

## NEW PLANT RECORDS FOR BOMBAY--III

BY

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AND

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(With five plates)

This is a continuation of the series by the senior author, the last number of which appeared in this *Journal* (52 : 661-663, 1955). Intensive search of the flora of Bombay by the authors has produced a number of new records, which so far have not been mentioned for the State of Bombay in any of our provincial or national Floras. The illustrations are all by the junior author, who for some time has been working on the Systematics of the Personales of Bombay. Some of our plants have been found by us in the field; others have been identified by us in Blatter Herbarium, St. Xavier's College, Bombay.

1. *Lindernia pyxidaria* Allioni in Misc. Taurin. 3 : 178, t. 5, 1766; Linn. Mant. 2 : 252, 1771; Haines, Bot. Bih. and Or. 634; Pennell, Scroph. W. Himal. 28; Mukerjee in *Journ. Ind. Bot. Soc.* 24 : 131, 1945 (Plate I). Scrophulariac.

*Gratiola integrifolia* Roxb. Fl. Ind. 1 : 138, 1820.

*Vandellia erecta* Benth. Scroph. Ind. 36, 1834; Fl. Brit. Ind. 4 : 281.

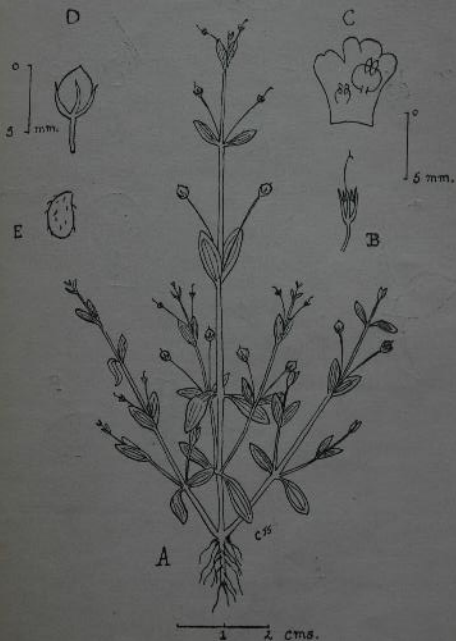
*Vandellia pyxidaria* Maxim. : Prain, Beng. Pl. 769; Gamble, Fl. Madr. 960.

We have followed Hooker, Haines, Pennell etc. in considering the Indian plant as identical with the European one; further we have taken *Gratiola integrifolia* Roxb. to be the same as our plant although Roxb. includes his plant under *Diandria* and not under *Didynamia*.

The present species is supposed to be widespread all over India; so far, however, it has only been found in Khandala by Santapau in 1953; it is therefore extremely rare in Bombay State, but further careful search will probably give more complete data about its distribution in Bombay.

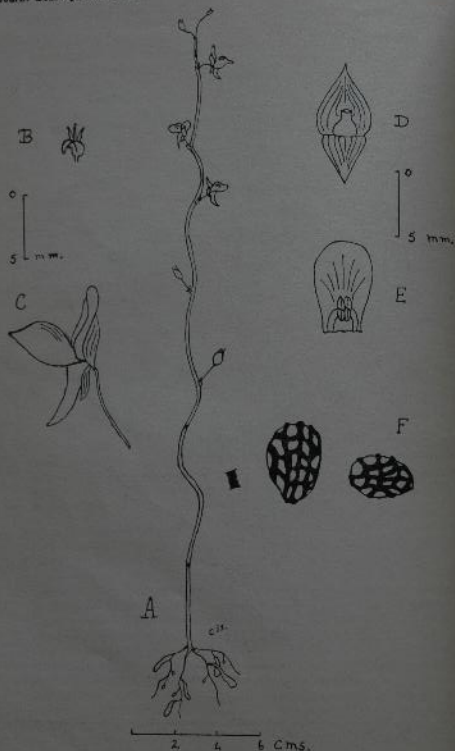
Description: Annual, slender, glabrous herbs. Stems divaricately branched from the base, rooting at some of the lower nodes. Leaves opposite, decussate, sessile, elliptic, entire or shallowly and obscurely crenate, up to 1.5 x 0.7 cms.; nerves 3-5, parallel.

Flowers solitary, axillary; pedicels slender, longer than the leaves or sepals, exceeding 1.5 cms. long; calyx 5-lobed, divided almost to the base; lobes linear or lanceolate, 2 mm. long in flower, elongating to 3 mm. in fruit; corolla 2-lipped, 5 mm. long; stamens 4, fertile, didynamous; anterior filaments larger, arched, appendiculate, pubescent at the base; the posterior ones shorter, inserted at lower level; anther-cells entire, connivent at the apex; ovary ovoid, glabrous; style filiform, 2 mm. long;



*Lindernia pyxidaria* All.

