITS s. n., Aug. 1916 (B); id., DOCTERS VAN LEEUWEN s. n., Apr. 1910 (B); Sepakoeng, KOORDERS 35785  $\beta$ , May 1899 (B); Djapara-Rembang, Koedoes, coll. unknown, s. n., Oct. 1924 (Pa); Soerakarta, HORSFIELD s. n. (L; U, type of *I. Horsfieldiana* MIQ.); Madioen, Madioen, WISSE s. n. (B); Ngawi, SOERADJI 10, May 1918 (B); Ngebel, KOORDERS 23164  $\beta$ , May 1896 (B); Kediri, Kediri, BACKER 11344, Febr. 1914 (B); Bendo Redjo, W. slope of G. Keloed, LEEFMANS s. n. (B); Soerabaja, Wonokromo, DORGELO 763, July 1922 (Pa); Malang, Malang, WISSE 221, June 1920 (B); Kepandjen, ISMAIL 23 (B); Tenger, Bodo, MOUSSET 285, March 1912 (B); Kepoeh near Pasoeroean, BACKER 8306, 24190, June 1913 and 1918 (B); Besoeki, Djatiroto, BACKER 8108, May 1919 (B); Asem Bagoes, BACKER 8204, May 1913 (B); Soembermalang near

Bondowoso, BACKER 13377, Apr. 1914 (B); Madoera, Ketapang daja, BACKER 19893, March 1915 (B); between Rapa and Karang Pinang, BACKER 20097, March 1915 (B); Pamekasan, ZOLLINGER 2232, June 1858 (L).

CELEBES, Celebes and Dependencies, Rogang near Lombasang, BÜNNEMEYER 11495, May 1921 (L).

TIMOR, without locality, SPANOGHE 206 (L).

NEW GUINEA, Papua, Rouna, CARR 12441, May 1935 (L); Port Moresby (according to VON MUELLER, Pap. Pl. IV, 1876, p. 70); id., JESWIET 65, May 1928 (W).

PHILIPPINE ISLANDS, in open grasslands and on and about tali, slopes and hedges, ascending to 1200 m (MERRILL). Without locality, LOHER 6588 (B); Luzon, Prov. of Benguet, Bued River, MERRILL 4270, Oct.—Nov. 1905 (B, L). Also in Ilocos Norte, Bontoc and Pangasinan (MERRILL).

Distribution: Tropical Africa, Madagascar, tropical Asia to North Australia.

Habitat: Grasslands, grassy waysides, thickets, hedges, fields, occasionally in secondary forests; between 1 and 1300 m.

Vernacular names: slawatan (Jav., Java, Madioen, KOORDERS); ojed-ojodan (Java, Malang, ISMAIL).

Use: See WATT l.c. DUTHIE says that the leaves and stems are often eaten as a vegetable.

2. *Ipomoea plebeia* R. BR., Prodr. Fl. Nov. Holl. ed. 1 (1810) p. 484; BENTH., Fl. Austr. IV (1869) p. 426; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1066 — ? *Convolvulus biflorus* L., Spec. Pl. ed. 2, App. (1763) p. 1668 — ? *Ipomoea biflora* (L.) PERS., Syn. I (1805) p. 183, non R. BR., 1810 (according to HALL f., 1897); HALL f. in Bull. Herb. Boiss. V (1897) p. 379; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 511; KOORDERS, Exk. fl. Java III (1912) p. 117 — *Convolvulus plebeius* (R. BR.) SPRENG., Syst. I (1825) p. 604; CHOISY in DC., Prodr. IX (1845) p. 412 — *Ipomoea timorensis* BL., Bijdr. (1825) p. 711.

Herbaceous; stems twining or prostrate, slender, terete, smooth or slightly striate, patently to retrorsely hairy. Leaves petiolate; petiole slender, shorter to longer than the blade, hairy like the stems, 1—6 cm long; blade ovate, rarely narrower, attenuate to short-acuminate towards the apex with an acute or obtusish mucronulate point, cordate at the base with a broad or narrow rounded sinus and broad obtuse auricles, sparsely hairy on both sides; nerves c. 5—7 on each side of the midrib; length of the blade 3—8 cm, width of the blade 1.5—6 cm, rarely narrower. Inflorescences axillary, sessile or with a short peduncle always very much shorter than the petiole, 1 or 2, sometimes 3-flowered; peduncle with patent hairs; flowers with slender, hairy, 5—7 mm long pedicels; bracts small, c. 2—2.5 mm; sepals hairy, two outer ones long and linear-

acuminate from a broad-triangular slightly cordate to truncate base, third sepal oblique, base of fourth and fifth sepal much narrower; sepals equal in length, 7—8 mm long; corolla little exceeding the sepals, c. 9 (11—13, BACKER) mm long, tubular to funnel-shaped, white, the midpetaline bands pilose towards the top; stamens included, red (Mrs. RENSCH), inserted near the corolla base, unequal; filaments filiform, glabrous, with exception of the dilated base; anthers elliptic, sagittate; ovary glabrous; style filiform, glabrous; stigma biglobular, papillose, violet (BACKER); disk annular; capsule little shorter than the sepals, about 7 mm high, broad-ovoid to globose, glabrous, crowned by the base of the style, opening by 4 valves, 2-celled; seeds 4, c. 4—4.5 mm long, shortly brown to grey-tomentose and sometimes with longer white hairs along the margins.

JAVA, Priangan, Soekaboemi, dust heap, BACKER 14793, July 1914 (B); Besoeki, Sitoehondo, BACKER 24627, June 1918 (B); Madoera, Kangean Islands, Sapken, BACKER 28570, Apr. 1919 (B); Saèboes, BACKER 29086, Apr. 1919 (B).

CELEBES, Celebes and Dependencios, Kalosi, KJELBERG 4000, May 1929 (B).

LOMBOK, Rindjani, S. S. E. side, Iwela near Pringgabaja, ELBERT 1987, June 1909 (L).

SOEMBAWA, Wawo, Mrs. RENSCH 899, June 1927 (B).

TIMOR, without locality, coll. unknown, n. 290 (L, type of *I. timorensis* BL.); REINWARDT s.n. (L, mixed with *I. Decaisnei* VAN OOSTSTR.); REINWARDT 36, 1332 (L); TEYSMANN s.n. (B); S. Middle Timor, Nipol, Mrs. WALSH 473, Apr. 1929 (B).

Distribution: Malay Archipelago, Queensland.

Habitat: Grasslands, dry thickets; between 1 and 600 m.

Remarks. HALLER in Bull. Herb. Boiss. V (1897) p. 379 considers *I. timorensis* BL., 1825 (= *I. plebeia* R. BR., 1810) as a synonym of *I. biflora* (L.) PERS. *I. biflora* (L.) PERS. was based by PERSOON on *Convolvulus biflorus* L., a Chinese species described by LINNAEUS in the Appendix to the second edition of his Species Plantarum, 1763. The name *I. biflora* consequently should have priority. As it is in my opinion somewhat doubtful, whether both species are identic, I prefer to use the name *I. plebeia* R. BR., 1810, for the Malaysian specimens.

3. *Ipomoea polymorpha* R. & SCH., Syst. IV (1819) p. 254; MERRILL in Philipp. Journ. Sc. XIV (1919) p. 450; id., Enum. Philipp. Fl. Pl. III (1923) p. 367 — *I. heterophylla* R. BR., Prodr. Fl. Nov. Holl. ed. 1 (1810) p. 487, non ORTEGA, 1800; CHOISY in DC., Prodr. IX (1845) p. 354; BENTH., Fl. Austr. IV (1869) p. 426; HALL f. in ENGL., Bot. Jahrb. XVIII (1893) p. 125; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1066; KOORDERS, Exk. fl. Java III (1912) p. 121; GAGNEP. &

COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 267; BACKER, Onkruidfl. Jav. Suikerrietgr. (1931) p. 523 — *Convolvulus Brownii* SPRENG., Syst. I (1825) p. 612, non l. c. p. 590 — *C. Robertianus* SPRENG., Syst. V (1828) p. 192 — *Ipomoea pumila* SPANOGHE in Linnæa XV (1841) p. 341; CHOISY in DC., Prodr. IX (1845) p. 357; MIQ., Fl. Ned. Ind. II (1857) p. 604; FORBES, Wander., Germ. ed. II (1886) p. 222 — *Convolvulus nolanaeflorus* ZIPP. ex SPANOGHE l. c. in syn. — *C. defloratus* CHOISY in ZOLL., Syst. Verz. 2. Heft (1854) p. 130, 132; MIQ., Fl. Ned. Ind. II (1857) p. 623.

A herbaceous annual, 8–60 cm high; stems terete, erect, simple, or branched from the base, branches patent to ascending, the young parts densely pilose, the adult parts less densely pilose, glabrescent to glabrous. Leaves petiolate; petiole shorter than the blade, sparsely pilose like the stems, 0.5–3 cm long; blade narrow-elliptic, elliptic-oblong, elliptic-obovate to oblanceolate, mostly attenuate towards both ends, the apex acute or obtuse to rounded, minutely mucronate, the base acute, attenuate into the petiole; blade glabrous or sparsely pilose near the base; leaf margin entire, undulate or coarsely dentate, with a few large teeth, occasionally irregularly pinnatifid, with few segments to lyrate with large, ovate or elliptic, entire or coarsely dentate terminal segment and small triangular to hastate basal ones; lateral nerves 5–6, straightly ascending; length of blade 1.5–7.5 cm, width of blade 0.5–3 cm. Flowers solitary in the leaf-axils; peduncle and pedicel very short or none; bracts linear-filiform, c. 1 cm long, long-hairy; sepals with distinct midrib, all long-acuminate, long-hairy, the outer ones herbaceous, ovate-lanceolate, entire or with one or two teeth at the margin, the inner ones herbaceous with thin scarious margin, lanceolate, all 8–10 mm long; corolla red-purple, darker inside (BACKER), rarely white, small, tubular-funnel-shaped, c. 1¼ cm long, ¾–1 cm wide, glabrous; stamens and style included; stamens inserted nearly 2 mm above the corolla base; filaments white, unequal, filiform, dilated and hairy at the base; anthers elliptic, nearly 1 mm long in open flower; ovary glabrous; style filiform, glabrous, articulate; capsule globular, glabrous, straw-coloured, shorter than the calyx, 4–6 mm high, 4-valved, 2-celled, 4-seeded; seeds with a mottled brownish or greyish black pubescence, c. 2½–3¼ mm long.

JAVA. In East Java, in the lower parts with strong east monsoon, on hard or stony soil, in sunny localities, especially on fields, grasslands, along waysides, locally frequent (BACKER). Buitenzorg, only cultivated in the Botanic Garden, TEYSMANN 101 (L); Malang, hills S. E. of Bangil, BACKER 37361, Apr. 1929 (Pa); G. Semongkrong, E. of Pasoeroean, BACKER 36543, March 1928 (Pa); id.,

VAN SLOOTEN 2430, Apr. 1931 (B); Besoeki, ZOLLINGER 2822, Apr. 1845 (B); between Badjoel mati and Batoe dodol, ZOLLINGER 2821, *type of Convolvulus defloratus* CHOISY (according to ZOLLINGER); Banjoepoetih near Asem Bagoes, BEGUIN 162, March 1922 (B); Balalean, E. of Soemberwaroc, CLASON-LAARMAN G 68, Jan. 1932 (B); Madoera, E. of Bangkalan, BACKER 18953, Febr. 1915 (B, L, U, W); Kwanjar, BACKER 19204, Febr. 1915 (B); Sapocloe, BACKER 19434, Febr. 1915 (B); Sampang, BACKER 19666, March 1915 (B); id., hills, RANT s.n., Dec. 1924 (B); Ketapang daja, BACKER 19872, March 1915 (B); Rapa, BACKER 20232, March 1915 (B); hills S.W. of Tamberoc, BACKER 20530, March 1915 (B); Kamal, BEUMÉ A 876, Febr. 1931 (B); Kangean Islands, Kangean, N. of Ardjasa, BACKER 26909, March 1919 (B).

SOEMBA, Nabeso, IBOET 87, March 1925 (B).

FLORES, between Boa Wae and Deroc, HORST 41, Nov. 1921 (B).

TIMOR, without exact locality, SPANOGHE, numbered Icon. 45 (L, *type of I. pumila* SPAN.); SPANOGHE 72 (L); id. s.n. (U); TEYSMANN 5091 H. B. (B, U); ZIPPELIUS 73 (88/1 and 88/2) and s.n. (L, *type of Convolvulus nolanaeflorus* ZIPP.).

PHILIPPINE ISLANDS, in dry open places at low altitudes (MERRILL). Luzon, Ilocos Norte, Union (MERRILL).

**Distribution:** Africa (Abyssinia), British India (?), Formosa (MERRILL), Java, Lesser Sunda Islands, Philippines, N.E. Australia.

**Habitat:** Grasslands, grassy waysides, fields, sandy plains; between 1 and 100 m.

**Vernacular name:** camarin (Philippines, Ilóko language, MERRILL).

#### Section 2. *Dasychaetia* HALL. f.

HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 130; BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 130.

Description see p. 483.

Not represented in Malaysia.

#### Section 3. *Pharbitis* (CHOISY) GRISEB.

(GRISEB., Fl. Brit. West Indian Isl. (1864) p. 473; HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 131; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 511 — genus *Pharbitis* CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 438 — *Ipomoea* subgenus *Pharbitis* (CHOISY) CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 199.

Description see p. 483.

#### Subsection 1. *Chorisanthae* HALL. f.

HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 135; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 511 (*Chorisantheae*); BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 131.

Description see p. 484.

4. *Ipomoea purpurea* (L.) ROTH, Bot. Abh. (1787) p. 27; LAMK., Tabl. Encycl. I (1791) p. 466; ROTH, Catal. Bot. I (1797) p. 36; BENTH., Fl. Austr. IV (1869) p. 417; CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 200; HALL, f. in ENGL., Bot. Jahrb. XVIII (1893) p. 137; id. in Versl. 's Lands Pl. t. 1895 (1896) p. 128; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 511; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1059; DUTHIE, Fl. Upper Ganget. Pl. II (1911) p. 117; KOORDERS, Exk. fl. Java III (1912) p. 120; MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 367 — *Convolvulus purpureus* L., Spec. Pl. ed. 2, I (1762) p. 219; CURTIS, Bot. Mag. III (1797) t. 113; id., XXV (1807) t. 1005 (var. *elatior*); id., XLI (1815) t. 1682 (var. *varius*) — *Ipomoea hispida* ZUCC., Cent. Obs. (1806) n. 36 (not seen); id. in ROEM., Collect. (1809) p. 127 (not seen) — *Pharbitis hispida* (ZUCC.) CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 438; id. in DC., Prodr. IX (1845) p. 341; MIQ., Fl. Ned. Ind. II (1857) p. 594 — *Ph. purpurea* (L.) VOIGT, Hort. Suburb. Calc. (1845) p. 354.

Herbaceous annual. Stems terete, twining, with short hairs mixed with longer retrorse bristles. Leaves petiolate; petiole shorter or longer than the blade, 2—15 cm long, retrorsely hirsute; blade broad-ovate or orbicular in outline, the margin entire or three-lobed; apex short-acuminate, base cordate with broadly rounded auricles; the upper and lower surface of the leaf with short bristly hairs; length of the blade 4—15 cm, width of the blade 2.5—12 cm. Inflorescences axillary, pedunculate, the peduncles shorter or longer than the petiole, with retrorse bristly hairs like the stems, 3—18 cm long; flowers 1—few at the end of the peduncle; pedicels with short hairs or with a few bristles, 8—15 mm long, recurved in flower-bud, afterwards erect, finally recurved again, in fruit to 20 mm long and thickened towards the apex; bracts linear or filiform, to 7 mm long; sepals about equal in length, the three outer ones herbaceous or the third one with a narrow scarious margin, oblong, slightly narrowed at the base, acute at the apex, with bristly, patent hairs in the basal portion, glabrous towards the apex; the two inner ones herbaceous with narrow scarious margins, linear-oblong to linear, acute at the apex, with a few bristly hairs near the base, further glabrous; all sepals c. 10—15 mm long, in fruit to 20 mm; corolla funnel-shaped, glabrous, the limb inside purple-blue with reddish midpetaline areas, outside often paler, the tube much paler to white; length of corolla 5—6 cm, width of limb 6 cm; stamens unequal, included, inserted about 6—7 mm above the base of the corolla; filaments filiform, white, the

base with long white hairs; anthers oblong, sagittate; ovary glabrous, 3-celled; style filiform, glabrous; stigma 3-globular, papillose; disk pale-yellow, low, annular, slightly 5-lobed; capsule globular, glabrous, 3-celled, with thin straw-coloured wall, 6 or less-seeded; seeds glabrous or sparsely pilose at the hilum.

JAVA, Buitenzorg, Buitenzorg, cult. in the Botanic Garden, 4106 HB and 4107 HB (B).

PHILIPPINE ISLANDS. Occasionally cultivated in Manila and other towns for ornamental purposes; but showing no tendency to become naturalized (MERRILL).

Distribution: Originally in America from New Mexico and Virginia as far south as Argentina and Uruguay.

Vernacular names: morning glory; dagschoone, dagbloem, purperwinde (Dutch).

Use: Cultivated in gardens for ornamental purposes.

5. *Ipomoea Nil* (L.) ROTH, Cat. bot. I (1797) p. 36; HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 136; id. in Versl. 's Lands Pl. t. 1895 (1896) p. 128; id. in Bull. Herb. Boiss. V (1897) p. 380; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 511; KOORDERS, Exk. fl. Java III (1912) p. 120; KOORDERS-SCHUM., Syst. Verz. I (1910—13) Conv. p. 5 — *Convolvulus Nil* L., Spec. Pl., ed. 2 (1762) p. 219; MERRILL in Bur. Gov. Lab. Philipp. 27 (1905) p. 62; id., Spec. Blanc. (1918) p. 322 — *Ipomoea scabra* FORSK., Fl. Aegypt.-Arab. (1775) p. 44; HALL. f. in Meded. Rijksherb. Leiden 46 (1922) p. 17 — *I. setosa* BL., Bijdr. (1825) p. 714; SPANOGHE in Linnæa XV (1841) p. 340 — *Pharbitis Nil* (L.) CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 439; DECAISNE, Herb. Timor. (1835) p. 61; SPANOGHE in Linnæa XV (1841) p. 338; CHOISY in DC., Prodr. IX (1845) p. 343 excl. var. *diversifolia* CHOISY; ZOLL., Syst. Verz. 2. Heft (1854) p. 128; MIQ., Fl. Ned. Ind. II (1857) p. 595 excl. var. *diversifolia* CHOISY; id., Suppl. (1860) p. 234 — *Ipomoea trichocalyx* STEUD., Nom., ed. 2, I (1840) p. 819, non DON; CHOISY in DC., Prodr. IX (1845) p. 370; MIQ., Fl. Ned. Ind. II (1857) p. 611; FORBES, Wander., Germ. ed. II (1886) p. 222 — *I. Nil* (L.) ROTH var. *setosa* (BL.) BOERL., Handl. Fl. Ned. Ind. II (1899) p. 511.

Herbaceous annual or perennial (HALLIER); stems twining or sometimes prostrate, terete or angular, retrorsely hirsute; leaves petiolate; petiole shorter to longer than the blade, 3—16 cm long, retrorsely hirsute; blade broad-ovate to orbicular in outline, the margin entire or three-lobed, the middle lobe broad-ovate, ovate or oblong, acuminate at the apex, generally not contracted at the base, the lateral lobes oblique-ovate to broadly falcate, acuminate, the base of the leaf broadly cordate; upper and lower surface of the blade with few to many more or less appressed hairs;

length of the blade 4—14 cm, width 3—12 cm. Inflorescences axillary pedunculate, the peduncles thicker than the petioles, terete, angular or applanate, hirsute like the stems, 2.5—12 cm long; flowers one, few or several at the end of the peduncle in a small umbellate cyme; pedicels 5—10 mm long, with retrorse hairs; bracts small, linear to filiform, 5—8 mm long; sepals 17—25, afterwards to 28 mm long, patently hirsute, especially in the basal portion, sometimes the bristly hairs are mixed with shorter and softer ones; outer sepals with lanceolate, inner ones with narrow-lanceolate base, all with a long and linear acumen; corolla funnel-shaped, c. 5—6 cm long, glabrous outside, pale blue or bright blue, afterwards red or reddish purple, rarely entirely white; the tube and limb always paler without; stamens unequal, included, inserted about 7—10 mm above the base of the corolla; filaments filiform, the base with long curled hairs; anthers ovate-oblong, sagittate; ovary glabrous; style filiform, glabrous; stigma biglobular, papillose; disk low, annular. Capsule ovoid to globular, glabrous, mucronate by the base of the style, opening by 3 valves, generally 3-celled; seeds c. 5 mm long, black, grey-puberulent.

MALAY PENINSULA. Often planted and run wild in hedges and waste ground (RIDLEY).

SUMATRA, Atjeh and Dependencies, near Gajö Locäs, PRINGO-ATMODJO 186 (exped. VAN DAALEN), March 1904 (B, L); East Coast, Lake Toba, near Tongging, LÖRZING 8094, Nov. 1920 (B); West Coast, Bt. Tinggi near Mangani, BÜNNEMEYER 3010, June 1918 (B, L); G. Marapi, BÜNNEMEYER 4814, Sept. 1918 (B); Djambi, near Lake of Kerintji, BÜNNEMEYER 8305, Febr. 1920 (B).

JAVA, without locality<sup>1)</sup>, KORTHALS 256 (L); KUIL & VAN HASSELT 67 (L); Batavia, Batavia, KOORDERS 41735  $\beta$ , June 1913 (B); Weltevreden, BACKER 35444, 35448, March and Aug. 1903 (B); Sentiong, BACKER 35447, July 1902 (B); Buitenzorg, cult. in the Botanic Garden, XV. K. B. X. 1; XV. K. B. XI. 7 (B); id., HALLER D. 196d, June 1893 (L); Magelang, Awoe awoe, JUNGHUHN s. n., May (L); Semarang, Bangkok, DOCTERS VAN LEEUWEN 1214, Jan. 1913 (B); Jogjakarta, near Bedaja, JUNGHUHN 171, May (L); Madioen, Madioen, BACKER 6978, Febr. 1913 (B); Ngebel, KOORDERS 23200  $\beta$ , May 1896 (B); Soerabaja, Soerabaja, DORGELO 286, Apr. 1922 (Pa); id., BACKER 26684, March 1919 (B); Sekapoeh, DORGELO 3041, Apr. 1924 (Pa); Gresik, DORGELO 3261 and s. n., Febr. 1925 (Pa); hills near SidaJoe, DORGELO 1889, June 1923 (Pa); Besoeki, near Waringin, and M. Arak arak, ZOLLINGER 2768 (according to ZOLLINGER); Idjen plateau near Djampit, BACKER 25095, June 1918 (B); Madoera, Kamal, DORGELO 683, June 1922 (Pa).

<sup>1)</sup> A specimen in Leiden, without collector's name, numbered 299, is named *Ipomoea setosa* BL. in BLUME's handwriting. It has been identified by HALLER as *I. Nil* ROTH var. *integrifolia* HALL. f.

CELEBES, Celebes and Dependencies, Lombasang, BÜNNEMEYER 11181, Apr. 1921 (B); id., BÜNNEMEYER 11303, May 1921 (B); Rogang near Lombasang, BÜNNEMEYER 11494, 11495, May 1921 (B); Tanette, BÜNNEMEYER 11745, May 1921 (B); id., BÜNNEMEYER 12525, June 1921 (B); Malino, BÜNNEMEYER 10763, Apr. 1921 (B); Salajar Islands, Bonerate, DOCTERS VAN LEEUWEN 1452, May 1913 (B, U).

LOMBOK, Labocan, ZOLLINGER 987 (according to ZOLLINGER); Rindjani, N. side, Labocan tjarik, ELBERT 568, Apr. 1909 (L); id., N. E. side, Sembaloen plateau, ELBERT 1528, May 1910 (L).

SOEMBAWA, Soembawa besar, Mrs. RENSCH 505, Apr. 1927 (B).

SOEMBA, Laora, IBOET 340, Apr. 1925 (B).

TIMOR, without locality, FORBES 3776 (B); FORBES 4105 (B, L); FORBES 4108 (L); Koepang, BROWN s. n. (L); S. M. Timor, Soë, on limestone, Mrs. WALSH 65, March 1929 (B).

NEW GUINEA, Netherlands New Guinea, Merauke, VERSTEEG 1968, Nov. 1907 (B); Papua, Rouna, CARR 12333, March 1935 (L).

PHILIPPINE ISLANDS, in thickets and waste places at low and medium altitudes (MERRILL). Luzon, prov. of Abra, RAMOS, Bur. of Sc. 7248, Jan.—Febr. 1909 (B); Distr. of Lepanto, BACANI, For. Bur. 15994, Jan. 1909 (B, L); Rizal prov., Manila, MERRILL 5163, Febr. 1906 (L); id., id., MERRILL 286, Febr. 1910 (U); id., id., RAMOS, Bur. of Sc. 12196, Sept. 1910 (L); id., id., MERRILL, Spec. Blanc. 281, Oct. 1913 (B, L).

Distribution: Circumtropical.

Habitat: Waysides, hedges, thickets, grasslands; cultivated and run wild; 1—1300 m.

Vernacular names: aröj djotang bodas (Sund., KOORDERS); teleng (Jav., Java, Madioen, KOORDERS); bulakán, kamokamotíhan (Philippines, Tagalog language, MERRILL).

Remarks. 1. Several authors have interpreted this species as being identic with the North American *Ipomoea hederacea* (L.) JACQ. (*Convolvulus hederaceus* L., Spec. Pl. ed. 1 (1753) p. 154 p.p.; id., ed. 2 (1762) p. 219 p.p.) and have mentioned it under that name<sup>1</sup>). See the criticism by HALLIER in Jahrb. Hamb. Wiss. Anst. XVI, 1898, 3. Beih. (1899) p. 42, under *I. hederacea* (L.) JACQ.

<sup>1</sup>) In literature relative to Malaysia and adjacent regions: R. BR., Prodr. Fl. Nov. Holl. ed. 1 (1810) p. 486; BENTH., Fl. Austr. IV (1869) p. 416; CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 199; FORBES, Wander., Germ. ed. II (1886) p. 222; WATT, Dict. Econ. Prod. India IV (1890) p. 485; TRIMEN, Handb. Fl. Ceyl. III (1895) p. 212; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1058; BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 159; DUTHIE, Fl. Upper Ganget. Pl. II (1911) p. 116; GAGNEP. & COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 241; GAMBLE, Fl. Pres. Madras V (1923) p. 917; RIDLEY, Fl. Malay Penins. II (1923) p. 462; MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 365.

The true *I. hederacea* is probably now and then cultivated in gardens. I did not see any specimens from Malaysia <sup>1</sup>).

2. *I. limbata* (LINDL.) BOERL., Handl. Fl. Ned. Ind. II (1899) p. 511; KOORDERS, Exk. fl. Java III (1912) p. 122 (= *Pharbitis limbata* LINDL. in Journ. Hort. Soc. V (1850) p. 33; MIQ., Fl. Ned. Ind. II (1857) p. 595; *Ph. Nil* (L.) CHOISY var. *limbata* (LINDL.) HOOK. in CURTIS, Bot. Mag. ser. 3, XXIV (1868) pl. 5720) seems to be a cultivated form of *I. Nil*.

6. *Ipomoea congesta* R. BR., Prodr. Fl. Nov. Holl. ed. 1 (1810) p. 485; CHOISY in DC., Prodr. IX (1845) p. 369; BENTH., Fl. Austr. IV (1869) p. 417; SCHUM. in ENGL., Bot. Jahrb. IX (1887) p. 216; SCHUM. & HOLLRUNG, Fl. Kais. Wilh. Land (1889) p. 114; WARB. in ENGL., Bot. Jahrb. XIII (1891) p. 413; HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 137; SCHUM. & LAUTERB., Fl. Deutsch. Schutzgeb. (1901) p. 515; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1059 — ? *Convolvulus indicus* BURM., Index Univers. Herb. Amb. VII (1755) p. [6] (not seen) — *C. acuminatus* VAHL, Symb. Bot. III (1794) p. 26 — *Ipomoea cathartica* POIR. in LAMK., Encycl., Suppl. IV (1816) p. 633 — *I. acuminata* (VAHL) R. & SCH., Syst. IV (1819) p. 228, non RUIZ & PAVON, 1799; HALL. f. in Versl. 's Lands Pl. t. 1895 (1896) p. 128; id. in Bull. Herb. Boiss. V (1897) p. 381; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 511 <sup>2</sup>); KOORDERS, Exk. fl. Java III (1912) p. 120 — *I. amoena* BL., Bijdr. (1825) p. 718 — *Convolvulus congestus* (R. BR.) SPRENG., Syst. I (1825) p. 601 — *Ipomoea cataractae* ENDL., Prodr. Fl. Norf. (1833) p. 53; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1067 — *Pharbitis insularis* CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 439; id. in DC., Prodr. IX (1845) p. 341 — *Ipomoea insularis* (CHOISY) STEUD., Nom. ed. 2, I (1840) p. 817; HILLEBR., Fl. Hawaiian Isl. (1888) p. 317 — *Pharbitis cathartica* (POIR.) CHOISY in DC., Prodr. IX (1845) p. 342 — *Ph. acuminata* (VAHL) CHOISY in DC., Prodr. IX (1845) p. 342 — *id.* var. *congesta* CHOISY, l. c. p. 343 — *Ipomoea indica* (BURM.) MERRILL, Interpr. Rumph. Herb. Amb. (1917) p. 445; id., Enum. Philipp. Fl. Pl. III (1923) p. 366; HEYNE, Nutt. Pl. ed. 2 (1927) p. 1304.

<sup>1</sup>) In literature relative to Malaysia it is mentioned by: BL., Bijdr. (1825) p. 710; HALL. f. in Versl. 's Lands Pl. t. 1895 (1896) p. 128; id. in Bull. Herb. Boiss. V (1897) p. 379; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 511; KOORDERS, Exk. fl. Java III (1912) p. 119. MIQ., Fl. Ned. Ind. II (1857) p. 596 mentions it under the name of *Pharbitis hederacea* (L.) CHOISY.

<sup>2</sup>) Var. *Burokii* BOERL., l. c., based on *Ipomoea Nil* BURCK in Ann. Jard. Bot. Buitenz. X (1891) p. 88 (haud ROTII), is unknown to me.

Herbaceous plant; the stems twining or occasionally prostrate and then sometimes rooting at the nodes, terete or angular, more or less densely retrorsely pilose. Leaves petiolate; petiole shorter to longer than the blade, 2—18 cm long, hairy, with the hairs directed towards the base; blade broad-ovate to orbicular in outline, the margin entire or three-lobed, the middle lobe ovate or oblong, shortly or long-acuminate at the apex, the base not or slightly narrowed, the lateral lobes oblique-ovate to broadly falcate, shortly or long-acuminate, the base of the leaf broadly cordate; lower surface often densely, upper surface less densely pilose with short, soft, appressed hairs, sometimes the lower surface sericeo-tomentose; length of the blade 5—17 cm, width 3.5—16 cm. Inflorescences axillary, pedunculate, the peduncle shorter to much longer than the petiole of the subtending leaf, more or less densely and retrorsely pilose like the stems, (0.5—)4—20 cm long; flowers few to several at the end of the peduncle in a dense umbellate cyme with very short branches; pedicels short, 2—5(—8) mm; bracts linear to filiform, occasionally broader to foliaceous; sepals especially near their base with rather soft, appressed hairs or nearly glabrous, not with patent bristly hairs as in *I. Nil*; outer sepals with a lanceolate to broad-lanceolate base, inner ones with a narrower base, all long and gradually linear-acuminate, 14—22 mm long; corolla funnel-shaped, 5—8 cm long, glabrous outside, bluish purple, afterwards more reddish purple or red, the limb darker than the tube. Stamens and style included; stamens unequal, inserted about 7—11 mm above the base of the corolla; filaments filiform, the base with long curled hairs; anthers linear, sagittate; ovary glabrous; style filiform, glabrous; stigma biglobular, papillose; disk low, annular. Capsule not seen in Malaysian specimens<sup>1</sup>).

MALAY PENINSULA, Johore, Mersing, CORNER, Singapore Field n. 29757, Aug. 1935 (B).

SUMATRA, West Coast, G. Talang, Laras Talang, BÜNNEMEYER 5179, Oct. 1918 (B, L).

JAVA, Buitenzorg, Buitenzorg, BOERLAGE s. n., Oct. 1888 (L); id., cultivated in the Botanic Garden, HALLIER C7 and C165a, March 1893 and June 1895 (L); id., id., XV. H. 1; XV. H. 30 (B); Priangan, Tjipakoe, BOERLAGE s. n., Nov. 1888 (L); Tjinjirean, BACKER 5763, Dec. 1912 (B); Telaga Patengan, LÖRZING 1427, March 1914 (B); Daradjat near Garoet, BURCK 182, June 1895 (B); Bandoeng, cultivated, BACKER 32313, Oct. 1903 (B); Tjibeureum, SMITH & RANT 502, Apr. 1911 (B); Sindanglaja, cultivated, KOORDERS 42176  $\beta$ , 42180  $\beta$ , 42181  $\beta$ , July—Aug. 1913 (B); Tasikmalaja, lake of Pendjaloe, Noesagede, probably introduced, KOORDERS 47914  $\beta$ , 47915  $\beta$ , July—Aug. 1917 (B, L); Pekalongan, Goemilem

<sup>1</sup>) cf. BURCK in Ann. Jard. Bot. Buitenz. X (1891) p. 115, note.

near Jasaredja, BACKER 16048, Sept. 1914 (B); Banjoemas, Batoer, Dieng plateau, BACKER 21731, Jan. 1917 (B); Magelang, Wonosobo, BRINKMAN 606, April 1935 (B); Semarang, Salatiga, DOCTERS VAN LEEUWEN s.n., Febr. 1909 (B); Malang, Malang, HAAGEN 331, July 1920 (B); Nongkodjadar, WISSE 612, June 1921 (B); Tengger, BUYSMAN 328, Sept. 1907 (U); id., MOUSSET 286 (B).

CELEBES, Manado, between Manado and Tomohon, cultivated and escaped from culture, KOORDERS 16563  $\beta$ , Jan. 1895 (B); Talaud Islands, Salibaoe, S. E. slope of G. Ajambana, LAM 3067, May 1926 (B); Miangas (Palmas) Island (according to MERRILL, 1923).

MOLUCCAS, Halmahera, Soa Tobaroe, BEGUIN 2032, June 1922 (B); Ternate, a specimen without collector's name, numbered 300 (L, type of *Ipomoea amoena* BL.); REINWARDT s.n., Aug. 1821 (L); Akè bobotja, BEGUIN 920, Oct. 1920 (B); Tidore, REINWARDT s.n., Aug. 1821 (L); Batjan, BOERLAGE 565, Aug. 1900 (B); Kay Islands (according to WARBURG).

NEW GUINEA, Netherlands New Guinea, Schouten Islands, Biak, N. coast, FEUILLETAU DE BRUYN 403, Sept. 115 (B); Territory of New Guinea, between Ramu and the coast, SCHLECHTER 14181, Febr. 1902 (B); Finschhafen; Kelana; Constantinhafen; Gogol R.; Nowulja R., Oertzen M.; Ramu R. (according to SCHUMANN & LAUTERBACH); Papua, Strickland River (according to VON MUELLER, Pap. Pl. VII, 1886, p. 30).

BISMARCK ARCHIPELAGO, New Ireland, Lamkot, PEEKEL 23 (B); New Britain (according to VON MUELLER, Pap. Pl. IX (1890) p. 64).

PHILIPPINE ISLANDS, in thickets at low and medium altitudes (MERRILL). Romblon, ELMER 12159, March 1910 (L); also in Luzon (Cagayan, Ilocos Norte, Bontoc), Negros, the Babuyan Islands, and Jolo (MERRILL).

Distribution: Circumtropical.

Habitat: Waste places, thickets, hedges, edges of secondary forest, occasionally on sandy sea-shores, also cultivated; between 0 and 1650 m.

Vernacular names: boengah (Sumatra, West Coast, BÜNNE-MEYER); pitoer (Celebes, Manado, KOORDERS); apoekoenga (Talaud Islands, LAM); lobokè ma dorooë (Halmahera, BEGUIN); bulakan pulá (Philippines, Súlu language, MERRILL).

Remarks. 1. MERRILL used the name *Ipomoea indica* for this species, on account of *Convolvulus indicus*, a name of BURMAN. BURMAN based this name on the *Convolvulus coeruleus* of RUMPHIUS (Herb. Amb. V, p. 432), the identity of which is rather doubtful. I, therefore, prefer to use the name *I. congesta* R. BR., though still another name viz. *I. acuminata* R. & SCH., 1819, based on *Convolvulus acuminatus* VAHL, 1794, should have priority. There exists, however, already an *Ipomoea acuminata* RUIZ et PAV., 1799, a different species.

2. HOCHREUTNER in Candollea V (1934) p. 185 described a var. *brevipedunculata*. This variety is unknown to me.

3. *I. Leari* PAXT., Mag. VI (1839) t. 267 which is sometimes found

in culture for ornamental purposes seems to be not or scarcely different from *I. congesta* R. Br.

4. The density of the pubescence of this species is very variable. According to the description, the specimen which ROBERT BROWN used as the type of his *Ipomoea congesta* was tomentose.

7. *Ipomoea Decaisnei* VAN OOSTSTR., nov. nom. — *Pharbitis variifolia* DECAISNE, Herb. Timor. (1835) p. 62; SPANOGHE in Linnæa XV (1841) p. 338; non *Ipomoea variifolia* MEISSN.

A herbaceous annual (DECAISNE) twiner; stems thin, almost filiform, terete, glabrous or very sparsely pilose with long, patent hairs; leaves petiolate, petiole thin, shorter than the blade, (0.5—)2—4.5 cm long, with sparse patent hairs; leaf-blade broad-ovate, ovate to triangular, shortly or long-acuminate at the apex with an acute or obtusish, mucronulate point, cordate at the base, the sinus rounded, the auricles rounded, angular or sometimes the leaf-base sagittate; length (1.5—)3—9 cm, width (1—)1.5—7 cm; surfaces of the leaves sparsely or sometimes more densely pilose with the same hairs as the stems and the petioles. Inflorescences axillary, pedunculate, peduncle generally rather short, patently pilose, 0.5—4 cm long; flowers few at the end of the peduncle in an umbellate cyme; pedicels 5—9 mm long, in fruit 10—17 mm; bracts linear or filiform, the lower ones to 9 mm long with sparse patent hairs; sepals herbaceous, subequal, linear, attenuate into an acute point, patently hairy in the lower half (hairs with thickened base), glabrous towards the top, 8—15 mm long; corolla violet, funnel-shaped, glabrous, c. 2—2.5 cm long; stamens and style included; stamens inserted c. 6 mm above the corolla base; filaments unequal, filiform, dilated and hairy at the base; anthers ovate, sagittate, 1.5 mm long (in open flower); ovary glabrous; style filiform, glabrous; stigma biglobular; capsule globular, mucronate by the base of the style, with thin, straw-coloured wall, c. 7—8 mm high, opening by 4 valves; seeds black, 4—4.5 mm long, finely puberulent, mottled brownish and greyish.

