

1. BOERHAAVIA, Linn.

Flowers hermaphrodite. Upper portion of the perianth campanulate or funnel-shaped, truncate and plicate or very shortly 5-lobed, falling off after flowering, leaving the lower portion persistent and enclosing the ovary and fruit. Stamens 1 to 4, usually exerted. Stigma dilated peltate or oblique. Fruit completely enclosed in the somewhat hardened 5-ribbed base of the perianth. Embryo transversely folded at the base of the cotyledons.—Herbs usually perennial. Leaves opposite.—Flowers small, in little clusters or umbels on simple or branched axillary peduncles. Bracts and bracteoles very small.

The genus is widely diffused over the tropical and subtropical regions of the New and the Old World. The Australian species are both Asiatic, one a common weed in Africa and Asia, the other perhaps confined to Asia; both, however, require further comparison with some of the American species.

Leaves orbicular or ovate to narrow-lanceolate. Deciduous portion of the perianth campanulate, not exceeding 1 line . . . . . 1. *B. diffusa*.  
Leaves cordate-ovate to lanceolate. Deciduous portion of the perianth 3 to 4 lines long, funnel-shaped, with a narrow tube . . . . . 2. *B. repanda*.

NIB

NICTAGINACEAE

*Boerhavia chinensis*

1. **B. diffusa**, *Linn. Chois. in DC. Prod. xiii. ii. 452*. A perennial with procumbent diffuse or ascending stems extending sometimes to several ft., the whole plant glabrous, or the lower portion and foliage pubescent or hirsute, with a few longer articulate hairs and sometimes glandular-viscid. Leaves of each pair unequal or nearly equal, petio- late, the lower ones often broadly ovate or orbicular  $\frac{1}{2}$  to 1 in. diameter, the upper ones usually smaller or narrower, sometimes nearly all narrow- lanceolate, from very obtuse to acute, entire sinuate or crisped on the margins especially when hirsute, the smaller ones sometimes clustered in the axils, the floral ones passing into minute bracts. Flowers very small, pale pink, sessile or on very short pedicels somewhat lengthened

under the fruits, in little heads or umbels on filiform peduncles more or less branched into compound umbels or irregular panicles axillary or terminal. Bracts under the pedicels small and lanceolate, with a pair of minute bracteoles under the perianth. Perianth constricted above the ovary, the lower portion about  $\frac{1}{2}$  line long, rather thick, 5- ribbed, studded with stipitate glands, the upper deciduous portion cam- panulate, petal-like, scarcely lobed, from  $\frac{3}{4}$  to rather above 1 line long. Stamens usually 3, sometimes 1, 2 or 4, inserted in a narrow cup-shaped toothed disk adnate to the stipes of the ovary, which as well as the whole ovary is entirely enclosed in the base of the perianth; filaments as long as or rather longer than the perianth. Fruiting base of the perianth oblong-turbinate, glandular-muricate when dry, becoming en- veloped in mucilage in hot water, from 1 to nearly 2 lines long.—*B. mutabilis*, Br. Prod. 422, Chois. in DC. Prod. xiii. ii. 455, (there placed in a wrong division); Nees in Pl. Preiss. i. 622; F. Muell. Pl. Vict. ii. t. 67, (the insertion of the stamens and style incorrect); *B. pubescens*, R. Br. Prod. 422; *B. procumbens*, Roxb.; Wight, Ic. t. 874.

**N. Australia.** Victoria river, *F. Mueller*; Islands of the Gulf of Carpentaria, *R. Brown*; (glabrous, glandular-pubescent and very villous-tomentose varieties), *Henne*; Adams Bay, *Hulls*; Port Essington, *Armstrong*; Port Darwin, *Schultz*.

**Queensland.** Keppel Bay, *R. Brown*; Port Moller and Isles off Cape Flattery, *M. Gillivray*; Howick's group, *F. Mueller*; Rockingham Bay, *Dallachy*; common about Rockhampton, *Dallachy* and others; Nerkoal and Amity Creeks, &c., *Bowman*; Warwick, *Beckler*; on the Maranoa, *Mitchell* (some of the specimens very hirsute, with the leaves white underneath); Armadillo, *Barton*; Curriwillightie, *Dalton*.

**N. S. Wales.** Mudgee, *Woolfs*; from the Darling river to the Barrier Range, *Victorian and other Expeditions*; New England, *C. Stuart*.

**Victoria.** Murray river, Mount Hope, *F. Mueller*.

**S. Australia.** Spencer's Gulf, *R. Brown*; Flinders Range, Taberton, *F. Mueller*; Cooper's Creek, *Howitt's Expedition*.

**W. Australia.** Swan river, *Drummond*, *Preiss*, n. 2389; Murchison river, *Old- field*; Port Walcott, *Harper*.

The glabrous and hirsute states are generally found in the same localities, the former, however, by far the most frequent. The species is a common weed in the warmer regions of Asia and Africa.

