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ROYAL BOTANIC GARDENS, KEW

XIX.—REVISION OF THE OLD WORLD SPECIES OF
BUDDLEJA. C. V. B. MARQUAND.

Distribution.

The genus *Buddleja* has a wide distribution extending throughout most of the warmer parts of Asia, Eastern and Southern Africa, and both North and South America. The present work excludes the New World species. There are no representatives of the genus wild in Europe, Northern Asia or Australasia, while all Mascarene species which have been placed in *Buddleja* are considered to belong to the allied genus *Nicodemia*, which differs in having a berry instead of a capsule. In every species from the Mascarene Islands in which the fruit is known this has been found to be the case. As in so many genera, the largest number of species is to be found in the Chinese province of Yunnan.

The interesting "Alternifoliae," which alone in the Loganiaceae have alternate leaves, are confined to Tibet and the borders of Western China* where all the species are normally deciduous. One species (*B. polystachya*) is common to Arabia and East Africa, and only three other species are African.

The altitudinal range of the genus extends from the Plains of India (1000 ft.), to the windswept Tibetan Plateau (12,000 ft.), but most of the species occur in the temperate zone.

Taxonomy.

Among the species included in this work, *B. gynandra* stands out as very distinct in the position of the androecium. Apart from this, the genus is a very natural one and not readily subdivided according to natural relationship.

The Sections and Series adopted by Bentham (in DC. Prodr.) and accepted by Engler (in Nat. Pflanzenfam.) are scarcely satisfactory when applied to the greatly increased number of Asiatic species now known. The following Series are proposed as convenient for the Old World species :—

§ **Gynandrae**—Corolla tube straight. Stamens free from the corolla tube. Leaves opposite (Sp. 1).

§ **Alternifoliae** (Kränzl. in Bull. Jard. Bot. Pétersb. xiii. 89 (1913), as a *Section*)—Corolla tube straight. Stamens inserted on the corolla tube. Leaves alternate. (Spp. 2-6).

*Except *B. amentacea* Kränzl., the origin of which is doubtful (see p. 184).

§ **Curviflorae**—Corolla tube curved. Stamens inserted on the corolla tube. Leaves opposite (Spp. 7–11).

§ **Rectiflorae**—Corolla tube straight. Stamens inserted on the corolla tube. Leaves opposite (Spp. 12–52).

For many years after its discovery *B. alternifolia* Maxim. was the only species with alternate leaves known in the family Loganiaceae. In 1913 Kränzlin described, in Bull. Jard. Bot. Pétersb. xiii. 89, a species of uncertain origin based on a single incomplete specimen, and proposed the name '*Alternifoliae*' for a Section of the genus to include the alternate-leaved species. The discovery of *B. Wardii*, however, in which some of the branches bear alternate leaves and others opposite, has shown that too much importance should not be attached to this character in the primary division of the genus.

Since the whole genus is not under review, no attempt is made here to discuss its systematic position. Originally placed in the Scrophulariaceae by Bentham, Lindley and other authors, it was transferred to the Loganiaceae in Benth. et Hook. f. Gen. Plant., and placed in the tribe Euloganieae which is now its accepted position.

The generic name has been spelt in a variety of ways by different authors. That adopted in the present work is the original (see Sprague in *Kew Bull.* 1928, p. 349).

Of the species coming within the scope of this Revision, all are shrubs except *B. Colvilei*, which is unique in its very large flowers and becomes a considerable sized tree in the Sikkim Himalaya; and *B. salviifolia*, which is not uncommon throughout a wide area in Africa, and though normally a shrub, has been reported to attain the girth of a tree in one locality.

Unfortunately in a number of cases it has not been possible to obtain fruiting specimens for examination, so a classification of the genus on the seed characters is impossible at the present time, but a sufficient number of species are known in fruit to indicate that there is no correlation between the position of the anthers and the character of the seed. This is seen at once in the following table:—

Seeds not tailed.		Seeds shortly tailed.		Seeds with long tails.	
Lindleyana	B	alternifolia	M	albiflora	T
paniculata	T	japonica	B	nivea	T
asiatica	M	Colvilei	T	macrostachya	T
salviifolia	M	Forrestii	T	Hookeri	T
heliophila	M	Griffithii	T	Davidii	M
tibetica		limitanea	M	officinalis	M
var. Farreri	M	Fallowiana	M	myriantha	M
				stenostachya	M

(Reference to insertion of stamens: B = near base, M = near the middle, T = near the throat of the corolla tube.)

The leaves in some species of this genus exhibit a particularly wide range of fluctuation in size, due to external conditions, especially soil moisture, so that cultivated plants are frequently very

different in appearance from the wild specimens. In some species a great range of leaf-form may be found on a single plant, some of the leaves having winged petioles and others not winged. Similarly the indumentum has been found to be variable to a certain extent. This variation in response to environment is one of the greatest difficulties in determining the limits of the species, especially when the material is scanty.

From the dissection of a very large number of flowers, the position of insertion of the stamens on the corolla tube has been found to be a most important character in this genus, being constant for each species. The shape of the corolla-tube is used to divide the genus into Series and also to separate the species. On the other hand, the corolla-lobes vary much within the same species. The indumentum of the ovary and corolla are also specific characters, though subject to slightly more variation. The flower-colour is almost invariably lost in drying, the corollas becoming blackish in many species.

The flowers of most species are strongly fragrant and are much visited by insects, particularly Lepidoptera. Several hybrids are known in gardens. Some of these were intentionally produced between Asiatic and American species of no close affinity such as *B. Fallowiana* × *B. globosa*, but no scientific genetical study of the genus has been made, nor has the cytology of any of the species been investigated to the author's knowledge.

In the present paper, 52 species and 22 varieties are recognised. Five species are described here for the first time.

Material and Acknowledgments.

The basis of the present work has been the material in the Herbarium of the Royal Botanic Gardens, Kew, but "types" of nearly all the species unrepresented at Kew have been received on loan for study through the kindness of those in charge of the following Institutions: Arnold Arboretum, U.S.A.; Botanical Museum, Berlin; Herbarium, Botanical Garden, Breslau; Royal Botanic Garden, Edinburgh; Rijks Herbarium, Leiden; Herbarium, Principal Botanical Garden, Leningrad; Muséum d'Histoire Naturelle, Paris; National Herbarium, Pretoria, South Africa.

The author wishes to acknowledge his indebtedness to all who have assisted in this way and particularly desires to express his thanks to Professor W. Wright Smith for most generously handing over to him some notes he had made on the species in cultivation at the Royal Botanic Garden, Edinburgh.

Buddleja [*Houst.* ex Linn. Gen. ed. 1, 26 (1737)] *Linn.* Sp. Pl. ed. 1, 112 (1753); Gen. Pl. ed. 5, 51 (1754); Benth. & Hook. f. Gen. Pl. ii. 793 (1876).

KEY TO THE OLD WORLD SPECIES OF BUDDLEJA.

Stamens inserted on the ovary, free from the corolla tube.....

1. *gynandra*.

Stamens inserted on the corolla tube :

Leaves alternate (on some branches more or less opposite in *B. Wardii*) :

Flowers 3 mm. in length ; leaves linear-lanceolate attenuate to a very narrow apex (the upper alone known), 10 cm. long...

2. *amentacea*.

Flowers exceeding 6 mm. in length ; leaves small, not linear-lanceolate :

Lamina entire, thin, upper surface glabrous ; midrib inconspicuous on lower surface.....3. *alternifolia*.

Lamina sinuate-dentate, thick, upper surface densely stellate-tomentose ; midrib conspicuous on lower surface :

Ovary glabrous :

Corolla pale pink, about 5 mm. long ; tube less than 1 mm. in diameter.....4. *Legendrei*.

Corolla cream coloured, about 10 mm. long ; tube 1.5-2 mm. in diameter.....5. *tsetangensis*.

Ovary tomentose.....6. *Wardii*.

Leaves always opposite :

Corolla tube curved :

Stamens inserted near the base of the corolla tube ; stem tetragonous, winged :

Leaves small (under 8 cm. in length) ; flowers deep red or violet purple ; exterior of corolla glandular, not tomentose ; fruit small.....7. *Lindleyana*.

Leaves large (10-20 cm. in length) ; flowers pale lilac ; exterior of corolla tomentose ; fruit large...8. *japonica*.

Stamens inserted near the middle of the corolla tube ; stem terete without wings :

Inflorescence elongate, up to 25 cm. long ; ovary glabrous, leaves large :

Leaves membranous, persistent ; exterior of the corolla stellate tomentose.....9. *curviflora*.

Leaves more or less coriaceous, deciduous ; exterior of the corolla glandular.....10. *venenifera*.

Inflorescence subcapitate ; ovary pilose above, leaves minute..... 11. *Purdomii*.

Corolla tube straight :

Stamens inserted in the lowest third of the corolla tube.....

12. *yunnanensis*.

Stamens inserted in the upper two-thirds of the corolla tube :

*Corolla densely glandular, not tomentose on the exterior :

Limb of the corolla about 6 mm. in diameter ; tube about 7 mm. long, anthers inserted in the middle ; leaves subtruncate at the base :

Inflorescence on the previous year's wood appearing before the leaves.....52. *tibetica* var. *glandulifera*.

Inflorescence terminal on the leafy branches :

Leaves 2-3 cm. long, cuneate at the base ; inflorescence small..... 13. *acosma*.

Leaves 6-8 cm. long, cordate at the base, inflorescence large.....38. *agathosma* var. *glandulifera*.

Limb of the corolla about 2 mm. in diameter ; tube about 3 mm. long ; anthers inserted near the mouth ; leaves attenuate at the base.....14. *adenantha*.

*Corolla eglandular glabrescent or tomentose on the exterior, occasionally with a few glands among the tomentum :

STAMENS INSERTED AT OR IMMEDIATELY BELOW THE MOUTH OF THE COROLLA :

Flowers very large ; corolla tube 6-8 mm. in diameter at the mouth..... 15. *Colvillei*.

Flowers much smaller ; corolla tube not exceeding 3.5 mm. in diameter at the mouth :

Length of corolla tube twice the diameter at the mouth (i.e. about 6 mm. long, 3-3.5 mm. diam.) :

Branchlets tetragonous ; ovary either glabrescent or tomentose throughout.....16. *Forrestii*.

Branchlets terete ; upper half of ovary tomentose, lower half glabrous17. *taliensis*.

Length of corolla tube more than three times the diameter at the mouth (i.e. not exceeding 2.5 mm. in diam.) :

Ovary glabrous :

Branchlets subterete ; flowers not exceeding 5 mm. in length..... 18. *albiflora*.

Branchlets tetragonous :

Corolla not exceeding 5 mm. long, 1 mm. wide..... 19. *Duclouxii*.

Corolla 8-10 mm. long, 2 mm. wide.....20. *longifolia*.

Ovary tomentose :

Inflorescence a widespreading panicle :

Leaves lanceolate ; anthers distinctly showing in the mouth of the corolla tube (Asiatic).....21. *paniculata*.

Leaves ovate or hastate-lobed ; anthers scarcely showing in the mouth of the corolla tube (African)..... 22. *pulchella*.

Inflorescence an elongated spikelike panicle :

†Rhachis, peduncles, etc., clothed with a dense white floccose tomentum :

Leaves petiolate, submembranous, up to 10 cm. wide ; stem more or less terete.....23. *nivea*.

Leaves sessile, coriaceous, not exceeding 5 cm. wide ; stem tetragonous..... 24. *cylindrostachya*.

†Rhachis, peduncles, etc. clothed with a short sparse tomentum, never floccose and frequently becoming glabrescent :

Flowers 8–10 mm. long :

Exterior of corolla tube densely tomentose :

Inflorescence very dense ; branchlets tetragonous, winged ; calyx longer than diameter.....

25. *macrostachya*.

Inflorescence very lax ; branchlets subterete, calyx shorter than diameter.....

26. *Hookeri*.

Exterior of corolla tube glabrous.....

27. *Henryi*.

Flowers 4–6 mm. long :

Corolla scarcely twice as long as calyx ; branchlets winged.....

28. *alata*.

Corolla three to five times as long as calyx ; branchlets not winged :

Stipules auriculate, almost always present ; stem terete ; flower reddish-yellow, exterior of corolla with glands interspersed with sparse tomentum ; calyx very densely tomentose.....

29. *polystachya*.