JAVA, Kediri, Gadoengoen, KOORDERS 22836 ♀, June 1896 (B); Madoera, between Bangkalan and Arosbaja, BACKER 21122, June 1916 (B).

CELEBES, Celebes and Dependencies, Kalolo near Lombasang, BÜNNEMEYER 11554, May 1921 (B); P. Boeton, Baoe-baoe, ELBERT 2630, Sept. 1909 (L).

LOMBOK, Rindjani, N. side, Bajan, ELBERT 723, Apr. 1909 (L); Rindjani, S. S. E. side, Iwela near Pringgabaja, ELBERT 2005, June 1909 (L).

SOEMBAWA, Dompoe, Mrs. RENSCH 788, May 1927 (B).

TIMOR, without locality, REINWARDT s.n. (L, mixed with *I. plebeia* R. Br.); id., REINWARDT 1328, Apr. 1821 (L); id., SPANOGHE s.n. (L, mixed with *I. obscura* (L.) KER-GAWL.); Nonboun, TEYSMANN s.n. (B).

**Distribution:** East Java, South-West and South-East Celebes, Lesser Sunda Islands.

**Habitat:** Thickets, hedges, waysides; between 1 and 750 m.

**Vernacular names:** kelawat woengoe (Jav., Java, Soerakarta, KOORDERS); gamet (Jav., Java, Kediri, KOORDERS); daoen tapahaik (Timor, TEYSMANN).

**Remarks.** HALLIER identified the specimens of this species from Timor as *Ipomoea Meyeri* (SPRENG.) DON. Indeed *I. Meyeri*, from Central America, seems to be closely related. For the time being I prefer, however, to keep the species distinct, as I believe there are some points of difference mainly in the shape and size of calyx and corolla.

Subsection 2. *Cephalanthae* (CHOISY) HALL. f. emend.

HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 131; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 511 (*Cephalanthae*) — *Ipomoea* section *Strophipomoea* § *Cephalanthae* CHOISY in DC., Prodr. IX (1845) p. 363 — *Ipomoea* section *Cephalanthae* BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 131 — *Ipomoea* section *Involucratae* BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr., IV, 2 (1905) p. 130.

Description see p. 484.

8. *Ipomoea Pestigridis* L., Spec. Pl. ed. 1 (1753) p. 162; BL., Bijdr. (1825) p. 709; ROXB., Fl. Ind. ed. CAREY, I (1832) p. 503 (*I. Pestigridis* WILLD.); SPANOGHE in Linnaea XV (1841) p. 340; WIGHT, Icon. t. 836; CHOISY in DC., Prodr. IX (1845) p. 363; ZOLL., Syst. Verz. 2. Heft (1854) p. 129; MIQ., Fl. Ned. Ind. II (1857) p. 609; CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 204; VIDAL y SOLER, Rev. Plant. Vasc. Philipp. (1886) p. 196; WATT, Dict. Econ. Prod. India IV (1890) p. 488; PRAIN in Journ. As. Soc. Bengal LXIII (1894) p. 105; HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 134; TRIMEN, Handb. Fl. Ceyl. III (1895) p. 216; HALL. f. in Versl. 's Lands Pl. t. 1895 (1896) p. 128; id. in Bull. Herb. Boiss. V (1897) p. 379; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 511; MERRILL in Bur. Gov. Lab. Philipp. 27 (1905) p. 63; BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 158; PRAIN in Journ. As. Soc. Bengal LXXIV (1906) p. 311; DUTHIE, Fl. Upper Ganget. Pl. II (1911) p. 116; KOORDERS, Exk. fl. Java III (1912) p. 119; KOORDERS-SCHUM., Syst. Verz. I (1910—13) Conv. p. 6; GAGNEP. & COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 268; MERRILL, Spec. Blanc. (1918) p. 323; GAMBLE, Fl. Pres. Madras V (1923) p. 918; RIDLEY, Fl. Malay Penins. II (1923) p. 460; MERRILL, Enum. Philipp.

Fl. Pl. III (1923) p. 367; HEYNE, Nutt. Pl., ed. 2 (1927) p. 1305; BACKER, Onkruidfl. Jav. Suikerrietgr. (1931) p. 524 — *I. hepaticaeifolia* L., Spec. Pl. ed. 1 (1753) p. 161 — *Convolvulus Pes-tigridis* (L.) SPRENG., Syst. I (1825) p. 592.

Herbaceous annual; stems twining or sometimes prostrate, slender, terete, 0.5—2 m long (BACKER), patently hairy with rigid hairs. Leaves petiolate; petiole hairy like the stems, slender, 1.5—10 cm long; blade orbicular or transversely elliptic in outline, palmately divided nearly to the base, with 5—7, occasionally with 3 or with 9 segments, the segments oblong to elliptic-oblong or elliptic, attenuate or slightly acuminate towards both ends, acute or obtusish at the apex, minutely mucronate, mostly rather densely hairy with appressed to patent hairs, the sinuses between the lobes rounded; length and width of the blade 3—7.5 × 2.5—10 cm. Inflorescences pedunculate; peduncles 2—18 cm long, hairy like the stems, bearing an involucre cymose, few-flowered head at their end; outer bracts of the involucre oblong, narrow-oblong, lanceolate-oblong or linear-oblong, 1.5—3 cm long, inner bracts smaller; flowers closing at c. 7 a.m. (BACKER); sepals slightly unequal in length, 7—12 mm long, lanceolate or the interior ones narrow-lanceolate, long-hairy; corolla much longer than the sepals, funnel-shaped, white, about 3—4 cm long, the limb c. 3.5 cm in diam. (BACKER); the midpetaline bands sparsely hairy; stamens included, the filaments inserted about 3 mm above the corolla base, slightly unequal, glabrous; anthers oblong, sagittate; ovary glabrous; style filiform, glabrous; stigma biglobular, papillose; disk annular; capsule about 8 mm high, ovoid, 4-valved, 1-celled, with 4 seeds; seeds sparsely grey-tomentose, 4 mm long.

MALAY PENINSULA, in waste ground, not very common (RIDLEY). Pahang, Pulau Tioman, Telok Paya, HENDERSON, Singapore Field n. 18438, May 1927 (B); also in Penang, Selangor and Malacca (PRAIN, RIDLEY).

SUMATRA, without locality, KORTHALS 129 (L); East Coast, Gedong djohore, S. of Medan, LÖRZING 3529, Febr. 1915 (B); West Coast, Padang, KORTHALS 179 (L); collector's name illegible, 229, Apr. 1870 (B); Benkoelen, Kroeï, VAN STEENIS 3152, Oct. 1929 (B); Riouw and Dependencies, Riouw Archipelago, P. Toedjoch, BÜNNEMEYER 5793, May 1919 (B).

JAVA, from West to East Java, at low altitudes, on soil pervious to water, in fields and thickets and along waysides and dikes (BACKER). Without locality, JUNGHUHN 5 (L); KORTHALS 128 (L); Batavia, Batavia, near old harbour, HALLIER s. n., Apr. 1895 (B); Tandjong Priok, KUIL & VAN HASSELT 64, Apr. (L); id., HALLIER s. n., June 1896 (B); id., BACKER 23152, Dec. 1917 (B); Tjilintjing near Tandjong Priok, VAN STEENIS 559, Febr. 1928 (B); Meester Cornelis, JUNGHUHN 120 (L); id., BACKER 32332, Oct. 1902 (B); Bidara tjina, S. of Meester Cornelis, EDELING s. n. (B); Weltevreden, BAKHUIZEN VAN DEN BRINK fil. 3587, Febr. 1925

(B); Laanhof, S.W. of Weltevreden, BACKER 32331, July 1902 (B); Goenoeng Sahari Sentiong near Weltevreden, BACKER 32329, June 1902 (B); along Kali Soenter, VORDERMAN s.n., Dec. (B); Tjikoja, ZOLLINGER 196 (L); near Tjikampek, BEUMÉE 1582, March 1918 (B); Tjikoempai, E. of Poerwakarta, HARMSSEN 83, Dec. 1921 (B); Krawang, KORTHALS 100 (L); island Edam, near lighthouse, BACKER 32125, Apr. 1906 (B); id., BACKER 30971, Nov. 1920 (B); id., BOSCHMA 252, Dec. 1921 (B); Buitenzorg, Tendjo, BACKER 24052, Apr. 1918 (B); Tjileungsir, VAN SLOOTEN 583, Dec. 1920 (B); id., BACKER 31116, Dec. 1920 (B); Buitenzorg, cultivated in the Botanic Garden XV. K. B. XI. 6 (B); Pekalongan, near Soebah, KOORDERS 22515 $\beta$ , May 1896 (B); id., KOORDERS 27336 $\beta$ , Apr. 1897 (B); id., KOORDERS 27339 $\beta$ , Apr. 1897 (B, L); id., KOORDERS 36989 $\beta$ , May 1899 (B, L); sugar estate Doekoewringin near Slawi, Administrator sugar estate Doekoewringin 36, Jan. 1915 (B); Tegal, BACKER 15217, Aug. 1914 (B); Magelang, E. side of mouth of K. Loekoela, BRINKMAN 60 (B); Semarang, Banjir (spate) canal, DOCTERS VAN LEEUWEN s.n., Aug. 1909 (B); forestry Tempoeran, BEUMÉE 5103, March 1920 (B); Kedoengdjati, KOORDERS 28235 $\beta$ , June 1897 (B, L); D j a p a r a - R e m b a n g, Ngarengan, KOORDERS 33512  $\beta$ , 35517  $\beta$ , 35609  $\beta$ , May and June 1899 (B); Soerakarta, HORSFIELD s.n. (U); J o g j a k a r t a, Jogjakarta, VORDERMAN s.n. (B); id., Goenoeng Kidoel, between Kemadang and Djepitoe, BACKER 2764, Apr. 1912 (B); Madioen, Madioen, WISSE 37, May 1919 (B); Kediri, Toengloer, WIND 2532, 3294, Apr. 1918 (B); G. Wilis above Kediri, BACKER 11303, Febr. 1914 (B); Soerabaja, Soerabaja, DORGELO 245, Apr. 1922 (Pa); Malang, Djatiroto, BACKER 7998, May 1913 (B); Semongkrong, JESWIET 155, Nov. 1921 (W); id., VAN SLOOTEN 2419, Apr. 1931 (B); G. Weni near Probolinggo, BACKER 24287, June 1918 (B); Tretes, BACKER 37463, March 1930 (Pa); Besoeki, Watoedodol, CLASON & VAN SLOOTEN 29, March 1931 (B); Baloeran, N.E. of Soemberwaroe, CLASON-LAARMAN G. 77, Jan. 1932 (B); Asem Bagoes, BACKER 8214bis, May 1913 (B); N. Banjoepoetih near Asem Bagoes, BEGUIN 165, March 1922 (B); Poeger-Watangan, KOORDERS 29995  $\beta$ , March 1898 (B, L); between Poeger and Amboeloe, BACKER 18201, Dec. 1914 (B); Madoera, E. of Amboenten, BACKER 21217, July 1916 (B); Bangkalan, BACKER 19019, 19097bis, Febr. 1915 (B); N.E. of Batang batang daja, BACKER 20876, March 1915 (B); Pamekasan, BACKER 20355, March 1915 (B); Sampang, BACKER 19586, March 1915 (B); Tamberoe, BACKER 20469, March 1915 (B); Kangean Islands, Kangean, N. of Ardjasa, BACKER 26758, March 1919 (B); id., Kangean, Kajoe Waroe, BACKER 27979, Apr. 1919 (B); id., Paliat, BACKER 29354, May 1919 (B); id., Saboenten, BACKER 29885, May 1919 (B); id., Saeboes, BACKER 29054, Apr. 1919 (B); id., Saoebi, BACKER 28220, Apr. 1919 (B); id., id., MAILMEISTER 8, March 1919 (B); id., Sapapan, BACKER 28557, Apr. 1919 (B); id., Sasëel, BACKER 28642, Apr. 1919 (B); id., Sepandjang, BACKER 28826, Apr. 1919 (B).

CELEBES, Celebes and Dependencie s, Makassar, Boentoeäla, NOERKAS 21 (exped. VAN VUUREN), Febr. 1912 (B, L); Malino, BÜNNEMEYER 10760, Apr. 1921 (B); Bonto Parang, BÜNNEMEYER 10588, March 1921 (B); Rogang near Lombasang, BÜNNEMEYER 11499, May 1921 (B); Kalolo near Lombasang, BÜNNEMEYER 11553, May 1921 (B); P. Boeton, Bae bae, KJELLBERG 58, Febr. 1929 (B); P. Mocna, Raha, ELBERT 2892, July 1909 (L); Manado, Gorontalo, VORDERMAN 12, June 1897 (B); id., Adjunct veterinary surgeon of Gorontalo 37a, Dec. 1928 (B).

BALI, Gilimanoeck, DE VOOGD 1731, Apr. 1934 (B).

LOMBOK, Rindjani, N. side, Laboan tjarik, ELBERT 625, Apr. 1909 (L); Warmada, Mrs. RENSCH 62, March 1927 (B).

SOEMBA, Nabeso, IBOET 58, March 1925 (B, L).

FLORES, Endeh, Mrs. RENSCH 1004, June 1927 (B).

TIMOR, without locality, REINWARDT 1333 (L).

MOLUCCAS, Ternate, ATASRIP 27 (B); id., FORSTEN 6, July 1861 (L); id., Doefa doefa, BEGUIN 901, Oct. 1920 (B); Boeroe, Kajeli, BOERLAGE 551, Aug. 1900 (B); Ceram, island Boano, KORNASSI 1288 (exped. RUTTEN), May 1918 (B, L, U); Ambon, Benteng, RANT 557, Oct. 1931 (B); Banda, coll. unknown, 106, 107 (L).

PHILIPPINE ISLANDS, in all or most parts of the Philippines in open grasslands and waste places at low and medium altitudes (MERRILL). Luzon, Zambales prov., Iba, MERRILL 326, June 1902 (B); Bulacan prov., Angat, Aug. 1913, MERRILL, Spec. Blanc. 292 (B, L); Rizal prov., RAMOS, Bur. of Sc. 2060, Oct. 1913 (B, L); id., RAMOS, Bur. of Sc. 1966, Nov. 1914 (B, L); id., Manila, MERRILL 357, July 1902 (B); Laguna prov., Los Baños, ELMER 8100, Apr. 1906 (B); Prov. of Cavite, Mendez Nunez, MANGUBAT, Bur. of Sc. 1337, Aug. 1906 (B); Panay, Antique prov., MCGREGOR, Bur. of Sc. 32333, May—Aug. 1918 (B, L).

Distribution: East tropical Africa, Mascarene Islands, continental tropical Asia, Malaysia.

Habitat: Grasslands, waste places, fields, thickets, occasionally in teak-woods; also on sandy soil near the sea; between 0 and 1000 m.

Vernacular names: laoc attan (Java, Batavia, JUNGHUIN); djemboetan, topong (Jav., Java, Pekalongan, KOORDERS); kontolan (Jav., Java, Semarang, KOORDERS); gamet (Jav., Java, Djapara-Rembang, Djokjakarta, BACKER, HEYNE, KOORDERS, VORDERMAN); gametan (Jav., Java, Besoeki, KOORDERS); kak samangkakan (Madur., BACKER, KOORDERS); boengkoekoeäle, boemboehoewale (Celebes, Gorontalo, VORDERMAN; adjunct veterinary surgeon of Gorontalo); kahanga koeroeng (Soemba, IBOET); samaka foeroe (Ternate, BEGUIN, HEYNE); maka maka (Tidore, BEGUIN, HEYNE); sayor patolla, patolla oetang (Banda); bangbañgau-ñg-buduan (Philippines, Ilóko language, MERRILL); malasandía, salasandía (Philippines, Panay Bisáya language, MERRILL).

Use: See WATT and HEYNE, l.c.c.

Remarks. HALLIER distinguished in Bull. Herb. Boiss. VI (1898) p. 539 a var. *africana*, confined to continental Africa and a var. *indica* occurring in the Mascarene Islands, and in tropical Asia. He only gives a differential diagnose of these two varieties, from which appears that var. *africana* has larger leaves with more (7—11) longer, narrower, long-acuminate lobes, poor-flowered inflorescences, fewer, longer and narrower bracts and larger pink instead of white, flowers.

9. *Ipomoea pileata* ROXB., Fl. Ind. ed. CAREY & WALL., II (1824) p. 94; id., ed. CAREY, I (1832) p. 504; CHOISY in Mém. Soc. Phys.

Genève VI (1833) p. 456; id. in DC., Prodr. IX (1845) p. 365; CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 203; TRIMEN, Handb. Fl. Ceyl. III (1895) p. 215; BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 151; GAGNEP. & COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 270; GAMBLE, Fl. Pres. Madras V (1923) p. 916 — *Convolvulus pileatus* (ROXB.) SPRENG., Syst. IV, 2 (1827) p. 61 — ? *C. trichocalyx* ZOLL. in Nat. en Geneesk. Arch. II (1845) p. 6.

Herbaceous annual; stems twining, slender, terete, retrorsely short-pilose; leaves petiolate; petiole thin, pilose like the stem, 1.5–10 cm long; blade ovate or broadly ovate, attenuate to slightly acuminate towards the apex with a blunt or acutish mucronulate point, base broadly cordate with obtuse sinus and broadly rounded auricles; surfaces pilose, beneath sometimes more densely than above; nerves 4–6 on each side of the midrib; length of blade 2–7 cm, width 1.5–5.5 cm. Inflorescences axillary; peduncles thicker than the petiole, pilose like the stem, 2–4.5 cm long; the flowers in a few- to several-flowered dense head, enclosed in a large foliaceous boat-shaped bract, 2.5–4 cm long, with two cusps; other bracts much smaller, oblong or elliptic, obtuse. Sepals herbaceous, the three outer ones oblong-spathulate to oblong, obtuse, 10 mm long, the two inner ones much narrower, lanceolate with a long and slender point, 9 mm long, all long pilose along the margins, and outside and inside especially in the upper part; corolla pink with darker centre or violet, hypocrateriform, about 3 cm long with narrow cylindrical tube and spreading limb; tube about 2 cm long, glabrous except near the top, limb with sparsely pilose, mucronate midpetaline areas; stamens included, inserted half-way the height of the corolla tube, unequal; filaments filiform, glabrous with exception of the slightly dilated base; anthers narrow-oblong, sagittate; ovary glabrous; style filiform, glabrous; stigma biglobular, papillose; disk low, annular, slightly lobed; capsule small, globose; seeds glabrous or thinly pubescent (BAKER & RENDLE).

SUMATRA, B a n g k a, Bakem, Soengai Liat, BÜNNEMEYER 1710, Oct. 1917 (B).

JAVA, †, Pasir, ZOLLINGER 554 (L); B a n t a m, between Sadjira and Pasir Ajoenan, BACKER 2111, June 1911 (B); B a t a v i a, Bidara tjina, S. of Meester Cornelis, EDELING (?) s. n. (B); B u i t e n z o r g, Bolangs, W. of Buitenzorg, VAN STEENIS 2172, Aug. 1928 (B); M a l a n g, Kepoeh, S. W. of Pasoeroean, BACKER 36396, June 1927 (Pa).

PHILIPPINE ISLANDS, C u l i o n, in dry open places at low altitudes (MERRILL).

D i s t r i b u t i o n: East Tropical Africa, Mascarene Islands, British India to China, Indo-China and Malaysia.

Habitat: Dry open places, grassy waysides, fields; between 1 and 400 m.

Vernacular name: bissoer hoctang (Bangka, BÜNNEMEYER).

Remarks. Several authors<sup>1)</sup> have considered this species as being identical with the African *I. involucrata* BEAUV. and have mentioned it under that name. BAKER & RENDLE in THISELTON-DYER, *Flora of Tropical Africa* IV, 2 (1905) p. 150, 151 and 152 have rightly distinguished both as being two different species.

#### Section 4. *Batatas* (CHOISY) GRISEB.

GRISEB., *Fl. Brit. West Indian Isl.* (1864) p. 468; HALL, f. in ENGL., *Bot. Jahrb.* XVIII (1893) p. 138; BOERL., *Handl. Fl. Ned. Ind.* II (1899) p. 511 — genus *Batatas* CHOISY in *Mém. Soc. Phys. Genève* VI (1833) p. 434 — *Ipomoea* subgenus *Batatas* (CHOISY) CLARKE in HOOK., *Fl. Brit. Ind.* IV (1883) p. 201 — *Ipomoea* section *Leiocalyx* HALL, f. sensu BAKER & RENDLE in THIS.-DYER, *Fl. Trop. Afr.* IV, 2 (1905) p. 132, p.p. Description see p. 484.

10. *Ipomoea triloba* L., *Spec. Pl. ed. 1* (1753) p. 161; CHOISY in DC., *Prodr.* IX (1845) p. 383, excl. syn. VAHL.; HALL, f. in ENGL., *Bot. Jahrb.* XVIII (1893) p. 138; id. in *Versl. 's Lands Pl. t. 1895*, (1896) p. 129; BOERL., *Handl. Fl. Ned. Ind.* II (1899) p. 511; PRAIN in *Journ. As. Soc. Bengal* LXXIV (1906) p. 315; BACKER in *Ann. Jard. Bot. Buitenz. 3rd Suppl.* 1 (1910) p. 405; KOORDERS, *Exk. fl. Java* III (1912) p. 117; GAGNEP. & COURCH., in LEC., *Fl. Indo-Chine* IV (1915) p. 237; MERRILL in *Journ. Roy. As. Soc. Str. Br. Spec. Numb.* (1921) p. 510; id., *Enum. Philipp. Fl. Pl.* III (1923) p. 368, c. syn.; BACKER, *Onkruidfl. Jav. Suikerrietgr.* (1931) p. 524 — *Convolvulus trilobus* (L.) DESR. in LAMK., *Encycl.* III (1789) p. 564 — *C. dentatus* BLANCO, *Fl. Filip.* ed. 1 (1837) p. 89; ed. 2 (1845) p. 66; ed. 3, I (1877) p. 123, t. 31, non VAHL (according to MERRILL in *Bur. Gov. Lab. Philipp.* 27 (1905) p. 63; id., *Spec. Blanc.* (1918) p. 322) — *Batatas triloba* (L.) CHOISY in *Mém. Soc. Phys. Genève* VIII (1838) p. 49; id. in DC., *Prodr.* IX (1845) p. 340 — *Ipomoea Blancoi* CHOISY in DC., *Prodr.* IX (1845) p. 389; MIQ., *Fl. Ned. Ind.* II (1857) p. 619; MERRILL in *Philipp. Journ. Sc. I, Suppl.* (1906) p. 119.

<sup>1)</sup> ZOLLINGER, *Syst. Verz.* 2. Heft (1854) p. 129; MIQ., *Fl. Ned. Ind.* II (1857) p. 609; BOERL., *Handl. Fl. Ned. Ind.* II (1899) p. 511; MERRILL & ROLFE in *Philipp. Journ. Sc.* III (1908) p. 122; KOORDERS, *Exk. fl. Java* III (1912) p. 119; MERRILL, *Enum. Philipp. Fl. Pl.* III (1923) p. 366.

A twining or sometimes prostrate herb; stems terete or slightly angular, 1—3 m long (BACKER), glabrous or sparsely hairy, especially at the nodes. Leaves petiolate; petiole shorter to longer than the blade, slender, glabrous, 3—10(—18) cm long, occasionally minutely tuberculate; blade broad-ovate to orbicular in outline, rarely narrower, entire, coarsely dentate to more or less deeply three-lobed, in the latter case the middle lobe ovate to oblong or narrow-oblong; the apex of the leaf obtuse, mucronulate, the base cordate, the auricles broadly rounded or angular; upper and lower surface of the blade glabrous or sparsely pilose; length of the blade 2.5—8 cm, width 2—7 cm. Inflorescences axillary, pedunculate; peduncles shorter or longer than the petioles of the subtending leaves, much thicker than these, glabrous, angular, minutely verrucose towards the top, 1-flowered or cymosely branched at the top and few- to several-flowered, branches of the cyme short, flowers consequently aggregate, peduncle 1—10(—12) cm long; pedicels angular, at least in dried state minutely verrucose, glabrous, 2.5—8 mm long; bracts minute, lanceolate-oblong; sepals slightly unequal, 7—8 mm long, the outer ones a little shorter; 3 outer sepals oblong to narrow-elliptic-oblong, obtuse or acutish, mucronulate, glabrous or with some hairs on the back, the margins always distinctly fimbriate (2 outer sepals fimbriate at both margins, third sepal fimbriate at one side; hairs with thickened base); 2 inner sepals somewhat broader, elliptic-oblong, acute, mucronulate, glabrous or sparsely hairy; corolla pink or pale red-purple, the centre sometimes darker, c. 18—20 mm long, glabrous, funnel-shaped, the limb with 5 short obtuse, rounded lobes; corolla closing before noon; stamens included, inserted c. 3—3.5 mm above the corolla base; filaments filiform, hairy at the base; anthers oblong, sagittate, c. 1.5 mm long; ovary with long hairs; style filiform, glabrous; stigma biglobular, papillose; disk low-cupular; capsule subglobular, 5—6 mm high, bristly hairy (hairs with thickened base), 4-valved, 2-celled, 4 or by abortion less-seeded; seeds glabrous, 3.5 mm long.

MALAY PENINSULA, Singapore, Singapore, junction of Owen Rd. and Serangoon Rd, FURTADO s. n., Nov. 1928 (B).

SUMATRA, East Coast, near Medan, LÖRZING 3075, Sept. 1914 (B).

JAVA, introduced from tropical America several years ago, now frequently naturalized in the lower parts, in thickets, hedges and cane fields (BACKER). Batavia, Batavia, near station, BACKER 32315, July 1903 (B); Weltevreden, BACKER 32330, Oct. 1903 (B); id., BACKER 32314, May 1902 (B); id., Tanah Abang, BACKER 32316, Oct. 1903 (B); id., Salemba, WEEHUIZEN 6, June 1917 (B); Buitenzorg, Depok, VAN STEENIS 2840, March 1929 (B); Buitenzorg, HALLIER 214, March 1893 (B, L); id., KOORDERS 32620 $\beta$ , July 1898 (B, L); Kotaparis, BAKHUIZEN VAN DEN BRINK fil. 14,

35, 356, May 1920, Apr.—June 1922 (B); cultivated in the Botanic Garden, HALLIER C 166, Aug. 1894 (L); id., HALLIER D 203, March 1893 (L); id., XV. H. 31; XV. K. B. X. 2; XV. K. B. XII. 11 (B); Tjitajam, BAKHUIZEN VAN DEN BRINK fil. 1653, Aug. 1922 (B, L); Goenoeng Pangapoeran near Tjitajam, BAKHUIZEN VAN DEN BRINK 5745, Oct. 1922 (B); G. Godeh above Tjiandjoer, BACKER 3121, Sept. 1911 (B); between Tjipeujeum and Radjamandjala, BACKER 13448, May 1914 (B); Priangan, Garoet, KOENS 164, May 1913 (B); Pekalongan, Batang, VAN HARREVELD s. n., Dec. 1921 (B); id., BACKER 15529, Sept. 1914 (B); Magelang, Magelang, VAN OOSTEN 18, Oct. 1919 (B); Semarang, Semarang, KOOPER 910, Sept. 1932 (B); Bangkong, DOCTERS VAN LEEUWEN s. n., Apr. 1910 (B); Djapara-Rembang, Koedoes, herb. Koedoes 1128 (Pa); Kediri, Kediri, BACKER 11242, Febr. 1914 (B); Soerabaja, Gresik, DORGEL0 3268 (Pa); Malang, Pasoeroean, BACKER 7658, May 1913 (B, Pa); Pekoentjen, JESWIET 206 & 207, Nov. 1922 (W); Tengger, BUYSMAN 207, Aug. 1907 (U); Besoeki, Djember, ULTÉE 2 (B); Asém Bagoes, BACKER 24988, June 1918 (B); id., BACKER 8206, May 1913 (B); between Asém Bagoes and Ardjasa, BACKER 8265, May 1913 (B); Ardjasa, E. of Sitoehondo, BACKER 24746, June 1918 (B); Sitoehondo, BACKER 24645, June 1918 (B); N. of Poeger, BACKER 18285, Dec. 1914 (B); Madoera, Kangean Islands, Kangean, Tambajangan, BACKER 27552, March 1919 (B); id., Kangean, Kajoe Waroc, BACKER 27993, Apr. 1919 (B).

BORNEO, without locality (according to HALLIER in Bull. Herb. Boiss. V (1897) p. 1041).

CELEBES, Celebes and Dependencies, Makassar, KJELLBERG 3060, Jan. 1930 (B); Palopo, KJELLBERG 1720, 4012, June 1929 (B).

BALI, N. W. Bafi, Prapatagoeng, VAN STEENIS 7647, Apr. 1936 (B).

SOEMBA, Laora, IBOET 342, Apr. 1925 (B, L).

MOLUCCAS, Ambon, ROBINSON 1825, July—Nov. 1913 (B, L).

NEW GUINEA, Papua, Kanosia, CAKE 11074, Febr. 1935 (L).

PHILIPPINE ISLANDS. "This species is common and widely distributed in the Philippines at low and medium altitudes in the settled areas, having been introduced from Mexico through the intermediary of the Acapulco-Manila galleons" (MERRILL, Spec. Blanc.). Luzon, Cagayan prov., BACANI, For. Bur. 16462, Jan. 1909 (L); Rizal prov., Antipolo, MERRILL, Spec. Blanc. 459, Oct. 1914 (B, L); id., MERRILL 5171, Febr. 1906 (B, L); Laguna prov., Los Baños, ELMER 8271, Apr. 1906 (B); id., id., Mt. Maquiling, ELMER 18221, June—July 1917 (B, L, U); Negros, prov. Negros oriental, Dumaguete, Cuernos Mts, ELMER 10338, June 1908 (B, L); Mindanao, Cottabato, COPELAND 1346, May 1904 (L); id., ROBINSON, Bur. of Sc. 11714, June 1910 (L).

Distribution: Originally in tropical America, now circum-tropical, as a weed.

Habitat: Grasslands, thickets, hedges, waste places, waysides, fields, also in savannah-forests and occasionally on sandy sea-shores; 0—750 m.

Vernacular names: aurora (Philippines, Spanish, and Tagalog language, MERRILL); bangbañgau, kámkamóte, koskusipa, kupit-kupit (Philippines, Ilóko language, MERRILL); halobagbug (Philippines,

Tagalog language, MERRILL); muti-muti (Philippines, Cebu Bisaya language, MERRILL), sagikat (Philippines, Bagobo language, MERRILL).

**11. *Ipomoea commutata* R. & SCH., Syst. IV (1819) p. 228; CHOISY in DC., Prodr. IX (1845) p. 382 — *Convolvulus carolinus* L., Spec. Pl. ed. 1 (1753) p. 154, non *Ipomoea carolina* L., Spec. Pl. ed. 1 (1753) p. 160 — *Ipomoea trichocarpa* ELL., Sketch II (1822)<sup>1)</sup> p. 260 (not seen) — *Convolvulus trichocarpus* (ELL.) SPRENG., Syst. I (1825) p. 593.**

Very closely related to the preceding species. Mainly differing in the short-pilose stems, petioles, leaf blades, peduncles and pedicels, the thinner peduncles, the longer branches of the cymose inflorescences with less aggregate flowers, the paler, in dry specimens straw-coloured calyces with somewhat more pilose sepals, the margins of which bear less stiff hairs. Moreover the sepals often have a longer, needle-shaped mucro, whilst the outer ones are often distinctly shorter than the inner. The corolla is mostly larger than in *I. triloba*, to 3 cm long and is red-purple with a darker centre. Especially the longer branches of the inflorescences are characteristic for this species as distinct from the very short ones of *I. triloba*. The first ramification of the inflorescence is mostly dichasial, the sequent ones are monochasial.

JAVA, Semarang, forestry Bandjaran, BEUMÉE 4168, May 1919 (B); Kediri, Paré, VORDERMAN A 27 (B); forest district S. Kediri, Koetaredjo, on volcanic sand, BEUMÉE 2385, May 1918 (B); Blitar, cultivated, ULTÉE s.n. (B); Malang, Bantoer, BACKER 3859, June 1912 (B); Malang, ULTÉE s.n., Nov. 1927 (B); Lebak róto, S. slope of G. Semeroe, BACKER 36561, June 1930 (Pa).

**Distribution:** Tropical America.

**Habitat:** Cultivated in gardens; run wild in thickets and hedges; between 1 and 300 m.

**Vernacular name:** djendjenang (Jav., Java, Kediri, VORDERMAN).

**12. *Ipomoea Batatas* (L.) LAMK., Tabl. Encycl. I (1791) p. 465; BL., Bijdr. (1825) p. 712; SPANOGHE in Linnaea XV (1841) p. 340; CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 202; HILLEBR., Fl. Hawaiian Isl. (1888) p. 314; WATT, Dict. Econ. Prod. India IV (1890) p. 478; HALL.f. in ENGL., Bot. Jahrb. XVIII (1893) p. 138; TRIMEN, Handb. Fl. Ceyl. III (1895) p. 212; HALL.f. in Versl. 's Lands Pl. tuin 1895 (1896) p. 129; id. in Bull. Herb. Boiss. V (1897) p. 380; id. in Meded. 's Lands Pl. tuin XIX (1898) p. 542; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 511; SCHUM. & LAUTERB., Fl. Deutsch. Schutzgeb. (1901) p. 515; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1057; HALL.f. in Bull. Herb.**

<sup>1)</sup> According to BARNHART in Bull. Torr. Bot. Club XXVIII (1901) p. 680.

Boiss. sér. 2, I (1901) p. 675; BAKER & REEDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 175; PRAIN in Journ. As. Soc. Bengal LXXIV (1906) p. 313; MERRILL in Philipp. Journ. Sc. I, Suppl. (1906) p. 119; HALL. f. in VALETON, Pl. Pap. in Bull. Dep. Agric. Ind. Néerl. X (1907) p. 50; DUTHIE, Fl. Upper Ganget. Pl. II (1911) p. 117; KOORDERS, Exk. fl. Java III (1912) p. 117, 122; KOORDERS-SCHUM., Syst. Verz. I (1910—13) Conv. p. 4; GAGNEP. & COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 240 (incl. var. *lobata* l. c. p. 241); MERRILL, Interpr. Rumph. Herb. Amb. (1917) p. 443; id. in Philipp. Journ. Sc. XIX (1921) p. 375; id. in Journ. Roy. As. Soc. Str. Br. Spec. Numb. (1921) p. 509; RIDLEY, Fl. Malay Penins. II (1923) p. 462; MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 364; HEYNE, Nutt. Pl. ed. 2 (1927) p. 1301; BACKER, Onkruidfl. Jav. Suikerrietgr. (1931) p. 525; OCHSE & BAKHUIZEN VAN DEN BRINK, Indische Groenten (1931) p. 155, fig. 95 and 96 — *Convolvulus Batatas* L., Spec. Pl. ed. 1 (1753) p. 154; ROXB., Fl. Ind. ed. CAREY, I (1832) p. 483 (*C. Batatas* WILLD.); MERRILL in Bur. Gov. Lab. Philipp. 27 (1905) p. 62; id., Spec. Blanc. (1918) p. 323 — *C. edulis* THUNB., Fl. Jap. (1784) p. 84 — *Batatas edulis* (THUNB.) CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 435; id. in DC., Prodr. IX (1845) p. 338; ZOLL., Syst. Verz. 2. Heft (1854) p. 128; MIQ., Fl. Ned. Ind. II (1857) p. 599; id., Suppl. (1860) p. 235.

A herbaceous plant, containing a milky juice, cultivated for the subterraneous fusiform or elongate tubers and sometimes wild as a culture-relic. Stems prostrate to ascending, or occasionally twining, 1—5 m long, much branched, more or less angular, or terete, rooting at the nodes, glabrous or hairy, green or tinged with purple. Leaves petiolate; petiole shorter to much longer than the blade, glabrous or hairy like the stems, 4—20 cm long, green or tinged with purple; blade broad-ovate to orbicular in outline, the apex acute or obtusish, mucronulate, the base broadly cordate to truncate, the margin entire or angular to lobed, in the latter case the leaf more or less deeply palmately 3—5(—7)-lobed, the lobes broad or narrow, from broad-ovate to oblong or linear-oblong; upper and lower surface of the blade glabrous or sparsely hairy; length 4—14 cm, width 4—11 cm; nerves green or purple. Inflorescences axillary; peduncles stout, angular, glabrous or hairy like the stems, shorter to much longer than the petioles, cymosely 1- or few- to several-flowered, 3—18 cm long; pedicels 3—12 mm long; bracts minute, narrow, acute, 2—3 mm long, deciduous; sepals glabrous or pilose on the back and fimbriate, pale green, the outer ones oblong or elliptic-oblong, the inner ones elliptic-oblong to ovate-oblong, all acute or acutish, excurrent in a

distinct mucro, equal in length or the inner ones longer, the outer ones 7—8 mm long, the inner ones to 9—12 mm; corolla pale violet, campanulate to funnel-shaped, gradually attenuate towards the base, glabrous, c. 3—4.5 cm long; stamens and style included; stamens inserted c. 4 mm above the corolla base; filaments filiform, unequal, glabrous, with exception of the hairy base; anthers linear-oblong, sagittate, c. 3 mm long; ovary hairy (or sometimes glabrous); style filiform, glabrous; stigma biglobular, papillose; disk cup-shaped, yellow; capsules rare, or absent in Malaysian specimens, ovoid, 4- or less-celled. Seeds glabrous.

MALAY PENINSULA; extensively cultivated (RIDLEY).

SUMATRA, Atjeh and Dependencies, Gajoe and Alas-lands, Koeta per boelochen, PRINGO ATMODOJO 521 (exped. VAN DAALLEN), Dec. 1904 (L); Tapanoeeli, Batak-lands, PRINGO ATMODOJO 521 (exped. VAN DAALLEN) (B); Middle Habinsaran near Parsoboeran, cult., LÖRZING 7836, Nov. 1920 (B); West Coast, Ophir District, Tanang Taloe, BÜNNEMEYER 1076, June 1917 (B); Benkoelen, Enggano Island, near Kajaäpoe, run wild, LÜTJEHARMS 5361, July 1936 (B, L); Palembang, Mocara Doea, cult., GRASHOFF 386, May 1915 (B); Bangka, Pelangas, TEYSMANN 3195 HB (B); Bakem, Socngai Liat, wild, BÜNNEMEYER 1620, Oct. 1917 (B).

