

VII. *On a reformed Character of the Genus Cryptolepis, Brown.* By HUGH FALCONER, M.D., Superintendent of the Hon. East India Company's Botanic Garden at Saharunpore. Communicated by J. F. ROYLE, M.D., F.R.S., F.L.S., &c.

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CRYPTOLEPIS, R. Brown in *Mem. Werner. Soc.*, vol. i. p. 69. (*Vermischte Botanische Schrift.*, ii. p. 405.).

CHAR. GEN. *Calyx* 5-partitus. *Corolla* infundibuliformis, 5-fida; tubo intus processibus 5, carnosus, obtusis, inclusis, cum limbi laciniis alternantibus, instructo; fauce nudâ. *Stamina* imo corollæ tubo inserta, inclusa; filamenta brevissima, distincta; *antheræ* sagittatæ, dorso penicillato-barbatæ, basi stigmatis margini adhærentes. *Massæ pollinis* solitariæ, granulosa, corpusculi glandulæformis appendiculæ lineari tenuissimæ applicitæ. *Ovaria* 2. *Stylus* brevissimus. *Stigma* dilatatum, margine attenuatum, apiculo conico. *Squamulæ hypogynæ* nullæ. *Folliculi* divaricatissimi, ventricosi, acuti, recti. *Semina* ad umbilicum comosa.

*Frutex volubilis, glaberrimus, succo lacteo scatens; foliis oppositis, brevè petiolatis, latè ellipticis, cum acumine subulato brevi, suprâ latè virentibus, subtus albido-glaucis, transversè venosis; petiolis supra basin articulatis; corymbis axillaribus, brevè pedunculatis, curvatis; floribus subsessilibus, majusculis, citrinis, corollæ limbo patulo, segmentis ligulatis.*

*Cryptolepis Buchanani*, Rœm. et Schult. Syst., iv. p. 409.

*C. reticulata*, Royle *Illustr.*, p. 270.

*Nerium reticulatum*, Roxb. *Flor. Ind.*, ii. p. 9.

*Hab.* passim in Indiâ Orientali.

Mr. Brown, in his celebrated monograph, in the 'Memoirs of the Wernerian Society,' refers the genus *Cryptolepis*, which he there establishes, to the *Apocynæ*, placing it next to *Apocynum*. He has been followed in this respect by all subsequent systematic authors. I find the same position assigned to it by the latest authorities, such as Endlicher, Lindley, &c., who seem to have taken Mr. Brown's definition on trust, from not having had an opportunity of verifying it by an appeal to specimens of the plant. But besides these authors, Dr. Wight, the last writer on the Indian *Asclepiadeæ*, in his excellent Mono-

graph (p. 64), states that *Cryptolepis Buchanani* belongs to the *Apocynæ*; and as he had the revision of Dr. Royle's collections in the *Asclepiadæ*, it is probable that some specimens were open to his examination, taken from the same plants in the Saharunpore garden which yielded the characters given in my definition. Yet it is very evident that the plant described above has the whole of the accessory stigmatic apparatus of *Asclepiadæ*, with granular pollen as typically developed as in *Cryptostegia* or any other of the *Periploceæ*, although in a less considerable degree of evolution; and that it must rank in that order along with them.

The extreme minuteness of the appendiculæ in *Cryptolepis* might possibly account for their eluding even the keen glance of Mr. Brown, directed to the dry specimen. But there are two other points of difference between the characters which I have noticed and those given by him, which lead me to suspect that my plant must be distinct from the one examined by that great observer. He mentions five hypogynous scales in his generic definition, whereas in my plant I do not find a trace of them. And it may be observed in reference to this point, that hypogynous scales are wanting (so far as I have the means of ascertaining) in the series of Periploceous genera allied to *Cryptolepis*. *Decalepis* of Wight and Arnott forms no exception; as, in it, the lower whorl of scales is attached to the base of the tube, and not hypogynous. Mr. Brown further states the corymbs to be interpetiolar; whereas, in the species noticed by me, they are axillary, a character of considerable importance in the habit. Roxburgh ('Flor. Ind.,' vol. ii. p. 9.) makes mention of this, in the description of his *Nerium reticulatum*.

It may not be out of place to add a few particulars regarding the characters of the sexual organs. The stamens arise from the bottom of the tube of the corolla; the filaments are distinct and very short; the anthers very thin and membranous, of a triangular or sagittate shape, very acute, and supplied at the back with a bearded pencil of hairs. They are connivent over the stigmatic head with their edges closely adjoining, and agglutinated at the base to its thinned margin. The pollen is scanty, and not collected in masses of definite aggregation, the grains being in a lax state of cohesion, but not quite free. It differs in this respect considerably from the pollen of *Cryptostegia*; which is applied to the appendiculæ, cohering in a web-like mass. The compound