Stipules absent (reduced to stipular ring) ; stem tetragonous ; flower lead-blue, throat orange, exterior of corolla eglandular, densely tomentose ; calyx rather sparsely tomentose.....

30. *Griffithii*.

STAMENS INSERTED IN THE MIDDLE PORTION OF THE COROLLA TUBE :

Ovary glabrous :

Corolla tube 3.0–3.5 mm. in diameter, leaf margin serrate :

Style 3–4 mm. long.....

31. *limitanea*.

Style 1 mm. long.....

32. *Cooperi*.

Corolla tube 1–1.5 mm. in diameter :

Flowers subsessile ; corolla tube not exceeding 5 mm. in length, exterior villous or tomentose :

Corolla tube 2–2.5 mm. long, less than 1 mm. wide ; lobes erect.....

33. *asiatica*.

Corolla tube 4.5–5 mm. long, 1.5 mm. wide, lobes widespreading.....

34. *Neemda*.

Flowers distinctly pedunculate ; corolla tube 7–10 mm. in length, exterior usually glabrous :

Lamina more than twice as long as broad ; margin serrate ; inflorescence elongate ; ripe fruit c. 10 mm. long.....

35. *Davidii*.

Lamina less than twice as long as broad ; inflorescence short ; ripe fruit c. 5 cm. long.....

36. *Delavayi*.

Ovary tomentose :

Calyx $\frac{2}{3}$ – $\frac{3}{4}$ length of corolla tube ; flowers large, very densely clustered in large subglobose whorls.....

37. *hastata*.

Calyx usually less than $\frac{1}{2}$ length of corolla tube ; flowers not very densely clustered :

- **Inflorescence terminal on the leafy branches :
- Inflorescence interrupted pseudo-verticillate ; leaves dentate, densely tomentose on both surfaces, cordate-ovate, attenuate to a fine acumen and long-petiolate..... 38. *agathosma*.
- Inflorescence not interrupted nor apparently verticillate :
- Panicle widespreading or few-flowered :
- Upper surface of lamina densely bullate and stellate-tomentose ; leaf usually distinctly auriculate with a short petiole (African).....39. *salviifolia*.
- Upper surface of lamina not bullate ; leaf not auriculate at the base (Asiatic except *auriculata*) :
- Leaves long-petiolate, more or less truncate or cordate at the base, usually crenate-serrate, up to 18 cm. long :
- Inflorescence compound, spreading, ebracteate or with a few short bracts.....40. *crispa*.
- Inflorescence small with numerous bracts longer than the flowers.....41. *caryopteridifolia*
- Leaves attenuate at the base into a short petiole, or subsessile, lanceolate, entire :
- Shrubs of dwarf habit with leaves less than 4 cm. long, 1 cm. wide and few-flowered inflorescence: Calyx densely tomentose, length scarcely equalling its diameter ; lobes very short and broad, subobtuse.....42. *brachystachya*.
- Calyx tomentellous, length about $1\frac{1}{2}$ times its diameter ; lobes triangular acute...43. *nana*.
- Shrubs of tall habit with large leaves (6-20 cm. long) and many-flowered inflorescence :
- Upper surface of the leaf glabrous (African)..... 44. *auriculata*.
- Upper surface of the leaf covered with stellate hairs (Asiatic) :
- ††Panicle subcylindrical c. 5 cm. in diameter on short leafy branches ; leaves broadly elliptical or elliptic-ovate ; peduncles 1-2 cm. long..... 45. *heliophila*.
- ††Panicle more or less pyramidal, usually widespreading on long leafy shoots :
- Corolla tube c. 4 times as long as wide ; leaves rarely exceeding 11 cm. in length.... 46. *officinalis*.
- Corolla tube c. 8 times as long as wide ; leaves up to 20 cm. long.....47. *acutifolia*.
- Panicle strict, elongate, spike-like, bearing many flowers :
- Branches tetragonous, plant sparsely tomentose, with auriculate stipules.....48. *myriantha*.

Branches terete ; plant very densely tomentose :

Flowers very densely crowded in erect spikelike panicles, auriculate stipules sometimes present....

49. *Fallowiana*.

Flowers rather lax in very long arcuate spikes ; stipules absent :

Leaves subcoriaceous with the upper surface markedly rugose, narrowly lanceolate abruptly petiolate ; petioles 1-1.5 cm. long...50. *candida*

Leaves membranous with the upper surface smooth, broadly lanceolate, attenuate into the very short petiole.....51. *stenostachya*.

**Inflorescence borne on short shoots on the previous year's wood, appearing before the leaves.....52. *tibetica*.

§ GYNANDRAE.

1. **Buddleja gynandra** *Marquand*, sp. nov. ; distinctissima staminibus ovario nec corollae affixis.

Shrub. Branches subterete, rather slender, covered with a short tomentum when young. Leaves opposite, lanceolate or ovate-lanceolate, acuminate, up to 13 cm. long, 3.5 cm. wide, attenuate into a petiole 5-8 mm. in length ; both upper and lower surface of the lamina densely stellate-tomentose at first, afterwards becoming glabrous or sparsely tomentellous above ; margin entire, occasionally slightly sinuate. Stipules reduced to a stipular ring. Inflorescence a rather lax widespreading panicle. Bracts linear, 6-8 mm. long above, lower ones larger and resembling the leaves. Flowers yellowish-white, scented, forming cymules of 5-7 flowers on short tomentose peduncles. Calyx tomentose, 2-2.5 mm. long, divided to $\frac{1}{3}$ into 4 subobtusely deltoid lobes. Corolla sparsely stellate-tomentose outside ; tube 4-5 mm. long, about 1 mm. in diameter, sparsely pubescent inside ; lobes 4, obovate-spathulate, about 2 mm. long, 1.5 mm. wide, entire. Stamens 4, inserted on the side of the ovary, about 1.5 mm. long ; anthers subdeltoid ; lower portion of filaments adnate, upper free portion slender, slightly shorter than the anthers. Ovary tomentose ; style twice as long as the stamens ; stigma clavate. Fruit not seen.

TONKIN. Langson, in rocky places, 27 Jan. 1886, *B. Balansa* 930 (type in Herb. Kew.).

§ ALTERNIFOLIAE.

2. **B. amentacea** *Kränzlin* in Bull. Jard. Bot. Pétersb. xiii. 89, 92 (1913).

JAVA. Precise locality and collector unknown, "*Herb. Fischer*."

The only known specimen of this species is the "type," which is preserved in the Herbarium of the Principal Botanic Garden, Leningrad. Unfortunately the lower leaves are not present, and the collector's label is indecipherable. This was stated to be the case

by the author of the species in the original place of publication and by the editor in a footnote in the Russian text. A recent study of the type sheet has failed to reveal any clue. The label also bears the *nomen nudum* "Buddleya microcarpa Kl." in another handwriting.

3. **B. alternifolia** Maxim. in Bull. Acad. Pétersb. xxvi. 494 (1880).
"CHINA BOREALIS Vallis fl. Peishui inter pagos Tangtshang et Lidshapu, prov. Tschili, Schansi, Kansu occidentali et orientali et Szetschuan septentrionali" (apparently Tangshan and Likiapu in Southern Kansu), 19 Juni 1885, G. N. Potanin.

KANSU. Near Pinglo, Oct. 7, 1914, F. N. Meyer 1787; Tsing shui hsien, 1500 m., July 7, 1922, J. Hers 2402; moist foothills, Ho lan shan mountains, 1375-2400 m., shrub up to 5 m., flowers violet, very fragrant, May 10-25, 1923, R. C. Ching 185.

Cultivated specimens of *Purdom* 388 and *Farrer* 100, also belong to this species.

4. **B. Legendrei** Gagnepain in Lecomte, Not. Syst. ii. 280 (1912).
KANSU. Pongsu shi in the Li-kiu Valley, on mica schist soil, 3400 m., Legendre 1036.

5. **B. tsetangensis** Marquand in Journ. Linn. Soc., Bot. xlvi. 202 (1929).

TIBET. Tsetang, Tsampo Valley, on cliffs and gravel beds abundant in most villages, 3600 m., April 21, 1924, F. Kingdon Ward 5616.

6. **B. Wardii** Marquand in Journ. Linn. Soc., Bot. xlvi. 203 (1929).

TIBET. On rocks and cliffs by the river and around villages in the Tsang-po Valley below Tsetang, 3000-3400 m., April 29, 1924, F. Kingdon Ward 5636.

§ CURVIFLORAE.

7. **B. Lindleyana** Fortune in Lindl. Bot. Reg., Misc. 25 (1844).—*B. intermedia* Carr. in Rev. Hort. xlv. 151 (1873). *B. insignis* Hort. ex Dippel, Handb. Laubholz. i. 154 (1889). *B. salicifolia* Hort. ex Dippel loc. cit. 153.

SZETCHUAN. Yangtze banks, without precise locality, shrub of 60 cm. with purple flowers, June 1903, E. H. Wilson (Veitch Exped.) 4116; near Wa-shan, valley of Tung River, 1000-1300 m., July and Nov. 1908, E. H. Wilson (Arn. Arb. Exped.) 1375a.

HUPEH. Ichang and immediate neighbourhood, A. Henry 4190; in glens, Ichang, flowers red, Aug. 1901, E. H. Wilson (Veitch Exped.) 1615.

CHEKIANG. Chusan, Fortune 37; near Ningpo, Sept. 7, 1877, W. Hancock 26; without precise locality, W. Hancock 87; near Hangchow, July 3, 1915, F. N. Meyer 1497; open roadside, Ling-Ying-Sze near Hangchow, June 20, 1922, A. N. Steward in Nanking Univ. Herb. 2354.

FUKIEN. "Almost all from about 2000 feet above the plain," Foochow, 1897, *W. R. Carles* 575; open ground, Pei-ling hills, Foochow, *W. R. Price* 1172; Foochow city, Wooshihshan, on rocks by the side of spring, shrub with purple flowers, Aug. 25, 1923, *H. H. Chung* 2359.

KIANGSI. Kiukiang, 1873, *Shearer*; Lu shan (Kuling Range), 200-1100 m., July, Aug., Sept. 1908, *A. K. Schindler* 363.

KWANGTUNG. Hillsides by the North River, July 1864 and June 1865, *T. Sampson* in *Herb. Hance* 321; Nin District, Sept. 20, 1918, *Canton Christian College Herb.* 3445.

HONGKONG. South of Wanchai Gab, one bush only, Oct. 15, 1900, *W. T. Tutcher* 656.

JAPAN. Nikko and Fujiyama, *Maries*.

var. **sinuato-dentata** *Hemsl.* in *Journ. Linn. Soc., Bot.* xxvi. 120 (1889).

HUPEH. Ichang and immediate neighbourhood, flowers purple, *A. Henry* 624 and 3974; without precise locality, June 1901, *E. H. Wilson* (Veitch Exped.) 1995.

SZECHUAN. Mount Omei, 750 m., *E. Faber* 77; Mount Omei, bush of 1.3 m., July 1904, *E. H. Wilson* (Veitch Exped.) 5037; Yachou-Fu, thickets, 600-1300 m., bush of 1-1.5 m., flowers very dark red, July and Nov. 1908, *E. H. Wilson* (*Arn. Arb. Exped.*) 1375.

Differing from the type in the leaves being sinuate-dentate.

8. **B. japonica** *Hemsl.* in *Journ. Linn. Soc., Bot.* xxvi. 119 (1889), in obs.

JAPAN. Hondo: Hakone, Yokohama, 1862, *Maximowicz*; central part of the island, 1866, *Tschonoski*; without precise locality, *F. V. Dickens* 1305; Oyama, Oct. 1876, *J. Bisset*; central mountains, 600-2100 m., *Maries*; without precise locality, Aug. 1904, *H. Takeda*; without precise locality, Sept. 28, 1914, *E. H. Wilson* 7585. Japan, without precise locality, 1866-74, *L. Savatier* 896; Fudintsugi, Aug. 13, 1889, *Sci. Coll. Imp. Univ. Jap.*; Hyachine, Aug. 23, 1894, *Faurie* 13519.

9. **B. curviflora** *Hook. et Arn.* *Bot. Beech. Voy.* 267 (1836-1840). —*B. carnea* *Carr.* in *Rev. Hort.* li. 90 (1879).

LUCHU ARCHIPELAGO. Without precise locality, June 1827, *Beechey*.

10. **B. venenifera** *Makino* in *Bot. Mag. Tokyo*, xxiv. 56 (1910).

