

## PARALLELODON EGERTONIANUS, Stoliczka.

*Arca*, Everest, "Asiatic Researches" (Calcutta), 1833, vol. xviii, pt. 2, p. 114, pl. ii, fig. 27.

*Cucullæa virgata*, Blanford, Journ. Asiatic Soc. Bengal, 1863, p. 136; and Blanford and Salter, "Palæontology of Niti, Northern Himalaya," 1865, p. 103; non J. de C. Sowerby, 1840.

*Macrodon Egertonianum*, Stoliczka, Mem. Geol. Surv. India, 1865, vol. v, p. 89, pl. viii, fig. 7.

DIAGNOSIS.—*M. testa oblique-elongata, convexa, angusta, costis radiantibus rugosis ornata; costis ad marginem anteriorem paucioribus, ad marginem posteriorem prope obsolete; striis concentricis inæqualibus, undulatis, interdumque lamellosis.*—Stoliczka.

Shell obliquely elongate, convex, narrow, with radiating costæ; costæ fewer towards the anterior margin and nearly obsolete at posterior end; concentric striæ unequal, undulating, sometimes lamellose.

## DIMENSIONS.

Length	...	...	...	...	40 to 65 millimetres.
Height	...	...	...	...	20 to 25 "
Breadth	...	...	...	...	25 to 40 "

*Remarks.*—The Somali specimens exhibit the above characters as given by Stoliczka. In addition it may be noted that a difference exists in the ornamentation of the two valves. The right valves of all examples, whether from Africa or India, show a series of intermittent ribs between the prominent radiating costæ, which are entirely absent on the other valve, where the costæ are rather fewer and wider apart. This is referred to because in his observations on the species, Stoliczka merely states that the costæ "have usually no intermittent ribs between them." The extensive ligamental area is beautifully ornamented with numerous closely-set grooves. Lastly, a curious lithological resemblance may be observed between the Indian and African representatives of this species: both series of shells are of a lustrous black colour, relieved in places by a lightish-brown matrix. If the specimens from Niti in the British Museum were mixed with those from Somali-land, it would be somewhat difficult to separate them, so closely do they approximate to each other in almost every detail.

It is interesting to note, in conclusion, that Mrs. E. Lort-Phillips has very kindly presented five of her best specimens of this species to the Geological Department of the British Museum.

## III.—NOTE ON SOME FRAGMENTS OF BELEMNITES FROM SOMALI-LAND.

By G. C. CRICK, F.G.S.

ALL the fragments appear to be referable to the same species. There is not a complete specimen among them; some show the alveolar region, but the majority exhibit only the post-alveolar part, and there is not an example with the apex preserved.

Transverse sections of the guard show that the species here represented belongs to the group *Canaliculati*, as defined by Neumayr.<sup>1</sup>

<sup>1</sup> Verhandl. d. k.-k. geolog. Reichsanstalt, 1889, p. 52-6.

The guard appears to have been not very long, only very slightly hastate, with a moderately elongated apex; ventral surface with a strong, rather broad furrow, extending the whole length of the guard, disappearing only near the apex, a little narrower on the alveolar region; sides of the guard narrowly rounded, with dorso-lateral vascular impressions, well-marked on the alveolar region, very feeble on the rest; dorsal area broadly rounded, rather flat; angle of the phragmocone  $20^{\circ}$ ; alveolar region nearly circular in section, the post-alveolar region depressed; siphuncle on the same side as the deep groove.

The species resembles *Belemnites Tanganensis*, described by Futterer<sup>1</sup> from Tanga, on the east coast of Africa, where it occurs in association with Lower Oxfordian Ammonites. But Futterer's species is more compressed in the alveolar region, and less depressed in the post-alveolar region, than the Somali specimens. In these respects the latter agree better with the specimen figured by J. de C. Sowerby as *Belemnites canaliculatus*, Schlotheim (= *B. Grantanus*, D'Orb.<sup>2</sup>). The alveolus is shown in one of the Somali specimens; its angle ( $20^{\circ}$ ) agrees with that given by Waagen for *B. subhastatus*,<sup>3</sup> to which species he refers the *B. Grantanus*, D'Orb.

The Somali specimens in form agree with certain of the figures that Oppel gives of his *B. Gerardi* (Pal. Mittheil., pp. 273, 296, pl. lxxxviii, figs. 1-3, particularly figs. 1 and 2), which species Oppel states to be narrower and more depressed than Zieten's *B. subhastatus*. In the explanation of the figures, Oppel adds "*B. Grandianus*, D'Orb. MS." This possibly referred to the name *B. Grantanus*, which D'Orbigny gave to the specimen figured by Sowerby as *B. canaliculatus*; and, if so, it would seem that Oppel regarded *B. Grantanus*, D'Orb., and his own *B. Gerardi*, as the same species, although he does not place the former name in the synonymy of the latter.