JAVA. According to BACKER introduced in Java several centuries ago, now extensively cultivated at low and medium altitudes, on dikes of rice fields and as a second crop on rice fields; occasionally apparently wild, as a culture-relic. Bantam, Prinseneiland, KEULEMANS s.n. (L); Batavia, Batavia, cult., JUNGIHUIJN 32, Febr. (L); Kajoe poetih, E. of Weltevreden, cult., BACKER 32310, Aug. 1904 (B); Kebajoran, S.W. of Weltevreden, cult., BACKER 32309, July 1904 (B); Bidara tjina, EDELING (†) s.n. (B); island Edam, BOSCHMA 210, Dec. 1921 (B); id., BOSCHMA 311, Dec. 1921 (B); Duizend-eilanden (Thousand Islands), Noordwachter, inner side of *Barringtonia*-association, BOSCHMA 4, Sept. 1921 (B); Buitenzorg, Buitenzorg, cultivated in the Botanic Garden, XV. K. B. XII. 4 (B); id., VAN HARREVELD s.n., Aug. 1907 (Pa); near Buitenzorg, HALLIER 211, May 1893 (B, L); Soekaboemi, BACKER 14548, July 1914 (B); near Baraman-siang, cult., HALLIER 211, May 1893 (B); Priangan, Bandoeng, near Dago waterfall, VAN STEENIS 1678, May 1928 (B); Pekalongan, G. Semboeng, BACKER 12461, March 1914 (B); Semarang, Doekoehseti, Tajoe, cult., KOORDERS 35420 β, June 1899 (B); Alasdowa, KOORDERS 35116 β, May 1899 (B); Sepakoeng, Telomojo, KOORDERS 35783 β, May 1899 (B); Sepakoeng, cult., KOORDERS 35787 β (B); Djapara-Rembang, Ngarengan, cult., KOORDERS 35600 β, May 1899 (B); Gragahan, cult., KOORDERS 35683 β, June 1899 (B); Malang, Tengger, BUYSMAN s.n., March 1908 (U); id., KOORDERS 38077 β, Oct. 1899 (B); id., Ngadisan, cult., KOORDERS 38075 β, Oct. 1899 (B).

BORNEO. Cultivated (MERRILL, 1921).

CELEBES, Celebes and Dependencies, Bocloe Balca, slope of G. Bonthain, cult., BÜNNEMEYER 12269, June 1921 (B); P. Boeton, Kaboengka, KJELLBERG 200, 280, Febr. 1929 (B); P. Moena, Lombai, ELBERT 2959, Aug. 1909 (L); Manado, Tondano, FORSTEN 56, June 1840 (L); Amoerang, cult., KOORDERS 16574 β, Apr. 1895 (B); near Pakoe-oere, cult., KOORDERS 16585 β, Apr. 1895 (B).

LOMBOK, Rindjani, N. E. side, Sembaloen plateau, ELBERT 1535, May 1910 (L).

MOLUCCAS, Boeroe, Kajeli, VORDERMAN 50 (B); Ceram, between Kabiloo and Manco, cult., RUTTEN 275, Oct. 1917 (B, L, U); RUTTEN 283, Oct. 1917 (B); Ambon<sup>1)</sup>, ROBINSON, Pl. Rumph. Amb. 402, July—Nov. 1913 (L); G. Nona, BOERLAGE 99, July 1900 (B); Banda, without collector's name (L).

NEW GUINEA, Netherlands New Guinea, without locality, KOCH s. n. (L); Jabi M., cult., JANOWSKY 392, June 1913 (B); Tobadi, ATASRIP 114 (exped. WICHMANN) (B, L); Nassau Mts., Explorateurs bivouac, ladang, cult., DOCTERS VAN LEEUWEN 10510, Oct. 1926 (B); Territory of New Guinea, Ramu R., cult. (according to SCHUMANN & LAUTERBACH).

PHILIPPINE ISLANDS. Introduced by the Spaniards from Mexico in the early colonial period<sup>1)</sup>, now widely distributed in the Philippines in cultivation and extensively used as food (MERRILL). Luzon, Benguet prov., Mt. Pulog, CURRAN, MERRITT & ZSCHOKKE, For. Bur. 18158, Jan. 1909 (L); Camarines prov., MERRILL, Spec. Blanc. 306, Dec. 1913 (B, L); Sorsogon prov., Irosin, Mt. Bulusan, ELMER 15578, Dec. 1915 (B, L, U); id., id., ELMER 16337, June 1916 (B, L, U).

Distribution: Tropical and subtropical regions of both hemispheres.

Habitat: Cultivated and occasionally wild as a culture-relic; at low and medium altitudes, in Java sometimes up to 2200 m (KOORDERS, 1912).

Vernacular names: See HEYNE, Nutt. Pl., l. c. p. 1301. Further names are: keledak (Mal., Malay Peninsula, RIDLEY); obie jellar (Sumatra, West Coast, BÜNNEMEYER); besih loeh, ketila abang (Sumatra, Palembang, LÜTJEHARMS, GRASHOFF); hoci djawa (Sund., ZOLLINGER); telo klinden, telo ireng (Jav., Java, Semarang, KOORDERS); ketelo mantang, ketelo krantol (Jav., Java, Djapara-Rembang, KOORDERS); ketelo abang, ketelo poetih (Jav., Java, Malang, KOORDERS); oewi-kan-im-bawi, oewi koelo (Celebes, Manado, Tontemboan language, KOORDERS); daun patatas (Boeroe, VORDERMAN); batatta mirra (Banda); loetoe kastela (Banda, MIQUEL); camóte (Philippines, all dialects, MERRILL); lapni (Philippines, Ifugáo language, MERRILL); panggi-bagun (Philippines, Súlu language, MERRILL); tigi (Philippines, Bisáya language, MERRILL); tugi (Philippines, Bontók language, MERRILL). Also see DE CLERCQ—PULLE, Nieuw Plantk. Woordenb., ed. 2 (1927) p. 125.

Use. Cultivated for its edible tubers. The young shoots are eaten as a salad. For more detailed particulars concerning the use of this species see WATT, HEYNE and OCHSE & BAKHUIZEN VAN DEN BRINK<sup>2)</sup> l. c. A large number of varieties is found in culture, mainly distinguished

<sup>1)</sup> See MERRILL, Species Blancoanae, 1918, p. 323.

<sup>2)</sup> Also see the literature mentioned by OCHSE & BAKHUIZEN VAN DEN BRINK l. c. p. 159.

on account of the leaf-form and the size, form and colour of the tubers. The tubers are red, purple, orange, pale yellow or white.

13. *Ipomoea gracilis* R. BR., Prodr. Fl. Nov. Holl. ed. 1 (1810) p. 484; CHOISY in DC., Prodr. IX (1845) p. 370; BENTH., Fl. Austr. IV (1869) p. 422; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1063; MERRILL, Interpr. Rumph. Herb. Amb. (1917) p. 445; id. in Journ. Roy. As. Soc. Str. Br. Spec. Numb. (1921) p. 509; id., Enum. Philipp. Fl. Pl. III (1923) p. 365; id. in Philipp. Journ. Sc. XXIX (1926) p. 413; DOCTERS VAN LEEUWEN in Ann. Jard. Bot. Buitenz. XLVI—XLVII (1936) p. 405, photogr. 12, 39, 43, 46; VAN STEENIS in Trop. Nat. XXVIII (1939) p. 145, 146, fig. 6 — *Convolvulus denticulatus* DESR. in LAMK., Encycl. III (1789) p. 540 — *C. gracilis* (R. BR.) SPRENG., Syst. I (1825) p. 604 — *Ipomoea littoralis* BL., Bijdr. (1825) p. 713; CHOISY in DC., Prodr. IX (1845) p. 352; ZOILL., Syst. Verz. 2. Heft (1854) p. 129; MIQ., Fl. Ned. Ind. II (1857) p. 603; HALL. f. in VALETON, Pl. Pap. in Bull. Dép. Agric. Ind. Néerl. X (1907) p. 50; RIDLEY, Fl. Malay Penins. II (1923) p. 461 — *I. denticulata* (DESR.) CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 467, non R. BR., 1810; id. in DC., Prodr. IX (1845) p. 379; MIQ., Fl. Ned. Ind. II (1857) p. 616; BENTH., Fl. Austr. IV (1869) p. 421; CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 208; SCHUM. & HOLLR., Fl. Kais. Wilh. Land (1889) p. 114; WARB. in ENGL., Bot. Jahrb. XIII (1891) p. 412; PRAIN in Journ. As. Soc. Bengal LXIII (1894) p. 106; HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 139; TRIMEN, Handb. Fl. Ceyl. III (1895) p. 223; HALL. f. in Versl. 's Lands Pl. t. 1895 (1896) p. 129; id. in Bull. Herb. Boiss. V (1897) p. 380; id. in Meded. 's Lands Pl. t. XIX (1898) p. 543; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 511; SCHUM. & LAUTERB., Fl. Deutsch. Schutzgeb. (1901) p. 516<sup>1</sup>); MANSON BAILEY, Queensl. Fl. IV (1901) p. 1062; PRAIN in Journ. As. Soc. Bengal LXXIV (1906) p. 314; KOORDERS, Exk. fl. Java III (1912) p. 117; GAGNEP. & COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 266; RENDLE in GIBBS, Contr. Phyt. Fl. Arfak Mts (1917) p. 218.

A glabrous or sometimes sparsely hairy littoral plant. Stems prostrate and rooting (always?), or twining, thin, slender, herbaceous or becoming woody with age; leaves petiolate; petiole shorter to longer than the blade, thin, 0.5—7 cm long; blade broad-ovate, ovate or oblong in outline, occasionally orbicular to kidney-shaped, the margin entire or slightly undulate to

<sup>1</sup>) A specimen HOLLRUNG 155, mentioned by SCHUMANN in ENGL., Bot. Jahrb. IX (1887) p. 216 under *Calystegia affinis* ENDL., belongs to *Ipomoea gracilis* R. BR. See VAN OOSTSTROOM in Blumea III (1939) p. 286.

angular, or more or less deeply 3-lobed, the apex acute, obtusish, obtuse or retuse, mucronulate, the base cordate; upper and lower surface glabrous or nearly glabrous; the leaves are membranaceous or often thicker and are very variable in size: length of the blade 1—10 cm, width of the blade 1—7.5 cm. Inflorescences axillary; peduncles mostly short, 1—30 mm long, rarely to 90 mm, glabrous, 1- or few-flowered; pedicels long and thin, mostly longer than the calyx, 10—25(—40) mm long, glabrous; bracts minute, narrow, 1—2 mm long, deciduous; sepals glabrous, concave, the outer ones shorter than the inner ones; 2 outer sepals oblong-elliptic or elliptic, acutish or obtusish, 3 inner sepals elliptic to orbicular, all mucronulate with the mucro at the top or somewhat below it; outer sepals thin-coriaceous, inner ones thinner with membranous margins; length of outer sepals 6—10 mm, of inner sepals 8—12 mm; corolla pink or pink purple, often darker near base inside, funnel-shaped, 3—4.5 cm long, the rather narrow tube gradually attenuate towards the base, glabrous; stamens and style included; stamens inserted c. 5 mm above the corolla base; filaments filiform, unequal, glabrous in the upper half, the lower half hairy, especially at the slightly dilated base; anthers oblong, sagittate, c. 3 mm long; ovary glabrous; style filiform, glabrous; stigma biglobular, papillose; disk white (BACKER), cup-shaped; capsule depressed-globose, crowned by the style base, c. 9 mm in diam., 2-celled, 4-seeded; seeds glabrous, black, c. 3.5—4 mm long.

MALAY PENINSULA, sea sands, not common (RIDLEY). Pahang, Tanjong Tembling, Kuantan, collector ?, Singapore Field n. 221, June 1913 (B); Telok Sisik, Kuantan, HENDERSON, Singapore Field n. 22764, Aug. 1929 (B); also in Penang, Dindings, Perak, Pahang, Johor and Singapore (PRAIN, RIDLEY).

SUMATRA, Tapanoeli, Nias, Hinako Island, VON RÖMER s.n., Jan. (B); Batoe Islands, RAAP 33, 335, Sept. 1896 (B); West Coast, Padang, JUNGHUHN 96, May (L); Benkoelen, Benkoelen, AJOEB 24 (exped. JACOBSON), June 1916 (B); Enggano Island, Kiojoh, LÜTJELARMS 4682, June 1936 (B, L); Enggano Island, P. Bangkei, LÜTJELARMS 5143, June 1936 (B); Lampung Districts, Krakatau, BACKER 32180, Apr. 1906 (B); id., DOCTERS VAN LEEUWEN 3517, 3550, Apr. 1919 (herb. D. v. L.); Lang Island, BACKER 32171, May 1908 (B); id., DOCTERS VAN LEEUWEN 14242, May 1932 (herb. D. v. L.); Sebesi Island, DOCTERS VAN LEEUWEN 5190, Apr. 1921 (B); Verlaten Island, BACKER 32170, May 1908 (B, L); id., DOCTERS VAN LEEUWEN 3725, 4027, Apr. 1919, 1920 (herb. D. v. L.); Riouw and Dependencies, Riouw Archipelago, P. Toedjoch, Tg. Pasir, BÜNNEMEYER 5843, May 1919 (B, L); id., id., BÜNNEMEYER 5844, May 1919 (B); P. Toekoela near P. Bintan, BÜNNEMEYER 6294, June 1919 (B, L); Lingga Archipelago, P. Lingga, W. coast, TEYSMANN s.n. (B); id., id., P. Singkep, Dabo, BÜNNEMEYER 7312, Aug. 1919 (B); Anambas and Natocna Islands, Siantan, near Terempa, VAN STEENIS 838, March 1923 (B); Boengoran, S. of Ranai, VAN STEENIS

1299, Apr. 1928 (B, L); B a n g k a, Soengei Liat near Muntok, BERKHOUT 503, Aug. 1886 (B); id., BÜNNEMEYER 1541, 1938, Oct.—Nov. 1917 (B, L); Muntok, TEYSMANN s. n. (B); P. Lepar, Koemboeng, BÜNNEMEYER 2368 (B).

JAVA, without locality, BLUME 1710 (L, *type of I. littoralis* BL.); KORTHALS 247 (L); B a n t a m, between Pasaoeran and Anjer, BACKER 7208, March 1913 (B); Djoengkoelon, coll. indig. s.n. (B); Malingping, near mouth of Tji Langkahan, BACKER 1411, June 1911 (B); B a t a v i a, Duizend-eilanden (Thousand Islands), Noordwachter, BOSCHMA 75, Sept. 1916 (B); id., in *Barringtonia* association, VAN SLOOTEN & BACKER 35043, Sept. 1921 (B, L); P. Doea, SMITH 122a, Dec. 1906 (B); P. Sariboe, GRESHOFF s.n. (B); Buitenzorg, Pelaboean Ratoe, in *I. Pes-caprae* association, BACKER 730, Dec. 1911 (B); id., Karang Kawoe, BRUGGEMAN & HAGEN 904, Nov. 1931 (B); Buitenzorg, cultivated in the Botanic Garden, XV. H. 37 (B, L); id., HALLIER C167b, Aug. 1894 (L); Kediri, bay of Damas near Prigi, BACKER 11967, Febr. 1914 (B); M a l a n g, E. of mouth of Kali Srigontjo, BACKER 3969, June 1912 (B); Srigontjo, ZOLLINGER 1207 (B); Besoeki, Bondowoso, mouth of Kali Soekamadi, GLASON s.n., Sept. 1936 (B); id., BOOKERO s.n., Sept. 1937 (B); M a d o e r a, Kangean Islands, Sepandjang, BACKER 28834, 29052, Apr. 1919 (B).

BORNEO, W. Division, P. Lemockoetan, HALLIER 278 (B); Pasir Pandjang near Singkawang, Miss POLAK 264, Dec. 1936 (B); id., DUNSELMAN 68, Febr. 1937 (B); S. and E. Division, Asem asem near Pelahari, Forestry Bureau 1960, May 1919 (B); Poeloe berat bassa, near Bontong, RUTTEN 454, March 1911 (U); S a r a w a k (MERRILL, 1921); British North Borneo, Banguay Island, CASTRO & MELEGRILO 1475, July—Sept. 1923 (B).

CELEBES, Celebes and Dependenc ies, Moeara Sampara, KJELLBERG 1333, Apr. 1929 (B); Lelewaoe, Latoöe, KJELLBERG 2580, Oct. 1929 (B); Salajar, DOCTERS VAN LEEUWEN 1736, May 1913 (B, U); P. Boeton, Pasar Wadjo, KJELLBERG 272, Febr. 1929 (B); M a n a d o, Manado, KOORDERS 16561  $\beta$ , Dec. 1894 (B, L); Palele, KOORDERS 16576  $\beta$ , May 1895 (B, L); Ratatotok, KOORDERS 16560  $\beta$ , 16575  $\beta$ , March 1895 (B, L); Talaud Islands, Karakelang, Kocala Bahewa, LAM 3025, May 1926 (B).

MOLUCCAS, Halmahera, N. Galela, BEGUIN 1745, Sept. 1921 (B); Ternate, Sango, BEGUIN 1075, Nov. 1920 (B); Boeroe, Kajeli, VORDERMAN 54 (B); Ambon, ROBINSON 399, July—Nov. 1913 (B, L); Batoe merah, RANT 829, Nov. 1931 (B); Hila, TEYSMANN s. n. (B); Banda, 'without collector's name (L).

NEW GUINEA, Netherlands New Guinea, Schouten Islands, Biak, N. coast, FEUILLETAU DE BRUYN 267, 279, 398, Aug.—Sept. 1915 (B); P. Doom, Sorong, collector unknown, n. 1, Febr. 1913 (B); mouth of Mamberamo, JANOWSKY 447, Sept. 1913 (B); Merauke, KOCH s. n. (L) and f. 11. c. (B); id., VERSTEEG 1942, Nov. 1907 (B); Okaba, BRANDEHORST 69, Sept. 1907 (B); Territory of New Guinea, mouth of Markham River, WEINLAND 200 (BD, mixed with *Merremia gemella* (BURM. f.) HALL. f.); Finschhafen, Hatzfeldthafen, Kelana, Bussum, Huon bay (SCHUMANN & LAUTERBRACH, WARBURG); Papua, Lower Fly River, east bank opp. Sturt Island, common on river banks, BRASS 8196, Oct. 1936 (L).

BISMARCK ARCHIPELAGO, New Ireland, PEEKEL 94 (B, L).

PHILIPPINE ISLANDS; throughout the Philippines on sandy beaches and in

thickets along the seashore (MERRILL). Luzon, AHERN 2985 (B); Prov. Ilocos Norte, Bangui, RAMOS, Bur. of Sc. 27601, Febr.—March 1917 (B); Cagayan prov., RAMOS, Bur. of Sc. 7474, March 1909 (L); Pangasinan prov., Santiago Is., CLEMENS 18174, March 1928 (B); Sorsogon prov., Irosin (Mt Bulusan), ELMER 15757, May 1916 (B); Busuanga, MERRILL 413, Sept. 1910 (U); Palawan, Taytay, MERRILL, Bur. of Sc. 9305, May 1913 (B, L); Balabac Island, MANGUBAT, Bur. of Sc. 430, March—Apr. 1906 (B).

**Distribution:** Coasts of the Indian and Pacific Oceans: Madagascar and adjacent islands, British India, Ceylon, Indo-China, eastwards to N. Australia and the Pacific Islands; according to HALLIER (1894) in Mexico and the West Indies.

**Habitat:** On sandy beaches and in thickets (occasionally covering large trees) near the sea-shore; between 0 and 15 m.

**Vernacular names:** tapak kuda kechik (Malay Peninsula, Pahang); akar hitang (Mal., Sumatra, Palembang, LÜTJEHARMS); kangkon laut (Bangka, BERKHOUT); sejawoe salojon, siahaboe salojen (Manado, Ponosakan language, KOORDERS); wanaring pante (Manado, Tomboeloe language, KOORDERS); barwoean'a (Talaud Islands, LAM); lobokè, lobokè ma loha (Halmaheira, BEGUIN); sajor petoe (Boeroe, VORDERMAN); tjoef (P. Doom, Sorong); gamielke (New Guinea, KOCH); bulakán (Philippines, Tagalog language, MERRILL); ditadit (Philippines, Ivatán language, MERRILL); koskusipa (Philippines, Ilóko language, MERRILL); malakamóte (Philippines, Ibanág language, MERRILL); panggi-panggi (Philippines, Súlu language, MERRILL).

#### Section 5. *Leiocalyx* HALL. f. emend.

HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 139; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 511; BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 132, p.p.

This section in its new limitation includes the section *Leiocalyx* in the sense of HALLIER, 1893, and the genera *Calonyction* CHOISY and *Quamoclit* MOENCH.

#### Subsection 1. *Eu-Leiocalyx* VAN OOSTSTR., nov. subsect.

*Ipomoea* section *Leiocalyx* HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 139, s.s.; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 511; BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 132, p.p.

Description see p. 484 under section *Leiocalyx*.

14. *Ipomoea obscura* (L.) KER-GAWL. in Bot. Reg. III (1817) t. 239; DECAISNE, Herb. Timor. (1835) p. 65; SPANOGHE in Linnaea XV

(1841) p. 339; CHOISY in DC., Prod. IX (1845) p. 370<sup>1)</sup>; ZOLL. Syst. Verz. 2. Heft (1854) p. 129; MIQ., Fl. Ned. Ind. II (1857) p. 611<sup>1)</sup>; BENTH., Fl. Austr. IV (1869) p. 424; CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 207; FORBES, Wander., (Germ. ed. II (1886) p. 222; VIDAL y SOLER, Rev. Plant. Vasc. Philipp. (1886) p. 196; WATT, Dict. Econ. Prod. India IV (1890) p. 488; PRAIN in Journ. As. Soc. Bengal LXIII (1894) p. 106; HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 140; TRIMEN, Handb. Fl. Ceyl. III (1895) p. 220; HALL. f. in Versl. 's Lands Pl. t. 1895 (1896) p. 129; id. in Bull. Herb. Boiss. V (1897) p. 380; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 511 excl. syn. *I. ochroleuca* SPANOGHE; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1064; BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 164; MERRILL in Philipp. Journ. Sc. I, Suppl. (1906) p. 119; DUTHIE, Fl. Upper Ganget. Pl. II (1911) p. 115; KOORDERS, Exk. fl. Java III (1912) p. 118; KOORDERS-SCHUM., Syst. Verz. I (1910—13) Conv. p. 5; GAGNEP. & COURCH., Fl. Indo-Chine IV (1915) p. 246; GAMBLE, Fl. Pres. Madras V (1923) p. 916; RIDLEY, Fl. Malay Penins. II (1923) p. 461; MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 366; HEYNE, Nutt. Pl. ed. 2 (1927) p. 1304; BACKER, Onkruidfl. Jav. Suikerrietgr. (1931) p. 526 — *Convolvulus obscurus* L., Spec. Pl. ed. 2 (1762) p. 220; BURM. f., Fl. Ind. (1768) p. 44; HASSK., Pl. Jav. Rar. (1848) p. 519 — *Ipomoea solanifolia* auct., non L.; BURM. f., Fl. Ind. (1768) p. 49 — *I. luteola* R. BR., Prodr. Fl. Nov. Holl. ed. 1 (1810) p. 485; CHOISY in DC., Prodr. IX (1845) p. 369 — *I. insuavis* BL., Bijdr. (1825) p. 716.

Stems twining or prostrate, the older parts lignescent, 1—2 m long (BACKER), thin and slender, glabrous or patently hairy, sometimes almost lanate, the older stems with a longitudinally grooved and transversely split bark. Leaves petiolate; petiole long, slender, up to 9 cm long; glabrous or sparsely hairy; blade ovate, broad-ovate to orbicular or almost kidney-shaped, with entire or slightly undulate margin, attenuate or acuminate towards the apex, the top acute or obtusish to obtuse, mucronulate, the base widely cordate, the auricles broadly rounded; upper and lower surface of the blade glabrous or sparsely pilose, with short, appressed hairs or only fimbriate along the margins; length of the blade 2—10 cm, width of the blade 2—9 cm. Inflorescences axillary; peduncles thin, almost filiform, glabrous or sparsely pilose, with short hairs, 1- or

<sup>1)</sup> Var. *glabra* CHOISY l.c., based on a specimen from Timor, collected by GUICHENOT, is unknown to me.

few-flowered, 1—14 cm long; pedicels much longer than the small calyx, c. 1—2 cm long, very minutely verrucose, glabrous or with some hairs, thickened towards the top in fruit; bracts minute, narrow, acute, 1—2 mm long; sepals glabrous or sometimes pubescent, subequal or the two outer ones somewhat shorter, acutish, mucronulate, the outer ones with narrow, white margins, the middle portion thicker, minutely verrucose, green; the inner ones thinner; outer sepals ovate, inner ones broad-ovate, length of sepals 3—4 mm; sepals often reflexed in fruit; corolla white or pale yellow with a dark purple centre, funnel-shaped, c. 2—2.5 cm long, the limb 2.5—3 cm in diameter; stamens and style included; stamens inserted c. 3 mm above the corolla base; filaments filiform, very unequal in length, hairy at the dilated base; anthers oblong, sagittate, 2 mm long; ovary glabrous; style filiform, glabrous; stigma globular, papillose; capsule straw-coloured, broad-ovoid, crowned by the style base, 7—8(—9) mm high, 4-valved, 2-celled, 4-seeded; seeds black, finely grey-puberulent, c. 4—4.5(—5) mm long.

MALAY PENINSULA, Singapore (RIDLEY).

SUMATRA, East Coast, Haranggaol, lake Toba, LÖRZING 8826, May 1922 (B); Tapanoeli, near Pangoeroeran, Samosir, LÖRZING 7655, Nov. 1920 (B); West Coast, Singalang, KORTHALS 236 (L); foot of G. Malintang, BÜNNEMEYER 4457, Aug. 1918 (B, L).

JAVA, at low altitudes, in thickets, hedges and thin forests (BACKER). Without locality, HORSFIELD s. n. (L, U); JUNGHUIN 37, 43 (L); KORTHALS 272 (L); KUHLE & VAN HASSELT 68, 209 (L); Bantam, Serang, VAN WELSEME s. n. (B); Batavia, Batavia, KUHLE & VAN HASSELT 72 (L); id., PIEPER 67 (L); id., VORDERMAN s. n. (B); id., RAAP 418, June 1894 (L); id., HALLIER s. n., Apr. 1895 (B); Soenter, VORDERMAN s. n., Dec. (B); Tandjong Priok, edge of mangrove, SCHIFFNER 2436, July 1894 (L); Tjilingtjing near Tandjong Priok, sandy saliferous soil, VAN STEENIS 544, Febr. 1928 (B); Goenoeng Sahari Sentiong, BACKER 32326, May 1902 (B); Weltevreden, WEEHUIZEN 5, June 1917 (B); Tjikoja, ZOLLINGER 726 (L); Pekapoeran, SCHEFFER s. n., Aug. 1871 (B); Poerwakarta, BACKER 13871, June 1914 (B); Buitenzorg, Buitenzorg, BOERLAGE s. n., Dec. 1888 (L); id., REINWARDT 365 (L); id., BAKHUIZEN VAN DEN BRINK fil. 2174 (B); id., along the Tjiliwoeng, HALLIER 213b, March 1893 (B); id., Pasir Koeda, HALLIER 213a, March 1893 (B); id., cultivated in the Botanic Garden, TEYSMANN s. n. (L); HALLIER C 5a, Apr. 1893 (L); XV. K. B. X. 11 (B); XV. K. B. XI. 9 (B); Tjitajam, BAKHUIZEN VAN DEN BRINK fil. 1661, Aug. 1922 (B, L); G. Pangapoeran near Tjitajam, BACKER 5743, Oct. 1922 (B); Tjiomas, SOEGANDIRENJA 111, March 1900 (B); Koeripan, SCHEFFER s. n., Nov. 1870 (B); Depok, BAKHUIZEN VAN DEN BRINK 1465, July 1922 (B); Soekaboemi, BACKER 14774, July 1914 (B); Priangan, Tjipanes near Garoet, KOENS 21, May 1913 (B); G. Telagabodas near Pangentjongan, KOENS 241, May 1913 (B); between Legok djawa and Kelapa genep, SCHEFFER s. n., Oct. 1871 (B); Cheribon, Indramajoe, BACKER 16693, Sept. 1914 (B); between Linggar djati and Koenigan, BACKER 5025, Oct. 1912 (B); Pekalongan, Brebes, BACKER 15445, Sept. 1914 (B); sugar estate Doekoewringin, near Slawi, Administrator Sugar estate Doekoewringin

82, Febr. 1915 (B); Tegal, WINCKEL s.n., Oct. 1917 (B, L); forestry E. Tegal, BEUMÉE 4392, Sept. 1919 (B); Banjoemas, Kawoenganten, BACKER 4641, Sept. 1912 (B); Magelang, N. E. slope of G. Soembing, LÖRZING 410, May 1912 (B); Semarang, Semarang, DOCTERS VAN LEEUWEN s.n., Apr. 1910 (B); Pendrian, DOCTERS VAN LEEUWEN s.n., Apr. 1910 (B); Daroepana, BACKER 16453, Sept. 1914 (B); Sendang Ngesong, KOORDERS 28234  $\beta$ , June 1897 (B, L); Ambarawa, BRINKMAN 537, Dec. 1932 (B); Salatiga, culture garden, DOCTERS VAN LEEUWEN s.n., March 1909 (B); Djapara-Rembang, Ngarengan, KOORDERS 35605  $\beta$ , May 1899 (B); Toedir, BÜSGEN 62, Dec. 1902 (B); forestry Bekoetok, BLOKHIJUS s.n., July 1919 (B); Soerakarta, N. of Solo, BACKER 6423, Jan. 1913 (B); Jogjakarta, in rice fields, JUNGHUHN 95, Apr. (L); Madioen, Madioen, BACKER 6964, Febr. 1913 (B); id., WISSE 29, Apr. 1919 (B); E. of Madioen, WISSE 706, Aug. 1921 (B); Ngebel, KOORDERS 29192  $\beta$ , Aug. 1897 (B); Kediri, Kediri, BACKER 11257, Febr. 1914 (B); Teloeng Agoeng, LÖRZING 979, Febr. 1914 (B); G. Keloed, W. slope, Lahar Temas above Bendoredjo, on volcanic sand, VAN HARREVELD 8, Apr. 1922 (B); Soerabaja, Soerabaja, DORGELO 237, Apr. 1922 (Pa); Malang, Tengger, BUYSMAN s.n., March 1908 (U); Tengger, W. slope near Pogal, MOUSSET 570 (B); Gondang legi, BACKER 4664, June 1912 (B); Besoeki, Djember, ULTÉE 11 (B); between Djember and Bondowoso, BACKER 17754, Dec. 1914 (B); Asem Bagoes, BACKER 8205, May 1913 (B); between Litjin and Banjoewangi, KOORDERS 43693  $\beta$ , Aug. 1916 (B); Pantjoer, Idjen, KOORDERS 28510  $\beta$ , Aug. 1897 (B); near Poeger, KOORDERS 21070  $\beta$ , Oct. 1895 (B); id., along Kali Bedadoeng, KOORDERS 21071  $\beta$ , Oct. 1895 (B); Sitoebondo, BACKER 24631, June 1918 (B); Madoera, Kamal, BACKER 19240, Febr. 1915 (B); Ketapang daja, BACKER 19964, March 1915 (B); Sampang, BACKER 19663, March 1915 (B); Kangean Islands, Kangean, Pabean, BEGUIN W 2, June 1919 (B); id., id., Djoekoeng djoekoeng, BACKER 27551, March 1919 (B); id., id., Kajoe Waroe, BACKER 27992, Apr. 1919 (B); id., S. E. Paliat, BACKER 29535, May 1919 (B); id., Saboenten, BACKER 29677, 29827, May 1919 (B); id., Saeboes, BACKER 29138, Apr. 1919 (B); id., Saebibi, BACKER 28404, Apr. 1919 (B).

CELEBES, Celebes and Dependencies, Boeloe Tanah near Lombasang, BÜNNEMEYER 11435, May 1921 (B); Tanette, BÜNNEMEYER 11741, May 1921 (B); Boeloe Parigi near Tanette, BÜNNEMEYER 12444, June 1921 (B); Madjene, RACHMAT 141 (exped. VAN VUUREN), July 1913 (B); Mamoedjoe, RACHMAT 208 (exped. VAN VUUREN), July 1913 (B); Tolo, Mrs. BOUMAN-HOUTMAN 96 (B); P. Boeton, Bae bae, KJELLBERG 57, Febr. 1929 (B).

LOMBOK, Rindjani, N. side, Laboean tjarek, ELBERT 567, Apr. 1909 (L); id., N. side, Bajan, ELBERT 731, Apr. 1909 (L); id., S. S. E. side, Pringgabaja, ELBERT 2100, June 1909 (L).

SOEMBAWA, Bima, Donggo, Kenanta, ELBERT 3580, Dec. 1909 (L); Batoe Doelang, Mrs. RENSCH 753, May 1927 (B).

SOEMBA, Laora, IBOET 341, Apr. 1925 (B, L).

TIMOR, without locality, SPANOGHIE s.n. (L, mixed with *I. Decaisnei* VAN OOSTSTR.); Nonbauun, TEYSMANN s.n. (B); S. Middle Timor, Soë, on weathered limestone, Mrs. WALSH 11, Dec. 1928 (B).

WETAR, hills near lake Tihoe, Eucalypt-forest, ELBERT 4596, Febr. 1910 (L); Ihmedo, Eucalypt-savannah, ELBERT 4701, March 1910 (L).

MOLUCCAS, Ternate, BEGUIN 809, Oct. 1920 (B); Ceram, N. Ceram, Wahai, KORNASSI 5 (exped. RUTTEN), Aug. 1917 (B, L, U); Ambon, Hila, BOERLAGE 304, July 1900 (B).

NEW GUINEA, Papua, Kanosia, under *Hevea*, CARR 11522, Febr. 1935 (L).

PHILIPPINE ISLANDS; throughout the Philippines in open grasslands and borders of thickets at low and medium altitudes, often common (MERRILL). Luzon, Rizal prov., RAMOS, Bur. of Sc. 1965, Nov. 1914 (B, L); id., Antipolo, MERRILL 94, Jan. 1910 (U); Laguna prov., Los Baños, ELMER 8270, Apr. 1906 (B); Palawan, Taytay, MERRILL, Bur. of Sc. 1261, May 1913 (B, L).

Distribution: East tropical Africa, Mascarene Islands, tropical Asia, N. Australia.

Habitat: Grasslands, thickets, hedges, thin forests, waysides, waste ground, occasionally on sandy soil near the sea; 1—1300 m.

Vernacular names: aroy tali kentjir, aroy ki kalindan (Sund., Java, BLUME, HASSKARL, KOORDERS, MIQUEL); ojet kitjil (Jav., BURMAN, MIQUEL); ki papesan (Sund., BACKER, HEYNE); indjen indjenan, malingan, tingkil (Jav., BACKER, HEYNE); tatampajan (Java, Batavia, SCHEFFER); minjak minjakan (Java, Batavia, PIEPERS); aroy kalindan (Java, Buitenzorg, REINWARDT); anton anton (Jav., Java, Pekalongan, Administrator sugar estate Doekoewringin); klawatangede (Jav., Java, Semarang, KOORDERS); rojotang (Jav., Java, Madioen, WISSE); djoemplingan (Jav., Java, Besoeki, KOORDERS); katjoeping (Madur., Java, Besoeki, KOORDERS); kaloh bibi (Celebes and Dep., HEYNE, RACHMAT); kuskusipa, bangbañgau (Philippines, Ilóko language, MERRILL); panggipanggi (Philippines, Súlu language, MERRILL).

Use: See WATT l. c. and HEYNE l. c.

Remarks. HALLIER distinguished a var. *abyssinica*<sup>1)</sup> and a var. *indica*<sup>1)</sup> of this species. The specimens from Malaysia belong to var. *indica*. Specimens from Timor which HALLIER reckoned to var. *abyssinica* (in ENGL., Bot. Jahrb. XXVIII, 1899, p. 39) most probably belong to *I. ochroleucea* SPANOGHE.

15. *Ipomoea ochroleucea*<sup>2)</sup> SPANOGHE in Linnaea XV (1841) p. 340; Miq., Fl. Ned. Ind. II (1857) p. 614 (*I. ochroleuca*).

<sup>1)</sup> HALLIER f. in Jahrb. Hamb. wiss. Anst. XV (1898) p. 6; var. *abyssinica* occurs in tropical Africa and Arabia; var. *indica* is known from the islands of the Indian Ocean and from continental tropical Asia and Malaysia. Var. *abyssinica* mainly differs from var. *indica* in its cordate-subtriangular long-acuminate leaves, with broad and less deeply cordate base, in its mostly shorter and slightly stouter peduncles and in its larger and more acute sepals.

<sup>2)</sup> I use the original name, given by SPANOGHE, for this species.

A glabrous or very sparsely, shortly and patently pilose twiner; stems thin, slender, terete, old stems with yellow, lacerate bark; leaves petiolate; petiole thin, 1—4 cm long; blade ovate to broad-ovate, shortly or long-acuminate at the apex with acute or obtusish, mucronulate point, widely to narrowly cordate at the base; the auricles rounded; upper and lower surface of the leaf generally glabrous, the margin sometimes shortly fimbriate; length of the blade 3.5—7.5 cm, width 2.5—5 cm. Inflorescences axillary, 1—several-flowered, cymosely branched, branches if present well-developed, prim. branches c. 1.5—2 cm; peduncles thin, glabrous or hairy with very short patent hairs, 3.5—5 cm; pedicels much longer than the calyx, smooth, glabrous or hairy like the peduncle, 1.5—3 cm; bracts minute, oblong or triangular; sepals glabrous, equal in length, oblong to ovate-oblong, with broadly rounded to truncate, slightly emarginate, mucronulate point, the outer ones with thick centre and thin, pale margins, the inner ones thinner; length of sepals 5—6.5 mm; corolla sulphur-yellow (SPANOGHE), c. 4 cm long, widely funnel-shaped, suddenly narrowed at the base into a short tube, the limb c. 5 cm in diam., glabrous, with exception of the apical parts of the midpetaline bands, which are pubescent; stamens and style included; stamens inserted 5—5.5 mm above the corolla base; filaments filiform, unequal in length, hairy at the dilated base; anthers oblong, sagittate, 4 mm long; ovary glabrous; style filiform, glabrous, articulate; stigma biglobular, papillose; capsule broad-ovoid, straw-coloured, crowned by the base of the style, 10—11 mm high, 4-valved, 2-celled, 4-seeded; seeds black, shortly brownish tomentose, c. 6 mm long (sepals reflexed in fruit, to 7 mm long).