JAPAN. Osumi Province: Miyamura, Yaku-shima Island, Sept. 1909, *T. Makino*; Nako-no-shima Island, *S. Tashiro*.

A specimen in *Herb. Kew.* received through the Paris Herbarium from the Japanese Exhibition of 1886 without any particulars appears to belong to this. The corolla is densely glandular and sparsely stellate-tomentose outside.

Professor Hayata has very kindly presented to Kew some leaves and portions of stems of this plant collected by Dr. Makino, judging from which it appears to be a distinct species. As, however, I have not been able to see the flowers, its exact position is doubtful and it is placed in the Key to the species from the original description.

11. **B. Purdomii** *W. W. Smith* in Notes Roy. Bot. Gard. Edin. ix. 87 (1916).

KANSU. Common on very steep and torrid cliffs and banks of the most torrid loess region about Kiai-how; descending along the burning walls of the Hei-Shui-Jang, but not extending to Siku, April 29, 1914, *R. Farrer* 14.

§ RECTIFLORAE.

12. **B. yunnanensis** *Gagnepain* in Lecomte, Not. Syst. ii. 187, 192 (1912).

YUNNAN. Between Szemao and Chienhung, *Bons d'Anty* 437; Szemao in hedgerows, 1300 m., a shrub of 60 cm. with lilac flowers, *A. Henry* 12214.

13. **Buddleja acosma** *Marquand*, nom. nov.*—*B. incompta* *W. W. Smith* in Notes Roy. Bot. Gard. Edin. viii. 180 (1914), non Linn. fil.

YUNNAN. On dry rocks and exposed hillsides in the A-tun-tsi Valley, 3400 m., an untidy bush of 1–2 m., leaves silver in spring, golden in autumn, June 1913, *F. Kingdon Ward* 345; on calcareous and schistose soil, frequent west of Likiang, 1900–1950 m., May 30, 1916, *H. Handel-Mazzetti* 8786; open dry situations in side valleys of the Mekong-Salween divide, lat. 28° N., 2300–2700 m., flowers soft grey rose, fragrant, June 1918, *G. Forrest* 16557; dry situations amongst boulders and scrub on the Doker-La, Mekong-Salween divide, lat. 28° 25' N., 2700 m., a stunted shrub of 60 cm. with rose-lavender flowers, June 1919, *G. Forrest* 18720; on cliffs and dry rocky slopes on the Mekong-Salween divide, lat. 27° 36' N., long. 98° 50' E., 2700 m., shrub of 60 cm., in fruit, July 1921, *G. Forrest* 19665; open, dry, rocky hillsides in the A-tun-tsi Valley, lat. 28° 30' N., long. 98° 54' E., 3000 m., shrub of 60–90 cm., in fruit, Sept., 1921, *G. Forrest* 20767.

14. **B. adenantha** *Diels* in Notes Roy. Bot. Gard. Edin. v. 248 (1912).

YUNNAN. Amongst scrub on the margins of pine forests on the eastern flank of the Tali Range, lat. 25° 40' N., 2900–3400 m., a shrub of 1.5–2.5 m. with fragrant greyish-purple flowers, June-Aug. 1906, *G. Forrest* 4736.

15. **B. Colvillei** *Hook. f. et Thoms.* in Hook. Illustr. Himal. Pl. t. 18 (1855).

NEPAL. Nangki (near the border of Sikkim), shrub of 3 m., *Hooker*.

* I have been obliged to change the name of this species, for the trivial name was already occupied by the South African *B. incompta* Linn. fil. Suppl. 123 (1781). C.V.B.M.

SIKKIM. Lachen, 2800–3600 m., July and Aug. 2, 1849, *Hooker*; Chola, 3000–4200 m., Nov. 5 and 6, 1849, *Hooker*; Tonglo, 3000 m., Aug. 5, 1874, *Treutler* 493; Tonglo, 3100 m., Nov. 3, 1874, *J. S. Gamble* 3256a; Tonglo, 3000 m., Sept. 1880, July 1881, and July 1882, *J. S. Gamble* 8466, 9495, and 10436; Islumbo, 3400 m., Oct. 24, 1875, *J. S. Gamble* 25599; Tumbok, 3000 m., tree of 6 m., Oct. 10, 1870, *C. B. Clarke* 12896a.

TIBET. Chumbi: Pun-ka-bee-see-mo, July 24, 1884, *Dr. King's collector* 32.

The fruits in this species vary considerably in length.

16. **B. Forrestii** *Diels* in *Notes Roy. Bot. Gard. Edin.* v. 249 (1912).

YUNNAN. On ledges of cliffs and very stony ground on the western slopes of the Tsan-shan Range near the head of the Yangtze Valley, lat. 25° 40' N., 2800–3000 m., flowers reddish-maroon, fragrant, Sept. 1905, *G. Forrest* 979; open situations in scrub on the hills east of Tengyueh, lat. 25° N., 2300–2600 m., shrub of 2–4 m., flowers pale mauve, almost white, fragrant, Dec. 1912, *G. Forrest* 9471; on the mountains between the Salween and Irrawaddi, 1800 m., Oct. 1914, *C. Schneider* 2591; 1917–1919 collection, without precise data, *G. Forrest* 16017; in thickets in side valleys, Jang-tzow Shan, Shweli-Salween divide, lat. 25° 10' N., 2600 m., shrub of 3–4 m. with fragrant soft lavender-rose flowers, Aug. 1919, *G. Forrest* 18361.

There is a wide range of variation in the indumentum of the ovary in this species. Even in the same inflorescence of the type specimen, of two flowers examined, one had a practically glabrous ovary while the other was tomentose.

17. **B. taliensis** *W. W. Smith* in *Notes Roy. Bot. Gard. Edin.* ix. 87 (1916).

YUNNAN. Open scrub on the western flank of the Tali Range, lat. 25° 40' N., 2900 m., Aug. 1913, *G. Forrest* 11561.

18. **B. albiflora** *Hemsl.* in *Journ. Linn. Soc., Bot.* xxvi. 118 (1889).—*B. Hemsleyana* *Koehne* in *Gartenfl.* 169 (1903).

HUPEH. Patung district, *A. Henry* 156a, 1871, 2515 and 4689; Kuei, spreading shrub of 1 m. with purplish flowers, *A. Henry* 6193; west of the province, without precise locality, flowers lilac, July 1901, *E. H. Wilson* (*Veitch. Exped.*) 2247 and 2247a, also July 1907 (*Arn. Arb. Exped.*) 3360 and 3361.

SHENSI. Central part of the province, Aug. 20, 1916, *E. Licent* 2673.

var. **Giraldii** *Rehd. & Wils.* in *Sargent Pl. Wilson.* i. 569 (1913).—*B. Giraldii* *Diels* in *Engl. Jahrb.* xxix. 535 (1900).

SHENSI. Ta-see-tsuen, Sept. 19, 1897, *Giraldi*; Kay-y-san, June 18, 1899, *Giraldi* 5497 and 5498; Tai-pei-shan, 1910, *W. Purdom*.

SZECHUAN. Without precise locality, shrub of 2 m. with lilac flowers, 1300 m., Aug. 1903, *E. H. Wilson* (Veitch Exped.) 4117.

Differing from the type in the tomentose calyx.

19. **Buddleja Duclouxii** *Marquand*, sp. nov.; affinis *B. albiflorae* Hemsl., sed ramulis gracillimis tetragonis inflorescentia angustissima inter alia insigniter differt.

Shrub. Branches slender, tetragonous, sparsely tomentose. *Leaves* thin, opposite, (lower not seen) upper lanceolate, up to 5 cm. long, 1.3 cm. wide, cuneate at the base, margin finely serrate-dentate, upper surface at first sparsely stellate-tomentose, shortly becoming glabrescent, dark green in the dried specimen, lower surface densely tomentose with the nerves inconspicuous. *Stipules* small, auriculate. *Inflorescence* terminal, composed of 1-3 strict panicles up to 25 cm. long, 1-1.5 cm. wide, cymules subsessile, 2-3-flowered. *Bracts* few, linear-lanceolate, up to 8 mm. in length. *Flowers* small (colour not known); pedicels 1-1.5 mm. long, tomentose. *Calyx* tomentose, 2-2.5 mm. long, lobes 4, narrow, acute, shorter than the tube. *Corolla* sparsely tomentose outside; tube 4-5 mm. long, 1 mm. in diameter, interior pubescent; lobes 4, obovate-spathulate, 1-1.5 mm. long, margin slightly erose. *Anthers* subsessile, 1 mm. long, inserted just below the mouth of the corolla-tube. *Ovary* glabrous, subglobose; style short, glabrous; stigma clavate, 1-1.5 mm. in length. *Fruit* not seen.

YUNNAN. Neighbourhood of Ngy-leang, Sept. 14, 1905, (collected by Petrus Py), *Ducloux* 3790.

20. **B. longifolia** *Gagnepain* in *Lecomte*, *Not. Syst.* ii. 190, 191 (1912).

N.E. UPPER BURMA. Shrub of 1.5-2 m., flowers rose, tube yellow, on margins of thickets and by streams on Hpimaw-pass, N'Maikha-Salween Divide, lat. 26° N., long. 98° 42' E., 3000 m., Sept. 1924, *G. Forrest* 25079.

YUNNAN. Woods, Kichan, near Ta-pin-tze, flowers violet, 2800 m., Aug. 21, 1889, *Delavay* 3991; shrub of 2-4 m., flowers fragrant, deep lavender-purple, interior darkest, in thickets by streams in side valleys on the Chien-chuan-Mekong divide, lat. 26° 30' N., long. 99° 40' E., 2700 m., Aug. 1922, *G. Forrest* 23215.

21. **B. paniculata** *Wall.* in *Roxb. Fl. Ind.* ed. *Carey*, i. 412 (1820); *Wall. Cat.* No. 6403.

NEPAL. *Wallich* 6403.

ASSAM. Manipur: "collected during the Government Demarcation Survey of 1881-82" (without precise locality), *G. Watt* 6061. Lushai Hills: Stalong, 1500 m., "a *Buddleja* with bunches of small flowers, magenta pink within the tube," Feb. 1929, (*Mrs.*) *N. E. Parry* 125.

The two species, *B. paniculata* and *B. crispa* (No. 40), are united in *Fl. Brit. Ind.* by *C. B. Clarke* (1883), and by all subsequent authors.

In addition to the shape of the leaves and habit of the inflorescence they may be distinguished by the position of the anthers in the corolla tube.

B. nepalensis Colla which has been cited as a synonym of *B. paniculata* (sensu lato) is a doubtful species. The description agrees neither with *B. paniculata* (sensu stricto) nor with *B. crispa*.

22. **B. pulchella** *N. E. Br.* in *Kew Bull.* 1894, 389.—*B. usambarensis* Gilg in *Engl. Pfl. Ost-Afr. C.* 313 (1895). *B. Woodii* Gilg in *Engl. Jahrb.* xxiii. 201 (1896).

TANGANYIKA. Usambara: Kwa Mshaza, in high forest, 1570 m., *Holst* 8967.

NATAL. Near Kettle Fountain, 1862, *T. Cooper* 1159; Inanda, comm., Oct. 20, 1879, *J. M. Wood* 574; Alexandra District, Dumisa, 550 m., June 19, 1910, *H. Rudatis* 1035, and 650 m., July 3, 1910, *H. Rudatis* 1054. Specimens cultivated at Kew and in the Botanic Gardens, Durban, origin York, 600–1000 m., comm. *J. M. Wood*. Kentani District, 400 m. July 1913, *Alice Pegler* 764.

23. **B. nivea** *Duthie* in *Gard. Chron. Ser. 3*, xxxviii. 275 (1905).

W. SZECHUAN. Mountains, Washan, 1800–2400 m., flowers purple, shrub of 1.5–2 m., July 1903, *E. H. Wilson* (Veitch Exped.) 4121; south-east of Tachienlu, Tung Valley, 1300–2000 m., Aug. 1908, bush, 1–1.5 m. high with lilac flowers, *E. H. Wilson* (Arn. Arb. Exped.) 3356; Washan, thickets 1300–2000 m., bush, 1.5–2.5 m. high with purple flowers, Aug. 1908, *E. H. Wilson* (Arn. Arb. Exped.) 3358.