Stoliczka<sup>4</sup> regarded the *B. sulcatus* described by Blanford<sup>5</sup> from the Spiti Shales as identical with *B. canaliculatus*, Schlotheim, and he also considered the specimen described by Sowerby from Cutch as *B. canaliculatus*<sup>6</sup> rightly determined, and further he thought it was probably for this species that Oppel proposed the name *B. Gerardi*. He adopted, however, the name *B. canaliculatus*, Schloth. A comparison of the specimens from Spiti figured by Blanford with the example from Cutch figured by Sowerby, shows that the latter is more depressed than the former.

In a postscript to the "Palæontology of Niti" (p. 106) H. F. Blanford placed Oppel's *B. Gerardi* as a synonym of *B. sulcatus*, and adopted the latter name for the species.

<sup>1</sup> Zeitschr. deutsch. geol. Gesell., xvi (1894), p. 30, pl. v, figs. 2, 2a-c, 3, 3a-c.

<sup>2</sup> A. D'Orbigny, "Prod. de Paléont. stratigr.," vol. i, p. 326, 1850.

<sup>3</sup> Zieten, Verst. Württemb. 1832, p. 27, pl. xxi, fig. 2.

<sup>4</sup> Mem. Geol. Surv. India, vol. v, pt. 1, 1865, p. 111.

<sup>5</sup> H. F. Blanford in J. W. Salter and H. F. Blanford, "Palæontology of Niti, in the Northern Himalaya," 1865, p. 76, pl. x, figs. 1-3.

<sup>6</sup> Trans. Geol. Soc. London [2], vol. v, pl. xxiii, fig. 2 and explanation. 1840.

In his "Jurassic Fauna of Kutch" Waagen<sup>1</sup> refers *B. Grantanus* and *B. Gerardi* to distinct species, regarding the former as a synonym of Zieten's *B. subhastatus*.

Among the fossils brought by M. Aubry from Choa, Douvillé found only one Cephalopod—a single fragment of a Belemnite—which appeared to him to belong to the group of *Belemnopsis sulcata*.<sup>2</sup> It seems to have been associated with *Trigonia pullus*—a form which in this country occurs in the Lower Oolite—and may be identical with that occurring in Somali-land.

The Somali specimens are intermediate between the Spiti specimens<sup>3</sup> which were figured by Blanford as *B. sulcatus* and the Cutch specimen<sup>4</sup> figured by J. de C. Sowerby as *B. canaliculatus*, the transverse section of the Somali specimens being somewhat less compressed than the former, and not quite so depressed as the latter; they appear, however, to come rather nearer to the Cutch specimen, and I have therefore placed them with this species, and have adopted Prof. Waagen's identification of the same as *B. subhastatus*, Zieten.

*Horizon*.—Waagen states that *B. subhastatus* "is not very common in the Kutch Jura, and is apparently restricted to the beds with *Steph. macrocephalum*,"<sup>5</sup> and that *B. Gerardi* "is entirely wanting in the true *Macrocephalus* beds, but begins immediately above it, and extends from here through the whole of the upper part of the Charee group—in other words, it is found in Upper Callovian and Lower Oxfordian beds."<sup>6</sup> In Germany *B. subhastatus* characterizes the *macrocephalus* zone.

#### IV.—THE DISLOCATION AND DISINTEGRATION OF THE CHALK IN EASTERN ENGLAND AND IN DENMARK.

By Sir HENRY H. HOWORTH, K.C.I.E., M.P., F.R.S., F.G.S.

I PROPOSE in the following paper to continue and complete the story which I have partially printed in the *GEOL. MAG.*, Feb. 1896, p. 58; but first, a few words about the Yorkshire evidence, which I had overlooked.

Mr. J. F. Blake, speaking of the Yorkshire chalk, says it "has been subjected to the action of some force, which has been strong enough to take hold of huge masses and contort them and stand them on end. A remarkable folding in the rocks was noticed many years ago at Scale Nab, on the coast, by Professor Sedgwick—an equally noteworthy instance of similar action has come under my observation on the summit of the crest between Sherburn and Weaverthorpe. On ascending the hill from Sherburn is a large quarry with the chalk perfectly horizontal, and not more than 20 feet above the level of its upper surface are found beds belonging

<sup>1</sup> Pal. Indica, ser. ix, "Jurassic Fauna of Kutch," vol. i, pp. 13, 14, 1873.

<sup>2</sup> Bull. Soc. Géol. France [3], vol. xiv, p. 223.

<sup>3</sup> Now in the Brit. Mus. Coll., Nos. C. 2566-72.

<sup>4</sup> Now in the Museum of the Geological Society of London.

<sup>5</sup> *Op. cit.*, p. 15.

<sup>6</sup> *Op. cit.*, p. 13.