TIMOR, without locality, REINWARDT 1358, Apr. 1821 (L); SPANOGHE n. Icon. 68<sup>1)</sup> (L, *type*); Koepang, TEYSMANN s.n. (B); id., TEYSMANN 431 (L); S. Middle Timor, Kolbano, S. coast, on rocks near the sea, Mrs. WALSH 266, May 1929 (B).

Distribution: Timor.

Habitat: "on rocks near the sea" (always?).

16. *Ipomoea stibaropoda* VAN OOSTSTR., nov. spec.<sup>2)</sup>

Planta herbacea, glabra, vel sparse pilosa, caulibus volubilibus, teretibus, gracilibus. Folia petiolata, petiolis glabris vel basin versus pilis nonnullis praeditis, 2—2.5 cm longis, late ovata vel orbicularia, 3.5—6 cm longa, 3—6 cm lata, apice breviter acuminata, basi profunde cordata, sinu rotundato, auriculis late rotundatis, margine integra, fimbriata, nervis lateralibus utrinque 5—6 ex quibus c. 3 e basi orientibus, utrinque

<sup>1)</sup> In the Rijksherbarium at Leiden there is a coloured plate of this species, by SPANOGHE, numbered 68 and named *Ipomoea (Argyria?) ochrolaeca* SPAN.

<sup>2)</sup> Derived from *στιβάρως*-thick and firm, and *πός*-foot.

glabra, prope marginem breviter pilosa. Inflorescentiae axillares, pedunculatae, 1- vel 2-florae, pedunculis brevibus, teretibus, glabris vel sparse pilosis, 5—14 mm longis; pedicellis calyceem longe superantibus, crassis, erectis, deinde recurvatis, inerassatis, glabris, 15—18, in fructu ad 20—28 mm longis. Sepala crassiuscula, glabra, aequalia, 5—6 mm longa, exteriora ovato-oblonga, acutiuscula, mucronulata, margine angustissime scarioso, interiora latiora vel orbicularia, apice rotundata, mucronulata, margine scarioso latiore. Corolla flava, infundibuliformis, c. 4.5 cm longa; basi in tubum angustum c. 6—7 mm longum attenuata. Stamina exserta, filamentis circiter 7 mm supra basin corollae insertis, filiformibus, basi pauce dilatata breviter pilosa, antheris linearibus, oblongis, sagittatis, c. 4 mm longis. Discus annularis, c.  $\frac{3}{4}$  mm altus. Ovarium glabrum, 2-loeculare, stylo exserto, filiforme, c. 38 mm longo, glabro. Capsula (juvenilis) ovoidea, mucronata, glabra.

CELEBES, Celebes and Dependencies, Salajar Islands, marble-rock near T. Djampca, DOCTERS VAN LEEUWEN 1602, May 14, 1913 (B; U, *type*).

Distribution: Salajar Islands.

Habitat: Unknown.

Remarks. Though both the specimen in Utrecht and that in Buitenzorg are very fragmentary, I have no hesitation in saying that they represent a new species. This species seems to be closely related to *I. obscura* and *I. ochroleuca*, it is, however, characterized by its thick pedicels, which are erect in flower and afterwards turned down.

17. *Ipomoea maxima* (L. f.) DON in SWEET, Hort. Brit., ed. 2 (1830) p. 372; HOCHREUTNER in Candollea V (1934) p. 186 — *Convolvulus maximus* L. f., Suppl. (1781) p. 137 — *Ipomoea sepiaria* KOEN. ex ROXB., Fl. Ind. ed. CAREY & WALL., II (1824) p. 90; id., ed. CAREY, I (1832) p. 499; CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 464; DECAISNE, Herb. Timor. (1835) p. 65; SPANOGHE in Linnæa XV (1841) p. 339; WIGHT, Icon. t. 838; CHOISY in DC., Prodr. IX (1845) p. 370; ZOLL., Syst. Verz., 2. Heft (1854) p. 129; MIQ., Fl. Ned. Ind. II (1857) p. 612; BENTH., Fl. Austr. (1869) p. 422<sup>1)</sup>; CLARKE<sup>2)</sup> in HOOK., Fl. Brit. Ind. IV (1883) p. 209; FORBES, Wander., Germ. ed. II (1886) p. 222; WATT, Diet. Econ. Prod. India IV (1890) p. 491; TRIMEN, Handb. Fl. Ceyl. III (1895) p. 220; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1063; DUTHIE, Fl. Upper Ganget. Pl. (1911) p. 115; GAMBLE, Fl. Pres. Madras V (1923) p. 916; BACKER, Onkruidfl. Jav. Suikerrietgr.

<sup>1)</sup> BENTHAM describes the seeds as being glabrous.

<sup>2)</sup> CLARKE describes a var. *stipulacea* (ROXB.) CLARKE (= *Convolvulus stipulaceus* ROXB.), which is unknown to me.

(1931) p. 527 — *I. verrucosa* BL., Bijdr. (1825) p. 718; SPANOGHE in Linnaea XV (1841) p. 340; CHOISY in DC., Prodr. IX (1845) p. 369; ZOLL., Syst. Verz., 2. Heft (1854) p. 129; MIQ., Fl. Ned. Ind. II (1857) p. 612; HALL. f. in Versl. 's Lands Pl. t. 1895 (1896) p. 129; id. in Bull. Herb. Boiss. V (1897) p. 381; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 511; KOORDERS, Exk. fl. Java III (1912) p. 118 — *Convolvulus verrucosus* (BL.) DIETR., Syn. Pl. I (1839) p. 670 — *Ipomoea subtrilobans* MIQ., Fl. Ned. Ind. II (1857) p. 615.

A herbaceous perennial; stems few or several from a stout perpendicular root, twining or prostrate, 1—2.5 m long (BACKER), pale grey or olive-green, hirsute with white patent hairs, glabrescent or glabrous, longitudinally and transversely wrinkled. Leaves petiolate; petiole often shorter than the blade, glabrous or with some minute hairs, or minutely verrucose, 1—3 cm long; blade broad-ovate, orbicular or kidney-shaped, attenuate towards the apex or more or less abruptly acuminate with obtuse or acutish mucronulate acumen, mostly deeply cordate, sometimes slightly cordate or truncate at the base with broadly rounded auricles; the surfaces glabrous but with minute hairs along the margins above, often with purple margin or with purple spots; margin entire or slightly angular; length of blade (1—)2.5—6 cm, width (1—)2—5 cm. Inflorescences axillary, pedunculate, few- to several-(5—11-, BACKER) flowered; flowers aggregate in an umbellate cyme; peduncle thick, often applanate, minutely verrucose towards the top, variable in length, 1.5—12 cm long; pedicels verruculose,  $\frac{3}{4}$ —1 cm long; bracts small, persistent; sepals glabrous, elliptic-oblong, obtuse, minutely mucronate, the mucro somewhat below the top, the outer sepals verruculose, coriaceous with thinner margins, all of the same length or the interior ones slightly longer, 4—6 mm; corolla pale lilac or nearly white with purple centre, tubular to funnel-shaped, 20—25 mm long; the limb  $1\frac{1}{4}$ —2 cm in diam. (BACKER); stamens and style included; stamens inserted c. 3 mm above the corolla base; filaments unequal, filiform, glabrous except the dilated base; anthers ovate, 1.5—2 mm long; ovary glabrous; style filiform, glabrous; stigma biglobular, papillose; capsule depressed-globular, c. 6—7 mm high, glabrous, 4-valved, 2-celled, 4-seeded; seeds c. 3 mm long, covered with a dense, very short, pale greyish or white tomentum and with some longer arachnoid hairs along the edges.

MALAY PENINSULA, waste ground; K e d a h, M a l a c c a, S i n g a p o r e (PRAIN, RIDLEY).

SUMATRA, East Coast, YATES 1255 (B).

JAVA. From West to East Java at low altitudes, mainly in the northern lowland, near the sea in moist, often somewhat saltish localities, by salines, but

also on not saltish soil, moist grasslands, fields, thickets, borders of cane fields and along waysides (BACKER). Without locality, BLUME 88 (L); BLUME 1135 (L, type of *Ipomoea verrucosa* BL.<sup>1</sup>); KORTHALS 251 (L); Batavia, Batavia, VORDERMAN s.n. (B); id., in the *I. Pes-caprae* formation, near the old harbour, HALLIER s.n., Apr. 1895 (B); Tandjong Priok, KUIHL & VAN HASSELT 63 (L); id., BACKER 34653, July 1903 (B); id., HALLIER s.n., Nov. 1894 (B); id., SCHIFFNER 2436a, July 1894 (L); id., along canal, RAAP 377, May 1894 (L); Tjilintjing, E. of Tandjong Priok, SCHEFFER s.n., Aug. 1871 (B); id., along fish-ponds, VAN STEENIS 524, Febr. 1928 (B); near Antjol, VAN STEENIS 6768, March 1935 (B); Rawah Embel, BACKER 34651, Jan. 1903 (B); Sentiong, BACKER 34650, Jan. 1903 (B); Chinese churchyard, N. of Weltevreden, HALLIER s.n., Aug. 1896 (B); Cheribon, Cheribon, BACKER 4759, Oct. 1912 (B); Ilaer geulis, BACKER 16859, Oct. 1914 (B); Losarang, BACKER 16752, Sept. 1914 (B); Pekalongan, Tegal, BACKER 15270, Aug. 1914 (B, L); Semarang, Semarang, HORSFIELD s.n. (L, type of *I. subtrilobans* MIQ.; U); Bangkong, DOCTERS VAN LEEUWEN s.n., Apr. 1910 (B); Soerabaja, Soerabaja, DORGEL 3276, Febr. 1925 (Pa); id., JESWIET 721, May 1925 (W); Morokrengangan, VAN SLOOTEN 2026, Sept. 1928 (B); Kalang anjar near mud-volcano Gedangan, BACKER 26650, March 1919 (B); Malang, experiment field Ratji between Pasoeroean and Probolinggo, BLJHOUWER 141, Apr. 1931 (B); Loemadjang, ZOLLINGER 2676 ZM., Febr. 1845 (B); G. Semongkrong, VAN SLOOTEN 2426, Apr. 1931 (B); Kepoeh, S.W. of Pasoeroean, BACKER 36042, Apr. 1930 (Pa); Bangil, BACKER 7594, May 1913 (B); Pekoentjen, JESWIET 592, Nov. 1923 (W); id., JESWIET 622 (W); Besoeki, Ragadjampi, ZOLLINGER (107), Aug. 1858 (L); N. Banjoepoetih, near Asem Bagoes, BEGUIN 164, March 1922 (B); Madoera, Bangkalan, BACKER 19137, Febr. 1915 (B); Sampang, BACKER 19597, March 1915 (B); Soemenep, BACKER 20694, March 1915 (B); Kangean Islands, Kangean, Ardjasa, BACKER 27139, March 1919 (B); id., Kangean, S.E. of Ardjasa, BACKER 30023, May 1919 (B); id., Kangean, E.S.E. of Tambajangan, BACKER 27758, March 1919 (B); id., S.E. Paliat, BACKER 29538, May 1919 (B); id., Saboenten, BACKER 29672, May 1919 (B).

CELEBES, Celebes and Dependencies, Djeneponto, Mrs. BOUMAN—HOUTMAN 72, May 1926 (B).

LOMBOK, Rindjani, N. side, Laboan tjarik, ELBERT 633, Apr. 1909 (L).

TIMOR, without locality, SPANOGIE s.n. and 89 (L); S. Middle Timor, Soë, Mrs. WALSH 126<sup>2</sup>), Febr. 1929 (B).

Distribution: British India, Ceylon, eastward to Indo-China, Hainan, Formosa, the Malay Peninsula and the Malay Archipelago.

Habitat: In moist, often somewhat saltish localities, near salines, on beaches, but also in moist grasslands, in fields, thickets, hedges, waste ground and along waysides; between 0 and 50 m.

Use: See WATT, l. c.

Remarks. 1. *Convolvulus maximus* L. f. seems to be the oldest

<sup>1</sup>) The specimen was originally named *I. rugosa* BL. and bears this name in BLUME's handwriting. Afterwards the name has been changed into *I. verrucosa*.

<sup>2</sup>) This specimen has the leaves ovate-oblong with sagittate base.

name for this species. In ROXBURGH'S Flora Indica it has been described as *Ipomoea sepiaria*. *Tiru tali* of RHEEDE (RHEEDE, Fl. Malab. 11, p. 109, t. 53) is according to ROXBURGH certainly identic with this species and ROXBURGH supposes that it is also identic with *Convolvulus maximus* L. f. LINNAEUS f. cites *Tiru tali* of RHEEDE as a synonym of his *C. maximus*. Concerning *I. verrucosa* BL. which I consider as a synonym I can state that I do not see any important difference between the specimens from British India, undoubtedly belonging to *I. sepiaria* and the type of *I. verrucosa* BL.

2. Some authors<sup>1)</sup> have mentioned this species as *I. sagittaeifolia* BURM. f. (Fl. Ind., 1768, p. 50, t. 18, fig. 2), a species which is unknown to me. The plate of BURMAN does not agree very well with *I. maxima*. According to HOCHREUTINER the type specimen of *I. sagittaeifolia* in the herbarium of BURMAN at Geneva, belongs to *I. reptans* (= *I. aquatica* FORSK.).

18. *Ipomoea aquatica* FORSK., Fl. Aeg.-Arab. (1775) p. 44; CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 210; FORBES, Wander., Germ. ed. II (1886) p. 222; VIDAL Y SOLER, Rev. Plant. Vasc. Philipp. (1886) p. 196; WATT, Diet. Econ. Prod. India IV (1890) p. 476; TRIMEN, Handb. Fl. Ceyl. III (1895) p. 221; BAKER & RENDLE in THES.-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 170; HALL. f. in VALETON, Pl. Pap. in Bull. Dep. Agric. Ind. Néerl. X (1907) p. 50; GAGNEP. & COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 248 — *Convolvulus repens* VAHL, Symb. I (1790) p. 17 (non L.); ROXB., Fl. Ind. ed. CAREY, I (1832) p. 482; BLANCO, Fl. Filip. ed. 1 (1837) p. 92; id., ed. 2 (1845) p. 68; id., ed. 3, I (1877) p. 128, t. 149; MERRILL in Bur. Gov. Lab. Philipp. 27 (1905) p. 62 (*C. repens* BLANCO); id., Spec. Blanc. (1918) p. 324 — *Ipomoea reptans* POIR. in LAMK., Encycl., Suppl. III (1814) p. 460, non *Convolvulus reptans* L.<sup>2)</sup>; BL., Bijdr. (1825) p. 714; CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 444; SPANOGHE in Linnaea XV (1841) p. 339; CHOISY in DC., Prodr. IX (1845) p. 349; ZOLL., Syst. Verz. 2. Heft (1854) p. 128; MIQ., Fl. Ned. Ind. II (1857) p. 601; BENTH., Fl. Austr. IV (1869) p. 420; HILLEBR., Fl. Hawaiian Isl. (1888) p. 314; HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 143; id., Versl. 's Lands Pl. t. 1895 (1896) p. 130; id. in Bull. Herb. Boiss. V (1897) p. 380; id. in

<sup>1)</sup> PRAIN in Journ. As. Soc. Bengal LXXIV (1906) p. 317; GAGNEP. & COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 260; RDLEY, Fl. Malay Penins. II (1923) p. 461; HENDERSON in Gardens' Bull. Str. Settlem. IV (1928) p. 293.

<sup>2)</sup> See MERRILL in Philipp. Journ. Sc. LIX (1936) p. 451, 452.

Meded. 's Lands Pl. t. XIX (1898) p. 544; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 511; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1062; HALL, f. in Bull. Herb. Boiss. sér. 2, I (1901) p. 675; PRAIN in Journ. As. Soc. Bengal LXXIV (1906) p. 316; DUTHIE, Fl. Upper Ganget. Pl. II (1911) p. 114; KOORDERS, Exk. fl. Java III (1912) p. 118; MERRILL, Interpr. Rumph. Herb. Amb. (1917) p. 444; id. in Journ. Roy. As. Soc. Str. Br. Spec. Numb. (1921) p. 510; GAMBLE, Fl. Pres. Madras V (1923) p. 916; RIDLEY, Fl. Malay Penins. II (1923) p. 462; MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 368; HEYNE, Nutt. Pl., ed. 2 (1927) p. 1305; MERRILL in Univ. Calif. Publ. Bot. 15 (1929) p. 260; BACKER, Onkruidfl. Jav. Suikerrietgr. (1931) p. 526; OCHSE & BAKHUIZEN VAN DEN BRINK, Ind. Groenten (1931) p. 160, fig. 97; VAN STEENIS in Arch. Hydrobiol., Suppl. XI (1932) p. 322, fig. 61; COERT in Trop. Nat. XXIII (1934) p. 29, fig. 14 — *I. repens* ROTH, Nov. Pl. Sp. (1821) p. 110, as to the description, not *Convolvulus repens* L., nor *I. repens* LAMK.; BL., Bijdr. (1825) p. 713; (?) SPANOGHE in Linnæa XV (1841) p. 339 — ? *Convolvulus rostratus* ZIPP. in Linnæa XV (1841) p. 339, pro syn. — *Ipomoea subdentata* MIQ., Fl. Ned. Ind. II (1857) p. 614.

Herbaceous, perennial or sometimes annual (see remarks); stems thick, terete or striate, hollow or spongy, rooting at the nodes, up to 2 or 3 m long, trailing on moist soil or mud or floating on water, occasionally twining, entirely glabrous or hairy at the nodes; no subterranean tubers<sup>1)</sup>. Leaves petiolate; petiole thick, glabrous, shorter or longer than the blade, 3–20 cm; blade glabrous, green above, pale green beneath, variable in form and size, ovate, triangular, ovate-oblong, lanceolate or linear, acute or obtuse to retuse and mucronulate at the apex, truncate, cordate to sagittate or hastate at the base, with rounded or with acutish or acute, entire or dentate auricles, the leaf margin above the auricles entire or coarsely dentate; length of the blade 3–15 cm, width 1–9 cm. Inflorescences axillary, pedunculate, cymosely 1–few-flowered; peduncle glabrous, thinner than the petiole, 1–12 cm long; pedicels longer than the calyx, glabrous, 20–65 mm long; bracts minute, narrow, acute, 1.5–2 mm long; sepals with thin, pale margins, glabrous, equal in length or the exterior ones a little shorter, the exterior ones ovate-oblong, obtuse, minutely mucronate or blunt, 7–8 mm long, the interior ones ovate-elliptic, obtuse, minutely mucronate, c. 8 mm long; corolla pink or pale lilac, often with a purple centre, rarely entirely white, funnel-shaped, 3–5 cm long, with a c. 4.5–5 cm broad limb

<sup>1)</sup> The species is easily propagated by cuttings.

(BACKER, LÖRZING), or in poorly developed specimens only 2.5 cm long, glabrous, the tube slightly constricted at the base at the place of insertion of the filaments; stamens and style included; stamens inserted c. 3 mm above the corolla base; filaments filiform, unequal in length, hairy at the dilated base; anthers oblong, sagittate, c. 3 mm long; disk annular; ovary glabrous; style filiform, glabrous; stigma biglobular, papillose; capsule ovoid, glabrous, c. 8—10 mm high, 4- or less-seeded; seeds densely pubescent.

MALAY PENINSULA. Extensively cultivated as a vegetable (RIDLEY).

SUMATRA, Atjeh and Dependencies, Poeloe Wé, Sabang, BACKHUYS s. n., herb. v. O. 4062, Oct. 1930 (L); id., shore of Anak laet, partly submerged, VAN STEENIS 18, Dec. 1927 (B); East Coast, YATES 1126 (B); Medan, LÖRZING 3273, Oct. 1914 (B); Sibolangit, cult., LÖRZING 5535, Febr. 1918 (B, L); Betimoos valley, probably cult., LÖRZING 5713, June 1918 (B, L, U); E. of Loboek pakam, LÖRZING 3300, Oct. 1914 (B); West Coast, Ophir District, Taloe, BÜNNEMEYER 87, Apr. 1917 (B); Benkoelen, Enggano Island, near Apiko, LÜTJELARMS 5379, July 1936 (B, L); Lampong Districts, Sebesi Island, DOCTERS VAN LEEUWEN 5423, Apr. 1921 (B); Palembang, Mocara Doea, spontaneous and cult., GRASHOFF 470, June 1915 (B); Djambi, Bangko, POSTHUMUS 494, July 1925 (B, L); Riouw and Dependencies, Riouw Archipelago, P. Doerian, BÜNNEMEYER 7743, Sept. 1919 (B); Lingga Archipelago, P. Lingga, G. Tanda, cult., BÜNNEMEYER 6864, July 1919 (B).

JAVA. From West to East Java, at low and medium altitudes, in moist, marshy or inundated localities, wild or cultivated (BACKER). Without locality, BLUME 1075 (L); JUNGHUHN 39, 53 (L); KORTHALS s. n. and 260, 261 (L); Bantam, Danoe, KOORDERS 40565  $\beta$ , May 1912 (B, L); id., KOORDERS 40823  $\beta$ , May 1912 (B); between Malingping and Penjawaengan, BACKER 1534, June 1911 (B); Batavia, Batavia, BLUME 77 (L); Tandjong Priok, BACKER 32336, July 1903 (B); G. Sahari Sentiong, between Batavia and Weltevreden, BACKER 32335, May 1902 (B); lake of Tjigombong, Miss POLAK s. n., March 1930 (B); Buitenzorg, Buitenzorg, BOERLAGE 138, Oct. 1888 (L); Pantar Pete, cult., ZOLLINGER 2118 (according to ZOLLINGER); Tjiboerial, VAN STEENIS 1497, May 1928 (B); Soekaboemi, BACKER 14909, July 1914 (B); Priangan, Garoet, KOENS 514, May 1913 (B); Cheribon, Karang Ampel, BACKER 16669, Sept. 1914 (B); Pekalongan, Brobes, BACKER 15316, Sept. 1914 (B); between Soebah and Weleri, BACKER 16558, Sept. 1914 (B); Banjoemas, between Banjoemas and Kroja, KOORDERS 20868  $\beta$ , Oct. 1915 (B); Semarang, Banjoebiroe, Rawa pening, KOORDERS 36224  $\beta$ , 36226  $\beta$ , May 1899 (B); id., BACKER 30201, March 1920 (B); Randosarie, DOCTERS VAN LEEUWEN s. n., July 1910 (B); Djapara-Rembang, Ngarengan, KOORDERS 35606  $\beta$ , June 1899 (B); Soerakarta, HORSFIELD s. n. (L; U, *type of I. subdentata* MIQ.); Soerabaya, Soerabaya, DORGELO 332, May 1922 (Pa); Madioen, Madioen, WISSE s. n. (B); Kediri, Telocengoeng, LÖRZING 1001, Febr. 1914 (B); Malang, Pasoeroean, JESWIET 6, Aug. 1913 (B); S. of Bantoe, BACKER 3829, June 1912 (B); Djatirot, BACKER 7823, May 1913 (B, Pa); Ranoe Lamongan, RUTTNER 336, Nov. 1928 (B); near Soember mandjong, KOORDERS 23449  $\beta$ , June 1896 (B); Pekoentjen, JESWIET 212, Nov. 1922 (W); id., JESWIET 225, March-May 1923

(W); Besoeki, between Poeger and Amboeloc, BACKER 18177, Dec. 1914 (B); Djember, ULTÉE s.n. (B); S. of Djember, BACKER 18362, Dec. 1914 (B).

BORNEO, S. and E. Division, Bandjermasin, KORTIALS 258, 259 (L); Samenggaris, AMDJAH 1086, Oct. or Dec. 1912 (B, L); British North Borneo, Elphinstone Prov., Tawao, ELMER 20786, Oct. 1922—March 1923 (B, U).

CELEBES, Celebes and Dependencies, Lake Tempe, NOERKAS 367 (exped. VAN VUUREN), Dec. 1912 (B, L); Manado, near Pakoe-oere, KOORDERS 16562 $\beta$ , Apr. 1896 (B); Talaud Islands, Salibaboe, marsh Lota near Moronge, rather rare, LAM 3219, May 1926 (B).

SOEMBAWA, Soembawa besar, Mrs. RENSCH 540, May 1927 (B).

MOLUCCAS, Ceram, W. Ceram, Way Poeloe Tikoes, KORNASSI 1263, May 1918 (B, L, U); Banda, without coll. name, no data (L).

NEW GUINEA, Netherlands New Guinea, Etnabay, KOCH s.n., Aug. 1904 (B, L); E. of Merauke, KOCH 2, Sept. 1904 (L).

PHILIPPINE ISLANDS. "This species is common and widely distributed in the Philippines at low and medium altitudes, growing in open muddy places, shallow pools, etc." (MERRILL). Luzon, Rizal prov., Manila, MERRILL, Bur. of Sc. 5168, Febr. 1906 (B, L); id., id., MERRILL, Spec. Blanc. 427, Nov. 1914 (B, L).

Distribution: Tropical America, tropical Africa, tropical Asia, N. Australia.

Habitat: In moist, marshy or inundated localities, in shallow pools, ditches, wet rice-fields, also along waysides, wild and cultivated; between 0 and 1000 m.

Vernacular names: See HEYNE, Nutt. Pl., l. c. p. 1305. Further names are: sajoran lalap (the leaves, Lingga Archipelago, BÜNNEMEYER); daoen deli dili di (Djambi, POSTHUMUS); laraë (Celebes, lake Tempe, NOERKAS); tanidri (Celebes, Makassar, MIQUEL); pintoer (id., Manado, Tontemboan language, KOORDERS); sajor kangkong (Ambon, MIQUEL); baláñgög, galatgat (Philippines, Ilóko language, MERRILL); kangkung, tankúng (Philippines, Súlu language, MERRILL); kangkóng (Philippines, Bíkól, Tagálog and Pampárgan language, MERRILL); tangkóng (Philippines, Ilóko, Kuyónon and Bisáya language, MERRILL). Also see DE CLERCQ—PULLE, Nieuw Plantk. Woordenb. ed. 2 (1927) p. 126.

Use: Used as a pot herb, especially the young shoots and leaves. Also used as fish-food. See WATT, HEYNE and OCHSE & BAKHUIZEN VAN DEN BRINK, l. l. c. c.

Remarks. 1. According to BACKER l. c. this species is perennial, or sometimes, in unfavourable localities, annual. OTTO KUNTZE states (Rev. Gen. Plant. II, 1891, p. 446) that it occasionally produces cleistogamic flowers, with fruits riping in the mud. BACKER, the well-known specialist of the flora of Java, never saw such flowers (BACKER, Onkruidfl. p. 527).

2. A specimen from Rotti, mentioned by SPANOGHE in *Linnaea* XV

(1841) p. 339, as *Ipomoea repens* ROTH, is unknown to me. SPANOGHE cites *Convolvulus rostratus* ZIPP. as a synonym.

3. OCHSE & BAKHUIZEN VAN DEN BRINK mention two forms viz. kankoeng biasa (Sund.) with dark green leaves and stems and lilae flowers and kankoeng nagri (Sund.) with yellow-green leaves, yellowish stems and white flowers.

4. HOCHREUTINER (in Candollea V, 1934, p. 186) states that the specimen of *Convolvulus sagittaeifolius* BURM. (published by BURMAN as *Ipomoea sagittaeifolia*) in BURMAN'S herbarium is identic with *Ipomoea reptans* (= *I. aquatica* FORSK.). If HOCHREUTINER is right, the specific name *sagittaeifolia* has priority as BURMAN published the name *I. sagittaeifolia* in 1768 (BURM. f., Fl. Ind., 1768, p. 50, t. 18, fig. 2).

5. The specimens DORGELO 332, from Soerabaja and JESWIET 6, from Pasoeroean have very narrow (3—6 mm broad) sagittate leaves.

19. *Ipomoea Pes-caprae* (L.) SWEET, Hort. Suburb. Londin. (1818) p. 35; CHOISY in DC., Prodr. IX (1845) p. 349; ZOLL., Syst. Verz. 2. Heft (1854) p. 128; MIQ., Fl. Ned. Ind. II (1857) p. 602; BENTH., Fl. Austr. IV (1869) p. 419; FORBES, Wander., Germ. ed. II (1886) p. 222; HILLEBR., Fl. Hawaiian Isl. (1888) p. 313; HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 145; id. in Versl. 's Lands Pl. t. 1895 (1896) p. 130; id. in Bull. Herb. Boiss. V (1897) p. 376, 381; id. in Meded. 's Lands Pl. t. XIX (1898) p. 543; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 512; SCHUM. & LAUTERB., Fl. Deutsch. Schutzgeb. (1901) p. 517; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1061; HALL. f. in Bull. Herb. Boiss. sér. 2, I (1901) p. 675; PRAIN in Journ. As. Soc. Bengal LXXIV (1906) p. 315; MERRILL in Philipp. Journ. Sc. I, Suppl. (1906) p. 120; KOORDERS, Exk. fl. Jav. III (1912) p. 117; KOORDERS-SCHUM., Syst. Verz. I (1910—13) Conv. p. 5; MERRILL, Interpr. Rumph. Herb. Amb. (1917) p. 444; id. in Journ. Roy. As. Soc. Str. Br. Spec. Numb. (1921) p. 510; GAMBLE, Fl. Pres. Madras V (1923) p. 917; RIDLEY, Fl. Malay Penins. II (1923) p. 460; MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 366; RENDLE in Journ. Bot. LXIII, Suppl. (1925) p. 71; RIDLEY in Kew Bull. (1926) p. 74; HEYNE, Nutt. Pl., ed. 2 (1927) p. 1304; JOCHEMS in Trop. Nat. XVIII (1929) p. 166—170, fig. 6, 7; BACKER, Onkruidfl. Jav. Suikerrietgr. (1931) p. 528; VAN STEENIS in Trop. Nat. XXIV (1935) p. 31, 32, fig. 3; id. in Trop. Nat. l. c. p. 121; BOOBERG in Handel. 7e N. I. Natuurw. Congres (1936) p. 403; DOCTERS VAN LEEUWEN in Ann. Jard. Bot. Buitenz. XLVI—XLVII (1936) p. 406; VAN STEENIS in Trop. Nat. XXVI (1937) p. 70; id., l. c. p. 156; id., l. c. XXVII (1938) p. 142; id., l. c. XXVIII (1939) p. 145 — *Convolvulus*

*Pes caprae* L., Spec. Pl. ed. 1 (1753) p. 159; ROXB., Fl. Ind., ed. CAREY, I (1832) p. 486 — *Ipomoea biloba* FORSK., Fl. Aegypt.-Arab. (1775) p. 44; CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 212; SCHUM. in ENGL., Bot. Jahrb. IX (1887) p. 216; SCHUM. & HOLLR., Fl. Kais. Wilhelms Land (1889) p. 114; WATT, Dict. Econ. Prod. India IV (1890) p. 482; WARB. in ENGL., Bot. Jahrb. XIII (1891) p. 412; TRIMEN, Handb. Fl. Ceyl. III (1895) p. 224; BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 172; GAGNEP. & COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 259; BACKER in Trop. Nat. VII (1918) p. 55, fig. 8 — *Convolvulus maritimus* DESR. in LAMK., Encycl. Bot. III (1789) p. 550 — *Ipomoea maritima* (DESR.) R. BR., Prodr. Fl. Nov. Holl. ed. 1 (1810) p. 486; BL., Bijdr. (1825) p. 720; SPANOGHE in Linnæa XV (1841) p. 340.

This species can be subdivided into 2 subspecies, viz. ssp. *Pes-caprae* (L.) VAN OOSTSTR. and ssp. *brasiliensis* (L.) VAN OOSTSTR. The former seems to be restricted to the coasts of continental tropical Asia, a few localities on the East African coast and one or two localities in Malaysia; the latter is circumtropical and is the common form in Malaysia.

ssp. *brasiliensis* (L.) VAN OOSTSTR., nov. ssp. — *Convolvulus brasiliensis* L., Spec. Pl. ed. 1 (1753) p. 159 — *Ipomoea brasiliensis* (L.) G. F. W. MEY., Prim. Fl. Esseq. (1818) p. 97 — *Convolvulus bilobatus* ROXB., Fl. Ind., ed. CAREY & WALL., II (1824) p. 73; id., ed. CAREY, I (1832) p. 485 — *Ipomoea Pes-caprae* (L.) SWEET var. *emarginata* HALL. f. in Bull. Soc. Roy. Bot. Belg. XXXVII (1898) p. 98; id. in Ann. R. Istit. Bot. Roma VII (1898) p. 231; id. in Bull. Herb. Boiss., sér. 2, I (1901) p. 675.

Perennial; stems from a thick woody base, long-trailing and rooting at the nodes, or occasionally twining, 5–30 m long (BACKER), terete or angular, or often flattened, glabrous, containing a milky juice. Leaves often secund, petiolate; petiole glabrous, up to 12(–17) cm long; blade ovate, obovate, elliptic, orbicular or transverse-elliptic to kidney-shaped or quadrangular to oblong, emarginate or sometimes truncate at the apex, mucronulate; truncate, rounded, short-attenuate into the petiole to sub-cuneate or slightly cordate at the base, rather thick and firm, sub-coriaceous, glabrous, 3–10 cm long, 3–10.5 cm broad; midrib below with 2 glands at the base of the leaf-blade<sup>1</sup>), lateral nerves 8–10 on each side of the midrib. Inflorescences axillary, secund; the peduncles stout, angular or flattened, 3–16 cm long, glabrous, 1-flowered or cymo-

<sup>1</sup>) See NIEUWENHUIS — VON ÜXKÜLL-GÜLDENBANDT in Ann. Jard. Bot. Buitenz. XXI (1907) p. 255, t. 26, fig. 59.

sely branched and few- to several-flowered, primary branches of the cyme short or elongate, 1—7 cm; pedicels longer than the sepals, glabrous, 12—30, in fruit to 45 mm long; bracts small, ovate-lanceolate, 3—3.5 mm long, deciduous; sepals subequal or the exterior ones a little shorter, exterior ones ovate to elliptic, or broad-elliptic, interior ones broader, to orbicular and very concave, all obtuse and mucronulate, subcoriaceous, glabrous, the exterior ones distinctly 3—5-nerved; exterior sepals 5—8, interior ones 7—11 mm long; corolla funnel-shaped, glabrous, pink, reddish purple or violet, darker inside at the base (rarely entirely white), 3—5 cm long; stamens and style included; stamens inserted c. 4 mm above the corolla base; filaments filiform, unequal in length, hairy at the dilated base; anthers oblong, sagittate, c. 4.5 mm long; ovary glabrous; style filiform; stigma biglobular, papillose; capsule globular, c. 12—15 mm high, glabrous, 4-valved, 2-celled, 4-seeded; valves thick, brown outside, whitish inside; seeds black, densely brownish tomentose, 6—7 mm long.

MALAY PENINSULA, common on all sandy sea-shores (RIDLEY), occasionally in the interior. About an inland collection from Negri Sembilan, RIDLEY, 1923, says: "I found a patch of this sea-shore plant on a cart track in the Bukit Tangga Pass in Negri Sembilan; perhaps the seed has been brought up in a cart of sea sand. It was flowering and fruiting here, many miles from the sea." Perak, Pulau Lalang, SEIMUND s. n., Nov. 1925 (B); Pahang, Pulau Tioman, Pulau Tulai, HENDERSON, Singapore Field n. 18503, May 1927 (B). Perlis, Kelantan, Penang, Malacca, Singapore (RIDLEY).

SUMATRA, A t j e h and D e p e n d e n c i e s, Poeloe Wé, E. of Sabang, VAN STEENIS 15, Dec. 1927 (B); Simaloer, ACHMAD 475, June 1918 (B, L); East Coast, Belawan, BLIJHOUWER 229, July 1930 (B); Serdang, near Rantau pandjang, LÖRZING 3674, March 1915 (B); Pantai tjermin, LÖRZING 9199, Nov. 1922 (B); P. Berhala, VAN DER MEER MOHR 5, Aug. 1926 (B); id., LÖRZING 6934, Nov. 1919 (B); Tapanoeli, Batoe Islands, RAAP 97, Sept. 1894 (B); West Coast, Padang, v. D. KER (†) 227, March 1869 (B); Mentawai Islands, Siberoet (according to RIDLEY, 1926); Benkoelen, Enggano Island, Kiojoh, LÜTJEHARMS 4698, June 1936 (B, L); id., P. Bangkei, LÜTJEHARMS 5141, June 1936 (B, L); Lampung Districts, Telok Betong, BACKER s. n., May 1908 (B); Tandjoeng Rata, BACKER 32328, Apr. 1906 (B); Krakatau, BACKER 32325, Apr. 1906 (B); id., Zwarte Hoek, BACKER 35332, May 1908 (B); id., id., DOCTERS VAN LEEUWEN 3720, Apr. 1919 (herb. D. v. L.); Anak Krakatau, seedling, very frequent, BOEDJN 2089, Nov. 1932 (B); id., seedling, DOCTERS VAN LEEUWEN 14759, May 1932 (B); Lang Island, BOERLAGE s. n. (B); id., BOERLAGE 11, 28, 32, Sept. 1896 (B); id., NOLTIENIUS s. n. (B); id., BACKER 35331, May 1908 (B); Verlaten Island, BACKER 35330, May 1908 (B, L); id., DOCTERS VAN LEEUWEN 11623, Febr. 1928, with witches' broom (herb. D. v. L.); Riouw and Dependencies, Riouw Archipelago, Batoe Hitam, P. Bintan, BÜNNEMEYER 6402, June 1919 (B, L); Lingga Archipelago, P. Sebangka, BÜNNEMEYER 7481, Aug. 1919 (B, L); Anambas and Natoena Islands, Boengocran,

Ranai, VAN STEENIS 1319, Apr. 1928 (B, L); B a n g k a, S. W. coast, BÜNNEMEYER 2478, Dec. 1907 (B); Tandjong Kalian near Muntok, BÜNNEMEYER 1545, Oct. 1907 (B).