Locality unknown, *Hort. Veitch*, flowers Aug. 4, 1905, fruit Oct. 14, 1905, *E. H. Wilson* (Veitch Exped.), *Seed No.* 1428 (type specimens).

var. **yunnanensis** *Rehder & Wils.* in *Sargent Pl. Wilson. i.* 570 (1913).—*B. macrostachya* Benth. var. *yunnanensis* Dop in *Bull. Soc. Bot. France* lvii. *Mém.* xix. 7 (1910).

W. SZECHUAN. Without precise locality, mountains, 2500 m., flowers purple, bush 1–2 m. high, July 1903, *E. H. Wilson* (Veitch Exped.) 4119; West of and near Wen-chu'an Hsien, in the Min Valley, in roadside thickets, 1300–1600 m., May 25, 1908, *E. H. Wilson* (Arn. Arb. Exped.) 3353, Aug. 1908, 3359; vicinity of Tachienlu in thickets, 1300–3800 m., July and Aug. 1908, *E. H. Wilson* (Arn. Arb. Exped.) 3351, 3357; Mupin, in thickets, 1600–2000 m., July and Oct. 1908, *E. H. Wilson* (Arn. Arb. Exped.) 1351, 1351a, 3354.

Differs from the type in the spikes being usually solitary and the upper surface of the leaf pubescent.

24. **B. cylindrostachya** *Kränzlin* in *Engl. Jahrb. l. Beibl.* 111, 35 (1913).

YUNNAN. Mengtze, in deep valleys, very rare shrub with dark purple flowers smelling of rhubarb root, Jan. 25, 1895,

W. Hancock 264; Mengtze, on grassy mountains near Ho-chie-ch'ai, 1600–1800 m., corolla reddish with orange throat, Nov. 15, 1896, *A. Henry* 10251; 2nd sheet of same No., bushy shrub 1 m. high with lilac flowers; Fêng chên Liu, 1500 m., shrub of 1–2 m., with pink to purplish flowers, Feb. 3, 1897, *A. Henry* 10251a; Szemao, grassy places on summit of East high range (Men chu thian), local shrub 15–30 cm. high with lilac flowers, 1800 m., Nov. 27, 1896, *A. Henry* 10251b; on way to Hsin-Kei, Fêng chên Liu, Mengtze, shrub of 3 m. with small leaves, 1500 m., *A. Henry* 10251d.

25. ***B. macrostachya* Benth.** Scroph. Ind. 42 (1835).—*B. Martii* J. A. Schmidt in Journ. Bot. vi. 228, 245 (1868).

ASSAM. Sillet, 1837, *Wallich* 6407: Khasia; *Fielding* sine numero; *Griffith* 196 and 197, also *East Ind. Co. Herb.* 3742; Surureen, lax bush of 4 m., June 26, 1850, *Hooker*: Kullung, July 8, 1850, *Hooker*; Pourang, large bush, "flowers sweet, flesh-coloured with darker eye," Sept. 15, 1850, *Hooker*; Myrong, 1200–1800 m., flowers pale primrose with croceous eye, odour strong, Oct. 1850, *Hooker*: Naga Hills; Kohima, Oct. 1886, *D. Prain*; lower spur of Japro Kohima, large straggling shrub on the exposed crest of knife edge ridge, flowers in long pendent spikes, cream with deep orange eye, strongly fragrant, 2100 m., lat. 25° 40' N., long. 94° 10' E., Nov. 27, 1929, *F. Kingdon Ward* 7702: Lushai Hills; Chuarlung 1500 m., flowers mauve with red centres, Jan. 1928, (*Mrs.*) *N. E. Parry* 124, 466 and 553; Manipur, "comm. 1886," *Watt* 5011 and 5125.

BURMA. Bhamo district; Lahpyekha, 1800 m., small tree, almost shrub, flowers mauve, stem brownish, upper bark peels off in strips, March 18, 1927, *Saw Mang Mya* 5321; 1800 m., shrub, flowers dull mauve, stem greyish red, slightly crooked, Bum Rawng Bum, March 20, 1927, *Saw Mang Mya* 5332. Mogok District, Kyinitaung Valley, 1200 m., Nov. 23, 1928, *E. A. Seaton* 7421.

YUNNAN. West Mountains, Szemao, 1500 m., tree of 6 m., *A. Henry* 10251 c; in side valleys on the hills east of Tengyueh, lat. 25° N., 1800 m., shrub of 2.5–3.5 m., in fruit, May 1912, *G. Forrest* 7604; shrub of 6 m., open situations, hills around Man-Hsien, lat. 24° 30' N., 900–1200 m., flowers dull rose fragrant, Feb. 1913, *G. Forrest* 9661; in thickets by streams on the Chien-chuan—Mekong divide, lat. 26° 36' N., long. 99° 40' E., 2400–2700 m., shrub of 3–6 m., flowers deep purple lavender, tube darkest, fragrant, July 1922, *G. Forrest* 23055.

SIAM. Calcareous rocks on "summit III," 2180 m., shrub of 2.5 m., Doi Chieng Dao, Feb. 17, 1905, *C. C. Hosseus* 400.

26. ***Buddleja Hookeri* Marquand**, sp. nov.; affinis *B. macrostachyae* Benth. sed ramulis subteretibus inflorescentia laxa calyce brevior inter alia differt.

Shrub 4–6 m. high. *Branches* subterete, drooping, at first whitish tomentose, shortly becoming glabrescent. *Leaves* opposite, lanceolate or obovate-lanceolate, subsessile, attenuate at the base, 15–20 cm.

long, 5–7 cm. wide, margin finely serrate, apex acuminate, upper surface soon becoming glabrous, lower surface tomentose. *Stipules* reduced to a rather conspicuous ring. *Inflorescence* terminal, of few lax tomentose spike-like panicles, usually bearing a pair of leaves at the basal node, and axillary. *Bracts* few, linear, up to 8 mm. long. *Peduncles* usually very short. *Pedicels* 2 mm. long, tomentose. *Calyx* tomentose; tube campanulate 1.5 mm. long, 2.5 mm. in diameter; lobes 4 acute, scarcely 1 mm. long, sinus broad, rounded. *Corolla* throat deep orange, limb white, powerfully fragrant, exterior tomentose throughout; tube 8–10 mm. long, 2–2.5 mm. in diameter, interior pubescent except near the base; lobes 4 obovate or sub-orbicular c. 3 mm. long and wide, margin subentire. *Stamens* 4 inserted just below the mouth of the corolla, anthers scarcely 1.5 mm. long, subsessile. *Ovary* densely tomentose; style tomentose at the base, together with the clavate stigma up to 5 mm. in length. *Fruit* ovoid, up to 8 mm. long. *Seeds* tailed, about 2.5 mm. long.

FRONTIER OF BURMA AND TIBET. In open Alder glades in the bottom of the valley of the Seinghku, lat. 28° 5' N., long. 97° 30' E., 2400 m., Sept. 25, 1926, *F. Kingdon Ward* 7456 (type).

SIKKIM. Lachen, 1800 m., Aug. 5, 1849, *J. D. Hooker*; Lachong River, 1800 m., Oct. 2, 1849, *J. D. Hooker*; Choongtau hill, Oct. 28, 1849, *J. D. Hooker*; Chongthang, Sept. 1903, *Prain*.

27. **B. Henryi** *Rehder & Wilson* in *Sargent Pl. Wilson*. i. 571 (May 1913); *Kränzlin* in *Engl. Jahrb. l. Beibl.* III. 44 (August 1913), *pro parte*.*

YUNNAN. Mengtze, S.E. in woods, 1500 m., shrub 2.5 to tree of 6 m., flowers flesh-coloured, *A. Henry* 9025; ravine, Mengtze, 1500 m., orange flowers, deliciously fragrant, *A. Henry* 9025b; open situations amongst scrub on the western flank of the Shweli-Salween divide, lat. 25° 20' N., 2400–2700 m., shrub 4–6 m., in fruit, Aug. 1912, *G. Forrest* 9044; in thickets and in conifer forests, Salween-Kiu-chang divide, lat. 27° N., long. 98° 35' E., 3000 m., shrub 2.5–3 m., flowers fragrant deep muddy wine colour, Aug. 1924, *G. Forrest* 25761.

var. **glabrescens** *Marquand*, var. nov.; a typo differt ovario glabrescente.—*B. Henryi* *Kränzlin* in *Engl. Jahrb. l. Beibl.* III. 44 (1913) *pro parte*.

YUNNAN. Flowers reddish, south of Red River from Manner, 1800 m., *A. Henry* 9025a.

Differs from the type in the glabrescent ovary.

var. **Hancockii** *Marquand*.—*B. Hancockii* *Kränzlin* in *Engl. Jahrb. l. Beibl.* III. 46: 1913.

* The *B. Henryi* *Kränzlin* was founded upon a mixed type; the "ovarium glabrum" agreeing with *Henry* 9025a only, of the three sheets cited and marked "typus" by the author. The other two had already been cited by *Rehder & Wilson* under their description published a few months previously.

YUNNAN. Mountain woods near Mengtze 1800–2100 m., a small tree or shrub, flowers dull purple with rather oppressive odour, Aug. 18, 1895, *W. Hancock* 384.

Differs from the type of the species and the preceding variety in the exterior of the corolla being tomentose.

28. *B. alata* *Rehder & Wilson* in *Sargent Pl. Wilson*. i. 570 (1913).

W. SZECHUAN. Ravine 1200 m. (without precise locality), Aug. 1903, shrub of 2 m., flowers lilac, *E. H. Wilson* (*Veitch Exped.*) 4118.

This species is closely allied to *B. myriantha* Diels, from which it differs in the absence of auriculate stipules, more distinctly winged stem, coarser tomentum on the flowers, and larger leaves, as well as the more or less infundibular corolla showing the anthers in the mouth.

29. *B. polystachya* *Fresen.* in *Flora* xxi. 605 (1838).—*B. acuminata* *R. Brown nomen* in *Salt. It. Abyss. App.* 62 (1814), non *Poir.* *B. Saltiana* *Steud. Nom. ed.* 2, i. 235 (1840). *B. foliata* *R. Br. ex Benth.* in *DC. Prodr.* x. 466. *B. Powellii* *Kränzl.* in *Engl. Jahrb.* l. *Beibl.* III, 34 (1913).

ARABIA. Yemen; on Kahil mountain near Menâkhah, 2500 m., Feb. 18, 1889, *G. Schweinfurth* 1467.

ERITREA. Neighbourhood of Acrur, 1900 m., March 6, 1892, *G. Schweinfurth & D. Riva* 779.

ABYSSINIA. Tigre; near Adowa, *Schimper* 1905; *Steudner* 851; Ankober, shrub of 2.5–3 m., common on the fences, called "Amfar," Nov. 12, 1841, *Roth* 464; Memsach, in narrow valleys near Gennia, June 26, 1837, *Schimper* 266; Gondar and vicinity, *R. E. Massey* 72; Mount Chillalo, 2400–2800 m., Nov. 1926, *H. Scott*.

UGANDA. Mount Nkoko Njern, 1500 m., shrub of 2–3 m. with reddish brown flowers, in short grassland, Nov. 12, 1916, *J. D. Snowden* 495; Mount Elgon, 1500–2000 m., shrub or small tree 3–5 m. high with reddish brown flowers, fairly common in bush and forest land, Feb. 17, 1924, *J. D. Snowden* 824; and without precise locality, *H. Powell* 73; Mount Elgon, 2400 m., shrub of 3 m. with yellow cinnabar flowers, occasional on the edge of the Bamboo zone, Jan. 1918, *R. A. Dümmer* 3610.

KENYA. Nyanza Prov.: Usain Gishu Plateau and Trans Nzoia, Nov.–Dec. 1928, *W. J. Dawson* 652. Naivasha Prov.: Nakuru, among the rocks of a dry valley, 1800 m., bushy shrub of 2 m., Dec. 1893, *G. F. Scott Elliott* 6850; Aberdare Mountains, 1905, *Evan James*; Kijube, shrub at 2200 m., Feb. 23, 1914, *W. J. Dawson* 24; Kamasia, 2400 m., "small tree up to 5 m.," *E. Battiscombe* 1189; near Forest Station, Dec. 20, 1921, *R. E. & C. E. Fries* 538. Kenya Prov.: Escarpment, 1900–2200 m., *E. Battiscombe* 41, and at 2200 m., *A. Linton* 174, also *C. F. Elliott* 158 and 250.

var. *parvifolia* *Marquand*, var. nov.; a typo differt foliis minoribus vix 2 cm. longis 1 cm. latis integris.

