

OBSERVATIONS ON THE GENUS *CLEA*, WITH THE DESCRIPTION
OF A NEW SPECIES.

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THIS genus was originally described by Mr. A. Adams in the Proc. Zool. Soc. for 1855, p. 119. As he had neither the animal, nor the operculum, he was unable to suggest its true systematic position; but he shrewdly remarked its resemblance to "a fluviatile *Buccinum*." In conjunction with his brother, he subsequently¹ referred it to the subfamily Melanopsinæ.

Dr. Brot,² however, has since shown, by an examination of the radula, that this mollusc clearly belongs to the Rhachiglossa and is closely allied to the Buccinidæ; indeed, conchologically and with regard to the operculum, it is scarcely separable from *Cominella*.³

The British Museum has recently been presented, by Mr. H. Fulton, with two specimens of a shell from the Island of Balabac, which M. Crosse in 1886 described under the name of *Quadrassia Hidalgoi*. Like *Clea*, it is an inhabitant of fresh water. He considered it a form of Planaxidæ, and made no reference whatever to the genus *Clea*. This evidently must have been an oversight, for the two forms are undoubtedly congeneric, indeed very closely related specifically. They correspond so closely in general form, in their periostracum, their apertures, and opercula, that I have not the slightest hesitation in placing them in one and the same genus.

The known species of *Clea* are—

1. *CLEA NIGRICANS*, A. Adams.

Clea nigricans, A. Adams.—Proc. Zool. Soc. 1855, p. 119; H. and A. Ad., Gen. Moll., pl. cxxxvii, fig. 8; Brot, Journ. de Conch. 1876, p. 350, pl. xii, figs. 2, 2a (operculum), fig. 4 (radula); Kobelt, Illust. Conchylienbuch, pl. xlvi, fig. 33.

Melania nigricans, Reeve.—Conch. Icon., figs. 231a-b.

Hemisinus nigricans, Reeve, *op. cit.* figs. 25a-d. Length (3 volutions) 28, diam. 16 mm.

Hab —"The River in Sarawak Borneo" (A. Adams); "I. de Rio" and Sadon, Sarawak (Issel).

Var *maxima*.—Brot, *op. cit.* 1881, p. 159, pl. vi, fig. 4; Bock, Proc. Zool. Soc. 1881, p. 635. Larger than type, of a uniform brown colour, and covered with distinct, but superficial striæ parallel with

¹ Gen. Recent Moll., vol. ii, p. 623.

² Journ. de Conch. 1876, pp. 348-351.

³ Cooke (Cambridge Nat. Hist., iii, p. 16) has suggested, since this was written, the probable derivation of *Clea* from *Cominella*.

the suture. The aperture is uniformly bluish-white within. Length (3 whorls) 33, diam. 18 mm.

Hab.—Bandjermasin, South Borneo.

Var. *fasciata*.—Brot, *loc. cit.* p. 159; Bock, *loc. cit.* p. 635. About the same size or a little smaller than the type, dark brown, with three broad bands, only slightly visible exteriorly, but distinct within the aperture: these do not quite reach the margin of the lip, which is white. The surface of the shell is smooth, with the exception of one or two striæ below the suture.

Hab.—Same as preceding variety.

Var. *funesta*.—H. Adams, Proc. Zool. Soc. 1861, p. 383, as a distinct species. Rather smaller than type, with a less distinct infra-sutural ridge, and a nearly smooth epidermis. Under a strong lens, the epidermis of the type exhibits very fine, and minutely granular lines of growth, but in the present variety scarcely a trace of such granulation is visible. Length 19, width 11 mm.

Hab.—Malacca (H. Ad.); Sarawak (C. Hose in Brit. Mus.).

Var. *parva*.—Much smaller than type; spire much eroded, with only two or three whorls remaining; transversely faintly striated throughout, a few striæ below the suture very distinct; scarcely any minute granulation. Length of specimens, consisting of two whorls only, 14–17 mm.

Hab.—N. Borneo, probably some part of Sarawak (A. Everett).

Var. *granulata*.—Same size as var. *parva*, but having the surface more strongly grooved throughout, the intervening ridges, crossed by lines of growth, being more or less distinctly granular. Scarcely a trace of minute granulation.

Hab.—Busau, West Sarawak (A. Everett).

Var. *Natunensis*.—Smaller and narrower than type, averaging about 20 mm. in length, less constricted below the suture, whilst the minute granulation of the surface is perhaps a trifle finer and more regularly spiral in its arrangement.

Hab.—Sirhassen Island, Natuna Group (A. Everett).

This is one of those cases in which the systematic zoologist is puzzled to decide upon the proper course to pursue—whether to create a number of so-called distinct species, or to regard the various forms in the light of varieties. Dr. Brot, who has had great experience with fresh-water mollusca, has refrained from describing as distinct species two of the forms enumerated, and consequently I am inclined to follow his example, considering it more philosophic to await further evidence, than is furnished by the shells, before regarding the varieties in question as separate species. True, the difference between the var. *maxima* and the vars. *parva* or *Natunensis* is enormous; still, taking into consideration the well-known great variation which obtains among fresh-water shells generally, and the strong probability of the future discovery of other intermediate connecting links, I think it advisable to consider these forms in the light of varieties of one and the same polymorphous species.

Mr. Carl Bock (Proc. Zool. Soc. 1881, p. 635) noticed with regard to the varieties which he collected, that only in young shells the

spire was perfect, it being broken and eroded in the old ones. This appears to be characteristic in all the forms, for out of the many specimens examined, only one, and that hardly fully matured, has the spire perfect. It consists of seven whorls, and tapers gradually to a bluntish point, the apex being rather globose.

2. *CLEA HIDALGOI* (Crosse).

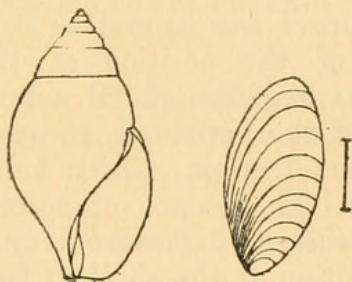
Quadrasia Hidalgoi, Crosse, Journ. de Conch. 1886, p. 161, pl. viii, figs. 7, 7a.

Hab.—Island of Balabac, South of Palawan, Philippines.

The dimensions given by Crosse are exceeded by both the specimens in the Museum Collection, the larger having a length of 17.5, the other of 15 mm.

3. *CLEA BANGUEYENSIS*, n.sp.

Testa *C. Hidalgoi* similis, sed plerumque conspicue major, epidermide olivacea induta, striis spiralibus minus corrugatis sculpta; apertura antice magis contracta, cæruleo-albida, vel fuscescens; labrum tenuius, superne latissime et minime profunde sinuatum. Long. 25, diam. 13 mm.; apertura 14 longa, 6 lata. Exemplum minor. Long. 20, diam. 9 mm.



Clea Banguyensis, n.sp.

Hab.—Banguy Island, off North Borneo and South of Balabac.

Besides the differences referred to above, I may also point out that this species has seven instead of six whorls, like *C. Hidalgoi*, and the apex is white instead of purple-brown.

The difference in the form of the aperture seems to be constant. In *C. Hidalgoi* the outer lip is rather saccate in front, whereas in the present species it is contracted.

4. *CLEA BOCKII*, Brot.

C. Bockii, Brot.—Journ. de Conch. 1881, p. 159, pl. vi, fig. 5.

Hab.—Paijo, Sumatra.

Only a single immature specimen was known to Dr. Brot. The species appears to have the same kind of sculpture as that of *C. Hidalgoi* and *C. Banguyensis*.



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