JAVA, from West to East Java, on and directly behind sandy sea shores; occasionally inland, along waysides, dikes and canals (BACKER). Without locality, BLUME 61, 1685 (L); JUNGHUHN 11 (L); PLOEM s. n. (B); B a n t a m, Prinseneiland, KEULEMANS s. n. (L); Java's le punt, BACKER 32323, Apr. 1906 (B); between Pasaoeran and Anjer, BACKER 7227, March 1913 (B); Djoengkoelon, coll. indig. s. n. (B); B a t a v i a, Batavia, VORDERMAN s. n. (B); id., near old harbour, frequent, BACKER 32320, June 1902 (B); id., id., HALLIER s. n., Apr. 1895 (B); Tandjong Priok, open sunny places near harbour, frequent, BACKER 32321, Apr. 1903 (B); id., near harbour, frequent, BACKER 32304, May 1908 (B); id., beach, BACKER 32322 (*fl. albo*), Apr. 1905 (B); id., id., BAKHUIZEN VAN DEN BRINK 1432, July 1922 (B); along canal near Tandjong Priok, RAAP 384, June 1894 (L); Tjilentjing near Tandjong Priok, near fish-ponds, VAN STEENIS 543, Febr. 1928 (B); id., VISSER s. n., March 1929 (L); id., between pier and lighthouse, BACKER 30970, Nov. 1920 (B); Antjol, dike of fish-pond, VAN HARREVELD s. n., June 1907 (Pa); Weltevreden, dike of canal, BACKER 32319, May 1902 (B); island Edam, BOSCHMA 230, Dec. 1921 (B); id., BACKER 32324, Apr. 1906 (B); id., near lighthouse, BOSCHMA 131, 231, Dec. 1921 (B); id., S. beach, BOSCHMA 155, Dec. 1921 (B); id., silt, BOSCHMA 282, Dec. 1921 (B); island Haarlem, VAN STEENIS 6813, Apr. 1935 (B); island Leiden, WENT s. n., May 1890 (L); Duizend eilanden (Thousand Islands), Noordwachter, S. part, BOSCHMA 14, VAN SLOOTEN & BACKER 35045, Sept. 1921 (B); B u i t e n z o r g, Pelabocan Ratoe, JUNGHUHN 10 (L); id., BOERLAGE s. n. (L); id., BACKER 2289, Febr. 1912 (B); id., Tjisolok, WINCKEL s. n., Nov. 1917 (B, L); Tjidaoen, KOORDERS 34659  $\beta$ , Apr. 1899 (B); Buitenzorg, cult. in the Botanic Garden, HALLIER C 6, Apr. 1893 (L); id., PULLE s. n., May 1906 (U); id., n. XV. K. B. XI. 12 (B, Pa); P e k a l o n g a n, between Slawi and Balapoelang, dike of tramway, 50—100 m, BACKER 15410, Sept. 1914 (B); between Pemalang and Pekalongan, BACKER 15679, Sept. 1914 (B); Tegal, BACKER 15262, Aug. 1914 (B); Koerapan Soebah, KOORDERS 27337  $\beta$ , Apr. 1897 (B); B a n j o e m a s, Karangbolong, KOORDERS 29684  $\beta$ , Febr. 1898 (B, L); Noesa Kambangan, KOORDERS 27051  $\beta$ , Febr. 1897 (B; L, mixed with *I. illustris* (CLARKE) PRAIN); id., S. coast, WOLF VON WÜLFING W. 74, March 1921 (B); id., near Karang Tengah, VAN STRAELEN 21, Apr. 1918 (B); P e k a l o n g a n or S e m a r a n g, between Soebah and Weleri, BACKER 16589, Sept. 1914 (B); S e m a r a n g, near mouth of Kali Bajoran, BEUMÉE A. 182, May 1919 (B); Karimoendjawa Islands, Karimoendjawa, KARTA 300, Nov. 1930 (B); id., Bangkoang, KOORDERS 134 (B); Sintok, KOORDERS 242 (B); D j a p a r a - R e m b a n g, Ngarengan, KOORDERS 35598  $\beta$ , May 1899 (B); id., teak-wood on red volcanic soil, 3—4 km from the beach, 50 m, BEUMÉE 3642, Dec. 1918 (B); Kragan, BEUMÉE A. 238, Jan. 1921 (B); Pasokan, KOORDERS 32921  $\beta$ , June 1899 (B); J o g j a k a r t a, S. coast, Parangtritis, dunes, 5 m, BEUMÉE A. 90, Oct. 1918 (B); dunes near Parangtritis (according to LÜTJEHARMS<sup>1)</sup>); M a d i o e n, Patjitan, BACKER 2895, Apr. 1912 (B); K e d i r i, Prigi, BACKER 11802, Febr. 1914 (B); Soerabaja, Bawean, along rice fields, KARTA 55, May 1928 (B, L, U); id., Sangkapoera, KARTA 7, June 1928 (B); M a

<sup>1)</sup> LÜTJEHARMS in Trop. Nat. XXVI (1937) p. 88, fig. 6.

lang, W. of mouth of Kali Srigontjo, BACKER 4028, June 1912 (B); S.E. foot of G. Semongkrong, wayside, a few km from the sea, locally frequent, 10 m, BACKER 36844, Jan. 1930 (Pa); S. coast, BUYSMAN 208, Aug. 1907 (U); Besoeki, E. of Besoeki, BACKER 24511, June 1918 (B, L); Petjaron, BACKER 24658, June 1918 (B); Boma, KOORDERS 28893  $\beta$ , Aug. 1897 (B, L); Poeger, BACKER 17805, Dec. 1914 (B); id., BEUMÉ A. 68, Aug. 1918 (B); Batoe oelo, CLASON s.n., Aug. 1930 (Pa); Asem Bagoes, BACKER 37151, Nov. 1926 (Pa); Madoera, Bangkalan, grasslands and waysides near the sea, frequent, 1—5 m, BACKER 19125, Febr. 1915 (B); E. of Sampang, BACKER 19796, March 1915 (B); Sapoeloch, JESWIET 1034, Aug. 1925 (W); id., BACKER 19489, Febr. 1915 (B); Tamberoe, VORDERMAN 67 (B); E. of Tamberoe, BACKER 20577, March 1915 (B); P. Poeteran, N. and S. side, BACKER 20776, March 1915 (B); Kangean Islands, Kangean, N. of Ardjasa, BACKER 26761, March 1919 (B); id., id., Kajoe Waroe, BACKER 28070, Apr. 1919 (B); id., id., Djoekoeng djoekoeng, BACKER 27573, March 1919 (B); id., P. Mamboerit, BACKER 27260, March 1919 (B); id., Paliat, BACKER 29356, May 1919 (B); id., Saoebi, BACKER 28363, Apr. 1919 (B); id., Saboenten, BACKER 29818, May 1919 (B); id., Sapapan, BACKER 28466, Apr. 1919 (B); id., Saseël, BACKER 28729, Apr. 1919 (B); id., Sepandjang, BACKER 28820, Apr. 1919 (B).

BORNEO, S. and E. division, Balikpapan, RUTTEN 64, May 1910 (U); Pembeliangan, AMDJAH 812, Oct. 1912 (B, L, U); Sarawak (according to MERRILL, 1921).

CELEBES, without locality, DE VRIESE & TEYSMANN 24, 216 (L); Celebes and Dependencies, Papang, RACHMAT 247 (exped. VAN VUUREN), July 1913 (B, L); Madjene, RACHMAT 137 (exped. VAN VUUREN), July 1913 (B); Kendari, KJELLBERG 1228, Apr. 1929 (B); Salajar, DOCTERS VAN LEEUWEN 1865, May 1913 (B, U); id., S. Salajar, W. side, Barang-barang, seedlings, DOCTERS VAN LEEUWEN 1909, May 1913 (B); Boeton, Konkeong Rea, on limestone and red loam, 200—300 m (probably incorrect), ELBERT 2832, 6817, 6818, 6819, Nov. 1909 (L); id., P. Kabaena, DE BOER, Forestry Experiment Station, BB. 3642, June 1921 (B); Manado, Likoepong, FORSTEN 12, Sept. 1840 (L); Kedoenggala, KOORDERS 16572  $\beta$ , Dec. 1894 (B, L); Ratatotok, KOORDERS 16571  $\beta$ , 16573  $\beta$ , March 1895 (B, L); Karoewatoe, KOORDERS 16586  $\beta$ , March 1895 (B, L); Talaud Islands, Karakelang, S. of Beo, LAM 2479, Apr. 1926 (B).

BALI, way Kintamani—Den Pasar, waysides, dikes of rice-fields, c. 2.5 km from the coast, VAN STEENIS 8130, Apr. 1936<sup>1)</sup> (B).

LOMBOK. The numbers 1513 and 2477 (L) collected by ELBERT in Lombok are very probably wrongly labeled (Rindjani, N. E. side, Sembaloen-plateau, 1185—1265 m, ELBERT 1513, May 1910 (L) and Mount Sepi, on limestone, 0—300 m, ELBERT 2477, July 1909 (L)).

SOEMBAWA, S. E. Bima, Oei-oet, S. E. slope to Waworadabay, on limestone, ELBERT 3905, Dec. 1909 (L); W. Soembawa, Lenangoea, river bank, 30 km from the coast, 300 m, DE VOOGD 2571, June 1936 (B).

TIMOR, S. Middle Timor, Kolbano, Mrs. WALSH 364, Apr. 1929 (B).

<sup>1)</sup> A fruiting specimen; see VAN STEENIS, *Ipomoea pes caprae* met vruchten in het binnenland, in Trop. Nat. XXVI (1937) p. 70—72.

MOLUCCAS, Ternate, Doefa doefa, BEGUEN 911, Oct. 1920 (B); Obi, SAÄNAN 74 (exped. VAN HULSTIJN) (B, L); Ceram, between Seti and Kobi, RUTTEN 383, Oct. 1917 (B); Pasir poetih, fields behind the beach, frequent, KORNASSI 191, Oct. 1917 (B, L, U); Wai Kapoetih, RUTTEN 1741, Oct. 1918 (B, L, U); Kilmoei, KORNASSI 783, Jan. 1918 (B, L, U); Ambon, ROBINSON 400, July—Nov. 1913 (B, L); Banda, coll. unknown (L); Kai Islands, Elat, JENSEN 142, Apr. 1922 (B, L).

NEW GUINEA, Netherlands New Guinea, without locality, KOCH A 7b (L); Schouten Islands, Biak, N. coast, FEUILLETAU DE BRUYN 294, Aug. 1913 (B); Hollandia, GJELLERUP 146, May 1910 (B); Territory of New Guinea, Finschhafen, HOLLRUNG 181 (B); Hatzfeldthafen; Constantinhafen; Huon Bay (SCHUMANN); Papua, Hisiu, CARE 11418, Febr. 1935 (L); W. Division, Daru Island, trailing on a low ridge of drift sand within mangroves, BRASS 6231, Febr. 1936 (L); Port Moresby (according to VON MUELLER, Pap. Pl. V, 1877, p. 91).

BISMARCK ARCHIPELAGO, New Britain (according to SCHUMANN & LAUTERBACH).

PHILIPPINE ISLANDS. "It occurs throughout the Philippines along the seashore, a characteristic species of the sandy beaches; also along the shores of some lakes." (MERRILL). Luzon, AHERN 299 Q (B); id., Cagayan prov., Aparri, MERRILL 334, June 1902 (B); Union prov., Bauang, ELMER 5649, Febr. 1904 (B); Bataan prov., Lamao River, Mt. Mariveles, MEYER, For. Bur. 2293, Dec. 1904 (B); Rizal prov., Manila, MERRILL, Spec. Blanc. 105, Nov. 1914 (B, L); Sorsogon prov., Irosin, ELMER 16768, July 1916 (B, L, U); Basilan, REILLO s. n., Sept. 1912 (L).

Distribution: Circumtropical.

Habitat: On and immediately behind sandy sea-shores, occasionally in the interior<sup>1)</sup> along waysides, ditches and canals.

Vernacular names: See HEYNE, Nutt. Pl., l. c. p. 1304. Further names are: geitepoot (Dutch); tepah kudah (Malay Peninsula, RIDLEY); balaleun (Sumatra, Simaloe, ACHMAD); tatosan (Sund., Sumatra, Lang Island, BOERLAGE); doan tapa koeda (Sumatra, Riouw Arch., BÜNNEMEYER); tjap koeda (Sumatra, Lingga Arch., BÜNNEMEYER); daoen barah (Sumatra, Anambas and Natoena Islands, VAN STEENIS); tatapajan (Java, Batavia, RAAP); boboledan (Sund., Java, Preanger, KOORDERS, WINCKEL); korak (Jav., Java, Banjoemas, KOORDERS); balaran (Jav., Java, Pekalongan, KOORDERS); belaran poetih, korakan (Jav., Java, Banjoemas, KOORDERS, VAN STRAELEN); katang (Jav., Java, Djapara-Rembang, KOORDERS); katang-katang (Karimoendjawa Islands, Bawean, KARTA); Kangean Islands, BACKER); loendo (Bawean, KARTA); tjalere (Celebes,

<sup>1)</sup> Cf. RIDLEY, Fl. Malay Penins. II (1923) p. 460 (Malay Peninsula); BOOBERG in Handel. 7e Ned. Ind. Natuurw. Congres (1936) p. 403 (Java, Bali); VAN STEENIS in Trop. Nat. XXVI (1937) p. 70 (Bali); id. in Trop. Nat. XXVI (1937) p. 156 (S. Celebes); id. in Trop. Nat. XXVII (1938) p. 142 (S. Celebes).

RACHMAT); tali watata inlawanan (Celebes, TEYSMANN); manaring-pante (Celebes, Manado, Tomboeloe language, KOORDERS); andaliaran'a (Talaud Islands, LAM); baro baro, katang katang (Ceram, KORNASSI); bombarie (Banda); wimgamiere (Netherlands New Guinea, KOCH); urur (Territ. of New Guinea, SCHUMANN & HOLLRUNG); aroidaidái, katang-katang, lagairái (Philippines, Tagalog and Bicol languages, MERRILL); kamigang, bagasúa' (Philippines, Tagalog and Bisaya languages, MERRILL); daripai (Philippines, Tagalog, Bicol and Bisaya languages, MERRILL); balim-balim, kabai-kabái, kamokamotíhan, tagarai (Philippines, Tagalog language, MERRILL); palang-palang, polang-polang (Philippines, Panay Bisaya language, MERRILL); lagilai (Philippines, Bagobo language, MERRILL); lambaiong (Philippines, Sulu and Ilóko languages, MERRILL); daloidói (Philippines, Bicol language, MERRILL); kamkamóte (Philippines, Ilóko language, MERRILL); vadinó (Philippines, Ivatán language, MERRILL). Also see DE CLERCQ—PULLE, Nieuw Plantk. Woordenb. ed. 2 (1927) p. 126.

Use: See WATT and HEYNE, l.l.c.c. According to VAN STRAELEN the sap of the stems is used in the island of Noesa Kambangan as a medicine against bites and stings of fishes.

ssp. *Pes-caprae* (L.) VAN OOSTSTR., nov. ssp. — *Convolvulus Pes caprae* L., Spec. Pl. ed. 1 (1753) p. 159; ROXB., Fl. Ind., ed. CAREY, I (1832) p. 486 — *Ipomoea biloba* FORSK., Fl. Aegypt.-Arab. (1775) p. 44 — *I. Pes-caprae* (L.) SWEET var. *biloba* (FORSK.) HALL. f. in Ann. R. Istit. Bot. Roma VII (1898) p. 231; id. in Bull. Herb. Boiss. sér. 2, I (1901) p. 675.

Differs from the preceding subspecies in the form of the leaves and the dimensions of calyx and corolla. The leaves are in the average smaller, deeply two-lobed, with rounded lobes; the leaf base is cuneate to attenuate into the petiole. The outer sepals are c. 9 mm long, the inner ones c. 13 mm long; the corolla is 6.5 cm long.

SUMATRA, *Tapanocli*, Batoe Islands, T. Batoe, RAAP 694, Febr. 1897 (B); Lampong Districts, Krakatau, Zwarte Hoek, BACKER 32327, June 1908 (B).

Distribution: East Africa (Somaliland), Continental Tropical Asia, Malay Archipelago.

Habitat: Sandy beaches.

Remarks. The ssp. *Pes-caprae* is based on *Convolvulus Pes caprae* L., characterized by LINNAEUS in the first edition of the Species Plantarum with the words:

CONVOLVULUS foliis bilobis, pedunculis unifloris.

*Convolvulus foliis bilobis. Fl. Zeyl. 75.*

*Convolvulus foliis subrotundis apice emarginatis basi integris. Roy. lugdb. 428.*

*Convolvulus maritimus zeylanicus, folio crasso cordiformi. Herm. lugdb. 174. t. 175.*

*Schovanna-adamboe. Rheed. mal. 11. p. 117. t. 57.*

*Habitat in India.*

The base of ssp. *brasiliensis* is *Convolvulus brasiliensis* L. described in the first edition of the *Species Plantarum* immediately after *C. Pes caprae* L.:

CONVOLVULUS foliis emarginatis, pedunculis trifloris.

*Convolvulus marinus catharticus, folio rotundo, flore purpureo. Plum. amer. 89. t. 104.*

*Convolvulus marinus s. Soldanella brasiliensis. Marcgr. bras. 51. Pis. bras. 258.*

*Habitat in Brasiliae, Domingo maritimis.*

Short as the descriptions given by LINNAEUS are, there is no doubt, that LINNAEUS used the name *C. Pes caprae* for specimens with deeply 2-lobed leaf blades, whereas the name *C. brasiliensis* was used on the contrary for specimens with emarginate leaf blades. A comparison of the plate of RHEEDE and that of PLUMIER can only confirm this opinion.

20. *Ipomoea asarifolia* (DESR.) R. & SCH., Syst. IV (1819) p. 251; HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 145; KOORDERS, Exk. fl. Java III (1912) p. 121 — *Convolvulus asarifolius* DESR. in LAMK., Encycl. III (1789) p. 562 — *Ipomoea repens* LAMK., Tabl. Encycl. I (1791) p. 467, non ROTH; TRIMEN, Handb. Fl. Ceyl. III (1895) p. 222; BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 172; GAMBLE, Fl. Pres. Madras V (1923) p. 916 — *Convolvulus rugosus* ROTTL. in Ges. Naturf. Fr. Neue Schr. IV (1803) p. 196 — *Ipomoea Beladamboe* R. & SCH., Syst. IV (1819) p. 233; CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 209; GAGNEP. & COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 260 — *Convolvulus Beladambu* (R. & SCH.) SPRENG., Syst. I (1825) p. 608 — *Ipomoea rugosa* (ROTTL.) CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 446; id. in DC., Prodr. IX (1845) p. 350; WIGHT, Icon. III, t. 887; MIQ., Fl. Ned. Ind. II (1857) p. 602 — *I. urbica* (SALZM.) CHOISY in DC., Prodr. IX (1845) p. 349 — *Convolvulus urbicus* SALZM. ex CHOISY in DC., Prodr. l. c., pro syn.

A perennial prostrate or sometimes twining herbaceous plant, much resembling *I. Pes-caprae*. Stems thick, terete or angular, striate in dry specimens. Leaves petiolate; petiole rather thick, with a deep longitu-

dinal groove above, smooth or minutely muricated, 3—9 cm long; blade orbicular to kidney-shaped, broadly rounded at the apex, not or slightly emarginate, minutely mucronate, cordate at the base with very wide to narrow sinus, the auricles rounded; length of blade 3.5—8 cm, width 3.5—10 cm. Inflorescences axillary, together with an axillary leafy shoot (or only 2 leafy shoots from a leaf-axil); peduncle angular, shorter or slightly longer than the petiole, 2—5.5(—10) cm, cymosely 1- or few-flowered; at least the central flower of the cyme with a pedicel much longer than the calyx, 14—24 mm long; sepals unequal, the outer ones shorter, all elliptic-oblong, obtuse, mucronulate, the outer ones 3-nerved, more or less muricated, 5—6 mm long, inner ones 8—9 mm; corolla red-purple, funnel-shaped, c. 5 cm long, glabrous; stamens and style included; stamens inserted c. 4 mm above the base of the corolla; filaments unequal, filiform, glabrous, except the shortly pilose dilated base; anthers lanceolate, c. 4 mm long (in open flower); ovary glabrous; style filiform, glabrous; stigma biglobular, papillose; capsule globose, glabrous, c. 15 mm in diam.; seeds glabrous, as large as a pea (BAKER & RENDLE).

JAVA, Besoeki, Bondowoso, ZOLLINGER 2933, June 1845 (B, originally mixed with *I. Pes-caprae*).

BALI, Moengoeran, SARIP 22 (exped. MAIER), July 1918 (B, L).

**Distribution:** Tropical America, Cape Verde Islands, tropical Africa, tropical Asia.

**Habitat:** In marshy grasslands; between 1 and 250 m.

**Vernacular name:** kangkong (Bali, SARIP).

21. *Ipomoea stolonifera* (CYRILL.) GMEL., Syst. Veget. I (1796) p. 345; POIR. in LAMK., Encycl. VI (1804) p. 20; BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 171; MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 368 (*I. stolonifera* (CYRILL.) POIR.) — *Convolvulus littoralis* L., Syst. ed. 10 (1759) p. 924 — *C. stoloniferus* CYRILL., Pl. Rar. Neap. I (1788) p. 14 — *C. acetosaefolius* VAHL, Eclog. Am. I (1796) p. 18 — *Ipomoea carnosa* R. BR., Prodr. Fl. Nov. Holl. (1810) p. 485; BENTH., Fl. Austr. IV (1869) p. 420; CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 213; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1061; GAGNEP. & COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 238; RIDLEY, Fl. Malay Penins. II (1923) p. 461 — *I. acetosaefolia* (VAHL) R. & SCH., Syst. IV (1819) p. 246 — *Batatas littoralis* (L.) CHOISY in Mém. Soc. Phys. Genève VIII (1838) p. 46; id. in DC., Prodr. IX (1845) p. 337 — *B. acetosaefolia* (VAHL) CHOISY in Mém. Soc. Phys. Genève VIII (1838) p. 46; id. in DC., Prodr. IX (1845) p. 338 — *Ipomoea littoralis* (L.) BOISS., Fl. Orient. IV (1879) p. 112; non BLUME, 1825; HALL. f. in

ENGL., Bot. Jahrb. XVIII (1893) p. 144; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 512; PRAIN in Journ. As. Soc. Bengal LXXIV (1906) p. 316; KOORDERS, Exk. fl. Java III (1912) p. 119; BACKER in Trop. Nat. VII (1918) p. 55, fig. 9.

A glabrous perennial; stems to 5 m long (BACKER), trailing, rooting at the nodes, terete, wrinkled, glabrous. Leaves petiolate; petiole 0.5—4 cm long; blade fleshy, very variable in form, often of various forms on the same plant, linear, lanceolate, ovate or oblong with entire or undulate margin, obtuse or emarginate or 2-lobed at the apex, obtuse, truncate or cordate at the base, or the blade is three- to five-lobed with a lanceolate to ovate or oblong, large middle-lobe and smaller lateral lobes; blade 1.5—4(—6) cm long, 1—3(—5) cm broad. Inflorescences axillary, peduncled; peduncle short, 12—15 mm long, cymosely 1- or occasionally 2—3-flowered; pedicels 8—15 mm, in fruit up to 25 mm long; bracts minute, linear, 2—3 mm long; sepals subcoriaceous, glabrous, pale green, unequal, the exterior ones shorter, all oblong, acutish to obtuse, the top attenuate into a distinct mucro, the inner ones 10—15 mm long; corolla funnel-shaped, glabrous, white, pale yellow inside and with a purple centre, 3.5—5 cm long; stamens and style included; stamens inserted 4—5 mm above the corolla base; filaments filiform, unequal, hairy at the dilated base; anthers linear-oblong, sagittate, c. 4 mm long; ovary glabrous; style filiform, glabrous; stigma biglobular, papillose; disk annular; capsule globular, smooth, c. 1 cm high, 4-valved, 2-celled, 4- or less-seeded; seeds c. 8 mm long, short-tomentose and with longer hairs along the edges.

MALAY PENINSULA, sea sands, not common (RIDLEY); Pahang, Pulau Tioman, Joara Bay, BURKILL, Singapore Field n. 978 (B); Malacca (PRAIN, RIDLEY).

JAVA, Madoera, W. of Ketapangdaja, BACKER 19994, March 1915 (B, L); Amboenten, JESWIET 1054, Aug. 1925 (W); id., BACKER 36469, March 1928 (Pa); W. and E. of Amboenten, BACKER 21210, July 1916 (B).

PHILIPPINE ISLANDS, Luzon, Cagayan (MERRILL, 1923); Babuyan Islands, Camiguin (MERRILL, 1923).

Distribution: Tropical and subtropical countries of both hemispheres.

Habitat: Sandy sea-shores, dunes; between 0 and 5 m.

22. *Ipomoea violacea* L., Spec. Plant. ed. 1 (1753) p. 161 — *I. tricolor* CAV., Icon. III (1794) p. 5, t. 208; CHOISY in DC., Prodr. IX (1845) p. 359; HALL f. in Versl. 's Lands Pl. t. 1895 (1896) p. 130; DUTHIE, Fl. Upper Ganget. Pl. II (1911) p. 117 — *Convolvulus violaceus* (L.) SPRENG., Syst. I (1825) p. 599 — *Ipomoea rubro-caerulea* HOOK., Bot. Mag. (1834) t. 3297; CHOISY in DC., Prodr. IX (1845) p. 375 —

*Pharbitis violacea* (L.) BOJ., Hort. Maurit. (1837) p. 227; CHOISY in DC., Prodr. IX (1845) p. 344 — *Convolvulus rubro-caeruleus* (HOOK.) DIETR., Syn. Pl. I (1839) p. 670 — *Pharbitis rubro-caerulea* (HOOK.) PLANCH., in Fl. des Serres IX (1854) p. 281, t. 966.

A herbaceous glabrous twiner. Stems terete; leaves petiolate; petiole thin, 1.5—6 cm long; blade ovate, long-acuminate at the apex with acute, mucronulate acumen, cordate at the base, 3.5—7 cm long and 2.5—6 cm broad. Inflorescences axillary; peduncles as thick as the stems, fistulose, terete, 3—9 cm long, cymosely branched at the top; pedicels long, much longer than the calyces, 15—18, afterwards to 25 mm; bracts minute, triangular; sepals subequal, green with white margin, carinate along the midrib, narrow-triangular to ovate-lanceolate, gradually narrowed towards the top, 4.5—6 mm long; corolla violet-blue or purple, with a white tube, funnel-shaped, glabrous, 4—6 cm long; stamens and style included; stamens inserted 4—5 mm above the base of the corolla; filaments filiform, slightly dilated at the base, glabrous, very unequal; anthers linear, sagittate, in open flower c. 3 mm long; ovary glabrous; style filiform, glabrous, articulate close to the base; stigma biglobular, papillose. Capsule pale straw-coloured, ovoid, c. 8—10 mm long, mucronate by the base of the style, opening by 4 valves, 2-celled, 4-seeded; dissepiment persistent; seeds minutely puberulent, nearly 5 mm long, black.

TIMOR, North Middle Timor, Maobessi (Insana), locally frequent, c. 400 m, Mrs. WALSH 399, June 1929 (B).

Distribution: Mexico, Central America, West Indies, tropical South America; elsewhere cultivated and perhaps occasionally escaped from culture.

Habitat: Unknown.

Vernacular name: non loeli (Timor, Mrs. WALSH).

23. *Ipomoea cairica* (L.) SWEET, Hort. Brit. (1827) p. 287; HALL, f. in ENGL., Bot. Jahrb. XVIII (1893) p. 148; id. in Versl. 's Lands Pl. t. 1895 (1896) p. 130; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 512; KOORDERS, Exk. fl. Java III (1912) p. 118; GAMBLE, Fl. Pres. Madras V (1923) p. 918, excl. syn. *I. pulchella* ROTH; MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 364; DEGENER & VAN OOSTSTR. in DEGENER, Fl. Hawaiiensis (1938) — *Convolvulus cairicus* L., Syst. ed. 10 (1759) p. 922 — *Ipomoea palmata* FORSK., Fl. Aegypt.-Arab. (1775) p. 43; CHOISY in DC., Prodr. IX (1845) p. 386; BENTH., Fl. Austr. IV (1869) p. 415; CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 214; WARB. in ENGL., Bot. Jahrb. XIII (1891) p. 413; TREMEN, Handb. Fl. Ceyl. III

(1895) p. 225; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1057; BAKER & RENDLE in THIS.-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 178 — *Convolvulus tuberculatus* DESR. in LAMK., Encycl. III (1789) p. 545 — *Ipomoea stipulacea* JACQ., Hort. Schoenbr. II (1797) p. 39, t. 199 — *I. tuberculata* (DESR.) R. & SCH., Syst. IV (1819) p. 208; MIQ., Fl. Ned. Ind. II (1857) p. 619; HILLEBR., Fl. Hawaiian Isl. (1888) p. 315 — *Convolvulus paniculatus* NAVES in BLANCO, Fl. Filip. ed. 3 (1877—83) t. 32, non BLANCO (according to MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 364).

A glabrous twiner (or occasionally prostrate) with a tuberous root. Stems more or less tuberculate or smooth, yellowish. Leaves petiolate; petiole 2—6 cm long; blade ovate to orbicular in outline, thin, palmately cut to the base into 5 lanceolate or ovate-lanceolate to ovate or elliptic basally and apically acuminate entire segments with acute or obtusish mucronulate top, the basal pair of segments usually again lobed or parted; length and width of leaves 3—10 cm; petiole often with pseudostipules (small leaves of the axillary shoot) at its base. Inflorescences axillary, pedunculate, cymosely 1—few-flowered, the peduncle 0.5—7 cm; pedicels 12—20 mm long; bracts minute; sepals subequal or the exterior ones slightly shorter, 4—6.5 mm long, often minutely tuberculate without, thick, green, with pellucid dots and with pale, scarious margin, the exterior ones ovate, obtuse to acutish, mucronulate, the interior ones broader, obtuse, mucronulate; corolla funnel-shaped, with the tube contracted near the base at the place of insertion of the filaments, 4.5—6 cm long, white with purplish-red tinge on both surfaces and purplish-red towards the base only on the inner surface, occasionally entirely white (var. *florae albo* HALL. f. <sup>1</sup>); stamens and style included; stamens inserted about 5 mm above the corolla base; filaments filiform, unequal, hairy at the dilated base; anthers linear-oblong, sagittate, c. 5—7 mm long; ovary glabrous; style filiform, glabrous; stigma biglobular, papillose; disk annular; capsule smooth, subglobose, 10—12 mm high, 4-valved, 2-celled, 4- or less-seeded; seeds c. 5—6 mm long, densely short-tomentose and with long (to 9 mm), silky hairs along the edges.

MALAY PENINSULA. Cultivated in every town, not wild anywhere (RIDLEY). Selangor, Port Swettenham, BURKILL, Singapore Field n. 1283, Aug. 1917 (B); Singapore, Botanic Garden, NUR s. n., June 1929 (B). Also in Malacca (PRAIN, as *I. pulchella* ROTIL, see remarks).

JAVA, Batavia, Moeara baroe, SCHIEFFER s. n., Aug. 1871 (B); Weltevreden,

<sup>1</sup>) HALL. f. in Versl. 's Lands Pl. t. 1895 (1896) p. 130; based on specimens cultivated in the Botanic Garden at Buitenzorg under n. XV. H. 25 and 25A.

Tanah abang, BACKER 32317, 32318, June 1902 and Jan. 1903 (B); Buitenzorg, Buitenzorg, cult. in a hedge, HALLER 215a and b, Apr.—May and March 1893 (B); Priangan, Sindanglaja, cult., KOORDERS 42179  $\beta$ , 42676  $\beta$ , Aug. 1913 (B).  
MOLUCCAS, Ceram laeet (WARBURG, 1891).

PHILIPPINE ISLANDS; widely distributed in cultivation, occurring also in waste places and thickets near dwellings (MERRILL). Luzon, Rizal prov., Manila, MERRILL 47, May 1902 (B); id., id., MERRILL, Bur. of Sc. 1432, Sept. 1911 (B, L); prov. of Laguna, MABESA, For. Bur. 26754, Febr.—Apr. 1917 (B); id., Los Baños, Mt. Maquiling, ELMER 18168, June—July 1917 (B, L, U).

Distribution: Of wide distribution in tropical Asia and Africa, naturalized elsewhere.

Habitat: Cultivated; wild in waste places, thickets etc.

Vernacular names: railway creeper (Malay Peninsula, PRAIN); tatampajan (Java, Batavia, SCHEFFER); aurora (Spanish, Philippines, MERRILL).

Remarks. Several authors <sup>1)</sup> have wrongly mentioned this species under the name of *I. pulchella* ROTH. The true *I. pulchella* is a species with a much smaller, c. 1.5 cm long, corolla, differing, moreover, in several other characteristics.

24. *Ipomoea coptica* (L.) ROTH apud R. & SCH., Syst. Veg. IV (1819) p. 208; ROTH, Nov. Pl. Spec. (1821) p. 110; CHOISY in DC., Prodr. IX (1845) p. 384; HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 147; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 512; HALL. f. in ENGL., Bot. Jahrb. XXVIII (1899) p. 45 — *Convolvulus copticus* L., Mant. II, App. (1771) p. 559 — *Ipomoea dissecta* WILLD., Phytogr. (1794) p. 5, t. 2; MIQ., Fl. Ned. Ind. II (1857) p. 608; BENTH., Fl. Austr. IV (1869) p. 416; SCHEFFER in Ann. Jard. Bot. Buit. I (1876) p. 39; CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 200; PRAIN in Journ. As. Soc. Bengal LXIII (1894) p. 104; TRIMEN, Handb. Fl. Ceyl. III (1895) p. 213; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1058; BAKER & RENDLE in THS.-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 176; DUTHIE, Fl. Upper Ganget. Pl. II (1911) p. 115.

Annual, glabrous. Stems herbaceous, slender, trailing or sometimes twining. Leaves petiolate; petiole mostly shorter than the blade, 3—8 (—20) mm long, with pseudostipules (small leaves of the axillary shoot) at the base; blade digitate, orbicular in outline, 1—3 cm long and broad, with 5 coarsely dentate to deeply and irregularly, once or sometimes twice

<sup>1)</sup> In literature relative to tropical Asia: WIGHT, Icon. I (1840) t. 158; PRAIN in Journ. As. Soc. Bengal LXXIV (1906) p. 312; DUTHIE, Fl. Upper Ganget. Pl. II (1911) p. 117; GAGNER. & COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 257; RIDLEY, Fl. Malay Penins. II (1923) p. 460.

pinnatifid segments, the teeth or lobes of the segments mostly acute; the middle segment larger than the lateral ones, ovate, oblong, lanceolate or oblanceolate in outline, the two basal segments sometimes 2-lobed again. Peduncles axillary, narrowly 2-alate, mostly shorter than the leaves, 1—3.5 cm long, cymosely 1—3-flowered; bracts lanceolate, entire (var. *genuina* HALL. f.<sup>1</sup>), very acute, small, 1.5—3 mm, or sometimes larger and palmately lacinate like the leaves (var. *acuta* CHOISY<sup>2</sup>); pedicels 4—5 (—7) mm long, at first erect, afterwards in fruit bent downwards; sepals thinly coriaceous, subequal, oblong or elliptic, minutely cuspidate, verruculose on the back, c. 4 mm long; corolla small, white, funnel-shaped, c. 12 mm long; capsule globose, c. 7—8 mm in diam., glabrous, 3-celled, 6-seeded; seeds c. 2.5 mm long, densely greyish-tomentose.

MALAY PENINSULA, Penang (according to MIQUEL, l.c.).

NEW GUINEA, Netherlands New Guinea, near Doré (according to SCHEFFER, l.c.; collected there by TEYSMANN).

Distribution: Tropical and South Africa, tropical Asia, North Australia.

Habitat: Unknown.

25. *Ipomoea diversifolia* R. BR., Prodr. Fl. Nov. Holl. ed. 1 (1810) p. 487; BENTH., Fl. Austr. IV (1869) p. 416; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1057; MERRILL in Philipp. Journ. Sc. XIII (1918) p. 57; id., Enum. Philipp. Fl. Pl. III (1923) p. 365 — *Convolvulus diversifolius* (R. BR.) SPRENG., Syst. I (1825) p. 592 — *Pharbitis laciniata* DALZ. in HOOK., Kew Journ. of Bot. III (1851) p. 178 — *Ipomoea laciniata* (DALZ.) CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 200.

Annual, glabrous. Stems herbaceous, slender, trailing or twining. Leaves petiolate; petiole mostly shorter than the blade, 3—12 mm long, with pseudostipules (small leaves of the axillary shoot) at the base; blade digitate, orbicular in outline, 1—2.5(—5) cm long and broad, with 5 coarsely and irregularly dentate to pinnatifid segments, the two basal of which sometimes bifid, the middle segment larger than the lateral ones, all narrow-oblong to oblanceolate in outline; peduncles axillary, angular or flattened, shorter than the leaves, 7—20 mm long, mostly 1-, sometimes to 3-flowered; bracts lanceolate, very acute, small, c. 3 mm; pedicels erect, 8—12, in fruit to 15 mm, at least in fruit thickened towards the calyx and erect; sepals elliptic or narrow-elliptic or oblong-lanceolate, cuspidate or acute, subequal or the inner ones slightly longer, 6—10 mm

<sup>1</sup>) HALL. f. in ENGL., Bot. Jahrb. XXVIII (1899) p. 45.

<sup>2</sup>) CHOISY in DC., Prodr. IX (1845) p. 384; HALL. f. in ENGL., Bot. Jahrb. XXVIII (1899) p. 47.

long, the back carinate and muricated; corolla white, purple inside at the tube, nearly 5 cm long, funnel-shaped, with long tube; capsule subglobose, glabrous; seeds densely tomentose.

PHILIPPINE ISLANDS, Luzon, prov. Ilocos Norte, Bangui, (according to MERRILL, 1918, 1923; I did not see the specimens mentioned by MERRILL).

D i s t r i b u t i o n: British India, Philippines, Northeastern Australia.

H a b i t a t: In grasslands at low altitudes.

R e m a r k s. *I. diversifolia* R. BR. is only known to me from the descriptions by ROBERT BROWN, BENTHAM and MANSON BAILEY. According to some identifications in the Rijksherbarium at Leiden, by HALLIER, *I. laciniata* (DALZ.) CLARKE<sup>1</sup>) from British India is identic. MERRILL based his identification of the Philippine plants only on the descriptions mentioned.

26. *Ipomoea graminea* R. BR., Prodr. Fl. Nov. Holl. ed. 1 (1810) p. 485; BENTH., Fl. Austr. IV (1869) p. 421; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1062 — *Convolvulus gramineus* (R. BR.) SPRENG., Syst. I (1825) p. 607.

This species is unknown to me. ROBERT BROWN collected it on the islands off Cape Wilberforce (North Australia), and BENTHAM (Fl. Austr. IV (1869) p. 421) only knew it from that locality. According to VON MUELLER'S CENSUS it is also known from Queensland. The original description of ROBERT BROWN l. c. reads:

"*I. graminea*, glabra, foliis elongato-linearibus mucronatis integerrimis, pedunculis unifloris, calycibus obtusis, corollis longissimis (T.) v.v."