A. Entire plant; B. Calyx with ovary, style and stigma; C. Corolla with stamens; D. Capsule; E. Seed, highly magnified.



*Utricularia smithiana* Wight

A. Entire plant; B. Bracts and bracteoles; C. Flower; D. Calyx with ovary, style and stigma; E. Upper lip with stamens; F. Seeds highly magnified.

stigma forked. Capsule subglobose to ovoid, slightly exceeding the calyx; seeds oblong, sparingly covered with hyaline hairs.

This plant was collected in Khandala by the senior author in May 1953 (*Santapan* 12749-12750 of 3 May and 12781-12784 of 23 May), growing in moist ground near the railway line. It was quite abundant locally; the colour of the corolla was noted at the time of collection as bluish or whitish.

2. *Utricularia smithiana* Wight, Icon. t. 1577, 1850; Gamble, Fl. Madr. 982, 1924 (Plate II). Lentibulariaceae.

*U. caerulea* Linn. var. *smithiana* Clarke in Hook. f. Fl. Brit. Ind. 4: 331, 1884.

Slender annual, insectivorous herb. *Rhizome* filiform, bearing bladders. *Leaves* linear-spathulate, 7 mm. long. *Scapes* erect or twining, up to 30 cms. long; scales few, ovate, pointed, 1 mm. long. *Flowers* pedicellate; bract broad, ovate, acute, 1-1.5 mm. long; bracteoles 2, narrower, lanceolate, equal to the bract in length; pedicels slender, filiform, 7 mm. long in flower, 1.5 cms. long in fruit; calyx-lobes 2, slightly unequal, posterior one broader, ovate, 4 mm. long; the lower one narrower, 3.5-4 mm. long, shorter than the pedicel, slightly decurrent in fruit; corolla 2-lipped, 'blue shaded mauve lilac' (Gamble); upper lip obovate, longer than the calyx lobe, 6 mm. long; lower lip broadly orbicular, pubescent near the throat, 7 mm. long in the North Kanara specimens; spur conical, curved outwards, about as long as the lower lip and larger than the calyx lobes. Stamens 2, on the upper lip; filaments broad; anthers 2-celled, connivent; ovary lenticular; style short. Capsule lenticular, enclosed by the enlarged calyx lobes, 2-3 mm. long; seeds subglobose, serobiculate.

*Sedgwick* 4469, collected in Oct. 1918 at Devarayi, near Londa in North Kanara.

The flowers in *Sedgwick* 4469 are decidedly smaller than those shown in Wight's Icon No. 1577; the seeds in Wight's picture are more reticulate than serobiculate. It was probably this that led Clarke to reduce this species to varietal rank; a careful examination of the seeds has shown to us that the reticulate ridges do surround serobiculations.

3. *Chirita hamosa* R. Br. var. *unifolia* Clarke in Hook. f. Fl. Brit. Ind. 4: 361, 1884 (Plate III). Gesneriaceae.

There has been a good deal of discussion regarding the validity of the genus *Chirita* Buch.-Ham. as distinct from *Didymocarpus* Wall. The latter was said to possess an *entire* stigma and the former a *bilobed* one. The variations that appear with advancing age of the flower and the ambiguity of the terms have created much difficulty. Clarke acknowledged the distinctions between the two genera as unsatisfactory, but refrained from fusing them into one. Otto Kuntze in 1891 fused the two genera into one, under the name of *Roettlera* Vahl. The problem has been reconsidered by B. L. Burtt, who advocates the retention of the two separate genera. He has redefined the 'entire' stigma of a species of *Didymocarpus* sect. *Eudidymocarpus* as a robust capitate structure, whilst the 'bilobed' stigma of a typical *Chirita* is oblique, bifid and thin; the emphasis seems to be on the oblique and slender nature of the stigma

rather than on its bilobed appearance. We have followed Burt in keeping the two genera separate. (Burt in *Notes R. Bot. Gard. Edinburgh* 21: 185-209, 1954).

The variety *unilobata* described here is quite unlike the typical *Chirita hamosa* in that it possesses a single leaf; the floral structure is the same in both plants.

Annual herbs. *Stems* slender, erect or curved, glabrous or sparingly pilose, 3-6 cm. long. *Leaf* solitary, shortly petioled, ovate, entire or slightly crenate, weakly hairy on both surfaces, penninerved,  $6 \times 4$  to  $15 \times 8$  cms.; secondary nerves 10-16 pairs. *Inflorescence* of about 6 flowers in the leaf axil; pedicels all connate at the base for about 1 mm., then fused in pairs for about 3 mm.; their free portions 1 cm. long, hispidulous; calyx 7-8 mm. long, tubular, hispidulous; lobes 5, linear-lanceolate, free for about half their length, persistent; corolla 1.5 cms. long, 2-lipped; tube slender; mouth 'pale blue or rosy' (Clarke); stamens 2 or rarely 3 fertile, epipetalous; anther cells entire, oblique, connate at the apex; staminodes usually 2, filiform; ovary hispid, 3 mm. long; style slender, 7 mm. long, hispid; stigma bifid. *Capsule* glabrous, except at the tip near the persistent style, straight or highly curved; seeds many, small, ellipsoid.