2. **B. repanda**, Willd.; *Chois. in DC. Prod.* xiii. ii. 455. A stouter and coarser plant than *B. diffusa*, usually glabrous and spreading. Leaves petiolate, cordate-ovate or lanceolate, usually acuminate, the margins undulate, rather thick, often above 1 in. long, but sometimes small. Flowers pedicellate in umbels on axillary or terminal peduncles and very frequently with a whorl of 6 to 8 pedicellate flowers at some distance from the terminal umbel. Pedicels 2 to 6 lines long, or more usually unequal in the same umbel, not so slender as in *B. diffusa*. Lower portion of the perianth under 1 line long, glandular muciculate as in *B. diffusa*, upper deciduous portion funnel-shaped, 3 to 4 lines long, the slender part of the tube as long as the campanulate summit. Stamens usually 2 or 3, sometimes 4, exserted. Fruit considerably longer than in *B. diffusa*.—Wight,  *Ic. t.* 1766.

**Queensland.** Lady Elliott's Island, *Capt. Robertson*.

**W. Australia.** Sharks Bay, *Milne, Maitland Brown*; between Moore and Murchison rivers, *Drummond, 6th coll. n.* 217.

The species has a considerable range in East India, the Indian Archipelago, &c., chiefly in maritime districts.

2. PISONIA, Linn.

Flowers hermaphrodite or unisexual. Perianth in the hermaphrodite flowers contracted above the ovary, in the males campanulate, in the females ovoid or cylindrical, the margin in all 5-angled or 5-toothed. Stamens usually 6 to 8, longer than the perianth, none in the female flowers. Ovary entirely wanting or imperfect in the male flowers. Stigma in the females dilated, oblique. Fruiting perianth oblong or elongated, 5-ribbed, smooth or glandular-muricate, crowned by the small withered limb of the perianth. Seed oblong with a deep longitudinal furrow. Albumen scanty. Embryo straight, the cotyledons convolute over the intruded testa.—Trees shrubs or woody climbers. Leaves opposite or scattered. Flowers in dense or loose cymes, often arranged in terminal panicles. Bracts and bracteoles very small or none.

The species are numerous in tropical and subtropical America, but there are also a few in southern Asia and in the island region from the S. African coast to the Pacific. Of the three Australian species one is widely spread over the tropical regions both of the New and the Old World, another extends to Norfolk Island and New Zealand, and possibly to some of the islands of the Eastern Archipelago and South Pacific, the third may be endemic, but closely resembles if it be not identical with a Pacific island species, the synonymy, however, notwithstanding the researches of Seemann, remains exceedingly confused, and the specimens now in our herbaria are wholly insufficient to clear it up.

- Tall woody climber with axillary spines. Flowers unisexual. Fruiting perianth muricate . . . . . 1. *P. aculeata*.  
Unarmed trees.  
Flowers unisexual. Perianth shortly villous, muricate when in fruit . . . . . 2. *P. inermis*.  
Flowers (all?) hermaphrodite. Perianth glabrous, elongated and smooth or minutely papillose-scabrous when in fruit . . . . . 3. *P. Brunoniana*.

1. **P. aculeata**, Linn.; Chois. in DC. Prod. xiii. ii. 440. A tall woody climber, forming impenetrable masses on the borders of forests, reduced to a low straggling bush in open places, glabrous or rarely pubescent, often armed with stout recurved axillary prickles (abortive peduncles). Leaves opposite or here and there alternate, petiolate, ovate, often broad, or rarely oblong or lanceolate, obtuse, entire, rarely exceeding 3 in. and often all under 2 in. long. Flowers dioecious, in small dense cymes or globular clusters, of which several are usually collected into small panicles in the upper axils, the common peduncle rarely exceeding the leaves and often very short. Male perianths shortly pedicellate, campanulate, shortly and broadly 5-toothed, the bud clavate and prominently 5-angled at the top, opening to about 2 lines diameter. Female perianths nearly sessile, ovoid, about 1 line long, obscurely 5-toothed, enclosing the ovary, the style shortly protruding, with a deeply lobed or fringed stigma. Fruits in loose cymes forming often large

panicles, the pedicels lengthening to above  $\frac{1}{2}$  in., the enlarged perianth oblong or linear-clavate,  $\frac{1}{4}$  to  $\frac{1}{2}$  in. long, 5-ribbed, glandular-muricate.—Wight, Ic. t. 1763, 1764; *P. villosa*, Poir.; Chois. in DC. Prod. xiii. ii. 440; *P. limonella*, Blume; Chois. l.c. 446.

**Queensland.** Cape York, *Daemel*; Burdekin river, *Fitzalan*; Edgecombe and Rockingham Bays, *Dallachy*; Broad Sound and Nerkoool Creek, *Bowman*; Rockhampton, *O'Shanesy*.

**N. S. Wales.** Clarence river, *Beckler*; Tweed river, *C. Moore*.

The species is very widely distributed over the tropical regions of the New and the Old World, especially in maritime districts.