ERITREA. Ainsaba, May 1870, *Beccari* 69.

The leaves of this plant are very distinct in their exceedingly small size, but it is possible that this may be largely due to the very dry conditions under which it was growing, the range of fluctuation in this respect being known to be large in some species of this genus. In floral characters this variety scarcely differs from the type of the species except that the inflorescence is slightly reduced.

30. **Buddleja Griffithii** *Marquand*, sp. nov. ; ex affinitate *B. macrostachyae* Benth. sed floribus minoribus vix ad 6 mm. longis inter alia differt.—*B. macrostachya* Benth. var. *Griffithii* C. B. Clarke in Hook. fil. Fl. Brit. Ind. iv. 81 (1883).

Shrub. Branches subtetragonous, scarcely winged, sparsely tomentose or glabrescent. *Leaves* opposite, lanceolate, usually 15–20 cm. long, 2.5–3.5 cm. wide, margin minutely serrate, apex attenuate, upper surface glabrescent, lower surface clothed with a thin tomentum. *Stipules* absent. *Inflorescence* composed of terminal and axillary spike-like panicles 20–30 cm. long, 1–1.5 cm. wide. *Bracts* linear, 3–12 mm. long. *Flowers* rather densely crowded on short pedicels. *Calyx* tomentose ; tube 1 mm. long, 1.5 mm. in diameter ; lobes narrowly triangular acute, scarcely as long as the tube. *Corolla* lead blue with an orange throat, exterior tomentose ; tube 4–5 mm. long, less than 1 mm. in diameter, interior pubescent ; lobes 4 suborbicular 1–1.5 mm. in diameter, margin slightly erose. *Stamens* inserted just below the mouth of the corolla tube, anthers subsessile, scarcely 1 mm. in length. *Ovary* tomentose ; style short. *Fruit* 4–5 mm. long. *Seeds* shortly tailed, scarcely 1 mm. long.

EAST BENGAL. Mishmee, *Griffith* (Kew Distrib.) 3747.

BHUTAN: fruiting without precise locality *Griffith* 2447 and (Kew Distrib.) 3743.

This plant is noted in ms. by C. B. Clarke from the Naga Hills, but there is no specimen from this locality in Herb. Kew.

31. **B. limitanea** *W. W. Smith* in Notes Roy. Bot. Gard. Edin. ix. 85 (1916).

YUNNAN. Open scrub on the western flank of the Shweli-Salween divide, lat. 25° 20' N., 2100–2400 m., shrub of 1–1.5 m., in fruit, Aug. 1912, *G. Forrest* 8962 ; shrub up to 1.5 m. high, thickets at the foot of the mountain near Talifu, 2400 m., Aug. 1914, *C. Schneider* 2487 ; “ duplicate of 1912–13 ” (without precise locality), *G. Forrest* 15851 ; open scrub in the Shweli Valley, lat. 25° 20' N., shrub of 1.5–2 m., flowers deep rose, 1800–2100 m., July 1917, *G. Forrest* 15936 ; in open thickets, Shweli-Salween divide, 2400 m., shrub of 1–1.5 m., flowers rose purple, June 1918, *G. Forrest* 17546.

32. **B. Cooperi** *W. W. Smith* in Notes Roy. Bot. Gard. Edin. x. 14 (1917).

BHUTAN. Between Rudong La and Pumthang, bush of 60–90 cm. on gravel and debris. Flowers white, tinged purple, 3400 m. July 23, 1915, *Cooper* 4154.

33. **B. asiatica** *Lour.* Fl. Cochinch. 72 (1790).—*B. acuminatissima* Blume Bijdr. 743 (1825). *B. discolor* Roth Nov. Pl. Sp. 83 (1821). *B. lanceolata* Heyne ex Wall. Cat. sub no. 640. *B. salicina* Lam. Tab. Encyclo. et Méth. i. 291 (1791). *B. serrulata* Roth Nov. Pl. Sp. 82 (1821). *B. subserrata* Buch.-Ham. ex D. Don Prod. Fl. Nep. 92 (1825). *B. virgata* Blanco Fl. Filip. ed. I. 57 (1837).

MADRAS. Pulney Mountain, Sept. 1836, *Wight* 1811; Nilgiris, 1900 m., Aug. 1883, *Gamble* 12257; Sigur Ghat, 900 m., Aug. 1886, *Gamble* 17892; Kodaikanal Ghat, Dec. 7, 1898, *Bourne* 1607.

FORMOSA. Bankinsing, *A. Henry* 200; Tamsuy, *Oldham* 318.

INDO-CHINA. Hue and vicinity (the type-locality), Jan.-May 1927, *R. W. Squires* 296.

SZECHUAN. Min River and Omei 1100 m., *Faber* 608.

The above are only representative. The specimens of this species in Herb. Kew. are too numerous to enumerate here. The range of the species includes Sikkim, Bhutan, Assam, Bombay, Madras, Burma, Siam, Tonkin, Yunnan, Szechuan, Kwangtung, Formosa, Java, Sumatra, Borneo and the Philippine Islands.

This is an exceedingly polymorphic species. A number of varieties have been described, some of which were originally accorded specific rank. Although some are distinct enough in their extreme forms they are completely connected by intermediates. The best marked of these varieties are the following from Java:—var. **sundaica** *Koorders* in Meded. 's Lands Pl. lxi. 93 (1903), distinguished by the inflorescence up to 25 cm. long, calyx lobes shorter than the tube, and cymules 1–3-flowered; var. **densiflora** *Koorders* l.c., with a short uninterrupted inflorescence, and cymules 3–7-flowered, and calyx lobes shorter than the tube; var. **salicina** *Koorders* l.c. with the inflorescence thin and interrupted, and calyx lobes as long as the tube.

34. **B. Neemda** *Buch.-Ham.* ex Roxb. Fl. Ind. ed. Carey et Wall. i. 411 (1820); Benth. Scroph. Ind. 43 (1835); Benth. in DC. Prodr. x. 446 (1846); Bot. Mag. t. 6323.

N.W. HIMALAYA. Punjab: Dehra Dun, April 1834, *Jamieson* 507; on river banks in the Punjab plain, 300–1200 m., Oct. 1846, *Thomson*; River Dak, Husa, March 20, 1871, *Aitchison* 491; Hurroo, March 24, 1872, *Aitchison* 1094; Gurdaspur, 2000 m., March 8, 1885, *Drummond* 1713; Thakor, March 1885, *Nanak* in *Herb. Drummond* 1714; dry hillside near Abbottabad, "only seen in one place as yet," Feb. 1902, *Barritt* 66 in *Herb. Drummond* 21972, without precise locality, *Drummond* 25488; small shrub, white, scented, Gurdaspur, Feb. 6, 1917, *R. R. Stewart* 1056.

This species is very different from the type of the preceding species in the much larger flowers with wide corolla tube and lobes

spreading to a diameter of 5–8 mm. instead of small and erect. They have been united by most authors. *B. asiatica* has a more southern and eastern distribution, but in parts of India and China some forms approach this species and it is possible that natural hybrids occur. On the other hand the present species resembles some forms of *B. polystachya*, which may be distinguished by its tomentose ovary.

35. **B. Davidii** Franch. in Nouv. Arch. Mus. Paris, Sér. 2, x. 65 (1887–88).—*B. variabilis* Hemsl. in Journ. Linn. Soc., Bot. xxvi. 120 (1889).

TIBET. Kam: without precise locality, Aug. 1, 1893, Potanin.

SZECHUAN. Mt. Omei, Faber 604 and 606; Tatsien-lu, July 13, 1893, Potanin; without precise locality, Aug. 7, 1893, Potanin; Mao chou, Aug. 27, 1893, Potanin; Tatsien-lu, 1893, Soulié 778 and 919; mountains, S. Wushan, bush of 1.5 m., flowers purple, July 1900, E. H. Wilson (Veitch Exped.) 1347; Min Valley, 1950 m., bush of 60–120 cm., flowers purple, Aug. 1903, E. H. Wilson (Veitch Exped.) 4120, Mt. Omei, July 1904, E. H. Wilson (Veitch Exped.) 5039, and Aug. 1904, 5038; bush 1–2 m., flowers purple, side of streams, Mupin, 2300 m., Aug. 1908, E. H. Wilson (Arn. Arb. Exped.) 3349; Hsien, 1300–2000 m., bush 2 m. high, flowers rose purple, side of streams West of and near Wen-ch'uan, E. H. Wilson (Arn. Arb. Exped.) 3350.

HUPEH. Ichang without precise locality, A. Henry 156, 1069, 2351, 3110a, 3110b, 4166a; Nanto and mountains to northward A. Henry 2060, 2668; Patung, shrub of 3 m. spreading with lilac flowers, A. Henry 7008; W. Hupeh, without precise locality, July 1900, E. H. Wilson (Veitch Exped.) 1347, 1347a; Patung mountains, bush 1.5 m. high, flowers purple, Aug. 1900, E. H. Wilson (Veitch Exped.) 1569; hills, Ichang, bush 1 m. high, flowers purple, Oct. 1900, E. H. Wilson 1738; by the side of streams north and south of Ichang, 1300–2000 m., bush 1–2.5 m. high, flowers purple, Aug. and Sept. 1907, E. H. Wilson (Arn. Arb. Exped.) 613a; thickets, Hsing-shan Hsien, 1300–2300 m., bush 1.5–2 m. high, flowers purple; Aug. and Oct. 1907, E. H. Wilson (Arn. Arb. Exped.) 3347.

var. **alba** Rehd. & Wils. in Sargent Pl. Wilson. i. 568 (1913).

W. SZECHUAN. Lugan Fa, Tu-ti-liang-shan, 1800 m., Oct. 1910, E. H. Wilson (Arn. Arb. Exped.) 4638.

Distinguished by the white flowers.

var. **magnifica** Rehd. & Wils. in Sargent Pl. Wilson. i. 567 (1913).

W. SZECHUAN. Lugan Fu, Tu-ti-liang-shan, 1800 m., bush 2–2.5 m. high, flowers violet purple, Aug. 1910, E. H. Wilson (Arn. Arb. Exped.) 4639.

W. HUPEH. Without precise locality, June, 1900, E. H. Wilson (Veitch Exped.) 1249; Hsing-shan Hsien, in thickets 1600–2300 m., flowering specimen only, bush 2 m. high, flowers vinous purple fragrant, July 1907, E. H. Wilson (Arn. Arb. Exped.) 613 *pro parte*; side of streams, Patung Hsien, bush 1.5–2.5 m. high, flowers

rosy-purple, fragrant, Aug. 1907, *E. H. Wilson* (Arn. Arb. Exped.) 3346.

Distinguished by the very large dense-flowered inflorescence and the margin of the corolla lobes reflexed.

var. **superba** *Rehd. & Wils.* in Sargent Pl. Wilson. i. 568 (1913).

W. HUPEH. Side of streams, Hsing-shan Hsien, 1600–2300 m., fruiting specimens only, Oct. 1907, *E. H. Wilson* (Arn. Arb. Exped.) 613 *pro parte*.

Distinguished by the extremely dense flowers with flat corolla lobes which are fimbriate but with margins not reflexed. This exceedingly polymorphic species has been cultivated extensively, and several other varieties founded on habit, time of flowering, etc. are known to the author from garden material only.

36. **B. Delavayi** *Gagnepain* in Lecomte, Not. Syst. ii. 190, 193 (1912).—*B. glabrescens* W. W. Sm. in Notes Roy. Bot. Gard. Edin. ix. 85 (1916).

YUNNAN. Oha-pin-keou, in a wood, Aug. 7, 1889, *Delavay* 3939; open situations amongst scrub at the North end of the Chien-Chuan Valley, lat. 27° N., 2400–2700 m., shrub of 1.5–3 m., flowers very deep blue-lavender, throat and tube tinged rose, fragrant, May 1914, *G. Forrest* 12433; on the Chungtien plateau, lat. 27° 30' N., 3000 m., July 1914, *G. Forrest* 12753; in open scrub on the Shweli-Salween divide, lat. 25° 30' N., 3000–3400 m., shrub of 2 m., flowers lilac-rose, fragrant, May 1917, *G. Forrest* 15664; amongst scrub by streams, N'Maikha-Salween divide lat. 26° 30' N., 2400 m., shrub of 2–3 m., flowers rose-lavender? faded when collected, July 1919, *G. Forrest* 18199.