BENTHAM describes the species as follows:

"A slender, glabrous twiner. Leaves on short petioles, linear-lanceolate or linear, entire, 4 to 8 in. long. Peduncles 1-flowered, ½ to 1½ in. long (including the pedicel), with very small distant bracts. Sepals oblong, obtuse, ½ in. long or rather more, the outermost one shorter. Corolla 2½ to 3 in. long, contracted into a slender tube."

There are two specimens from Papua in the Rijksherbarium at Leiden, both in fruiting state, which fairly well agree with these descriptions:

NEW GUINEA, Papua, Aroa River, CARR 11461, Febr. 1935 (L); Mabaduan, W. Division, not common, BRASS 6565, Apr. 1936 (L).

D i s t r i b u t i o n: N. Australia, Queensland, New Guinea.

<sup>1</sup>) These specimens of *I. laciniata* (DALZ.) CLARKE, from British India, I used for the description.

**Habitat:** Amongst grasses in open savannah-land and savannah-forests; at low altitudes.

**Remarks.** CARR mentions that the flowers are white and that they open in the evening; BRASS calls them dirty white and supposes they are nocturnal blooming.

Subsection 2. *Calonyction* (CHOISY) HALL. f.

HALL. f. in Meded. Rijksherb. Leiden 46 (1922) p. 19 — genus *Calonyction* CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 441 — *Ipomoea* section *Calonyction* (CHOISY) GRISEB., Fl. Brit. West Indian Isl. (1864) p. 466, p.p. — *Ipomoea* subgenus *Calonyction* (CHOISY) CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 197.

Annual (or perennial<sup>1</sup>) herbaceous twiners, glabrous or sometimes pubescent or hirsute; stems often muricated; leaves cordate, sometimes angular, herbaceous. Flowers nocturnal, axillary, solitary or often in a cincinnus or in a dichasial cyme; sepals herbaceous to membranaceous, glabrous or sometimes hirsute, long-aristate or rarely blunt, subequal or the exterior ones smaller; corolla large, actinomorphic or slightly zygomorphic, white, pink or lilac, glabrous, salver-shaped, the tube very long, narrow-cylindrical or rarely widened above the middle; stamens and styles often exerted; ovary glabrous, 2-celled or rarely 4-celled, 4-ovuled; stigma biglobular; capsule 4-valved, 4-seeded; seeds large, glabrous, opaque.

27. *Ipomoea alba* L., Spec. Pl. ed. 1 (1753) p. 161; HALL. f. in Meded. Rijksherb. Leiden 1 (1911) p. 25; id., in Meded. Rijksherb. Leiden 46 (1922) p. 19 — *Convolvulus aculeatus* L., Spec. Pl. ed. 1 (1753) p. 155 — *Ipomoea bona-nox* L., Spec. Pl. ed. 2 (1762) p. 228; CURTIS, Bot. Magaz. XIX (1804) t. 752; BL., Bijdr. (1825) p. 712; CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 197; FORBES, Wander., Germ. ed. II (1886) p. 222; HILLEBR., Fl. Hawaiian Isl. (1888) p. 314; SCHUM. & HOLLR., Fl. Kais. Wilh. Land (1889) p. 115; WATT, Diet. Econ. Prod. India IV (1890) p. 483; PRAIN in Journ. As. Soc. Bengal LXIII (1894) p. 101; TRIMEN, Handb. Fl. Ceyl. III (1895) p. 213; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1061 — *Convolvulus bona-nox* (L.) SPRENG., Syst. I (1825) p. 600 — *Calonyction speciosum* CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 441, t. 1, fig. 4, excl. var. b; DECAISNE, Herb. Timor. (1835) p. 62; SPANOGHE in Linnæa XV (1841) p. 338;

<sup>1</sup>) See HALLIER in Bull. Herb. Boiss. V (1897) p. 1038—1039.

CHOISY in DC., Prodr. IX (1845) p. 345, excl. var.  $\gamma$  ex p. et var.  $\delta$  (cf. HALL. f. in Bull. Herb. Boiss. V, p. 1030); ZOLL., Syst. Verz. 2. Heft (1854) p. 128; MIQ., Fl. Ned. Ind. II (1857) p. 596, excl. var.  $\gamma$  et  $\delta$  (cf. HALL. f. in Bull. Herb. Boiss. V, p. 1030); id., Suppl. (1860) p. 235; HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 153; GAGNEP. & COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 285 — *C. bona-nox* (L.) BOJ., Hort. Maur. (1837) p. 227; HALL. f. in Versl. 's Lands Pl. t. 1895 (1896) p. 130; id. in Bull. Herb. Boiss. V (1897) p. 379, 1028; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 512; SCHUM. & LAUTERB., Fl. Deutsch. Schutzgeb. (1901) p. 515; PRAIN in Journ. As. Soc. Bengal LXXIV (1906) p. 319; DUTHIE, Fl. Upper Ganget. Pl. II (1911) p. 118; KOORDERS, Exk. fl. Java III (1912) p. 122; GAMBLE, Fl. Pres. Madras V (1923) p. 920; RIDLEY, Fl. Malay Penins. II (1923) p. 463; HEYNE, Nutt. Pl., ed. 2 (1927) p. 1306 — *Convolvulus muricatus* BLANCO, Fl. Fil. ed. 1 (1837) p. 92; id., ed. 3, I (1877) p. 127, Ic. II, t. 332, non L.; MERRILL in Bur. Gov. Lab. Philipp. 27 (1905) p. 62; id., Spec. Blanc. (1918) p. 321 — *Calonyction speciosum* CHOISY var. *muricatum* auct.; HASSK., Pl. Jav. Rar. (1848) p. 522, excl. syn. *I. aculeata* BL. — *C. aculeatum* (L.) HOUSE in Bull. Torr. Bot. Club 31 (1904) p. 590; MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 369; OCHSE & BAKHUIZEN VAN DEN BRINK, Indische Groenten (1931) p. 153, fig. 94; (see also HALL. f. in Meded. Rijksherb. Leiden 1 (1911) p. 25, n. 77). For a more detailed list of the synonyms see HALL. f. in Bull. Herb. Bois. V (1897) p. 1028, sub *Calonyction bona-nox* (L.) BOJ.

A glabrous or rarely pubescent (see remarks) twiner, to 5 m high. Stems herbaceous, annual<sup>1)</sup>, to 3—4 mm thick, with a white milky juice, slender, terete, smooth or sometimes muricated. Leaves petiolate; petiole long and slender, 5—20 cm; blade thin, ovate or orbicular in outline, rarely oblong to ovate-oblong, the margin entire, or 3-lobed, often on the same plant; the apex acuminate with acute or obtuse, mucronulate acumen, the base cordate with broad or narrow, rounded sinus and with broadly rounded or sometimes angular auricles; length of blade 6—20 cm, width 5—16 cm; lateral nerves c. 7—8 on each side of the midrib. Inflorescences axillary, 1—several-flowered, the flowers in a cincinnus, rarely dichasial; peduncle stout, terete, 1—24 cm long; pedicels 7—15 mm long, much thickened and clavate in fruit and then to 25 or 30 mm long; bracts small, deciduous; flowers opening at night<sup>2)</sup>,

<sup>1)</sup> See HALLIER in Bull. Herb. Boiss. V (1897) p. 1038—1039.

<sup>2)</sup> See HALLIER in Bull. Herb. Boiss. V (1897) p. 1042—1044; id. in Meded. Rijksherb. Leiden 46 (1922) p. 19, note.

fragrant; sepals coriaceous, elliptic, glabrous, unequal, the 2 or 3 exterior ones shorter and with a long, thick recurved or patent awn, the interior ones longer, mucronulate with a much shorter and thinner mucro; exterior sepals 5—10 mm long, awn 4—8 mm; interior sepals 8—15 mm long, mucro 2—3 mm; sepals often reflexed in fruit; corolla white with greenish bands, hypocrateriform, the cylindrical tube 7—12 cm long, suddenly expanding into the 11—14 cm broad rotate limb; stamens and style exerted; stamens inserted in the upper part of the corolla tube; filaments filiform, glabrous, white; ovary glabrous; style filiform, glabrous; stigma biglobular, papillose; capsule ovoid, mucronate by the persistent base of the style, 2.5—3 cm high, 4-valved with oblong valves, 2-celled, 4-seeded; seeds glabrous, smooth, brown or black, 10—12 mm long, 7—8 mm broad.

MALAY PENINSULA. Often cultivated in gardens, but does not establish itself outside (RIDLEY). According to PRAIN cultivated in Penang and in Singapore.

SUMATRA, without locality, KORTHALS 119 (L); West Coast, Padang, KORTHALS 235 (L); Pariaman, DIEPENHOFST 2123 HB (B); Fort de Koek, cult., JACOBSON 2137, Dec. 1922 (B); Palembang, Komering-hoeloe, dry ricefields, cult., GRASHOFF 598, Aug. 1915 (B); Lampung Districts, between Kenali and Negarabatin, CRAMER 120, Aug. 1915 (B).

JAVA, without locality, KORTHALS 242 (L); WAITZ 183 (L); BLUME 1562, Oct. (L); Batavia, G. Parang, REINWARDT 1234 (L); Tjidoerian near Tjikoja, ZOLLINGER 445 (L); Buitenzorg, Buitenzorg, cult., BAKHUIZEN VAN DEN BRINK 7879, May 1928 (B); Pabaton, VAN STEENIS 1606, June 1928 (B); Kotaparis, cult., BAKHUIZEN VAN DEN BRINK fil. 2447, March 1923 (B, L); cult. in the Botanic Garden, n. XV. K. B. IX. 1 (B); XV. K. B. XI. 4 (B); XV. K. B. XIII. 3 (B); Gedeh, N.W. slope above Buitenzorg, BACKER 24006, Apr. 1918 (B); Soekaboemi, BOERLAGE s.n., July 1888 (L); Tjidadap, S. of Tjibeber, cult., WENCKEL 1156  $\beta$ , June 1917 (B); Priangan, Tasikmalaja, Noesagede Island, lake of Pendjaloe, KOORDERS 47916  $\beta$ , Aug. 1917 (B); Pekalongan, Tegal, Goedji, DE MONCHY s.n. (B); Madioen, Ngebel, G. Wilis, KOORDERS 23181  $\beta$ , May 1896 (B); Malang, Tengger, BUYSMAN s.n., Febr. 1908 (U); Besoeki, Idjen plateau between Sempol and G. Merapi, BACKER 25261, June 1918 (B); Djember, ULTÉ 5 (B); Madoera, between Boernih and Kesek, DORGELO 3111, July 1924 (Pa); Kangean Islands, Kangean, Paseraman, BACKER 29962, May 1919 (B).

CELEBES, without locality, FORSTEN 57 (L); Celebes and Dependencies, Tjampalagia, RACHMAT 242 (exped. VAN VUUREN), July 1913 (B); Malino, BÜNNEMEYER 10717, Apr. 1921 (B); Lombasang, BÜNNEMEYER 11182, Apr. 1921 (B); Kalolo near Lombasang, BÜNNEMEYER 11551, May 1921 (B, L); Tanette, BÜNNEMEYER 11759, May 1921 (B); Manado, Tomohon, fertile volcanic sand, KOORDERS 16580  $\beta$ , Jan. 1895, a pubescent specimen, see remarks (B).

LOMBOK, Rindjani, N. E. side, Sembaloen plateau, ELBERT 1566, May 1910 (L).

FLORES, Mborong, Mrs. RENSCH 1454, July 1927 (BD, mixed with *Operculina Riedeliana* (OLIV.) VAN OOSTSTR.).

MOLUCCAS, Ceram, Manoesela, KORNASSI 575, Nov. 1917 (B); Middle Ceram, Walokonc, RUTTEN 2206, May 1919 (B).

NEW GUINEA, Territory of New Guinea, Hatzfeldhafen, Finschhafen, Ramu R. (according to SCHUMANN & HOLLRUNG and to SCHUMANN & LAUTERBACH).

BISMARCK ARCHIPELAGO, New Britain, Gazelle Peninsula (according to SCHUMANN & LAUTERBACH).

PHILIPPINE ISLANDS. "This species is common and widely distributed in the settled areas of the Philippines at low and medium altitudes, is certainly an introduced plant in the Archipelago, and probably originated in tropical America" (MERRILL). Luzon, Cagayan prov., CURRAN, For. Bur. 16724, March 1909 (L); Prov. of Nueva Vizeaya, vicinity of Dupax, MCGREGOR, Bur. of Sc. 11151, March—Apr. 1912 (L); Rizal prov., RAMOS, Bur. of Sc. 10910, Oct. 1909 (B, L); id., Antipolo, RAMOS, Bur. of Sc. 445, Nov. 1910 (U); id., id., MERRILL, Spec. Blanc. 177, Nov. 1914 (B, L); Prov. of Laguna, Calauan, MCGREGOR, Bur. of Sc. 12381, Nov.—Dec. 1910 (L). According to MERRILL also in Masbate, Samar and Leyte.

Distribution: Circumtropical, originally in tropical America (see HALLIER in Meded. Rijksherb. Leiden 46 (1922) p. 19).

Habitat: Cultivated in gardens and wild in thickets, hedges, along waysides and edges of forests; between 1 and 1400 m.

Vernacular names: moonflower; bering roembi (Sumatra, West Coast, DIEPENHORST); troelak (Sumatra, Palembang, GRASHOFF); teroelak (Mal., HEYNE, OCHSE); terong kori boddas (Sund., Java, HASSKARL); soendal malam, areuj koetjoeboeng (Sund., Java, BAKHUIZEN VAN DEN BRINK, HEYNE, KOORDERS, OCHSE); koeroelak (BLUME); kloerak (Jav., Java, Madioen, KOORDERS); boenga pareh (Celebes, RACHMAT); pitoer (Celebes, Manado, Tomboeloe language, KOORDERS); kalakamôte, malakamôte, kamokamotihan (Philippines, Tagalog and Bisaya language, MERRILL); kakaiuit (Philippines, Gaddang language, MERRILL); pekpeket (Philippines, Bontók language, MERRILL).

Use: Often cultivated in gardens. According to HEYNE the young leaves are eaten as a vegetable (Palembang). The dried flowers (soendal malam, sêdêp malam) are used in pies and in kimlo (Chinese vegetable soup) (OCHSE, l. c. p. 154, 155). Also see WATT, l. c. p. 483, 484.

Remarks. HALLIER in Bull. Herb. Boiss. V (1897) p. 1037—1038 distinguishes two varieties, each subdivided into two subvarieties, on account of the form of the leaves and the absence or presence of a pubescence.

var. *normalis* HALL. f., l. c. p. 1037; leaves cordate, entire.

subvar. 1. *glabra* HALL. f., l. c. p. 1037; leaves glabrous.

subvar. 2. *pubescens* HALL. f., l. c. p. 1037; leaves with a dense

and soft pubescence on the nerves beneath, sepals glabrous or hairy at the base, stems glabrous or hairy at the nodes, petioles glabrous.

var. *lobata* HALL. f., l. c. p. 1037; leaves at least partly 3—5-lobed, mostly with large middle lobe and much smaller lateral lobes.

subvar. 1. *calva* HALL. f., l. c. p. 1037; leaves glabrous.

subvar. 2. *hirsuta* HALL. f., l. c. p. 1038; young parts pubescent (subsericeous), afterwards often glabrescent.

A subdivision on account of the form of the leaves appears to be of doubtful value, as the middle leaves of many specimens are 3- to 5-lobed, whereas the upper ones are entire (HALLIER in Meded. Rijks-herb. Leiden 46 (1922) p. 19—20).

By far the greater part of the specimens from Malaysia is glabrous; a distinctly pubescent specimen is KOORDERS 16580  $\beta$ , from Manado, Celebes (mentioned by KOORDERS in Meded. 's Lands Plantent. XIX (1898) p. 542, as *Ipomoea alba* L. var. *pubescens* CHOISY, a combination never made by CHOISY; see HALL. f. in Bull. Herb. Boiss. sér. 2, I (1901) p. 675).

23. *Ipomoea muricata* (L.) JACQ., Hort. Schoenbr. III (1798) p. 40, t. 323, non CAV., 1799; MIQ., Fl. Ned. Ind. II (1857) p. 608, excl. syn. BL. et DIETR.; CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 197; WATT, Diet. Econ. Prod. India IV (1890) p. 487; PRAIN in Journ. As. Soc. Bengal LXIII (1894) p. 101 — *Convolvulus muricatus* L., Mant. (1767) p. 44 — *Ipomoea bona-nox* L. var. *purpurascens* KER, Bot. Reg. IV (1818) t. 290 — *Calonyction muricatum* (L.) DON, Gen. Syst. IV (1838) p. 264; HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 154; id. in Versl. 's Lands Pl. t. 1895 (1896) p. 130; id. in Bull. Herb. Boiss. V (1897) p. 1044; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 512; BAKER & RENDLE in THIS.-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 118; DUTHIE, Fl. Upper Ganget. Pl. II (1911) p. 118; KOORDERS, Exk. fl. Java III (1912) p. 122; GAGNEP. & COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 286; GAMBLE, Fl. Pres. Madras V (1923) p. 920; MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 370 — *C. longiflorum* HASSK., Cat. Hort. Bog. (1844) p. 140; id., Pl. Jav. Rar. (1848) p. 523, excl. syn. — *C. speciosum* CHOISY var. *muricatum* (L.) CHOISY in DC., Prodr. IX (1845) p. 345, excl. synn. WILLD., LEDEB., BL., DIETR. — *Convolvulus colubrinus* BLANCO, Fl. Fil. ed. 2 (1845) p. 66; id. ed. 3, I (1877) p. 125, Ic. II, t. 315 (according to MERRILL in Bur. Gov. Lab. Philipp. 27 (1905) p. 63; id., Spec. Blanc. (1918) p. 321).

A glabrous or nearly glabrous twiner; all green parts containing

a white milky juice; stems herbaceous, annual, terete or angular, muricated, warts small, acute; leaves petiolate; petiole 4—12 cm long, muricated or smooth; blade broadly ovate to orbicular, acuminate at the apex with acute or obtuse, mucronulate acumen, distinctly cordate at the base, with wide or narrow sinus and broadly rounded auricles, 7—18 cm long, 6.5—15 cm broad; nerves c. 5—6 on each side of the midrib. Inflorescences axillary; peduncles muricated, 1—few-flowered, 3—6 cm long; pedicels smooth, 10—20 mm long, or longer, thickened towards the calyx, very thick in fruiting stage; bracts oblong, acute, scarious, c. 8 mm long; sepals about equal in length, the two outer ones oblong to ovate, more or less plicate at the top and attenuate into a thick, suberect awn, the three inner ones obtuse or slightly emarginate, distinctly awned; length of outer sepals, without awn c. 6—7 mm, of inner sepals c. 7—8 mm, awn of outer sepals 4—6, of inner sepals c. 4 mm; corolla pale bluish-purple, opening at night<sup>1</sup>), glabrous, long-funnel- to salver-shaped, c. 5—7.5 cm long, with a narrow, cylindrical, c. 3—6 cm long tube, this tube widened above at the place of insertion of the filaments; limb funnel-shaped to rotate, 5-angular. Stamens and style not or scarcely exerted; stamens inserted in the upper part of the corolla tube; filaments filiform, glabrous, the base dilated, with sparse short hairs; anthers oblong, sagittate, in open flower c. 3 mm long; ovary glabrous; style glabrous, filiform; stigma biglobular, papillose; capsule ovoid, c. 18—20 mm high, enclosed at the base by the slightly enlarged, to 15 mm (with awn) long sepals, 4-valved, with thin papery valves, 2-celled, 4-seeded; seeds black, glabrous, c. 9—10 mm long.

JAVA; cultivated (according to KOORDERS).

PHILIPPINE ISLANDS, cultivated only (MERRILL). Luzon, Union prov., Bauang, cult., FENIX s. n., Apr. 1918 (B).

Distribution: America, from Mexico to Colombia and Brazil, the West Indies, tropical Africa and adjacent islands, British India, China, Japan, Philippines (cultivated).

Vernacular names: pipita de tonkin (Philippines, Luzon, FENIX); tonkín, tunkín (Philippines, Tagalog language, MERRILL).

Use: Cultivated for its flowers. In the Philippine Islands used as a remedy against snake-bites (BLANCO). See WATT, l. c.

### Subsection 3. *Quamoclit* (MOENCH) HALL. f.

HALL. f. in Meded. Rijksherb. Leiden 46 (1922) p. 20 — genus *Quamoclit* MOENCH, Meth. (1794) p. 453 (*Quamoelit*) — *Ipomoea* section

<sup>1</sup>) HALL. f. in Bull. Herb. Boiss. V (1897) p. 1048.

*Quamoclit* (MOENCH) GRISEB., Fl. Brit. West Indian Isl. (1864) p. 472 — *Ipomoea* subgenus *Quamoclit* (MOENCH) CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 198.

Annual (or perennial, HOUSE) herbaceous twiners, mostly glabrous; leaves cordate, often angular or palmately 3—5-lobed, rarely deeply pinnately divided. Flowers mostly axillary, often in a dichasium consisting of two scorpioid cymes or in a real dichasium, rarely solitary; sepals herbaceous to membranaceous, small, glabrous, obtuse, mostly aristate below the apex, subequal or the exterior ones shorter; corolla small or medium-sized, often slightly zygomorphic, often bright red, rarely yellow or white, glabrous, salver-shaped, the tube cylindrical or thickened upwards, the limb patent; stamens and style exserted, usually declinate; ovary glabrous, 4-celled, 4-ovuled; stigma biglobular; capsule 4-valved, 4-celled, 4-seeded; seeds glabrous or rarely puberulent, opaque, black.

29. *Ipomoea angulata* LAMK., Tabl. Encycl. I (1791) p. 464 — *I. phoenicea* ROXB., Fl. Ind. ed. CAREY & WALL., II (1824) p. 92; id., Fl. Ind. ed. CAREY, I (1832) p. 502 — *Convolvulus angulatus* (LAMK.) SPRENG., Syst. I (1825) p. 594 — *C. phoeniceus* (ROXB.) SPRENG., Syst. I (1825) p. 596 — *Quamoclit phoenicea* (ROXB.) CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 433; id. in DC., Prodr. IX (1845) p. 336; MIQ., Fl. Ned. Ind. II (1857) p. 594; PRAIN in Journ. As. Soc. Bengal LXXIV (1906) p. 318; DUTHIE, Fl. Upper Ganget. Pl. II (1911) p. 122; GAMBLE, Fl. Pres. Madras V (1923) p. 919; RIDLEY, Fl. Malay Penins. II (1923) p. 463; MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 370 — *Q. angulata* (LAMK.) BOJ., Hort. Maurit. (1837) p. 224; CHOISY in DC., Prodr. IX (1845) p. 336; HALL. f. in Bull. Herb. Boiss. VII (1899) p. 415.

A herbaceous annual twiner. Stems terete or slightly angular, often contorted, 2—5 m high (BACKER), glabrous or sparsely pilose. Leaves petiolate; petiole slender, shorter or longer than the blade, 3—12 cm, glabrous or sparsely pilose; blade mostly glabrous, ovate or broad-ovate to orbicular in outline with acuminate, mucronulate apex and cordate base, the margin entire, angular, coarsely dentate or obscurely to deeply 3-lobed, in the latter case the middle lobe lanceolate to elliptic-lanceolate or ovate, acuminate and mucronulate at the apex, narrowed towards the base, the lateral lobes more or less oblique, lanceolate or ovate, entire or angular; length of the blade 3—15 cm, width 3—10 cm. Inflorescences lateral or terminal, 10—35 cm long, few- to several-flowered, pedunculate; peduncle often longer than the petiole, 3—20 cm long, terete or angular, glabrous or pubescent, cymosely branched at the top, the first rami-

fication mostly dichasial with terminal flower, the sequent ones monochasial; flowers and fruits on erect pedicels; pedicels angular, 5—7 mm long, sometimes longer, in fruit up to 8—12 mm, those of the central flower up to 15 mm long; bracts minute, 1.5—2 mm long, triangular, mucronulate; sepals oblong-rectangular with broadly obtuse or truncate apex and with a large straight or slightly curved awn inserted immediately below the top; length of the outer sepals without awn 2—2.5, of the inner ones 3 mm; awn 3—4 mm; corolla scarlet, glabrous, hypocrateriform, 3.5—4 cm long, the tube narrowed towards the base, slightly curved, the patent limb up to 2 or 2.5 cm in diam.; stamens and style exerted; filaments slightly unequal, inserted c. 9 mm above the corolla base, filiform, glabrous; anthers elliptic, c. 1.5 mm long (in open flower); ovary glabrous, at base enclosed by a cup-shaped, c.  $\frac{3}{4}$  mm high disk; style filiform, glabrous; stigma globular, papillose; capsules on erect pedicels, globular, 5—7 mm high, glabrous, 4-valved, 4-celled, the dissepiments persistent, pellucid, with a thickened circular margin; seeds 4, c. 4 mm long, black, densely pubescent; sepals in fruit patent, afterwards reflexed.

MALAY PENINSULA. Cultivated in gardens, but has not established itself outside (RIDLEY). PRAEN (1906) only mentions a specimen from Singapore.

JAVA. According to BACKER of tropical American origin. Cultivated for several years for ornamental purposes; frequently run wild at low and medium altitudes, in thickets and grasslands, slopes of ravines, borders of cane fields, locally abundant. Bantam, Prinseneiland, KEULEMANS s. n. (L); Batavia, Pal Merah, BACKER 35453, Sept. 1904 (B); Grogol (Pal Merah), cult. ♀, BACKER 35453, July 1904 (B); Buitenzorg, Buitenzorg, cult. in the Botanic Garden, KUHLE & VAN HASSELT 77 (B, L); id., HALLER D 212c, Aug. 1893 (L); Priangan, Bandoeng, VAN DER VEEN s. n., herb. v. O. 820, Sept. 1923 (L); id., along brooklet in ravine, totally covering the slopes, VAN STEENIS 1665, May 1928 (B); Semarang, Kedoeng djati, KOORDERS 28174 ♂, June 1897 (B, L); Madioen, Doengoes, WISSE 358, Apr. 1920 (B); valley of Kali Tjatoer, WISSE 409, Apr. 1921 (B); Ngabel, near rest-house, KOORDERS 23236 ♂, May 1898 (B); Kediri, forest district N. Kediri, Toengloer, old teak-wood, on red volcanic soil, GRUTTERINK 3281, June 1920 (B); forest district S. Kediri, Gadoengan, clearings in forest, KRAMER 334, July 1923 (B); Paré, sugar cane plantation Kentjang, VAN HARREVELD s. n., May 1914 (B); Malang, Bantoer, BACKER 36677, July 1927 (Pa); Balesari near Gondang legi, BACKER 3546, May 1912 (B); Tengger, BUYSMAN s. n., Febr. 1908 (U); Besoeki, N. slope of G. Idjen, above Bajeman, BACKER 24969, June 1918 (B); id., id., BACKER 30802, April 1920 (B).

TIMOR, Beloe, Asoemanoe, Fialaran, Mrs. WALSH 422, June 1929 (B).

BISMARCK ARCHIPELAGO, New Ireland, PEEKEL 57 (B, L).

PHILIPPINE ISLANDS; according to MERRILL in thickets at low altitudes, thoroughly naturalized. Luzon, Rizal prov., RAMOS, Bur. of Sc. 1953, Nov. 1914

(B, L); id., REELLO, Bur. of Sc. 19178, Dec. 1912 (L); id., Antipolo, MERRILL 89, Jan. 1910 (U).

**Distribution:** A native of tropical America, now circum-tropical.

**Habitat:** Cultivated in gardens; run wild in waste places, fields, grasslands, thickets and thin forests; up to 1200 m.

**Vernacular names:** ajong ajong (Sund., Java, BLUME, MIQUEL); rajoetan, sanggolangit (Java, Kediri, VAN HARREVELD, KRAMER). Also see DE CLERCQ—PULLE, Nieuw Plantk. Woordenb. ed. 2 (1927) p. 188, under *Quamoclit coccinea* MOENCH.

**Use:** Often cultivated for ornamental purposes.

**Remarks.** Several authors<sup>1)</sup> have confounded this species with the North American *I. coccinea* L. (L., Spec. Pl. ed. 1 (1753) p. 160; *Quamoclit coccinea* (L.) MOENCH, Meth. (1794) p. 453). For a discussion of the differences between the two species see HALL f. in Bull. Herb. Boiss. VII (1899) p. 415. Of the true *I. coccinea* L. I saw a specimen cultivated in the Botanic Garden at Buitenzorg (n. XV. K. B. X. 4).

30. *Ipomoea Quamoclit* L., Spec. Pl. ed. 1 (1753) p. 159; CURTIS, Bot. Mag. VII (1794) t. 244; BL., Bijdr. (1825) p. 708; ROXB., Fl. Ind. ed. CAREY, I (1832) p. 503 (*I. Quamoclit* WILLD.); SPANOGHE in Linnæa XV (1841) p. 339; BENTH., Fl. Austr. IV (1869) p. 428; CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 199; FORBES, Wander., Germ. ed. II (1886) p. 222; VIDAL y SOLER, Rev. Plant. Vasc. Philipp. (1886) p. 196; WATT, Diet. Econ. Prod. India IV (1890) p. 491; TRIMEN, Handb. Fl. Ceyl. III (1895) p. 215; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1067; MERRILL in Bur. Gov. Lab. Philipp. 27 (1905) p. 62; GAGNEP. & COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 235; MERRILL, Spec. Blanc. (1918) p. 322 — *Convolvulus pennatus* DESR. in LAMK., Encycl. Meth. III (1789) p. 567 — *C. Quamoclit* (L.) SPRENG., Syst. I (1825) p. 591 — *Quamoclit vulgaris* CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 434; id. in DC., Prodr. IX (1845) p. 336; ZOLL., Syst. Verz. 2. Heft (1854) p. 128; MIQ., Fl. Ned. Ind. II (1857) p. 594; id., Suppl.

<sup>1)</sup> Mentioned as *I. coccinea* L. by CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 199; TRIMEN, Handb. Fl. Ceyl. III (1895) p. 215; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1067; GAGNEP. & COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 236.

Mentioned as *Quamoclit coccinea* (L.) MOENCH by MIQ., Fl. Ned. Ind. II (1857) p. 593; id., Fl. Ned. Ind., Suppl. (1860) p. 234; HALL f. in ENGL., Bot. Jahrb. XVIII (1893) p. 154; id. in Versl. 's Lands Pl. t. 1895 (1896) p. 131; id. in Bull. Herb. Boiss. V (1897) p. 379; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 513; KOORDERS, Exk. fl. Java III (1912) p. 123; BACKER, Onkruidfl. Jav. Suikerrietgr. (1931) p. 530.

(1860) p. 234; SCHUM. & LAUTERB., Fl. Deutsch. Schutzgeb. (1901) p. 515; MERRILL in Philipp. Journ. Sc. I, Suppl. (1906) p. 119 — *Q. pinnata* BOJ., Hort. Maurit. (1837) p. 224; HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 154; id. in Versl. 's Lands Pl. t. 1895 (1896) p. 131<sup>1)</sup>; id. in Bull. Herb. Boiss. V (1897) p. 379; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 513; PRAIN in Journ. As. Soc. Bengal LXXIV (1906) p. 318; DUTHIE, Fl. Upper Ganget. Pl. II (1911) p. 122; KOORDERS, Exk. fl. Java III (1912) p. 123; RENDLE in Journ. Linn. Soc. XLII (1914) p. 113; MERRILL, Interpr. Rumph. Herb. Amb. (1917) p. 446; id. in Journ. Roy. As. Soc. Str. Br. Spec. Numb. (1921) p. 510; GAMBLE, Fl. Pres. Madras V (1923) p. 919; RIDLEY, Fl. Malay Penins. II (1923) p. 463; MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 370; id. in Philipp. Journ. Sc. XXIX (1926) p. 414; HEYNE, Nutt. Pl. ed. 2 (1927) p. 1306; BACKER, Onkruidfl. Jav. Suikerrietgr. (1931) p. 530 — *Q. Quamoclit* (L.) BRITTON in BRITTON & BROWN, Fl. North. Unit. States III (1898) p. 22.

A glabrous twiner (rarely prostrate); leaves petiolate; petiole 8—40 mm long, at base often with pseudo-stipules (small leaves of the axillary shoot); blade ovate or oblong in outline, 2—10 cm long, 1—6 cm broad, pinnately partite to the midrib, with (8—)10—18 pairs of linear to filiform patent segments, the inferior of which are often bifid. Inflorescences axillary, cymosely 1—few-flowered; the peduncles generally exceeding the leaves, 1.5—10(—14) cm long; pedicels much longer than the calyx, (5—)9—20 mm long, thickened and clavate in fruit; bracts minute, deltoid, acute; sepals slightly unequal, the exterior ones shorter, 3-nerved with verrucose nerves; all oblong to oblong-spathulate, obtuse, mucronulate somewhat below the apex, outer sepals (without mucro) 4—4.5 mm, inner ones (without mucro) 5—6 mm long, mucro  $\frac{3}{4}$ —1 mm; margins of the sepals pale; corolla red (or sometimes white<sup>2)</sup>), hypocrateriform, glabrous, the tube 2.5—3.5 cm long, slightly narrowed towards the base, straight, the limb expanded, 18—20 mm in diam., 5-lobed with acutish, mucronulate lobes, each consisting of a midpetaline band, and 2 narrow strips of the 2-parted connecting fields; stamens and style exserted; stamens inserted near the corolla base; filaments filiform, hairy at their base; ovary glabrous; style filiform, glabrous; stigma bi-

<sup>1)</sup> HALLIER mentions a var. *pectinata* HALL. f., cult. in the Botanic Garden at Buitenzorg. There is as far as I know no specimen of this var. in the herbarium at Buitenzorg.

<sup>2)</sup> var. *albiflora* DON, Gen. Syst. IV (1838) p. 260; HALL. f. in Versl. 's Lands Pl. t. 1895 (1896) p. 131.

globular, papillose; capsule glabrous, ovoid, obtuse, often crowned by the thickened base of the style, 6—8 mm long, 4-valved with longitudinally splitting valves, 4-celled, 4-seeded; seeds ovoid-oblong, 5—6 mm long, 2.5 mm broad, blackish-brown, marmorate by tufts of minute hairs; dissepiments of the capsule persistent, pellucid, with thickened margin.

MALAY PENINSULA; cultivated in gardens, the species has not established itself outside (RIDLEY). PRAIN, 1906, cites a specimen from Penang.

SUMATRA, *Tapanoeli*, Nias, VON RÖMER s. n. (B); *Benkoelen*, Enggano Island, near Meok, LÜTJEHARMS 5407, July 1936 (B, L).

JAVA, cultivated and run wild in thickets, hedges, waste places and along borders of cane fields (BACKER). Bantam, Prinseneiland, KEULEMANS s. n. (L); Batavia, Batavia, VORDERMAN s. n. (B); Sentiong, BACKER 35455, Sept. 1903 (B); Buitenzorg, Buitenzorg, KUIIL & VAN HASSELT s. n. (L); id., cult., VAN HARREVELD s. n., Sept. 1907 (Pa); id., VAN STEENIS s. n., Nov. 1935 (B); along the Tjiliwong, SCHIFFNER 2433, 2435, Nov.—Dec. 1893 (L); Tegal sapi, BAKHUIZEN VAN DEN BRINK fil. 1772, Sept. 1922 (B); along the Pakantjilan, BAKHUIZEN VAN DEN BRINK 3255, Febr. 1920 (L); id., BAKHUIZEN VAN DEN BRINK fil. 136, Febr. 1920 (B); Tjikopo, BOERLAGE s. n. (L); Kiara Pajoeng, N. of Tjiandjoer, in moist valley, BACKER 23624, March 1918 (B); Tjibagoeng, SOEGANDIREJA 124, March 1900 (B); Panjindangan, between Tjibadak and Pelaboean, as a weed, BAKHUIZEN VAN DEN BRINK 1387, Aug. 1909 (B); Pelaboean Ratoe, cult., BOERLAGE s. n. (L); Priangan, Bandoeng, VISSER s. n., June 1928 (L); Semarang, Tjandi, DOCTERS VAN LEEUWEN s. n., Febr. 1911 (B); Djapara-Rembang, Ngarengan, KOORDERS 33507  $\beta$ , May 1899 (B, L); id., cult., KOORDERS 35565  $\beta$ , June 1899 (B); Kediri, forest district N. Kediri, Toengloer, in teak-wood on stony volcanic soil, WIND 2529, Apr. 1918 (B); between Tritik and Dk. Djeroek, in teak-wood on volcanic tuff, THORENAAR 104, Nov. 1919 (B); Gadoengan, KOORDERS 22859  $\beta$ , May 1896 (B); Soerabaja, Socrabaja, DORGELO 178 (Pa); Malang, G. Weni near Probolinggo, BACKER 24286, June 1918 (B); Tengger, BUYSMAN 439, Jan. 1908 (U); Besoeki, near Poeger, ZOLLINGER 243 (L); id., KOORDERS 21075  $\beta$ , Oct. 1895 (B, L); id., KOORDERS 29954  $\beta$ , March 1898 (B); G. Idjen, N. slope above Bajeman, BACKER 24970, June 1918 (B); G. Kendeng, Idjen, N. slope, fissures of rocks, Mrs. CLASON—LAARMAN 104, Febr. 1932 (B); Madoera, Pagantenan, BACKER 20464, March 1915 (B); Bangkalan, BACKER 18991, Febr. 1914 (B); Poeloe Poeteran, BACKER 20817, March 1915 (B).

BORNEO, British North Borneo, Apin apin (according to RENDLE, 1914).

CELEBES, without locality, FORSTEN 75 (L); Celebes and Dependencies, Bonto Parang, BÜNNEMEYER 10625, March 1921 (B, L, U); Salajar Islands, Bonerate, DOCTERS VAN LEEUWEN 1438, May 1913 (B, U); P. Boeton, Kambolosea, ELBERT 2691, 6372, Aug. 1909 (L); id., Baoe bae, KJELLBERG 185, Febr. 1929 (B); Toekangbesi Islands, Bimongko, ELBERT 2585, 6075, July 1909 (L).

LOMBOK, Ekos, Mrs. RENSCH 404, Apr. 1927 (B).

SOEMBAWA, S. E. Bima, Oei-oct, S. E. slope to Waworadabay, ELBERT 3904, Dec. 1909 (L).

TIMOR, without locality, FORBES 3871 (B, L).

MOLUCCAS, Ternate, FORSTEN s. n., July 1841 (L); Ambon, ROBINSON 403, July—Nov. 1913 (B, L).

NEW GUINEA, Territory of New Guinea, Finschhafen, WEINLAND 20 (B).

BISMARCK ARCHIPELAGO, New Britain, Gazelle Peninsula, Ralum, near Valavolo (according to SCHUMANN & LAUTERBACH).