stigmatic head is of a dilated and well-defined pentagonal form, with an abbreviated conical apex. The margin is thinned off to rather a fine edge, which at each of the five angles is notched with a sharp and rather deep emargination: the corners of these notches are tipped with a moist and viscid looking denuded surface, differing in appearance and texture from the rest of the margin of the stigmatic head. Leading up from these emarginations to the apex of the stigma, there are five straight, shallow, narrow, converging furrows, along which are laid as many very delicate, narrow-oblong or linear, bronze-coloured, horny-looking, transparent, membranous straps or appendiculæ. The lower end of these appendiculæ is attenuated where it passes through the marginal notch, and is applied to the centre of an oval, thin, delicate glandular corpuscle, which stretches across the notch, adhering to its under surface, and placed in contact with the moist tips of its angles. They have no adhesion at the fecundating stage with the furrows on which they lie, and are readily detached, while the glandular corpuscle sticks with considerable tenacity to the angles of the stigma. Pollen grains in irregular aggregations are strewn interruptedly over the surface of the appendiculæ, which is viscid. Compared with the same organ in *Cryptostegia*, these appendiculæ are extremely minute.

I have examined a great number of flowers, with the object of finding some of the pollen grains emitting their tubes at some point along the margin of the stigma, with an instrument quite equal to the observation; and tried in some cases to excite the pollen artificially by applying it to the viscid corners of the notches, but without success in either case. The extensive laceration of the floral envelopes, and the rapid evaporation from the wounds during the hot months in India, followed by very speedy withering, were at least sufficient to account for the failure.

*Cryptolepis*, although an unquestionable Periploceous *Asclepiadea*, appears to constitute the closest known transition from that family to the *Apocynæ*, in the very reduced state of evolution of the accessory stigmatic apparatus, as compared with the other *Periploceæ*; in the lax aggregation of its pollen-grains; and in a portion at least of the stigmatic margin being in the ordinary condition of a denuded and secreting surface.

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Since the above remarks were written (July last), I have learnt by letters from Dr. Wight and Mr. Griffith, that both have been long aware of *Cryptolepis* being an *Asclepiadea*, Dr. Wight having ascertained the fact soon after his return to India.

Messrs. Wight and Arnott have arranged the mass of Wallich's Indian species of *Periploca* under their new genus *Streptocaulon*, the distinction of which is founded on the beardless anthers, and the flexuous direction of the aristæ of the scales. One of their species, *S. calophyllum*, is common in the Himalayas, and in it I find that the anthers are pointed and somewhat bearded; it has also shining leaves, and the follicles are parallel or divergent, not divaricate. A new species of the same group, from the neighbourhood of Cashmeer, with a peculiar pseudo-aphyllous habit, has the anthers decidedly bearded, and the aristæ of the throat-scales flexuose. The separation of either from *Periploca* seems hardly admissible; and I suggest that *S. calophyllum* be replaced under *Periploca*, along with the Cashmeer species, of which the characters are subjoined. Messrs. Wight and Arnott, the original constructors of *Streptocaulon*, had their doubts about its claims to rank as a distinct genus.

1. *Periploca calophylla*.

Volubilis glabra, foliis angustè lanceolatis longè attenuatis utrinque nitidis transversè venosis, cymis subsessilibus paucifloris, floribus breviter pedicellatis, corollâ intùs parcè hirsutâ, squamis hirsutissimis, folliculis elongatis gracilibus subparallelis (nec divaricatis!).

*Streptocaulon calophyllum*. *Wight, Contr.*, p. 65.

*Hab.* Passim in vallibus exterioribus montium Himalensium.

2. *Periploca Hydaspidis*.

Volubilis ramosissima glabra, ramis fasciculatis nodoso-articulatis, foliis tenuissimis linearibus apiculatis adpressis remotis caducis, cymis axillaribus multifloris, floribus breviter pedicellatis, corollâ intùs squamisque tomentosis.

*Hab.* Secus ripas Hydaspidis extra Cashmeer prope "Khutao Kelah." Fl. Septembri.

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EXPLANATION OF PLATE V.

Fig. A. A flowering branch of *Cryptolepis Buchanani*.

1. A corolla seen from above.
2. Limb and upper part of the tube of the corolla removed, showing the calyx, and the anthers closely connivent over the top of the stigma.
3. The same seen erect.
- 4 and 5. Anthers, front and back views. N.B. The shade near the margins in fig. 4. indicates the slits of the cells, which are more marked than represented in the figure.
6. The same as fig. 2, but the anthers removed to show the *appendiculæ* in situ: considerably enlarged.
7. Stigma and ovaria, &c., seen erect; the corpuscles and their *appendiculæ* removed, to show the viscid corners of the notches, which are enlarged a little out of proportion.
8. Stigma seen from above; the corpuscles removed.
9. Stigma seen from below (turned upside down), to show the gland-like corpuscles stretching across the notches, and applied to the viscid corners. (N.B. Not well executed.)
- 10, 11 and 12. Corpuscles and their *appendiculæ*, with pollen grains strewed over the latter. (N.B. No attempt by the native artist to show accurately the form or mode of aggregation of the grains.)
13. Nearly ripe follicles.
- 14 and 15. Structure of the follicles.
16. The unripe seeds.