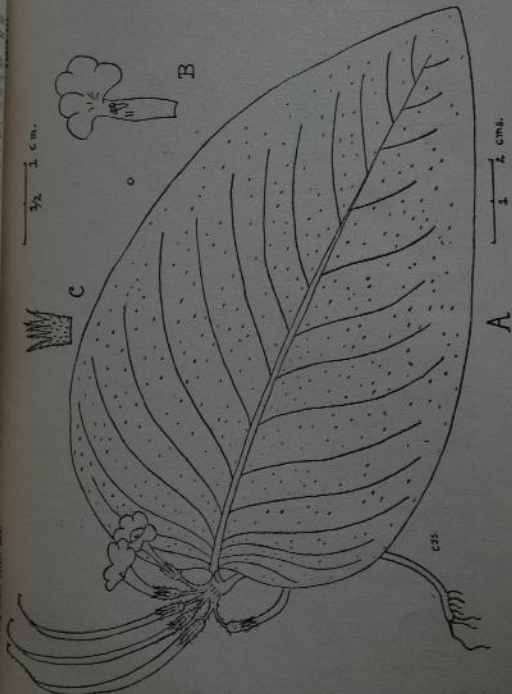
*T. R. D. Bell* 3171 in Herb. Sedgwick, collected in North Kanara in 1917. The specimen is preserved in Blatter Herbarium, but bears no further indication of the exact locality where the plant was collected.

4. *Didymocarpus pygmaea* Clarke in DC. Mon. Phan. 5(1): 82, 1883, et in Hook. f. Fl. Brit. Ind. 4: 345, 1884; Haines, Bot. Bih. and Or. 648; Gamble, Fl. Madr. 988; Burt in *Notes R. Bot. Gard. Edinb.* 21: 202, 1954 (Plate IV). Gesneriac.

*Roettlera pygmaea* O. K. Rev. Gen. Pl. 2: 476, 1891.

The name *Didymocarpus* Wall. 1819, is *nom. cons.* against *Roettlera* Vahl, 1805, and is listed in the Intern. Code of Bot. Nomencl. under No. 7810.

Annual pubescent herbs. *Stems* slender, curved or straight 3-7 cms. high. *Leaves* usually solitary, rarely two or more smaller ones are borne on a prolongation of the stem, sessile, ovate to ovate-oblong, penninerved, membranaceous, glistening and hairy on the upper side, hairy along the nerves on the lower side, 3-9 cms. long; apex obtuse; base shallowly cordate; secondary nerves 6-9, prominently arched. *Flowers* 4 or more, fasciated, arising from the base of the leaf; bracts usually small, near the outermost pedicel, sometimes larger and leaf-like, up to 4 cms. long; pedicels free, 1-3 mm. long in flower, up to 5 mm. in fruit, hairy; calyx tubular, hairy, 5-lobed, divided almost to the base, 3 mm. long in flower, up to 5 mm. long in fruit; sepals linear-lanceolate, 3 mm. long, somewhat enlarged in fruit; corolla tubular, white, 4 mm. long, pubescent externally in the limb, unopened in our specimens from Pavagadh. Stamens 2 fertile; anther cells oval, oblique, confluent at the top; filaments in the unopened flowers flexed near the base; staminodes 2, inserted a little lower than the stamens, filiform, 1 mm. long; ovary oblong, hairy, 1 mm. long; style reflexed in the unopened flowers, 3 mm. long, hairy; stigma funnel-shaped, not oblique. *Capsules* straight elongated, cylindrical, hispid, surmounted by the remnants of the style, 2-valved, 1.5-2 cms. long; seeds ellipsoid, punctate.



*Chirita hamosa* var. *unifolia* Clarke

A. Entire plant; B. Corolla with stamens and staminodes; C. Calyx

5 mm.