37. **Buddleja hastata** *Prain* ms., sp. nov.; ex affinitate *B. agathosmae* Diels et *B. tibeticae* W. W. Sm. sed limbo corollae ad 1 cm. diametro calyce 9 mm. longo distinctissima.

Shrub. Branches terete, densely tomentose. *Leaves* hastate, 15–20 cm. long including the winged petiole, 4–6 cm. wide, apex acute, margin crenate-dentate, upper and lower surfaces clothed with a thin tomentum. *Stipules* auriculate. *Inflorescence* terminal and axillary, with the flowers in very dense subglobose whorls 3–4 cm. in diameter. *Bracts* numerous, densely tomentose, linear-lanceolate, up to 2.5 cm. in length. *Flowers* very large. *Calyx* densely tomentose, tube 5 mm. long, lobes 4 linear subobtusate 4 mm. long. *Corolla* glabrous; tube 8–10 mm. long, 1.5 mm. wide; lobes 4 broadly obovate or suborbicular 4 mm. long, 3–4 mm. wide. *Stamens* 4, inserted just above the middle of the corolla tube, anthers subsessile scarcely 1.5 mm. long. *Ovary* tomentose; style short, tomentose below. *Fruit* not seen.

S. TIBET. Between Gyantse and Phari, July–Sept. 1904 (Tibet Frontier Commission), *H. J. Walton*.

A barren specimen from the Kyichu valley, 15 miles east of Lhasa, also collected by Capt. Walton, probably belongs to this species.

38. **B. agathosma** *Diels* in Notes Roy. Bot. Gard. Edin. v. 248 (1912).

YUNNAN. On exposed cliffs to the west of Yunnan fu, 2400 m., shrub of 1.5-3 m., flowers purplish lavender, very fragrant, Feb. 1905, *G. Forrest* 593.

var. **glandulifera** *Marquand*, var. nov.; a typo differt corolla extus glandulis sessilibus dense vestita.

YUNNAN. In thickets on dry slopes on the Yang-Dza Shan, Mekong-Salween divide, lat. 28° 18' N., long. 98° 43' E., 2400-2700 m., shrub of 1-2 m., flowers deep violet-lilac, fragrant, May 1921, *G. Forrest* 20143.

This is a rather well-marked variety distinguished by the corolla being clothed with sessile glands on the outside.

39. **B. salviifolia** *Lam.* Encycl. i. 513.—*B. aurantiaco-maculata* Gilg. in Engl. Jahrb. xxx. 377 (1901). *Lantana salviifolia* Linn. Syst. ed. x. 1116 (1759).

NYASALAND. Zomba 1800-2100 m., Sept. 1859 *Kirk*; Zomba Plateau 1500 m., Sept. 5, 1895, *A. Whyte*; without precise locality, *J. Buchanan* 654; Nyika Plateau, 1800-2100 m., June 1896, *A. Whyte*; Nachari, 2400 m., Sept. 1902, *J. McClounie*; Kondowe to Karonga, 600-1800 m., July 1896, *A. Whyte* 365.

RHODESIA. Melssetter District; 1800 m., "a shrub with very strongly mignonette-scented whitish flowers," Sept. 21, 1906, *C. F. M. Swynnerton* 609 and Sept. 23, 1906, 675; Imyanga, Aug. 1920, *J. S. Henkel* in *Herb. Eyles* 2590. Umtali District; Vumba mountains, in forest at "Cloudlands" 1600-1700 m., July 8, 1927, "tree 5 m., flowers lilac," *E. E. Galpin* 9256.

TANGANYIKA. Langenburg District; Rungwe mountains, Oct. 25, 1910, flowers light reddish-brown, *A. Stolz* 379.

PORTUGUESE EAST AFRICA. Masekessi District; Vumba mountain, shrub 0.6-2 m., flowers lilac, Aug. 1911, *M. T. Dawe* 388.

SOUTH AFRICA:—Western Region: Clanwilliam Div.; Wupperthal, 1836, *Drège* 699c; Bull. Hoek. 150 m., Aug. 2, 1896 *Schlechter* 8373. Middelburg Div.; Sneeuwberg lower and middle slopes, Dec. 11, 1910, bush of 1-1.5 m., *Pearson and Pillans* (Percy Sladen Memorial Expedition) 5806.

Coastal Region: Bedford Div.; near Bedford, *Mrs. Hutton*; Stockenstrom Div.; Kat Bey, *Henry Hutton*; Caledon Div.; Zwarb Berg, *Zeyher* 3526; Caledon, Oct. 1, 1846, *Prior*; and Jan. 22, 1894, *Otto Kuntze*; George Div., about the source of the Keurbooms River in Long Kloof March 20, 1914, *Burchell* 5077; in the wood under the mountain, George, Aug. 6, 1847, *Prior*; on the hill near George, 300 m., March 27, 1893, *Schlechter* 2418; between Gauritz River and Long Kloof, 1836, *Ecklon & Zeyher* 1328; Knysna Div.; Kaatjes Kraal, near Yzer Nek, March 30, 1814, *Burchell* 5202, between Keurbooms River and Biton River, April 10, 1814, *Burchell* 5284; Uitenhage Div.; between Galgebosch and Melk River, Feb. 17,

1814, *Burchell* 4766; banks of the Zwartkops River, *Zeyher* 461; valley of Zwartkops River, Dec. 30, 1847, *Prior*; Port Elizabeth Div.; Algoa Bay, Dec. 1847, *Prior*; Humansdorp Div., Karedoun Pass 300 m., March 1926, *H. C. Fourcade* 3221.

Central Region: Somerset Div.; on Bosch Berg, erect shrub of 2.5–3 m., June 11, 1813, *Burchell* 3226; (*Mrs.*) *Barber* 8; 1100 m., *MacOwan* 927; Queenstown Div.; near Queenstown, 1860, *Cooper* 193; Shiloh, *Bauer* 244 (pro parte); Hangklip mountain 1800–2000 m., 1893, *E. E. Galpin* 1623; Graaff Reinet Div.; Oude Berg 900–1200 m., *Drège*; Beaufort West Div.; Nieuwveld mountains, near Beaufort West 900–1500 m., *Drège* 699a; Albert Div.; without precise locality 1861, *Cooper* 697.

Ka'ahari Region: Basutoland; without precise locality 1861, *Cooper* 695; Lefibé, *M. & Mme. Dieterlen* 54; Transvaal; Magaliesberg Range, Sept., *Burke* 376; at the bottom of mountain ravines, Rimer's and other creeks near Barberton, shrub of 1.5–3 m., Sept. 1889, *E. E. Galpin* 481; Barberton, Sept. 1906, *Thorncroft* in *Trans. Mus. Herb.* 2847; Lydenberg Div.; on the sides of streams in the Macamao Gold Fields, June 1874, *McLea* in *Herb. Bolus* 467; near Lydenberg and near Spitzkop, Aug. 1887, *Wilms* 1027; Lydenberg May 1915, *Rogers* 14687; Pretoria, July 20, 1904, (*Miss*) *Leendertz* 187; Rustenberg Div.; 1300 m., Aug. 1904, without precise locality, *Miss Pegler* in *Herb. Nation.* 296; near river at Krondaal, 1300 m., Sept. 1905, *Miss Nation* 344; Zoutpansberg Div., without precise locality, Dec. 20, 1909, *W. C. Worsdell*; Pretoria, The Fountains, Oct. 1903, *J. Burt Davy* 2357; Forest near Pilgrim's Rest, May 1905, *Grenfell* 864.

Eastern Region: Tembuland: Umtata Div.; Transkei, Bazeia, *Baur* 244; Pondoland; between St. John's River and Umtsibeaba River, *Drège*; Natal, summit of Table Mountain, 1840, *Krauss* 447; banks of the River Umtwalumi, *Gerrard* 1850, and without precise locality, *Gerrard* 1211; Mont-aux-Sources, hillside and flats as pioneer scrub in the Lugela Valley, very common 1500 m. Feb. 15, 1926, *B. McLean* 84; Alexandra Div.; Dumisa, tree of 6 m., 1100 m. Aug. 22, 1911, *H. Rudatis* 1442; Van Reenen, 1500–1800 m. Nov. 5, 1894, *J. Medley Wood* 5491.

40. **B. crispa** *Benth.* *Scroph.* Ind. 43 (1835); *Wall. Cat.* 6404.

BALUCHISTAN. Chihil Tan and Zahree, 1851, *J. E. Stocks* 867; Urak, June 1886, *Lace*; Larghun, 2300 m., May 4, 1888, *Lace* 3842; Gustoi May 25, 1897, *Harsukh* in *Herb. Duthie* 20591.

AFGHANISTAN. Shaded bank, Otipore, March, *Griffith* 3744; shrub of 2–3 m. through the whole Kuram valley, 1879, *Aitchison* 189; same locality, *Harsukh* in *Herb. Duthie* 14921.

N. W. HIMALAYA. Without locality, *Wallich* 6404; 1200–2100 m., *Thomson*. Waziristan, Shakai, 1800–2100 m., April 30, 1895, *Duthie* 15686; Hazara, Kagan Valley 2200 m., May 18, 1896, *Inayat* in *Herb. Duthie* 19942a; Simla, 2100 m., *Thomson*; 1200–2100 m., 1844, *Edgeworth*; April 15, *Lady Dalhousie*; Elysium Hill

2100 m. April 21, 1877, *Gamble* 4145a, 4145c; March, *Collett*; stony places at the foot of the mountain, Krol between Kasauli and Simla 600 m., April 13, 1885, *Drummond* 2802; Ladies Mile, Jako, Simla, May 30, 1902, *Bourne* 3719; Kumaon Laharkot, 1800 m., *Strachey & Winterbottom* 1; Almorah 1600–2200 m. *Madden*; Punjab, Dalhousie Road above Donera, 900 m. Feb. 22, 1917, *R. R. Stewart* 1268a; Dharmcot, Dharmsala 2400 m. May 18, 1917, *R. R. Stewart* 1867.

BHUTAN. *Griffith* 1009, 2446.

41. ***B. caryopteridifolia*** *W. W. Smith* in *Notes Roy. Bot. Gard. Edin.* viii. 179 (1914).

YUNNAN. Open situations on the Tong Shan in the Yangtze bend, lat. 27° 20' N., 3000 m., shrub of 1.5–2 m., flowers pale lavender, Sept. 1913, *G. Forrest* 11016; east of Likiang, 1450–2100 m., flowers violet, July 3, 1914, *Handel-Mazzetti* 3405; open, dry situations on the Yung-peh mountains, lat. 26° 40' N., 2400 m., shrub of 1.5 m., flowers pale lilac-rose, fragrant, Aug. 1917, *G. Forrest* 15311; amongst rocks in dry situations on the Leilung Shan, lat. 28° 12' N., 3000 m., shrub of 60–120 cm., flowers grey, fragrant, Sept. 1917, *G. Forrest* 15317; in thickets on dry bouldery hillsides on the hills around Yung-peh, lat. 26° 40' N., long. 100° 45' E., 1500–1800 m., shrub of 1.5 m., flowers fragrant, rose-lavender, July 1921, *G. Forrest* 21188; dry stony hillsides amongst scrub on the Chien-Chuan—Mekong divide, lat. 26° 30' N., long. 99° 40' E., shrub of 60–120 m., flowers, exterior grey, interior violet-lavender, fragrant, 2700–3000 m., Aug. 1922, *G. Forrest* 23238.

var. ***eremophila*** *Marquand*.—*B. eremophila* *W. W. Smith* in *Notes Roy. Bot. Gard. Edin.* viii. 179 (1914).