PHILIPPINE ISLANDS. "This species was introduced from Mexico at an early date by the Spaniards and is now distributed in the settled areas of the Philippines at low and medium altitudes. It is thoroughly naturalized in many regions and is also commonly cultivated for ornamental purposes." (MERRILL, Spec. Blanc.). Luzon, Bulacan prov., Obando, MERRILL, Spec. Blanc. 513, Oct. 1914 (B, L); Sorsogon prov., Irosin, Mt. Bulusan, ELMER 14387, Oct. 1915 (B, L, U); also in Ilocos Norte, Bontoc, Nueva Vizcaya, Union, Pampanga, Rizal, Bataan, Laguna, Camarines and Albay prov. (MERRILL); Mindanao, district of Cotabato, ROBINSON, Bur. of Sc. 11623, June 1910 (L); Bantayan Island, MCGREGOR, Bur. of Sc. 1702, Sept. 1906 (B); Panay, Negros, Cebu, Banguey Island (MERRILL).

Distribution: Circumtropical.

Habitat: Cultivated in gardens and run wild in waste places, hedges, thickets, thin forests and along borders of cane- and rice-fields; between 1 and 1200 m.

Vernacular names: Cypress-vine, red jasmine (HEYNE); kardinaalsbloem (Dutch, BACKER, HEYNE); katilan (Sund., BLUME, MIQUEL); boenga tali (Mal., HEYNE, MIQUEL); ratjik boemi, rintjik boemi (Sund., Java, Buitenzorg, Priangan, BACKER, BAKHUIZEN VAN DEN BRINK, BOERLAGE, HEYNE); songgolangit (Jav., Java, Batavia, Djapara-Rembang, Kediri, Besoeki, BACKER, HEYNE, KOORDERS, THORENAAR); boegada (Celebes, BÜNNEMEYER); cabello de angel (Philippines, Spanish, MERRILL); malabokbok, agoho, agau (Philippines, Tagalog language, MERRILL); lumpitan (Philippines, Magindanao language, MERRILL); malmarama, pirospiros (Philippines, Cebu Bisaya language, MERRILL); sailatan, silauak-ankambing (Philippines, Sulu language, MERRILL); tartaraok, tentenedor (Philippines, Ilóko language, MERRILL). See also DE CLERCQ-PULLE, Nieuw Plantk. Woordenb. ed. 2 (1927) p. 188, under *Quamoclit pinnata* Boj.

Use: Cultivated for ornamental purposes. See WATT and HEYNE, l. l. c. c.

#### Section 6. *Eriospermum* HALL. f.

HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 149; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 512; BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 133.

Description see p. 484.

31. *Ipomoea digitata* L., Syst. ed. 10 (1759) p. 924; CHOISY in

DC., Prodr. IX (1845) p. 389; CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 202; FORBES, Wander., Germ. ed. II (1886) p. 222; VIDAL Y SOLER, Rev. Plant. Vasc. Philipp. (1886) p. 196; SCHUM. & HOLLR., Fl. Kais. Wilh. Land (1889) p. 115; WATT, Diet. Econ. Prod. India IV (1890) p. 484; TRIMEN, Handb. Fl. Ceyl. III (1895) p. 212; SCHUM. & LAUTERB., Fl. Deutsch. Schutzgeb. (1901) p. 516; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1056; BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 189; GAGNEP. & COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 239; RIDLEY, Fl. Malay Penins. II (1923) p. 460; MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 364; id. in Philipp. Journ. Sc. XXIX (1926) p. 414; DOCTERS VAN LEEUWEN in Ann. Jard. Bot. Buitenz. XLVI—XLVII (1936) p. 405 — *Convolvulus paniculatus* L., Spec. Pl. ed. 1 (1753) p. 156; ROXB., Fl. Ind. ed. CAREY, I (1832) p. 478 (*C. paniculatus* WILLD.); MERRILL in Bur. Gov. Lab. Philipp. 27 (1905) p. 63; id., Spec. Blanc. (1918) p. 323 — *Ipomoea paniculata* (L.) R. BR., Prodr. Fl. Nov. Holl. ed. 1 (1810) p. 486, non BURM., 1768; BL., Bijdr. (1825) p. 709; SPANOGHE in Linnaea XV (1841) p. 340; BENTH., Fl. Austr. IV (1869) p. 414; WARB. in ENGL., Bot. Jahrb. XIII (1891) p. 413; HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 149; id. in Versl. 's Lands Pl. t. 1895 (1896) p. 130; id. in Bull. Herb. Boiss. V (1897) p. 379; id. in Meded. 's Lands Pl. t. XIX (1898) p. 543; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 512; SCHUM. & LAUTERB., Fl. Deutsch. Schutzgeb. (1901) p. 517; PRAIN in Journ. As. Soc. Beng. LXXIV (1906) p. 312; MERRILL in Philipp. Journ. Sc. I, Suppl. (1906) p. 119; KOORDERS, Exk. fl. Java III (1912) p. 120; MERRILL in Journ. Roy. As. Soc. Str. Br. Spec. Numb. (1921) p. 510; GAMBLE, Fl. Pres. Madras V (1923) p. 918 — *Batatas paniculata* (L.) CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 436; id. in DC., Prodr. IX (1845) p. 339; ZOLL., Syst. Verz. 2. Heft (1854) p. 128; MIQ., Fl. Ned. Ind. II (1857) p. 599.

A large perennial twiner, sometimes prostrate; roots tuberous; stems terete, glabrous; leaves petiolate; petiole mostly shorter than the blade, smooth or minutely muricated, longitudinally sulcate above, 3—10 cm long; blade glabrous, orbicular in outline, palmately divided to or mostly beyond the middle, very rarely entire or shallowly lobed, more or less cordate or truncate at the base; dimensions of the blade 6—14 × 6—15 cm; segments (3—)7(—9), lanceolate to ovate, entire, acuminate with an acute or blunt, minutely mucronate top; the middle lobe 5—9 cm long, 1.5—3 cm broad, the lateral lobes shorter. Inflorescences axillary, peduncled; peduncles generally longer than the petioles, terete but often angular at the top, glabrous, cymosely branched at the top,

few- to many-flowered, 2.5—20 cm long; pedicels longer than the calyx, terete, glabrous, 9—25 mm long; flower buds globular; sepals equal or the exterior ones shorter, all orbicular or the exterior ones narrower, oblong to broad-elliptic, obtuse, concave, coriaceous, 6—11 mm long, pale-green, glabrous; corolla pale-lilac, the tube darker lilac inside, funnel-shaped, the tube cylindrical, narrowed at the base, the limb patent; length of corolla 5—6 cm, width of limb 6—7 cm; stamens and style included; stamens inserted 5—7 mm above the corolla base; filaments filiform, unequal, white hairy at the base; anthers linear, sagittate, 5—6 mm long; ovary glabrous; style filiform, glabrous; stigma biglobular, papillose; disk low, annular. Capsule ovoid, obtuse, glabrous, 12—14 mm high, opening by 4 thin, pale brown valves, 2-celled, 4-seeded; seeds black, with long woolly-sericeous, white, easily detaching hairs.

MALAY PENINSULA. On waste ground near villages; wild probably on the sea-shore (RIDLEY). In Penang, Perak, Pahang and Singapore (PRAIN, RIDLEY).

SUMATRA, without locality, KORTHALS s. n., 111, 112 (L); Lampong Districts, Verlaten Island, *Casuarina*-forest, DOCTERS VAN LEEUWEN 4114, Apr. 1920 (herb. D. v. L.); id., mixed forest, DOCTERS VAN LEEUWEN 11622, Febr. 1928 (herb. D. v. L.); Riouw and Dependencies, Riouw Archipelago, P. Dompok near P. Bintan, BÜNNEMEYER 6417, June 1919 (B); P. Oedjan near P. Bintan, BÜNNEMEYER 6440, June 1919 (B, L); Lingga Archipelago, P. Redjai, BÜNNEMEYER 7624a, Aug. 1919 (B, U).

JAVA, without locality, HORSFIELD s. n. (U); KORTHALS 173, 239 (L); KUIIL & VAN HASSELT 193 (L); Batavia, Weltevreden, Kramat Sentiong, BACKER 32311, Dec. 1902 (B); Weltevreden, cult., BACKER 32312, Apr. 1905 (B); Krawang, KORTHALS 173 (L); Buitenzorg, Buitenzorg, BAKHUIZEN VAN DEN BRINK fil. 2702, June 1923 (B); id., cult. in the Botanic Garden XV. K. B. X. 3 (B); XV. K. B. XII. 6 (B); XV. K. C. V. 12 (B); Pledang, cult., KOORDERS 40182  $\beta$ , March 1903 (B, L); Karanghawoe, W. of Pelaboean Ratoe, VAN STEENIS 2882, May 1929 (B); M a g e l a n g, Keboemen, BRINKMAN 92, Apr. 1929 (B); Semarang, forestry Telawa, on marl, BEUMÉE 4961, Jan. 1920 (B); Djapara-Rembang, N. of Randoe, Blatoeng, BACKER 6588, Jan. 1913 (B); Jogjakarta, Wonosari, BACKER 2606, Apr. 1912 (B); Madioen, Ngawi, BACKER 6680, Febr. 1913 (B); between Tegalombo and Slahoeng, BACKER 3429, Apr. 1912 (B); Madoera, Bangkalan, BACKER 19114, Febr. 1914 (B); P. Poeteran, BACKER 20768, March 1915 (B); between Rapa and Karang Pinang, BACKER 20081, March 1915 (B); hills S. W. of Tamberoe, BACKER 20516, March 1915 (B); Kangean Islands, Kangean, Gelaman, BACKER 27152, March 1919 (B); id., Kangean, Kajoe Waroe, BACKER 28185, Apr. 1919 (B); id., Kangean, Pabean, DOMMERS 117, Oct. 1919 (B); id., Kangean, S. E. of Tambajangan, BACKER 27724, March 1919 (B); id., Paliat, BACKER 29395, May 1919 (B); id., Saoebi, BACKER 28386, Apr. 1919 (B); id., Sapapan, BACKER 28485, Apr. 1919 (B).

BORNEO, without locality, KORTHALS 104 (L); KORTHALS 240 (B); W. Division, Pontianak, Sei Raja, bank, MONDI 40, March 1931 (B, L); Kapoeas,

TEYSMANN 8294 (B); Soengai Sambas, HALLIER 1015 (B, L); S. and E. Division, Bandjermasin, KOETHALS 104 (L).

CELEBES, Celebes and Dependencies, Tjimpaga, RACHMAT 168 (exped. VAN VUUREN), July 1913 (B, L); Mapili, RACHMAT 366 (exped. VAN VUUREN), Aug. 1913 (B, L); P. Moena, shore, on limestone, KJELLBERG 52, Febr. 1929 (B); Manado, near and in Manado, KOORDERS 16584  $\beta$  (B, L); Oetan aris near Manado, fertile volcanic soil, KOORDERS 16583  $\beta$ , Dec. 1894 (B, L); near lake Tondano, KOORDERS 16582  $\beta$ , Jan. 1895 (B, L); Tondano, FORSTEN 9, May 1840 (L); Gorontalo, FORSTEN 3 (L); Talaud Islands, Nanoesa, Merampi, LAM 3434, June 1926 (B).

TIMOR, without locality, SPANOCHE s.n. (L).

MOLUCCAS, Ceram, Waroe, KORNASSI 978, Febr. 1918 (B); Kelang Island, Sole, KORNASSI 1347, May 1918 (B, L, U); Ambon, ROBINSON 1823, July—Nov. 1913 (L); Kai Islands, JAHIERI 190 (B).

NEW GUINEA, Netherlands New Guinea, without locality, KOCH s.n. (L); Merauke, VERSTEEG 1962, Nov. 1907, leaves entire to very shallowly lobed (B); Territory of New Guinea, Hatzfeldhafen, HOLLRUNG 371 (B); Constantinhafen; Ramu R. (according to SCHUMANN & LAUTERBACH); Papua, W. Division, Daru Island, BRASS 6241, March 1936 (L).

PHILIPPINE ISLANDS. "This species is widely distributed in the Philippines, occurring in thickets near the sea or more or less within the influence of brackish water" (MERRILL, Spec. Blanc.). Luzon, Bulacan prov., Obando, MERRILL, Spec. Blanc. 392, Oct. 1914 (B, L); Bataan prov., Lamao River, Mt. Mariveles, BORDEN, For. Bur. 2020, Sept.—Oct. 1904 (B); Rizal prov., Manila, MERRILL 7129, Aug. 1910 (L); id., id., RAMOS, Bur. of Sc. 12149, Sept. 1910 (L). Also in Culion, Coron, Mindanao and Banguay Island (MERRILL).

Distribution: Circumtropical.

Habitat: In thickets on the beach, but also in the interior, in waste places, thickets, hedges, thin forests (savannah-forests, teak-woods), along-fields and along waysides; also cultivated; between 0 and 700 m.

Vernacular names: kaledek hutan, kangkong laut (Malay Peninsula, RIDLEY); romboet, rabet (Java, Kangean, DOMMERS); pala poeang (S. Celebes, RACHMAT); kangkoeng oetan, beteta pante (Celebes, Manado, Tomboeloe language, KOORDERS); ondo (Talaud Islands, LAM); bulakan, puntas puntas (Philippines, Tagalog language, MERRILL); kam-kamóte (Philippines, Ilóko language, MERRILL).

Use: ROXBURGH, l. c.: "Cattle eat it. The root is cathartic, and as such used by the natives where it grows." See WATT, l. c.

Remarks. HALLIER in Versl. 's Lands Pl. t. 1895 (1896) p. 130 mentions a var. *fol. variegatis*, a variety with variegated leaves, cultivated in the Botanic Garden at Buitenzorg (XV. H. 5 and 5A).

### 32. *Ipomoea asterophora* VAN OOSTSTR., nov. spec.

Description of the type specimen, BRASS 7437 (L) from Papua (the data in parentheses have reference to the other specimens mentioned below):

Planta volubilis, caulibus teretibus, substriatis, praesertim ad nodos pilis stellatis nonnullis praeditis, glabrescentibus. Folia petiolata, petiolis tenuibus, pilis stellatis praeditis, glabrescentibus, 3—5.5(—8) cm longis, late ovata vel orbicularia, (7—)9(—14) cm longa, (7.5—)9—10(—11) cm lata, apice attenuata vel breviter acuminata, acumine late triangulare obtuso vel submarginato, minutissime mucronato, basi late cordata, margine integra vel subundulata vel leviter (vel profunde) lobata, lobis utrinque 1—2 late (vel anguste) triangularibus apice obtusis, utrinque pilis stellatis numerosis vestita, nervis lateralibus utrinque 3—4, ex quibus c. 2—3 e basi orientibus, valde curvatis. Inflorescentiae axillares, pedunculatae, apice cymoso-ramosae, (2—)6-florae, pedunculis teretibus vel subangulatis, c. 6(—15) cm longis, cum ramis pilis stellatis nonnullis praeditis vel glabris; bracteis minutis deciduis, pedicellis gracilibus calyce longioribus, pilos stellatos nonnullos gerentibus, (10—)12—18(—20) mm longis. Sepala valde concava, apice rotundata, subcoriacea, glaberrima (vel exteriora pilis stellatis nonnullis praeditis) exteriora subbreviora, elliptica, 7—9 mm longa, interiora orbicularia, 9—10 mm longa. Corolla purpureo-alba, intus basin versus obscure purpurea, campanulato-infundibuliformis, basi in tubum breviter cylindricum c. 7—8 mm longum, abrupte attenuata, 7 cm longa, glabra. Stamina brevia, inclusa, filamentis circiter 7 mm supra basin corollae insertis, inaequalibus, basi pauca dilatata breviter pilosa, antheris oblongis, sagittatis, c. 4.5 mm longis. Discus annularis, crassus, c. 0.5 mm altus. Ovarium glabrum, stylo incluso, filiformi, glabro, stigmatibus biglobulari papilloso.

JAVA, Madoera, Kangean Islands (according to the label of a specimen numbered XV. G. 73 and cultivated in the Botanic Garden at Buitenzorg under the name of *I. longiflora* R. Br.). The original locality of a specimen XV. K. B. XI. 10, cultivated in the Botanic Garden at Buitenzorg under the name of *I. Hardingii* Paxt. is unknown (see remarks).

MOLUCCAS, Ceram, S. E. Ceram, Toem, KORNASSI 875, Jan. 1918 (B).

NEW GUINEA, Netherlands New Guinea, Noord River, VERSTEEG 1041, June 1907 (B); Papua, Fly River, Oroville Camp, 30 miles above D'Albertis Junction, common in seral<sup>1)</sup> shrubberies of muddy riverbanks, BRASS 7437, Aug. 1936 (L, type).

Distribution: Kangean Islands, Moluccas, New Guinea.

Habitat: River banks; between 0 and 100 m.

Remarks. 1. The specimen VERSTEEG 1041 consists of 2 branches, one with entire, the other with 3-lobed leaves. These 3-lobed leaves are lobed to or beyond the middle; the middle lobe is broad-ovate, attenuate towards the apex, with an obtuse point, the lateral lobes are much nar-

<sup>1)</sup> This orthography on the label! Possibly erroneous for "tidal"?

rower and slightly falcate. KORNASSI 875 has entire leaves, perhaps with a somewhat undulate margin. The cultivated specimens have the leaves partly entire, and partly 3-lobed. The specimen XV. K. B. XI. 10 bears the name *I. Hardingii* PAXT. and indeed fairly well agrees with the original plate of that species in PAXTON, Mag. Bot. XI (1844) p. 217. *I. Hardingii* has been described as a hybrid of *I. rubrocoerulea* (= *I. violacea* L.) and *I. Horsfalliae*. It is, in my opinion, rather doubtful whether it indeed represents a product of hybridization of these two, so very different species.

2. *I. asterophora* seems to be very closely related to *I. digitata* L., from which species is mainly differs in the possession of stellate hairs. *I. digitata* L. is mostly entirely glabrous, but I saw some South American specimens with a short pubescence of simple hairs. The South-American *I. bonariensis* HOOK., another closely related species has the same stellate indument, but differs in the form of the leaves and especially in the more coarse and straight main nerves of these.

Some other specimens from New Guinea have a much less dense pubescence which is especially developed on the stems, the petioles and the main nerves of the leaves beneath (FEUILLETAU DE BRUYN 162) or in extreme cases only at or near the nodes of the stems (DOCTERS VAN LEEUWEN 9599 and 11362):

var. *subglabra* VAN OOSTSTR., nov. var.

Description of the type specimen, FEUILLETAU DE BRUYN 162 (L) from Netherlands New Guinea (the data in parentheses have reference to the other specimens mentioned below):

Caules pilis stellatis dense vestites (vel ad nodos pilis stellatis nonnullis praeditis ceterum glabri); folia subtus in nervis pilos stellatos gerentia (vel utrinque glabra) petiolis pilis stellatis vestitis (vel basin versus pilis stellatis nonnullis praeditis vel glabris); inflorescentiae subglabrae vel glabrae.

NEW GUINEA, Netherlands New Guinea, Mamberamo, FEUILLETAU DE BRUYN 162, Oct. 1914 (B; L, *type*); Mamberamo near Albatros Bivouac, DOCTERS VAN LEEUWEN 9599, July 1926 (B); Otken River, DOCTERS VAN LEEUWEN 11362, Nov. 1926 (B).

Distribution: New Guinea.

Habitat: Riverbanks; up to 60 m.

Remarks. 1. I suppose that an old and fragmentary specimen collected by TEYSMANN, n. 12114, in Celebes, on rocks near Pangkadjene, belongs here too, though the stellate pubescence is totally lacking.

2. All specimens mentioned under var. *subglabra* have the leaf blades

thinly herbaceous, broadly ovate, acuminate at the apex with narrow, obtuse acumen and broadly cordate at the base; the margin is entire or shallowly undulate; length of the blade 9—16 cm, width 7—12 cm; petioles 4—6.5 cm; peduncles 7—12 cm; in some cases the inflorescence is up to 5 times dichasially ramified, up to 25 cm long and many-flowered.

**33. *Ipomoea Horsfalliae* Hook., Bot. Mag. (1834) t. 3315; RIDLEY, Fl. Malay Penins. II (1923) p. 462.**

A large, glabrous twiner; stems terete, finely striate in dry specimens; leaves petiolate; petiole shorter than the blade, 2.5—10 cm long; blade deeply palmately lobed to beyond the middle or to the base into 3—5 segments; middle segment generally much larger than lateral ones, ovate, elliptic or elliptic-oblong, generally attenuate towards both ends and acuminate at the apex with acute or obtusish, mucronulate point, lateral segments ovate-lanceolate, lanceolate or linear-lanceolate, margins of the segments entire or coarsely dentate or crenate; length and width of the leaf blade 5—14 cm. Inflorescences axillary, few- to several-flowered, 8—20 cm long; the peduncle 1.5—7.5 cm long, widely cymosely ramified; pedicels as long as or longer than the sepals, 8—15 mm long; sepals subequal or the exterior ones slightly shorter, elliptic or ovate-elliptic, obtuse, concave, 7—9 mm long; sepals green at the base, for the rest red purple or purplish black; corolla red or red-purple, hypocrateriform, the tube gradually widened towards the top; length of corolla c. 5 cm, tube c. 3.5 cm long, c. 9 mm in diam. (VAN STEENIS), limb c. 3.5 cm in diam., 5-lobed; stamens and style exerted; stamens inserted c. 7 mm above the corolla base; filaments densely villous at the base; anthers oblong, sagittate, in open flower c. 5 mm long; ovary glabrous; style filiform, glabrous; disk cupular, nearly 1 mm high.

MALAY PENINSULA. Cultivated in gardens (RIDLEY).

JAVA, *Batavia*, Weltevreden, cult., BACKER 32339, Apr. 1905 (B); *Buitenzorg*, *Buitenzorg*, cult. in the Botanic Garden, XV. H. 23 (B); XV. K. B. XI. 1 (B); XV. K. B. XIII. 1, VAN HARREVELD s. n., Aug. 1907 (Pa); cult., VAN STEENIS 5093, Jan. 1932 (B); *Kotaparis*, cult., BAKHUIZEN VAN DEN BRINK fil. 3236, March 1924 (B).

**Distribution:** West Indian Islands; cultivated throughout the tropics.

**Vernacular name:** Roode Stephanotis (red Stephanotis) (Java, BAKHUIZEN VAN DEN BRINK fil.).

**Use:** Cultivated in gardens for ornamental purposes.

**34. *Ipomoea fragrans* (BOJ.) BOJ. ex CHOISY in DC., Prodr. IX (1845) p. 341 in syn., p. 393; HALL. f. in ENGL., Bot. Jahrb. XVIII**

(1893) p. 153; MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 365 — *I. lilacina* BL., Bijdr. (1825) p. 716, non SCHRANK, 1822; CHOISY in DC., Prodr. IX (1845) p. 369; HALL, f. in Bull. Herb. Boiss. V (1897) p. 380; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 512; BAKER & RENDLE in THIS-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 187; KOORDERS, Exk. fl. Java III (1912) p. 121; MERRILL in Journ. Roy. As. Soc. Str. Br. Spec. Numb. (1921) p. 510 — *Pharbitis fragrans* BOJ., Hort. Maurit. (1837) p. 227; CHOISY in DC., Prodr. IX (1845) p. 341 — *Ipomoea riparia* G. DON, Gen. Syst. IV (1838) p. 265; CHOISY in DC., Prodr. IX (1845) p. 389 — *I. Baclei* CHOISY in Mém. Soc. Phys. Genève VIII (1838) p. 60, t. II; id. in DC., Prodr. IX (1845) p. 381 — *I. Lindleyi* CHOISY in DC., Prodr. IX (1845) p. 371 — *I. Parkeri* CHOISY in DC., Prodr. IX (1845) p. 381 — *I. Parkeri* CHOISY var. *subsericea* MEISSN. in Mart. Fl. Bras. VII (1869) p. 284; VAN OOSTSTR. in PULLE, Fl. Surin. IV (1932) p. 92 — *I. oxyphylla* BAKER in Kew Bull. (1894) p. 71 — *I. Stuhlmannii* DAMMER in ENGL., Pfl. Ost-Afr. C (1895) p. 333.

A perennial twiner; stems terete, finely striate when dry, densely short-pilose with soft white hairs; leaves petiolate; petiole slender, 3—10(—12) cm long, pilose like the stems; blade broad-ovate to orbicular, acuminate at the apex with acute or obtuse mucronulate point, broadly cordate at the base, densely pilose beneath, much more sparsely so and glabrescent above, 5—12 cm long, 4—10 cm wide; nerves 7—9 pairs on each side of the midrib. Inflorescences axillary, pedunculate, the peduncle pilose like the stem, often glabrous or nearly so in the lower portion, terete, 2—12 cm long, cymosely 1—few-flowered with very short branches, flowers consequently subumbellate; pedicels pilose, mostly longer than the calyx, 7—14 mm long; sepals equal in length, 7—10 mm long, the two outer ones elliptic-oblong, acute, shortly pilose, the inner ones broader, ovate-elliptic, less acute; corolla pink or purple with darker centre, funnel-shaped, 4—5 cm long, the midpetaline bands with sericeous hairs outside; stamens and style included; stamens inserted c. 4 mm above the corolla base; filaments unequal, filiform, hairy at the dilated, flattened base; anthers lanceolate, sagittate, 4 mm long; ovary glabrous; style filiform, glabrous; stigma biglobular. Capsule globose, 12 mm high, glabrous, 4-valved (valves brown outside, whitish inside), 2-celled, 4-seeded; seeds 6 mm long, white-villous.

SUMATRA, Tapanoeli, Toba, Oeloean, OUWEIAND 146, March 1896 (B).

JAVA, without locality, BLUME 1097 (L, *type of I. lilacina* BL.); Priangan, G. Papandajan, KORTIALS 275 (L); between Kali poetjang and Pada Herang, BACKER 4517, Sept. 1912 (B); Rawah Lakbok, FRANK 5, June 1933 (B); Semarang, Rawah Pening, BACKER 30200, March 1920 (B); id., KOORDERS 36225 $\beta$ , May 1899

(B); id., Miss POLAK 62, Aug. 1930 (B); Malang, Djatiroto, BACKER 7832, May 1913 (B); Besoeki, Poeger, KOORDERS 21076<sub>g</sub>, Oct. 1895 (B).

BORNEO, without locality, KORTHALS 126 (L); W. Division, P. Lemoekoetan, HALLIER 279 (B); S. and E. Division, Bandjermasin, KORTHALS 238 (B, L).

BALI, near lake Batoer, VAN STEENIS 7931, Apr. 1936 (B).

PHILIPPINE ISLANDS; in thickets and bordering fresh-water swamps (MERRILL). Luzon, Laguna prov., Los Baños, GATES & OTANES, Bur. of Sc. 22419, Dec. 1914 (B, L); id., in the hot springs swamp, lake margin, GATES & OTANES, Bur. of Sc. 7758, Dec. 1914 (L); Mindanao, Lanao, Cotabato (MERRILL).

Distribution: Tropical America (British Guiana, Surinam); tropical Africa, Madagascar and adjacent islands, Malay Archipelago, Philippine Islands.

Habitat: In marshes, along rivers and in marshy forests, occasionally in waste places; between 1 and 1000 m.

Remarks. *Ipomoea lilacina* BL., 1825 is illegitimate, being a later homonym of the validly published *I. lilacina* SCHRANK, 1822. According to MERRILL, 1923, the valid name is *I. fragrans* (BOJ.) BOJ. ex CHOISY, the type of which is unknown to me. Moreover, I am not responsible for the various synonyms mentioned above; I have derived them from HALLIER (in ENGL., Bot. Jahrb. XVIII (1893) p. 153) and from BAKER & RENDLE, l. c., with exception of *I. Parkeri* CHOISY and its var. *subsericea* MEISSN., the types of which I could compare with BLUME's type of *I. lilacina*.

35. *Ipomoea illustris* (CLARKE) PRAIN, Beng. Pl. II (1903) p. 735; PRAIN in Journ. As. Soc. Bengal LXXIV (1906) p. 314; RIDLEY, Fl. Malay Penins. II (1923) p. 460; RENDLE in Journ. Bot. LXIII, Suppl. (1925) p. 72 — *I. campanulata* L. var. *illustris* CLARKE in Hook. f., Fl. Brit. Ind. IV (1883) p. 211; PRAIN in Journ. As. Soc. Bengal LXIII (1894) p. 107; GAGNEP. & COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 253.

A twiner (rarely prostrate and rooting); stems woody, pale fulvous, longitudinally wrinkled to angular, glabrous or pubescent, smooth or rarely muricated. Leaves petiolate; petiole slender, 3—8 cm long, smooth or rarely muricated, glabrous or pubescent; blade ovate, broad-ovate or orbicular, sometimes ovate-oblong, acuminate at the apex, acumen short to long and narrow, acute or obtusish, mucronulate; base shallowly cordate to truncate; margin entire or undulate; surfaces glabrous or lower surface pubescent; length of blade 6—15 cm, width 3.5—11 cm; nerves 10—15 on each side of the midrib. Inflorescences axillary, pedunculate, cymosely 1—several-flowered; peduncle stout, 2.5—8 cm long, glabrous or rarely pubescent; pedicels 10—15, sometimes to 25 mm, in fruit to

28 mm long, angular, thickened towards the calyx, glabrous or rarely pubescent; sepals glabrous or rarely pubescent, coriaceous, with pale thinner margins, orbicular with rounded top, the outer ones 7—10, the inner ones 10—12 mm long, in fruit respectively up to 14—15 and up to 18 mm long; corolla reddish purple with darker centre, paler without, sometimes pale purple or rarely white, up to 10 cm long, tubular to funnel-shaped, contracted at about 1.5 cm above the base; stamens and style included; filaments inserted c. 12 mm above the corolla base, filiform, hairy at the base; anthers linear-lanceolate, c. 5 mm long; ovary glabrous; style filiform, glabrous; stigma biglobular; disk low, annular. Capsule ovoid, c. 1.5 cm high, brown, 4-valved, 2-celled, 4-seeded; seeds black, 8—9 mm long, with long sericeous hairs along the margins.

MALAY PENINSULA. On sea-shores, rare (RIDLEY). Penang, Adang Islands (PRAEN, RIDLEY).

SUMATRA, Atjeh and Dependencies, Simaloer, ACHIMAD 1028, Apr. 1919 (B, L); id., JACOBSON 2095, Aug. 1913 (B); Tapanoeli, Nias, VON RÖMER s. n. (B); Lampung Districts (according to RENDLE, 1925).

JAVA, Bantam, Tjarita, BOEDJN 1248A, May 1931 (B); Pasaoeran, BACKER 7161, March 1913 (B); id., BACKER 7273, March 1913 (B); Malingping, BACKER 1404, June 1911 (B); Batavia, Tandjong Priok, without collector's name (B); id., along canal, RAAP 491, June 1894 (L); id., HALLER s. n., June 1896 (B); Buitenzorg, Oedjoeng Genteng, BACKER 17547, Nov. 1914 (B); Pelabocan Ratoe, BACKER 18396, Dec. 1914 (B); Balch Kambang (Zandbaai), BACKER 802, Dec. 1911 (B); Banjoemas, bank of Serajoe near the sea, BACKER 4546, Sept. 1912 (B); Noesa Kambangan, KOORDERS 27051 $\beta$ , Febr. 1897 (L, mixed with *I. Pes-caprae* (L.) SWEET); id., N. side, opposite Tjilatjap, BACKER 20995, May 1915 (B); id., Brambang, AMDJAH 46, June 1909 (B); Kediri, Prigi, BACKER 11893, Febr. 1914 (B); near bay of Domas, W. of Prigi, BACKER 11968, Febr. 1914 (B).

BORNEO, W. Division, P. Lemoekoetan, HALLER 364 (B); Karimata Islands, P. Pelapis, Tiangbalai, MONDI 137, March 1931 (B, L).

CELEBES, Manado, between Singkel and Bocha, on fertile volcanic sand, KOORDERS 16581  $\beta$ , Jan. 1895 (B, L).

BALI, E. of Gilimanoek, VAN STEENIS 7574, Apr. 1936 (B).

MOLUCCAS, Ceram, Way Sala, KOENASSI 1256, May 1918 (B).

NEW GUINEA, Papua, W. Division, Daru Island, in savannah-forest, BRASS 6446, Apr. 1936 (L).

PHILIPPINE ISLANDS, Luzon, prov. of Bulacan, RAMOS, Bur. of Sc. 2028, Dec. 1914 (B, L).

Distribution: British India, Ceylon, Indo-China, Malay Peninsula, Andamans, Malay Archipelago, Philippines, New Guinea.

Habitat: Sea-shores, and in thickets and along edges of forests near the sea; between 1 and 25 m.

Vernacular names: olor baowo oeding (Sumatra, Simaloer,

ACHMAD); blaran (Java, Pekalongan, BEUMÉE); boedokkin (Celebes, Manado, Bantik language, KOORDERS).

**Remarks.** This species is generally known in systematic literature under the name of *Ipomoea campanulata* L. (L., Spec. Pl. ed. 1 (1753) p. 160). LINNAEUS gives the following description of it:

IPOMOEA foliis cordatis, pedunculis multifloris, perianthio exteriore orbiculari, corollis campanulatis lobatis.

Adamboe *Rheed. mal.* 11. p. 115. t. 56.

*Habitat in* India.

*Corolla crassior; quam in reliquis; sub Perianthio quinquepartito, aliud perianthium minus orbiculatum integerrimum.*

From this description it is clear that the plant which LINNAEUS had before him cannot be a representative of the genus *Ipomoea*, or even of the family Convolvulaceae, as no Convolvulacea has a 5-partite inner perianth (corolla) together with a smaller, orbicular, entire outer one (calyx). Fortunately the herbarium of LINNAEUS, preserved at the Linnean Society at London, throws light upon this question. It contains, as HALLIER<sup>1</sup>) states, under the name of *Ipomoea campanulata* a specimen of *Thespesia populnea* (L.) SOLAND., a Malvacea, fully agreeing with LINNAEUS's description.

LINNAEUS himself already knew this *Thespesia* and described it in the first edition of his *Species Plantarum* as *Hibiscus populneus* L. It is a remarkable fact that LINNAEUS considered a so totally aberrant species, as a representative of the genus *Ipomoea*. The synonym Adamboe RHEEDE, mentioned by LINNAEUS, appears to be a real Convolvulacea, and most probably must be treated as to belong to *Stictocardia tiliaefolia*. Especially the form of the fruit enclosed by the enlarged sepals figured and described by RHEEDE has led to this opinion.

From the above I hope that it will be clear that *Ipomoea campanulata* L. can only be treated as a synonym of *Thespesia populnea* (L.) SOLAND. The right name for the Convolvulaceous species treated as *I. campanulata* L. is *I. illustris* (CLARKE) PRAIN.

Concerning the name *Stictocardia tiliaefolia* can be said that MERRILL wrongly changed this name into *S. campanulata* (L.) MERRILL, on account of the fact that LINNAEUS used the name *I. campanulata* for RHEEDE's Adamboe.

As has been pointed out under *Ipomoea tuba* (this paper, p. 577) the specimen mentioned by LINNAEUS the son, in his Supplement, under

<sup>1</sup>) HALLIER, H. in Meded. Rijksherb. Leiden 1 (1910) p. 26.

*Convolvulus grandiflorus* belongs to *Stictocardia tiliaefolia*. HALLIER based his *Stictocardia tiliaefolia* upon *Rivea tiliaefolia* CHOISY and the synonyms mentioned by CHOISY in DC., Prodr. IX (1845) p. 325, as appears from his citation of *S. tiliaefolia* (CHOISY) HALLIER, to which has been added as a synonym among others, *Rivea tiliaefolia* CHOISY in DC., Pr. 9 p. 325 c. syn. The oldest of these synonyms is *Convolvulus tiliaefolius* DESR., 1791.

As *Convolvulus grandiflorus* L. f., 1781, has been published before *Convolvulus tiliaefolius* DESR., 1791, the former name has priority. There exists, however, already a *Convolvulus grandiflorus* JACQ., published in 1776, so that the right name for the *Stictocardia*-species remains *S. tiliaefolia* (DESR.) HALL. f.

36. *Ipomoea crassicaulis* (BENTH.) B. L. ROBINSON in Proc. Amer. Acad. LI (1916) p. 530; id. in Contrib. Gray Herb., New Series XLV (1916) p. 530 — *Batatas? crassicaulis* BENTH., Voy. Sulph. (1844) p. 134; WALP., Rept. VI (1846—47) p. 530 — *Ipomoea fistulosa* MART. ex CHOISY in DC., Prodr. IX (1845) p. 349; HALL. f. in Versl. 's Lands Pl. t. 1895 (1896) p. 130; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 512.

A shrub, 1—2 m high, erect or ascending, or sometimes twining, and to 5 m high. Branches thick, terete to angular, fistulose or solid, the older parts lenticellate, pale greyish, the younger parts densely short-pubescent, glabrescent. Leaves petiolate; petiole slender, 2.5—15 cm long; blade ovate or ovate-oblong, acuminate at the apex, with an acute or obtuse, mucronulate acumen, cordate to truncate at the base, 6—25 cm long, 4—17 cm broad; young leaves densely pubescent on both surfaces, adult leaves pubescent below, especially on the nerves, glabrous or nearly so above; midrib below with 2 glands at the base of the leaf-blade<sup>1)</sup>; lateral nerves 7—9 on each side of the midrib; secondary nerves many, parallel. Inflorescences axillary, pedunculate, cymosely branched at the apex, several- to many-flowered; peduncle stout, terete, pubescent or glabrous, 5—15 cm long; bracts minute, ovate, obtuse, deciduous; pedicels longer than the calyx, puberulent; sepals subequal or the exterior ones slightly shorter, 5—6 mm long, orbicular, broadly rounded at the top, puberulent; calyx with 5 extrafloral nectaries between the bases of the sepals<sup>1)</sup>; corolla pink or pale lilac, inside often darker towards the base, tubular to funnel-shaped, 7.5—9 cm long, the limb 10—12 cm in diam. (BACKER), the tube constricted close to the base, the tube and the midpetaline bands

<sup>1)</sup> See NIEUWENHUIS — VON ÜXKÜLL-GÜLDENBANDT in Ann. Jard. Bot. Buitenz. XXI (1907) p. 254, t. 24, fig. 40 and 43.

farinose outside, the connecting fields glabrous or nearly so; stamens and style included; stamens inserted c. 6 mm above the base of the corolla; filaments very unequal, 2 longer and 3 shorter ones, filiform, white, hairy at the dilated purple base; anthers white, linear, sagittate, c. 8 mm long; ovary puberulent; style filiform, the basal part puberulent; stigma biglobular. Capsule ovoid, mucronate, 1.5—2 cm long, pale brown, finely puberulent in the basal portion, 4-valved, incompletely 4-celled or 2-celled, 4- or less-seeded; seeds black, the whole surface long sericeo-villose.