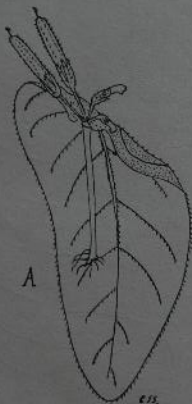
B



C



D



A

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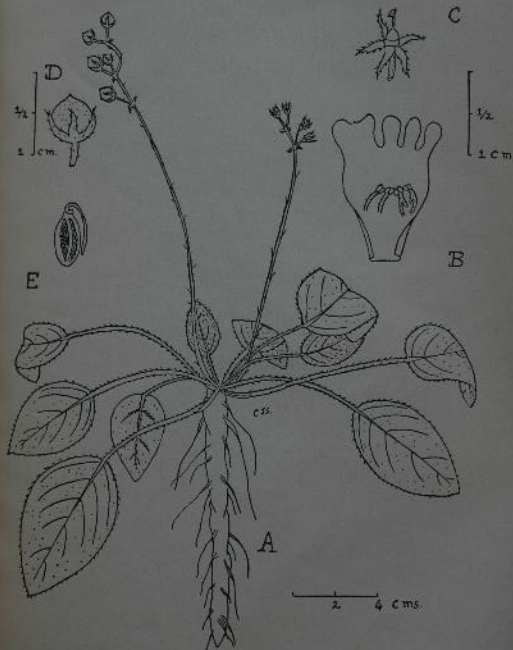
1 2 cms.



E

*Didymocarpus pygmaea* Clarke

A. Entire plant; B. Corolla with stamens and staminodes; C. Calyx with ovary, style and stigma; D. Seeds (highly magnified); E. Stigma (highly magnified).



*Jerdonia indica* Wight

A. Entire plant; B. Corolla with stamens (Adapted from Wight); C. Calyx with disc, ovary, style and stigma (Adapted from Wight); D. Capsule; E. Seed with funicle.

Des: C. G. P.  
H. S. G. P.



A peculiar floral structure was observed in two flowers of a specimen collected from Pavagadh on the 29th December 1954. One of the flowers had 6 epipetalous stamens with small dehiscent anther cells. There were three ovaries. Of these one was completely free while the other two were slightly adnate at the base. The styles were entirely free. The stigmata, although basically of normal structure, were split in the middle so as to appear bilobed. The other flower of the same plant had 4 epipetalous stamens and 4 others slightly adnate to the two distinct ovaries. The plant bore 3 fruits which, though stunted, appeared to be of normal structure.

A careful search on two different occasions has yielded only cleistogamous flowers; this confirms the observations of Heines; but we have failed to find the bulbils mentioned by the same author.

*Saldanha* 1782-1786 of 13th October 1954, and *Saldanha* 2200 of 29th December 1954; collected from the fort walls at Pavagadh near Baroda.

5. *Jerdonia indica* Wight, Icon. t. 1352, 1850; Clarke in DC. Mon. Phan. 5 (1): 164, 1883 & in Hook. f. Fl. Brit. Ind. 4: 368, 1884; Gamble, Fl. Madr. 991, 1924 (Plate V). Gesneriac.

Perennial, acaulescent, scapigerous herbs. *Rootstock* thick, scarred, bearing numerous secondary roots, 6-25 cms. long. *Leaves* crowded at the base; petioles long, grooved, rusty-villous, 4-13 cms. long; leaf-blade elliptic to ovate, sparingly rusty-villous on the upper side especially when young, prominently rugose-pilose along the margins and along the nerves on the lower side, reticulately veined, 4 × 3 to 9 × 6 cms.; secondary nerves about 8 pairs. *Scapes* few, slender, sparingly rugose-pilose; bracts sublinear, rusty-villous, 2 mm. long; pedicels hairy, often in pairs, 5 mm. long in flower, 7 mm. long in fruit; calyx ± 5-partite, 5 mm. long; lobes lanceolate, rusty-villous; corolla pale lilac marked with red lines, (Gamble), 1.7 cms. long; tube elongate, swollen upwards; limb oblique, 2-lipped; upper lip 2-lobed, emarginate; lower lip 3-lobed; stamens 4, all fertile; anterior filaments dilated, spurred, sparingly hairy; posterior pair also dilated and hairy but not spurred; anthers 2-celled, cohering at their apices so as to cover the stigma; disc-cup-shaped; ovary ovoid, glabrous; style linear, glabrous; stigma peltate. Capsule ovoid, puberulous, loculicidal, 2-valved, 5 mm. in diameter; seeds small, ellipsoid, laterally grooved, sub-umbonate at the apex; funicle prominent and white.

Wight's figure shows a number of adventitious roots arising from the base of the stem. All the specimens in Blatter Herbarium, however, have a prominent rootstock giving rise to secondary roots. We have adapted the description of the corolla, stamens and ovary from Wight, since all our specimens are only in fruit.

*Hallberg and McCann* 34539, 34540, 34542 and *Sedgwick* 6786 from Sampkhand, North Kanara; collected in Oct, 1919. *Sedgwick and Bell* 7224 from Malemane Ghat, North Kanara, October 1919.