YUNNAN. Arid regions above the Yangtze, 3000 m., compact dwarf shrub of 30–60 cm., May 1913, *F. Kingdon Ward* 304; above the Yangtze between Yungpeh and Likiang 1800 m., July 3, 1914, *C. Schneider* 1736; near Ndaku, lat. 27° 20' N., 1750–2250 m., Aug. 1, 1914, *Handel-Mazzetti* 4389; dry stony pasture on the Muli mountains, valley of the Litang, lat. 28° 12' N., 3000 m., shrub of 0.5–1 m., flowers dull rose, exterior grey, June 1918, *G. Forrest* 16258; open situations in thickets, Muli mountains, lat. 28° 12' N., 3000 m., shrub of 1.5 m., flowers deep blue lavender, Oct. 1918, *G. Forrest* 19139, 18687; dry stony slopes and amongst rocks on the Bey-ti Shan, lat. 27° 45' N., long. 100° 18' E., 2100 m., stunted shrub of 30–60 cm., flowers soft bluish-rose, fragrant, July 1921, *G. Forrest* 20543; open dry situations amongst scrub on the divide between the Yangtze and Yungning valleys, lat. 27° 42' N., long. 100° 30' E., 1800–2100 m., shrub of 60–90 m., flowers exterior grey, interior purplish-rose, June 1922, *G. Forrest* 21273; dry hillsides amongst scrub and rock on the hills above Feng-kou, lat. 27° 40' N., long. 100° 26' E., 1800 m., shrub of 1–1.3 m., flowers exterior grey, interior pale lavender, June 1922, *G. Forrest* 21280.

Though very distinct in its typical form with leaves scarcely 1 cm. long, this is connected with the type of *B. caryopteridifolia* by a

complete chain of intermediates so that one is forced to consider the whole series as one polymorphic species. In cultivation the species exhibits a very wide range of variation. Of the specimens enumerated above, *Handel-Mazzetti* 4389 is almost exactly equidistant between the type and variety.

var. **lanuginosa** *Marquand*, var. nov.; a typo differt foliis utrinque dense lanuginosis corollae tubo ad 1.5 mm. lato.

YUNNAN. Open dry, stony pasture, Muli mountains, lat. 28° 12' N., 3000 m., shrub of 60–90 cm., flowers deep, soft rose, exterior white, fragrant, Aug. 1918, *G. Forrest* 16639; dry bouldery slopes on the hills, north of Yungpeh, lat. 26° 40' N., long. 100° 45' E., 2400 m., shrub of 60–90 cm., flowers fragrant, exterior grey, interior rose-lavender, Aug. 1921, *G. Forrest* 21175.

This is a rather distinct variety with wider corollas than the type. The young stems and leaves are clothed with a very thick tomentum.

42. **B. brachystachya** *Diels* in Notes Roy. Bot. Gard. Edin. v. 249 (1912).

YUNNAN. In dry exposed situations amongst rocks, on the descent from the Lu-po pass to the Salween, Mekong-Salween divide, lat. about 27° N., 2100–2400 m., dwarf shrub of 30–45 cm., flowers lavender colour and fragrant, *G. Forrest* 1076.

43. **B. nana** *W. W. Smith* in Notes Roy. Bot. Gard. Edin. viii. 126 (1913).

YUNNAN. Moist open situations on the divide between the Shayang and Chu-tong valleys, lat. 25° 20' N., 2000 m., dwarf shrub of 30–60 m., flowers greyish-lavender, April 1910, *G. Forrest* 5519.

44. **B. auriculata** *Benth.* in Hook. Comp. Bot. Mag. ii. 60 (1836).

S. AFRICA:—Coastal Region: Fort Beaufort Div., Winterberg 1836, *Ecklon* (flowers white, yellow in the throat); Stockenstrom Div., Chumie Berg, 1836, *Ecklon*; Katberg, *Henry Hutton*; Klarf, summit of the Katberg, May 1869, *J. Shaw*; Katberg, 1200 m., *R. Baur* 874.

Central Region: Somerset Div., near Somerset, on Bosch Berg, May 29, 1813, *Burchell* 3157; and June 1813, *Burchell* 3179; Griqualand East, Maclear Div., Potriviers Berg, wooded kloof 1700 m., March 20, 1904, *E. E. Galpin* 6771.

Kalahari Region: Transvaal; Barberton, June 1905, *I. Thorncroft* 4343; Pietersburg, "The Downs," 1500 m., July 1917, *F. A. Rogers* 20167.

Eastern Region: Xalanga Div., Cala, hillside near Bushman's painting, 1200 m., March 29, 1910, *Alice Pegler* 1741.

var. **euryifolia** *Prain & Cummins* in Dyer Fl. Cap. iv. II. 1048.

S. AFRICA:—Kalahari Region: Transvaal: Rimer's Creek, Barberton, 900 m., shrub of 1.5–2.5 m., corolla tube orange, limb pale lilac, July 1890, *E. E. Galpin* 970; in abandoned Kaffir Kraals near

Lydenberg, June 1889, *F. Wilms* 1030; Sabie Lock, near Pilgrim's Rest, Aug. 1904, *J. Burt Davy* 2437; Waterval Boven, June 10, 1905, *F. A. Rogers* 984; shrub of 1-2 m., Mount Fletcher, *J. R. Sims* 2536.

Eastern Region: Natal: Tugela River, *Gerrard* 1967; Griqualand East; near Kokstad, in Umzimhlava Woods 1200 m., May 1883, *Tyson* 1287.

This variety is distinguished from the type of the species in the leaves being densely pubescent on the under surface with the nerves and veins deeply impressed.

45. **B. heliophila** *W. W. Smith* in Notes Roy. Bot. Gard. Edin. viii. 126 (1913).

YUNNAN. Open, sunny situations along the base of the eastern flank of the Tali Range, lat. 25° 40' N., 2100-2400 m., shrub of 1-2 m., flowers soft magenta rose shading to crimson at base, July 1910, *G. Forrest* 6796; shrub of 1.2-1.6 m., corolla-tube lavender-rose, limb lavender, throat deep red orange, fragrant; open scrub in dry situations on the Langkong Ho-Ching divide, lat. 26° 16' N., 2400 m., May 1913, *G. Forrest* 9984; open scrub in dry situations on the Langkong divide, lat. 26° 16' N., 2400-2700 m., shrub of 2-2.5 m., flowers, tube bluish-rose, limb pale soft blue, May 1913, *G. Forrest* 9988; open thickets on the western flank of the Tali Range, lat. 25° 40' N., 3000 m., shrub of 1.5-2 m., flowers rose-lavender, fragrant, June 1917, *G. Forrest* 15622.

var. **angustifolia** *Marquand*, var. nov.; a typo differt foliis anguste lanceolatis acuminatis calyce pubescente.

YUNNAN. In open thickets by streams and on the margins of forests, Shweli-Salween divide, lat. 25° 20' N., long. 98° 56' E., 2700-3000 m., shrub 2-3 m. high, flowers soft greyish rose, strongly fragrant, April 1924, *G. Forrest* 24069.

This variety is distinguished by the thin narrow leaves, acuminate at the apex, and the sparse hairs on the calyx.

var. **pubescens** *Marquand*, var. nov.; foliis ovato-lanceolatis calyce pubescente a typo differt.

YUNNAN. Dry scrubby banks on the margins of pine forests on the hills around Beta-pu, lat. 25° 30' N., long. 99° 48' E., 2400-2900 m., shrub of 1-1.5 m., flowers pure pale soft rose-pink, drying purplish, fragrant, April 1921, *G. Forrest* 19357; dry banks amongst scrub on the margins of pine forests on the hills between Tai-ping-pu and Yangpi, lat. 25° 36' N., long. 99° 54' E., 2100-2400 m., shrub of 1.5-2 m., flowers rose-pink to soft lavender, fragrant, April 1922, *G. Forrest* 21121.

In this variety the leaves scarcely differ from the type of the species but the calyx is only sparsely hairy, not tomentose.

46. **B. officinalis** *Maxim.* in Bull. Acad. Pétersb. xxvi. 496 (1893).

SZECHUAN. Ya-chon, April 5, 1893, *Potanin*.

HUPEH. Ichang Gorge, River Yangtze, *Maries*: Ichang, shrub in glens, etc., early in the year, *A. Henry* 1117, 1291, 1447, 1527, 3110, 7884; Ichang, shrub of 1-2.5 m., flowers lavender, on cliffs, etc. March 16, 1900, *E. H. Wilson* (Veitch Exped.) 155, 155a; Ichang cliffs, etc., 300-600 m., March 24, 1908, *E. H. Wilson* (Arn. Arb. Exped.) 4005.

KWEI-CHOW. River Yangtze, without precise locality, *E. Faber* 605.

YUNNAN. Flowers lilac, Red River, 3000 m., *A. Henry* 9749.

47. **B. acutifolia** *C. H. Wright*, in *Kew. Bull.* 1896, 24.—*B. lavandulacea* Kränzl. in *Engl. Jahrb. i. Beibl.* 111, 42 (1913). *B. Mairei* Lév. in *Fedde Repert.* xiii. 258 (1914).

BHUTAN. *Griffith* 2444 (*Kew. Distr. No.* 3745).

BURMA. Sadon, 2000 m., flowers white, Feb. 1900. *Shaik Mokim* 63; Bhamo District, Sinlum Kaba, 1500-1800 m., April 11, 1912, *Lace* 5779; Myitkyina district, Lankkaung 1300 m., April 23, 1929, *Su Koe* in *Herb. Parkinson* 9117.

YUNNAN. Very common in hedges and wastes, Mengtze, flowers lavender, fragrant, March 1893, *Hancock* 143; Szemao, February, *Bons d'Anty* 3; Mengtze, 1400 m. shrub 2 m. to tree 5 m., flowers lavender, *A. Henry* 10178; forests on mountains east of Szemao, 1500 m., shrub of 3 m., with lilac flowers, *A. Henry* 11619; hills Tai-pou, 2500 m., large shrub with lavender flowers, *E. E. Maire* 467; Mo-tsou, 600 m., *E. E. Maire* (sine numero); without precise locality, *E. E. Maire* 2487; generally in dry situations, common from Yunnan fu to Talifu, 2000-2700 m., shrub of 1-2.5 m., flowers white with lavender centre, fragrant, Feb. 1905, *G. Forrest* 2; open situations, hills to the south of Tengyueh, lat. 25° N., 1800-2100 m., shrub of 3 m., flowers interior creamy white, exterior pale purplish, fragrant, Feb. 1913, *G. Forrest* 9550; amongst scrub in open situations, south end of Kau-guai Valley, lat. 24° 30' N., 900 m., shrub of 2-3 m., flowers, tube dull lavender rose, limb buff, throat orange red, fragrant, Jan. 1913, *G. Forrest* 9494; Yunnan fu, shrub of 2.5 m., flowers white with orange throat, Feb. 8, 1914, *C. Schneider* 45; between Ssiao-ma-kai and Schin lun, flowers white within, lilac outside, March 9, 1914, *C. Schneider* 302; 1900 m., tall shrub roadsides and walls, April 20, 1916, *O. Schoch* 41; *Schneider* 361.

KWEI-CHOW. Pin-fa, April 1907, *J. Cavalerie* 3097, 8082, 8140.

KWANG-SI. On hills and glens Lungchow, shrub of 60-90 cm., flowers lavender, *Morse* 278; Lungchow, shrub of 1-1.5 m., flowers white, orange throat, *Morse* 466, 467.

48. **B. myriantha** *Diels* in *Notes Roy. Bot. Gard. Edin.* v. 250 (1912).—*B. asiatica* var. *stipulata* Gagnep. in *Lecomte Not. Syst.* ii. 189 (1912) (nomen nudum).

UPPER BURMA. In thickets of the lower ridges of the N'Maikha-Salween divide, lat. 27° 17' N., long. 98° 46' E., 2700 m., shrub of 1.5-2 m., flowers purple or soft rose-lavender, fragrant, July 1925, *G. Forrest* 27055, 27536.

S.E. TIBET. Tsarong: dry situations on the margins of thickets on the Salween—Kiu-chiang divide, lat. $28^{\circ} 40' N.$, long. $98^{\circ} 15' E.$, shrub of 2–2.5 m., flowers soft rose-lavender, fragrant, July 1919, *G. Forrest* 19235.

YUNNAN. Above Tali at the foot of the Sang Shan, Sept. 25, 1888, *Delavay* 3627; without precise locality, *Ducloux* 444; dry open situations on the borders of pine woods, western slopes of the Isen Shen range, Yang-pi pass, lat. $25^{\circ} 40' N.$, 2100–2700 m., shrub of 2–3 m., flowers dull purple, Sept. 1905, *G. Forrest* 912; at the foot of the mountain near Tali fu, 2500 m., shrub of 1.5 m., flowers pale violet, Aug. 1914, *C. Schneider* 2503; in open thickets by streams on the Mekong-Salween divide, lat. $27^{\circ} 36' N.$, long. $98^{\circ} 56' E.$, 2400–2700 m., shrub of 2–4 m., flowers dull rose, hispid white exterior, fragrant, July 1921, *G. Forrest* 19804.