SUMATRA, East Coast, E. of Medan, LÖRZING 3162, Oct. 1914 (B, L); Kampongbaroe, S. of Medan, LÖRZING 3504, Febr. 1915 (B); R i o u w a n d D e p e n d e n c i e s, Lingga Archipelago, P. Singkep, Manggoe, BÜNNEMEYER 7169, Aug. 1919 (B).

JAVA. According to BACKER introduced in Java many years ago and cultivated as an ornamental plant; frequently escaped from culture and naturalized at low altitudes along rivers, canals, locally abundant. B a t a v i a, Weltevreden, G. Sahari Sentiong, BACKER 32303, May 1902 (B); Pal Merah, S. W. of Weltevreden, BACKER 32299, May 1903 (B); Buitenzorg, Sindanglaja, cult., KOORDERS 42175 ♂ (B); Tjiomas, Forestry Experiment Station 3929 and 3930, March 1926 (B); Tjidadap, S. of Tjibeber, cult., WINCKEL 1911 ♂, Dec. 1923 (B); Buitenzorg, cult. in the Botanic Garden, XV. H. 14 (B); X. F. 72 (L); s. n. (L); P e k a l o n g a n, Brebes, cult.; BACKER 15315, Sept. 1914 (B); Kemantran near Tegal, DOCTERS VAN LEEUWEN s. n., Oct. 1909 (B); S e m a r a n g, Karangbalong, LÖRZING 1699, June 1914 (B); forestry N. W. Wirosari, cult., BEUMÉE 3429, Oct. 1918 (B); M a d i o e n, Padjaran, cult., ALTONA 6682, Oct. 1925 (B); Saradan, ALTONA 6682a, Oct. 1925 (B); S o e r a b a j a, Gresik, DORGÉLO 1576bis, Jan. 1923 (Pa); sugar-estate Ngelom, Balongdowo, BOVIEN, herb. Djombang n. 43, Sept. 1923 (Pa); M a l a n g, Paseroacan, BACKER 37285, Oct. 1930 (Pa); Loemadjang, Government physician of Solo s. n., Dec. 1935 (B); Lekok, cult., Nov. 1928 (Pa); Djatiroto, cult., VERMEULEN 40, June 1921 (B); Besoeki, Djember, ULTÉE 10 (B).

BORNEO, B r i t i s h N o r t h B o r n e o, without locality, VILLAMIL, Bur. of Sc. 256bis, Nov. 1916—Febr. 1917 (B).

CELEBES, C e l e b e s a n d D e p e n d e n c i e s, Palopo, KJELLBERG 1941, July 1929 (B).

MOLUCCAS, C e r a m, Hatoemete, KORNASSI 634 (exped. RUTTEN), Nov. 1917 (B, L, U).

**Distribution:** A native of America, where it is known from Mexico, Florida, the West Indies as far as south as Brazil, and Paraguay.

**Habitat:** Frequently cultivated and run wild along rivers, canals, in moist waste places and along waysides; between 1 and 1000 m.

**Vernacular names:** klemoet, kangkoengan (Java, according to a note on a label of a specimen collected by the Forestry Experiment Station; BACKER, ALTONA); oela (Java, Madioen, ALTONA); doean krangkoengan (Java, Malang, according to the Government physician of Solo).

Use: Cultivated as an ornamental plant; the leaves are eaten by the Madurese as a vegetable.

Remarks. 1. According to LÖRZING this species does not produce ripe seeds in Malaysia. It easily propagates by cuttings.

2. Several authors<sup>1)</sup> have used the name *Ipomoea carnea* JACQ. for the Asiatic specimens of this species, most probably wrongly; the species described by JACQUIN and figured by him in his *Select. Stirp. Am.* (1763) p. 26, t. XVIII, seems to be different.

37. *Ipomoea sumatrana* (MIQ.) VAN OOSTSTR., nov. comb. — *Convolvulus polyanthus* WALL., *Cat.* (1828) n. 1378, nomen — *Lettsonia sumatrana* MIQ., *Fl. Ned. Ind. Suppl.* (1860) p. 560 — *Ipomoea staphylina* R. & SCH. var. *malayana* PRAIN in *Journ. As. Soc. Bengal* LXIII (1894) p. 106; id. in *Journ. As. Soc. Beng.* LXXIV (1906) p. 317; RIDLEY, *Fl. Malay Penins.* II (1923) p. 462.

A large woody, glabrous twiner; stems terete or angular, greyish-brown, fistulose; leaves petiolate; petiole slender, 4–10 cm long; blade rather stiff, ovate, obtuse or acute to short-acuminate at the apex, slightly cordate or truncate at the base, 6–12 cm long and 5–10 cm broad; lateral nerves prominent beneath, 11–14 on each side of the midrib. Inflorescences axillary, 10–15 cm long, paniculate, one or two times racemously branched, the ultimate partial inflorescences cymose; large inflorescences with leaflike bracts at the base of the lowest branches; peduncle under the lowest branch c. 4–6 cm long; pedicels longer than the calyx, 6–10 mm; outer sepals slightly shorter than inner ones; outer ones broadly ovate, obtuse, c. 3.5–4.5 mm long, coriaceous, inner ones orbicular, broadly rounded, c. 4.5–5 mm long, coriaceous with scarious margin; corolla white, slightly tinged with pink (PRAIN), tubular to funnel-shaped, c. 3–3.5 cm long, glabrous; tube c. 5–6 mm wide; mid-petaline areas between the nerves with many minute dark stripes (glands?); stamens and style included; stamens inserted c. 1.5 mm above the corolla base; filaments unequal, filiform, sparsely pilose at the dilated base; anthers oblong, sagittate, in open flower c. 3.5 mm long; ovary glabrous; style filiform, glabrous; stigma biglobular, papillose; disk thick, annular; capsule ovoid, sub-acute, c. 7.5 mm long, 4-seeded; seeds with long silky hairs (PRAIN).

MALAY PENINSULA, Perlis, Kangar, HENDERSON, Singapore Field n. 22925,

<sup>1)</sup> BOERL., *Handl. Fl. Ned. Ind.* II (1899) p. 512; KOORDERS, *Exk. fl. Java* III (1912) p. 120; GAGNEP. & COURCH. in LEC., *Fl. Indo-Chine* IV (1915) p. 271; BACKER, *Onkruidfl. Jav. Suikerrietgr.* (1931) p. 528.

Nov. 1929 (B); also in Kedah, Penang, Perak and Pahang (PRAIN, RIDLEY). The type of *Convolvulus polyanthus* WALL. was collected in Penang.

SUMATRA, West Coast, Soengei Pague, TEYSMANN HB. 1150 (B, L; U, type of *Lettsomia sumatrana* MIQ.).

JAVA, Semarang, Salatiga, Kali Taman, DOCTERS VAN LEEUWEN s. n., June 1909 (B).

SOEMBAWA, Batoe Doelang, dry thickets, Mrs. RENSCH 619, May 1927, see remarks (B).

Distribution: Malay Peninsula, Malay Archipelago.

Habitat: probably in thickets; between 1 and 1000 m.

Remarks. 1. PRAIN considers this species as a variety of *I. staphylina* R. & SCH. The differences between this variety and the typical *I. staphylina* are, however, so important that I feel quite justified in giving it the rank of a species. In *I. staphylina* the leaf blades are thin, ovate to ovate-oblong, the number of lateral nerves amounts to 7—8(—11) on each side of the midrib; the corolla is broadly funnel-shaped to campanulate, and c. 2 cm long, the filaments are inserted c. 2.5 mm above the corolla base. In *I. sumatrana* the leaf blade is thicker, and always ovate, there are 11—14 lateral nerves, the corolla is much narrower and longer, tubular to funnel-shaped and c. 3—3.5 cm long; the filaments are inserted c. 1.5 mm above the corolla base.

2. The specimen from Soembawa collected by Mrs. RENSCH is somewhat aberrant. It has the stems densely warty with minute warts, the peduncles are thinner than in the other specimens and few-flowered.

38. *Ipomoea aculeata* BL., Bijdr. (1825) p. 715; HALL. f. in Bull. Herb. Boiss. V (1897) p. 380; id. in Meded. Rijksherb. Leiden 1 (1911) p. 25.

A glabrous twiner, to 10—15 m high (BACKER, KOORDERS), occasionally prostrate. Stems woody, greyish or pale straw-coloured, often thickened at the nodes, terete or striate to angular, glabrous, smooth or muricated by small curved hooks. Leaves petiolate; petiole slender, 2.5—8(—12) cm long, smooth or sometimes with some acute warts; blade ovate to orbicular, entire or rarely 3-lobed (see remarks), acuminate at the apex with a short or long and narrow acute or obtusish mucronulate acumen, cordate to truncate at the base, if cordate with a narrow to very broad, mostly obtuse sinus; auricles rounded; length of blade 5—14 cm, width 3—10 cm; lateral nerves 5—6 on each side of the midrib. Inflorescences axillary, 1- or few-flowered; peduncle short or very short, 2—10(—15) mm long, much thicker than the petiole; pedicels terete or angular and more or less thickened towards the calyx, 7—15 mm long, in fruit clavate and to 20 mm long, recurved in flower bud, later erect, finally

recurved again; sepals 12—18 mm long, broad-elliptic or orbicular, rarely narrower, coriaceous, the inner ones mostly somewhat shorter than the outer ones and with a narrow scarious margin, all broadly rounded to emarginate at the apex and minutely mucronate, slightly enlarged in fruit and to 20 mm long; corolla white, greenish outside, expanding at night, 14—17 cm long, hypocrateriform with long and narrow tube; stamens and style exerted; filaments inserted at the mouth of the tube, unequal, filiform, hairy at their base; anthers lanceolate, sagittate, c. 5 mm long; ovary glabrous; style filiform, glabrous; stigma biglobular; disk low, annular; capsule enclosed by the sepals, ovoid, mucronate, c. 15 mm high, 4-valved, with more or less lacerate valves, 2-celled, 4-seeded; seeds densely grey-woolly, 6—8 mm long.

SUMATRA, East Coast, N. W. Karolands, GALOENGI 464, July 1919 (B).

JAVA, W. Java, without locality, KUIJL & VAN HASSELT s. n. (L, mixed with *I. alba* L.); Batavia, G. Parang, BLUME 1234 (L, type of *I. aculeata* BL.; U); id., BLUME 684 (L); Buitenzorg, Balekambang, Zandbaai, BACKER 25609, Aug. 1918 (B); Djapara-Rembang, Ngarengan, KOORDERS 35604  $\beta$ , May 1899 (B); Soerabaja, forest-district N. Soerabaja, Bloeloek, on marl, BEUMÉE 2683, May 1918, a very small specimen (B); Malang, forest Sempol near Djenggolo, KOORDERS 23464  $\beta$ , June 1896 (B); Besoeki, between Rogodjampi and Bakal, ZOLLINGER 1772, May 1858 (L).

WETAR, near lake Tihoe, *Eucalyptus*-forest, ELBERT 4554, Febr. 1910 (L); hills near lake Tihoe, *Eucalyptus*-forest, ELBERT 4589, Febr. 1910 (L).

Distribution: Sumatra, Java, Lesser Sunda Islands.

Habitat: In thickets and thin forests; between 1 and 700 m.

Vernacular names: waren tan tan (Karobatak, GALOENGI); klorak (Jav., Djapara-Rembang, KOORDERS).

Use: According to GALOENGI the pulverized top of the plant is used in the Karolands, Sumatra, as a medicine against boils.

Remarks. From a note by HALLIER in Bull. Herb. Boiss. V (1897) p. 380, no. 19 and in Meded. Rijksherb. Leiden 1 (1911) p. 25, n. 77 we learn that this author identifies *Calonyction mollissimum* ZOLL. with *Ipomoea aculeata* BL. This is not quite correct. The type of *I. aculeata* BL. in Leiden is entirely glabrous, whereas *C. mollissimum* ZOLL. has been based, according to the description, on specimens with a soft pubescence on stems and leaves. This soft pubescence is also found in the specimen ZOLLINGER 2860 (Buitenzorg), mentioned in ZOLLINGER'S Systematisches Verzeichnis under *Calonyction mollissimum*. In correspondence with HALLIER'S later opinion, which appears from several identifications on the labels in the Rijksherbarium at Leiden, the present author distinguishes the more or less pubescent specimens which group themselves round ZOLLINGER'S *Calonyction mollissimum* as a var. *mollissima* of *Ipomoea aculeata* BL.:

var. *mollissima* (ZOLL.) HALL. f. inedit. — *Calonyction mollissimum* ZOLL., Syst. Verz. 2. Heft (1854) p. 128, 131; MIQ., Fl. Ned. Ind. II (1857) p. 597 — *Calonyction mollissimum* ZOLL. var. *glabrior* MIQ., Fl. Ned. Ind. II (1857) p. 597 — ? *Ipomoea Yomae* KURZ, For. Fl. Brit. Burma II (1877) p. 218 (see remarks); PRAIN in Journ. As. Soc. Bengal LXIII (1894) p. 103 — *I. mollissimum* (ZOLL.) HALL. f. ex BOERL., Handl. Fl. Ned. Ind. II (1899) p. 512; KOORDERS, Exk. fl. Java III (1912) p. 121; HEYNE, Nutt. Pl., ed. 2 (1927) p. 1304 — *I. mollissimum* (ZOLL.) HALL. f. var. *glabrior* (MIQ.) BOERL., Handl. Fl. Ned. Ind. II (1899) p. 512.

Differs from the typical *I. aculeata* in being wholly or partly pubescent or short-tomentose.

JAVA, Magelang, N. E. foot of Soembing, above Temanggoeng, LÖRZING 400, May 1912 (B); Soerakarta, HORSFIELD (L; U, type of *Calonyction mollissimum* ZOLL. var. *glabrior* MIQ.); Kediri, near Gadoengan, KOORDERS 22861 β, May 1896 (B, L); Besoeki, near Waringin, ZOLLINGER 671, type of *Calonyction mollissimum* ZOLL. (according to ZOLLINGER); Litjin, ZOLLINGER 2860, May 1845 (B); Madoera, TEYSMANN 1780 HB (B, L); Pegantenan, VORDERMAN 82 (B); Kangean Islands, Paliat, BACKER 29618, May 1919 (B).

LOMBOK, Rindjani, S. E. side, Sapit valley, S. slope of Poessoek mountain, ELBERT 1891, June 1909 (L); id. between Sapit and Swela, ELBERT 1939, June 1909 (L).

SOEMBAWA, Batoe Doelang, Mrs. RENSCH 603, May 1927 (B); Wawa, Mrs. RENSCH 889, June 1927 (B).

TIMOR, without locality, REINWARDT 1277, see remarks (L); S. Middle Timor, Kot Olien, on limestone, Mrs. WALSH 250, Apr. 1929, see remarks (B).

ALOR, Kalabahi, Mrs. BOUMAN-HOUTMAN 133. (B).

PHILIPPINE ISLANDS, Luzon, Laguna prov., Calauan, MCGREGOR, Bur. of Sc. 12397, Nov.—Dec. 1910 (B, L).

Distribution: Java, Lesser Sunda Islands, Philippine Islands (perhaps in Silhet, Pegu and Tenasscrim, see remarks).

Habitat: In thickets and thin forests; between 1 and 700 m.

Vernacular names: oeloek-oeloek (Java, Kediri, KOORDERS); rabet kalorak (Madoera, HEYNE, KOORDERS); klorak (Madoera, VORDERMAN).

Use: According to HEYNE the leaves are used as a purgative and as a substitute for soap.

Remarks. 1. A nocturnal bloomer; the flowers are open only during a single night; they are fragrant, giving an odour being a cross between that of clove and of sirih-leaves (LÖRZING). The wood of the stems is fragrant (BACKER).

2. The leaf margins are generally entire; the specimen WALSH 250

from Timor has the leaves partly entire and partly three-lobed. Such three-lobed leaves are also found in a specimen from Timor collected by REINWARDT (n. 1277).

3. It is not quite certain that *I. Yomae* KURZ of which species I did not see the type, really belongs here. HALLIER mentions it as a synonym of *I. aculeata* after having examined the materials in the Kew herbarium (Meded. Rijksherb. Leiden 1, 1911, p. 25). As KURZ describes his species with pubescent petioles, appressed pilose lower surfaces of the leaves and pubescent peduncles, it might be better to consider it provisionally as identic with var. *mollissima*. The specimen of KURZ was collected in the forests of the Pegu Yomah Mts. PRAIN mentions specimens from Silhet and Tenasserim.

4. MIQUEL's var. *glabrior* of *Calonyction mollissimum* ZOLL. is based on a specimen (HORSFIELD) which is less dense pubescent than the typical specimens of ZOLLINGER. As only point of difference MIQUEL mentions the sinus of the leaves being obtuse ("foliorum sinus obtusus") instead of acute as should be found in the typical *C. mollissimum*. In the specimens I could examine of *I. aculeata* as well as of var. *mollissima* the sinus is mostly distinctly obtuse.

39. *Ipomoea tuba* (SCHLECHTEND.) DON, Gen. Syst. IV (1838) p. 271 — *Convolvulus grandiflorus* JACQ., Hort. Vindob. III (1776) p. 39, t. 69; DESR. in LAMK., Encycl. Meth. III (1789) p. 543, non L. f., 1781 — *C. tuba* SCHLECHTEND. in Linnaea VI (1831) p. 735 — *Calonyction grandiflorum* (JACQ.) CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 442, in note; id. in DC., Prodr. IX (1845) p. 346 — *Ipomoea glaberrima* BOJ. ex BOUTON in HOOK., Journ. Bot. I (1834) p. 357; HALL. f. in VALETON, Pl. Pap. in Bull. Dép. Agric. Ind. Néerl. X (1907) p. 50; DOCTERS VAN LEEUWEN in Ann. Jard. Bot. Buitenz. XLVI—XLVII (1936) p. 405 — *Convolvulus catharticus* BLANCO, Fl. Filip. ed. 1 (1837) p. 94 (according to MERRILL in Bur. Gov. Lab. Philipp. 27 (1905) p. 63; id., Spec. Blanc. (1918) p. 321) — ? *Calonyction comosperma* BOJ., Hort. Maur. (1837) p. 228 — *C. Jacquinii* DON, Gen. Syst. IV (1838) p. 267 — *Ipomoea grandiflora* (CHOISY) HALL. f. in ENGL., Bot. Jahrb. XVIII (1893) p. 153, non ROXB., nec LAMK. (see remarks); BOERL., Handl. Fl. Ned. Ind. II (1899) p. 512.

A glabrous twiner. Stems woody, branched, terete or angular, smooth or rarely muricated, straw-coloured in dry specimens, often longitudinally wrinkled. Leaves petiolate; petiole 3.5—16 cm long; blade orbicular or ovate, acuminate at the apex with obtuse, mucronulate top, deeply cordate at the base, auricles rounded; length of blade 5—16 cm, width

of blade 5—14 cm; lateral nerves 7—8 on each side of the midrib, secondary nerves parallel, tertiary nervation distinctly reticulate (at least in dry specimens the secondary and tertiary nervation often pellucid). Inflorescences axillary; peduncles short, terete, pale, 1—few-flowered, variable in length, 0.7—7(—12) cm; pedicels angular, thickened in fruit (to clavate), 14—30 mm long; flowers opening at night. Sepals orbicular, with broadly rounded to emarginate, mucronulate apex, equal in length or the interior ones slightly longer, the exterior ones 15—20 mm long, the interior 18—25 mm, all coriaceous, the interior ones somewhat thinner; corolla white, with 5 greenish bands, hypocrateriform, 9—12 cm long, the cylindrical tube 7—8 cm long, the expanded limb c. 8—10 cm in diam.; stamens and style included; filaments inserted near the base of the corolla tube, c. 6 mm above the corolla base, filiform, glabrous, except at the dilated base; anthers linear, c. 6 mm long, short-sagittate at the base; ovary glabrous; style filiform, glabrous; stigma biglobular; capsule globular, 2—2.5 cm high, pale brown, glabrous, opening by 4 valves, 2-celled, 4-seeded; seeds 10 mm long, black, densely short-tomentose and with longer (to c. 3 mm) sericeous hairs along the edges; sepals enlarged in fruit, at first enclosing the capsule as a cup, later reflexed against the pedicel, 20—30 mm long; pedicels much thickened in fruit.

MALAY PENINSULA, Perlis, Pulau Rabana, off coast of Perlis, on trees and limestone rocks by sea. HENDERSON, Singapore Field n. 23112, Nov. 1929 (B).

SUMATRA, Atjeh and Dependencies, P. Wé, Sabang, in *Barringtonia*-formation, VAN STEENIS 9, Dec. 1927 (B); Simaloer, ACHMAD 964, March 1919 (B, L); East Coast, P. Berhala, VAN DER MEER MOHR 32, 88, Aug. 1926 and Aug. 1927 (B); Tapanoeli, Batoe Islands, P. Pinil, RAAP 517, Oct. 1896 (B); Lampung Districts, Krakatau, BACKER 33971, Apr. 1906 (B); Lang Island, BACKER 33970, May 1908 (B); Verlaten Island, N.E. side, DOCTERS VAN LEEUWEN 3738, Apr. 1919 (herb. D. v. L.).

JAVA, without locality, BLUME s. n. (L); B a t a v i a, Duizend eilanden (Thousand Islands), Noordwachter, BOSCHMA 68, Sept. 1921 (B); id., VAN SLOOTEN & BACKER 35044, Sept. 1921 (B); P. Pendjaliran, Noordoostereiland, SMITH 104, Dec. 1906 (B); P. Paniki, Zuidwachter, SMITH 38, Dec. 1906 (B); P. Bokor, Klein Kombuis, BACKER 31061, Nov. 1920 (B); island Edam, BACKER 34059, Apr. 1906 (B); island Haarlem, VAN STEENIS 6806, Apr. 1935 (B); island Leiden, BOERLAGE s. n., July 1888 (L); id., DOCTERS VAN LEEUWEN 7873, Apr. 1924 (B); Tandjong Priok, KUHIL & VAN HASSELT 80, Apr. (L); coast, in *Barringtonia*-form., VAN HARREVELD s. n. (Pa); id., thickets along canal, HALLER s. n., June 1896 (B); Tjilintjing, E. of Tandjong Priok, SCHIEFFER s. n., Aug. 1871 (B); Antjol, BACKER s. n. and 34058, May 1903 (B); Buitenzorg, cult. in the Botanic Garden, XV. K. B. 9; XV. K. B. X. 6; XV. K. B. XIV. 11 (B); Pelabocan Ratoe, KUHIL & VAN HASSELT 211, Febr. (L); Besoeki, bay of Bonde alit, ALTMANN 491, Apr. 1935 (B); M a d o c-

ra, Kangean Islands, Kangean, Kajoe Waroc, BACKER 28051, Apr. 1919 (B); id., Bangko, BACKER 29189, Apr. 1919 (B); id., Mamboerit, BACKER 27358, March 1919 (B); id., Saboenten, BACKER 29785, May 1919 (B); id., Saèboes, BACKER 29111, Apr. 1919 (B); id., Saoebi, BACKER 28376, Apr. 1919 (B); id., Saoebi, MAHLMELSTER 25, March 1919 (B); id., Sapapan, BACKER 28474, Apr. 1919 (B); id., Sascël, BACKER 28689, Apr. 1919 (B); id., Sepandjang, BACKER 28791, Apr. 1919 (B).

CELEBES, Celebes and Dependencies, P. Moena, on limestone, KJELLBERG 54, Febr. 1929 (B); Manado, Miangas (Palmas) Island (according to MERRILL, 1923).

MOLUCCAS, Ternate, Tagalolo, BEGUIN 1655, June 1921, see remarks (B); Ambon, Hila, TREUB s.n. (B).

NEW GUINEA, Netherlands New Guinea, Schouten Islands, Biak, N. coast, FEUILLETAU DE BRUIJN 274, Aug. 1915 (B); Merauke, KOCH s.n. and T. T. 3, Aug. 1904 (B, L); Territory of New Guinea, Finschhafen (SCHUMANN & HOLLRUNG); Papua, Port Moresby, CARR 11867 & 11868, Apr. 1935 (L).

BISMARCK ARCHIPELAGO, Duke of York (N. Lauenburg) group (SCHUMANN & HOLLRUNG).

PHILIPPINE ISLANDS, in thickets often near the sea (MERRILL). Luzon, Batangas prov., Taal Volcano, MERRILL, Spec. Blanc. 1051, Jan. 1917 (B, L); also in Jolo (MERRILL).

Distribution: Tropical America, East tropical Africa, Mascarene Islands, tropical Asia, Polynesia.

Habitat: On the beach and in thickets near the sea; between 0 and 10 m.

Vernacular names: alor baeowo alas (Sumatra, Simaloer, ACHMAD); tatampajan besar (Java, Batavia, SCHEFFER); gangamielke (Netherlands New Guinea, KOCH); lambatung (Philippines, Súlu language, MERRILL); bulacan (Philippines, Tagalog language, MERRILL).

Remarks. 1. Several authors<sup>1)</sup> have interpreted this species as being identic with *Ipomoea grandiflora* (L. f.) LAMK., Tabl. Encycl. I (1791) p. 467 (= *Convolvulus grandiflorus* L. f., Suppl. (1781) p. 136). On account of the description of *Convolvulus grandiflorus* L. f. it is evident that the specimen of KÖNIG, which has been described by LINNAEUS, the son, as the type, belongs to another species. LINNAEUS, the son, describes the stems and petioles as pubescent, a characteristic never found in *I. tuba*. According to HALLER (in Jahrb. Hamb. Wiss. Anst. XV

<sup>1)</sup> CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 198; FORBES, Wander., Germ. ed. II (1886) p. 222; SCHUM. & HOLLR., Fl. Kais. Wilh. Land (1889) p. 115; WARB. in ENGL., Bot. Jahrb. XIII (1891) p. 413; TRIMEN, Handb. Fl. Ceyl. III (1895) p. 214; MANSON BAILEY, Queensl. Fl. IV (1901) p. 1060; BAKER & RENDLE in THES.-DYER, Fl. Trop. Afr. IV, 2 (1905) p. 190; KOORDERS, Exk. fl. Java III (1912) p. 121.

(1898) p. 45; id. in Meded. Rijksherb. Leiden 1 (1911) p. 25) *Convolvulus grandiflorus* L. f. is identic with *Stictocardia tiliaefolia*<sup>1)</sup>.

2. MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 369 mentions this species as *Calonyction album* (L.) HOUSE. For a discussion of this combination made by HOUSE, see HALLIER in Meded. Rijksherb. Leiden 1 (1911) p. 25, n. 76.

3. The specimen BEGUIN 1655, from Ternate, has aberrant seeds; they are long hairy at the margins and otherwise glabrous.

40. *Ipomoea trichosperma* BL., Bijdr. (1825) p. 710; CLARKE in HOOK., Fl. Brit. Ind. IV (1883) p. 198 (see remarks); HALL. f. in Bull. Herb. Boiss. V (1897) p. 379; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 512; HALL. f. in Bull. Herb. Boiss. sér. 2, I (1901) p. 675; KOORDERS, Exk. fl. Java III (1912) p. 120 — *Calonyction trichospermum* (BL.) CHOISY in Mém. Soc. Phys. Genève VI (1833) p. 442; id. in DC., Prodr. IX (1845) p. 346; HASSK., Pl. Jav. Rar. (1848) p. 523; ZOLL., Syst. Verz. 2. Heft (1854) p. 128; MIQ., Fl. Ned. Ind. II (1857) p. 598; GAGNEP. & COURCH. in LEC., Fl. Indo-Chine IV (1915) p. 287 (? see remarks) — *Ipomoea capillata* SPANOGHE in Linnæa XV (1841) p. 340; FORBES, Wander., Germ. ed. II (1886) p. 222; BOERL., Handl. Fl. Ned. Ind. II (1899) p. 512 — *Calonyction diversifolium* HASSK., Catal. Pl. Hort. Bogor. alt. (1844) p. 140; id. in Walp., Rept. VI (1847) p. 531; id., Pl. Jav. Rar. (1848) p. 523 — *C. trichospermum* (BL.) CHOISY var. *diversifolium* (HASSK.) CHOISY in DC., Prodr. IX (1845) p. 346; MIQ., Fl. Ned. Ind. II (1857) p. 598 — *C. capillatum* (SPANOGHE) MIQ., Fl. Ned. Ind. II (1857) p. 598 — *Ipomoea longiflora* R. BR. var. *diversifolia* (HASSK.) HALL. f. in Versl. 's Lands Pl. t. 1895 (1896) p. 130; id. in Bull. Herb. Boiss. V (1897) p. 379 (*I. longiflora* non R. BR. var. *diversifolia*) — *I. trichosperma* BL. var. *diversifolia* (HASSK.) BOERL., Handl. Fl. Ned. Ind. II (1899) p. 512.

A glabrous twiner; stems woody, terete, smooth or here and there minutely verrucose, pale brown; leaves petiolate; petiole thin, slender, 4.5—12 cm long; blade orbicular or transverse elliptic in outline, (3—)5(—7)-lobed mostly far beyond the middle, the middle lobe elliptic or lanceolate, attenuate towards both ends, acuminate at the apex with narrow, acute or obtusish, mucronulate acumen; the lateral lobes slightly smaller than the middle one, obliquely ovate to lanceolate, long-acuminate, the basal lobes much smaller; base of the leaf cordate with

<sup>1)</sup> The synonym Munda-Valli RHEEDE mentioned by LINNÆUS fil. does not belong here, but has reference to *Ipomoea-alba* L. (*I. bona-nox* L.).

broadly rounded sinus; rarely the leaf margin is entire or coarsely dentate (see remarks); length and width of the blade 6—12 cm, middle lobe 5—8 × 2—3.5 cm. Inflorescences axillary; peduncles stout, nearly as thick as the stems, much thicker than the petioles, terete, smooth, 1-flowered or dichasial or partly monochasial and few-flowered; length of peduncle 2—14 cm; pedicels angular, thickened towards the calyx, 13—25 mm long; sepals very unequal, the exterior sepals much shorter than the interior ones; the first (outer) and second sepal coriaceous, broadly elliptic to orbicular, broadly rounded at the apex, mucronulate, resp. 8—10 and 10—15 mm long, the third, fourth and fifth sepal coriaceous with scarious margin, the third broad-elliptic to orbicular, broadly rounded at the apex, mucronulate, c. 16—18 mm long, the fourth and fifth broadly elliptic, rounded and mucronulate at the apex, the central part coriaceous, the margins scarious, c. 20—25 mm long; corolla white with reddish midpetaline bands, hypercrateriform with long and narrow tube, the whole corolla (tube and limb) 11—14 cm long, the tube 8—9 cm long, the limb c. 10 cm in diam.; stamens and style exerted; filaments inserted c. 1.5 cm above the corolla base; filaments long, filiform, hairy at the base; anthers linear, curved (always?), c. 5 mm long; ovary glabrous; style filiform, glabrous; stigma biglobular; disk low, annular. Capsule large, 2.5—3 cm high; seeds 7—8 mm long, densely tomentose and with long (10—12 mm) sericeous patent hairs.

JAVA, without locality, ZOLLINGER s. n. (U); Buitenzorg<sup>1)</sup>, Buitenzorg, cult. in the Botanic Garden, coll. unknown, n. 130 (L); id., KORTHALS 254 (L); id., X. F. 57 (from Celebes), leaves coarsely dentate, see remarks (B, L); id., HALLIER C9a, C9c, C9d, C9e, May—June 1893—95 (L); Pekalongan, Soebah, KOORDERS 36841 β, June 1899 (B); Soerakarta, HORSFIELD s. n. (L, U); Malang, Pasoeroean, near Experiment Station, ALTMANN 236, May 1933 (B); Bangil, BACKER 7605, May 1913 (B, Pa); Binor, BACKER 13058, Apr. 1914 (B); Paiton, BACKER 12946, Apr. 1914 (B); G. Semongkrong, E. of Pasoeroean, BACKER 37194, June 1926 (Pa); Besoeki, Batoe oelo near Sabrang, ZOLLINGER 2727 (according to ZOLLINGER); G. Idjen, N. slope, above Bajeman, BACKER 30793, Apr. 1920 (B); Madoera, Poeloe Poeteran, N. side, BACKER 20810, March 1915, leaves entire, see remarks (B).

CELEBES, Celebes and Dependencies, Salajar Islands, Kajoe adi, DOCTERS VAN LEEUWEN 1308, May 1913 (B); P. Boeton, Limbo, ELBERT 2788, 6623, 6624, 6625, Aug. 1909 (L). According to the label a specimen cultivated in the Botanic Garden at Buitenzorg under n. X. F. 57, has been originally collected in Celebes (B; specimens in L collected by HALLIER, C9a, May 1893; HALLIER C9c, d, May—June 1895).

<sup>1)</sup> BLUME describes the type locality as "in convallibus humidis circa Buitenzorg." There is no specimen from that locality in the Rijksherbarium at Leiden.

SOEMBRAWA, Bima, REINWARDT s. n. and 50 (L); Wawo, Mrs. RENSCH 897, June 1927 (B).

TIMOR, without locality (Koepong, according to MIQUEL), SPANOGHE s. n. (U); SPANOGHE 41 (B, L); id., SPANOGHE No. Icon. 70<sup>1)</sup> (L, type of *I. capillata* SPAN.); id., DE CASTRO 5 (B); Beloe, Atam boea, Mrs. WALSH 430, June 1929 (B).

ALOR, Kalabahi, Mrs. BOUMAN-HOUTMAN 132 (B).

Distribution: Java, Celebes, Lesser Sunda Islands.

Habitat: In thickets, hedges and thin forests, near the beach and in the interior; between 1 and 400 m.

Vernacular names: aroi wat (oewat) goeling (Sund., HASSKARL, MIQUEL); tropongan (Jav., Java, Pekalongan, KOORDERS); nachtschoone (Dutch, Alor, Mrs. BOUMAN-HOUTMAN).

Remarks. 1. The leaves of this species are usually 5-lobed, occasionally they are 3- or 6—7-lobed; more rarely entire or coarsely dentate leaves are found. Among the specimens I could examine the latter is only the case in two numbers, viz. in a specimen collected by BACKER (20810) in Madoera and in a specimen cultivated in the Botanic Garden at Buitenzorg (X. F. 57).

2. Specimens mentioned by CLARKE under the name of *I. trichosperma* probably belong to *I. aculeata* BL.

3. Specimens mentioned by GAGNEFAIN & COURCHET under the name of *Calonyction trichospermum* most probably belong to another species, according to the description given by these authors.

Mentioned for Malaysia only on the ground of a single cultivated specimen:

*Ipomoea* (sect. *Leiocalyx*, subsect. *Calonyction*) *campaniflora* HALL. f. in Meded. Rijksherb. 46 (1922) p. 20 — *Calonyction campanulatum* HALL. f. in Bull. Herb. Boiss. V (1897) p. 1050, t. 18, fig. 2; MERRILL, Enum. Philipp. Fl. Pl. III (1923) p. 369.

Of this species MERRILL mentions a cultivated specimen from the Philippine Islands: Luzon, prov. of Union, LETE 253. It is known as suma-ñg-nagisit (Ilóko language). The species originally occurs in Mexico and Central America. For a detailed description see HALL. f. in Bull. Herb. Boiss. l. c.

*Ipomoea* (sect. *Leiocalyx*, subsect. *Eu-Leiocalyx*) *dasysperma* JACQ., Eclog. I (1811—16) p. 132, t. 89; HASSK., Retzia (1855) p. 70; MIQ., Fl. Ned. Ind. II (1857) p. 617; BOERL., Handl. Fl. Ned. Ind. II (1899)

<sup>1)</sup> There are two plates of *I. capillata* SPAN., numbered SPANOGHE no. 70, in the collections of the Rijksherbarium at Leiden.

p. 512; KOORDERS, Exk. fl. Java III (1912) p. 118; CURTIS, Bot. Mag. CXLV (1919) t. 8788.

Formerly cultivated (according to HASSKARL) in the Botanic Garden at Buitenzorg. Vernacular name: aroy kawoijang.

Doubtful for Malaysia is:

*Ipomoea repanda* JACQ., Enum. Pl. Carib. (1760) p. 13; FORBES, Wander., Germ. ed. II (1886) p. 222.

FORBES, Wander., Germ. ed. II (1886) p. 222 mentions a specimen collected in Timor, Koepang, by WILES & SMITH as belonging to *Ipomoea repanda* JACQ. This specimen is unknown to me, but it is rather doubtful that the West Indian *I. repanda* occurs in Timor.

Insufficiently known species:

*Ipomoea ? reflexa* SPANOGHE in Linnaea XV (1841) p. 341; CHOISY in DC., Prodr. IX (1845) p. 389; MIQ., Fl. Ned. Ind. II (1857) p. 619.

The original description of this species reads:

Caule volubili verrucoso, foliis cordatis ovatis acuminatis, mucrone brevi aristatis, glabris integerrimis, parallelo-venosis. Pedicellis axillaribus folio paulo longioribus, multifloris. Basi pedunculis 1-bracteatis, bracteis coriaceis. Laciniis calycinis ovato-lanceolatis, 2 exterior. brevioribus. Corolla flava valde reflexa non plicata, filamenta basi lato-appendiculata. Stigma 2-fidum, ovarium 4-ovulatum. — Crescit in insula Rotty, circa Termanoe.

There is no specimen of this species in the herbaria which I could examine.

Species mentioned for Malaysia on the ground of wrongly identified specimens:

*Ipomoea quinata* R. BR. The type of this species is unknown to me. A specimen from Kaiser Wilhelmsland, HELLWIG 189<sup>1)</sup>, in Buitenzorg (a duplicate from Berlin) belongs to the genus *Merremia* and is closely related to *M. quinquefolia*, differs, however, in the absence of glands in the inflorescences.

The specimens LOHER 2143 (4143) & 2144 (4144) from the Philippine Islands, Luzon, Benguet prov., mentioned by MERRILL (Enum. Philipp. Fl. Pl. III (1923) p. 367) are unknown to me.

<sup>1)</sup> This specimen was collected Aug. 12, 1888. I suppose it is the same as that mentioned by WARBURG (in ENGL., Bot. Jahrb. XVIII (1893) p. 207) and by SCHUMANN & LAUTERBACH (Fl. Deutsch. Schutzgeb. (1901) p. 517) as HELLWIG 184, from Kelana, Kaiser Wilhelmsland, collected Aug. 12, 1888.

*Ipomoea aspera* VATKE (= *Calonyction asperum* CHOISY). The statement by HALLIER (in ENGL., Bot. Jahrb. XVIII (1893) p. 154; see also BOERLAGE, Handl. Fl. Ned. Ind. II (1899) p. 512) of this species as occurring in Sumatra is wrong. According to a note in HALLIER's manuscript in the Rijksherbarium at Leiden, the specimen in question belongs to the Menispermaceae (cf. HALLIER in ENGL., Bot. Jahrb. XXVIII (1899) p. 52).