KWEI-CHOW. Shrub with white flowers, *J. Esquirol* 581.

Note. This species is very closely allied to the Szechuan species *B. alata* (No. 28).

49. **B. Fallowiana** *Balf. fil. & W. W. Smith* in Notes Roy. Bot. Gard. Edin. x. 15 (1917).—*B. macrostachya* Benth. var. *yunnanensis* Diels in Notes Roy. Bot. Gard. Edin. vii. 145 (1912).

YUNNAN. Dry stony situations along base of the eastern flank of the Lichiang Range, lat. $27^{\circ} 12' N.$, 2700 m., branched shrub of 2–4 m., flowers rich lavender, throat of corolla orange, fragrant, with an odour resembling vanilla, July 1906, *G. Forrest* 2599; by streams at the north end of the Lichiang Plain, lat. $27^{\circ} 20' N.$, 2700 m., shrub of 1.5–3 m., flowers soft lavender, throat orange, fragrant, July 1910, *G. Forrest* 6047; stony situations by streams on the eastern flank of the Lichiang Range, lat. $27^{\circ} 30' N.$ 2700–3000 m., shrub of 1–1.5 m., flowers lavender, throat orange, strongly fragrant, Aug. 1910, *G. Forrest* 6285; Lichiang Range, lat. $27^{\circ} 15' N.$, 2500–3000 m., July 1913, *G. Forrest* 10591; shrub of 2 m., flowers lilac. Ngu leh-keh in the neighbourhood of Lichiang, 3000 m., July 29, 1914, *C. Schneider* 2054; at the foot of the snow clad mountains near Lichiang, 3000 m., Aug. 6, 1914, *C. Schneider* 3399; open pasture on the hills around Tengyueh, lat. $25^{\circ} N.$, 1800 m., compact shrub of 1–1.5 m., flowers fragrant, very dark rose-lavender, May 1919, *G. Forrest* 17790; open thickets by streams on the N. W. flank of the Lichiang Range, lat. $27^{\circ} 20' N.$, long. $100^{\circ} 10' E.$, 3000 m., shrub of 1.5–2.5 m., flowers fragrant, soft lavender-purple, Aug. 1922, *G. Forrest* 23179.

There are several forms of this species in cultivation differing slightly in flower colour.

50. **B. candida** *Dunn* in Kew. Bull. 1920, 134.

EASTERN HIMALAYA. Outer Abor Hills, low bushes scattered in the sward, Sidi river mouth and opposite Yambung on the north side of the Dihang, *Burkill* 37631; Tsangpo gorge, Gompa Ne, on cliffs and rocks in open sunny places in the river bed and up the

bracken and grass clad slopes above, 1500 m., shrub of 2-3 m. with very flannelly whitish leaves and small racemes of violet flowers, Dec. 9, 1924, *F. Kingdon Ward* 6372; Dihang valley, Abor Hills, small shrub 2.5-3 m. high, leaves flannelly, the young shoots with a matt bronzy look, on rocks in the bed of the river, above flood level, growing in almost pure sand, 300 m., flowers probably quite small, in long spikes, Feb. 13, 1928, *F. Kingdon Ward* 7863.

51. **B. stenostachya** *Rehder & Wilson* in *Sargent Pl. Wilson*. i. 565 (1913).

SZECHUAN. Flowers pale purple, thickets Mupin, 1200-2400 m., Oct. 1908, *E. H. Wilson* (*Arn. Arb. Exped.*) 1351.

52. **B. tibetica** *W. W. Smith* in *Rec. Bot. Surv. Ind.* iv. 270 (1911).—*B. Whitei* Kränzl. in *Engl. Jahrb. l. Beibl.* 111, 46 (1913).

TIBET. Lhalung valley, 3400 m., June 10, 1906, *J. C. White* 72.

var. **Farreri** *Marquand*.—*B. Farreri* Balf. fil. & *W. W. Smith* in *Notes Roy. Bot. Gard. Edin.* ix. 84 (1916).

KANSU. Arid places crevices, walls and banks; Ha Shui fang, Siku, Feng S'an Ling, and at the edge of the subalpine coppice below Chago, Sha-Tan-yu valley on the borders of the province, bush of 1.5-2 m., May 8, 1914, *Farrer & Purdom* 44.

SZECHUAN. Arid places 3400 m., shrub of 1.5 m. (without precise locality), July 1904, *E. H. Wilson* (*Veitch Exped.*) 4122: Wen chüan hsien near Scha pei, 1600-1700 m., April 26, 1914, *Limpricht* 1310.

var. **grandiflora** *Marquand* in *Journ. Linn. Soc., Bot.* xlvi, 202 (1929).

TIBET. Tsela Dzong, varying much in size and habit, scrubby thick bushes only 30-60 cm. high on the open rocky sun-scorched face of the mountain, to a large thick bush or tree in villages and by streams in more sheltered situations, "flowers lilac, purple, or almost white with orange eye, leaves variable, covered with silver or golden fur," 2700-3000 m., May 22, 1924, *F. Kingdon Ward* 5693; Tsangpo valley below Tsetang, small scraggy tree or large untidy bush up to 4-6 m. high, flowers bright purple with deep orange eye, fragrant, no leaves yet showing, 3000-3400 m., April 29, 1924, *F. Kingdon Ward* 5635.

var. **truncatifolia** *Marquand*.—*B. truncatifolia* Lévl. in *Fedde Repert.* xiii. 342 (1914).

YUNNAN. Brittle shrub with white woolly leaves, flowers pink, Kiao-tche-keou, 2550 m., *E. E. Maire* (sine numero); valley of Tche-ka, 2500 m., large shrub, branches white, leaves cottony, flowers violet, rare, May (sine anno) *E. E. Maire* 376; open thickets on the western flank of the Tali Range, lat. 25° 40' N., 300 m., shrub of 2-3 m. foliage only, Aug. 1913, *G. Forrest* 11528; Ouai-gai-tchai, 2500 m., large bushy shrub, leaves and young branches white tomentose, flowers bluish-violet, hedges, *E. E. Maire* 329.

var. **glandulifera** *Marquand*, var. nov. ; a typo differt paniculis lateralibus ad 9 cm. longis 4 cm. latis corolla extus glandulis sessilibus dense vestita.

YUNNAN. Open dry situations on the Chungtien plateau, lat. 27° 45' N., 3400 m., shrub of 1.5-3 m., flowers greenish-rose, fragrant, June 1917, *G. Forrest* 13871.

This is a very well marked variety. The inflorescences are much larger and less compact than the type and the exterior of the corolla is glandular.

Key to the varieties of *B. tibetica*.

Exterior of the corolla eglandular :

Branchlets tetragonous ; flower 6-8 mm. long.....*tibetica* (type)

Branchlets terete ; flower usually exceeding 10 mm. in length :

Panicle (up to 20 cm. long, 15 cm. wide) branches spreading at right angles ; corolla glabrescent on the exterior...var. *Farreri*

Panicle lateral compact (up to 5 cm. long, 3 cm. wide) ; corolla tomentose on the exterior :

Leaves cordate at the base ; petiole not winged ; nerves conspicuous on the underside.....var. *grandiflora*.

Leaves truncate at the base ; petiole winged ; nerves hidden by the very dense tomentum.....var. *truncatifolia*.

Exterior of the corolla glandular.....var. *glandulifera*.

Index of species and synonyms.

acosma 13 ; *acuminata* 29 ; *acuminatissima* 33 ; *acutifolia* 47 ; *adenantha* 14 ; *agathosma* 38 ; *alata* 28 ; *albiflora* 18 ; *alternifolia* 3 ; *amentacea* 2 ; *asiatica* 33 ; *asiatica* var. *stipulata* 48 ; *aurantiaco-maculata* 39 ; *auriculata* 44.

brachystachya 42.

candida 50 ; *carnea* 9 ; *caryopteridifolia* 41 ; *Colvillei* 15 ; *Cooperi* 32 ; *crispa* 40 ; *curviflora* 9 ; *cylindrostachya* 24.

Davidii 35 ; *Delavayi* 36 ; *discolor* 33 ; *Duclouxii* 19.

eremophila 41.

Fallowiana 49 ; *Farreri* 52 ; *foliata* 29 ; *Forrestii* 16.

Giraldii 18 ; *glabrescens* 36 ; *Griffithii* 30 ; *gynandra* 1.

Hancockii 27 ; *hastata* 37 ; *heliophila* 45 ; *Hemsleyana* 18 ;

Henryi 27 ; *Hookeri* 26.

incompta 13 ; *insignis* 7 ; *intermedia* 7.

japonica 8.

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Lindleyana 7 ; *longifolia* 20.

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nana 43 ; *Neemda* 34 ; *nivea* 23.

officinalis 46.

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salicifolia 7; *salicina* 33; *Saltiana* 29; *salviifolia* 39; *serrulata* 33; *stenostachya* 51; *subserrata* 33.
taliensis 17; *tibetica* 52; *truncatifolia* 52; *tsetangensis* 5.
usambarensis 22.
variabilis 35; *venenifera* 10; *virgata* 33.
Wardii 6; *Whitei* 52; *Woodii* 22.
yunnanensis 12.

Doubtful species.

- B. acuminata* Poir. Encyc. Suppl. i. 745 (1810)—Type (in Herb. Jussieu) not seen. India.
B. nepalensis Colla in Mem. Acad. Torino, xxxv. 182 (1835) (Hort. Ripul., App. 4, 38). Nepal.
B. otophylla Hassk. in Versl. en Med. Kon. Akad. Wentensch, v. 97 (1857). The type of this species has not been seen. In the original description it is compared with a Brazilian species.
B. Poiretii Spreng. Syst. Veg. i. 430 (1825). No specimen seen, origin doubtful.
B. ternata Lour. Fl. Cochinch. 72 (1790). The type of this species has not been seen, but from the description it is not a species of *Buddleja*.
B. truncata Gagnepain in Lecomte, Not. Syst. ii. 187, 192 (1912). No specimen has been seen, but this is stated to differ from *B. officinalis* Maxim. in the leaves being more bullate, abruptly truncate or cordate at the base and dentate. Collected by Delavay in Yunnan.

Excluded Species.

- B. diversifolia* Vahl. Symb. Bot. iii. 15 (1794).
 = *Nicodemia diversifolia* Tenore Cat. Ort. Napol. 88 (1845).
B. incompta Linn. fil. Suppl. 123 (1781).
 = *Gomphostigma incomptum* N.E. Br. in Kew Bull. 1929, 143.
B. indica Lam. Encyc. i. 513 (1785).
 = *Nicodemia diversifolia* Tenore Cat. Ort. Napol. 88 (1845).
B. madagascarensis Lam. Encyc. i. 513 (1785).
 = *Nicodemia madagascarensis* R. N. Parker, Forest Fl. Punjab. ed. 2, 357 (1924).
B. Missionis Benth. Scroph. Ind. 43 (1835).
 = *Wendlandia Notoniana* Wall. ex Wright & Arn. Prod. 403 (1834).
B. plectranthoidea Lévl. Cat. Pl. Yunnan, 171 (1916).
 = ***Leucosceptrum plectranthoideum*** (Lévl.) Marquand comb. nov.
B. virgata Linn. fil. Suppl. 123 (1781).
 = *Gomphostigma scoparioides* Turcz. in Bull. Soc. Nat. Mosc. xvi. 53 (1843).
 = *Gomphostigma virgatum* O. Kuntze Rev. Gen. iii. II. 201 (1893).

In addition to the above, the following Mascarene species are referred to the genus *Nicodemia* for the reason stated in the Introduction :—

- B. candelabrum* Kränzl. in Engl. Jahrb. l. Beibl. III, 40 (1913).
 - B. comorensis* Baker in Journ. Linn. Soc. xx. 206 (1884).
 - B. cuspidata* Baker in Kew Bull. 1895. 113.
 - B. fusca* Baker in Journ. Linn. Soc., Bot. xx. 205 (1884).
 - B. rondeletiaefolia* Benth. in DC. Prod. x. 445 (1846).
 - B. sinuata* Willd. ex Roem. & Schult. Syst. Mant. iii. 97 (1827).
 - B. sphaerocalyx* Baker in Journ. Linn. Soc., Bot. xxii 505. (1887).
 - B. sphaerocephala* Baker in Journ. Linn. Soc., Bot. xxi. 425 (1885).
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