

fossil confirms the reference of the latter to *Bochianites*.<sup>1</sup> Somewhat less marked is the similarity to *Bochianites Weteringi* G. Boehm and *Bochianites Versteeghi* G. Boehm<sup>2</sup> from the passage-beds between the Jurassics and Cretaceous of the Sula Islands.

A definite opinion about the present form cannot be arrived at without further material. In the meanwhile the most appropriate course is to unite it with the genus *Bochianites*.

As far as its locality is concerned, Stoliczka remarks: "It is undoubtedly from the Spiti-shales, but the exact locality is not noticed; it was collected by Capt. Hutton."

### B.—BELEMNOIDEA.

The group of BELEMNITES (BELEMNOPSIS) GERARDI, Oppel.

The lower stage of the Spiti Shales is constituted by group of strata abounding in Belemnites; at the same time numerous Belemnites occur also in the higher strata. A closer examination has disclosed the fact that all these Belemnites belong to one group, that of the *Canaliculati*, which we may designate as the group of *Belemnites Gerardi* Oppel.

As early as 1833, Everest<sup>3</sup> figured these Belemnites, later on single specimens were described by Blanford<sup>4</sup> as *Belemnites sulcatus* Mill., by Oppel<sup>5</sup> as *Belemnites Gerardi*, by Stoliczka<sup>6</sup> as *Belemnites canaliculatus* Sci.oth. *Belemnites Gerardi* was also recorded by W. Waagen<sup>7</sup> from the Upper Kelloway and the Lower Oxfordian of Kachh, and by A. Rothpletz<sup>8</sup> from Rotti.

It has not escaped Blanford's attention that the dorsoventral diameter of the rostrum of the specimens from the Spiti Shales is somewhat greater than that of the European forms cited above. The comparatively strong lateral compression of the guard and the exceptionally deep and broad canal which extends right down to the tip lends to the specimens from the Spiti Shales a very striking and characteristic appearance which fully justifies the special name given to them by Oppel.

Neumayr<sup>9</sup> also studied *Belemnites Gerardi*. He placed this species, together with *Belemnites sulcatus* Phillips, *Belemnites absolutus* Pander, and *Belemnites volgensis* d'Orbigny, in a special group, that of the "Absoluti," which, in contra-

1 P. Lory, sur le crétacé inf. du Dévoluy et des régions voisines. *Trav. du laboratoire de Géologie de l'Univ. de Grenoble*, IV, 1898, p. 129.

2 *Palaeontographica*, Supplement IV, 1904, pp. 26, 27, pl. II, figs. 5, 6.

3 Memorandum on the fossil shells discovered in the Himalaya Mountains. *Asiatic Researches*, 1833, vol. 18, pl. II, fig. 17.

4 *Journal, Asiatic Society*, XXXII, 1864, p. 125, pl. I, figs. 1, 2 a-c. *Palaeontology of Nitti*, 1865, p. 76, pl. 10.

5 *Palaeontolog. Mitteilungen*, II, 1865, pp. 273, 296, pl. 88, figs. 1-3.

6 *Memoirs, Geol. Survey of India*, Calcutta, 1866, V, pp. 111, 112.

7 *Palaeontologia Indica*, Ser. IX, I, Jurassic Fauna of Kutch, vol. I, 1, p. 13, pl. II, fig. 3.

8 *Palaeontographica*, vol. 39, pp. 104, 105.

9 *Verhandlungen der Geologischen Reichsanstalt*, 1889, p. 52.

distinction to the "Canaliculati" were supposed to be characterised by the absence of the ostracum lamella, by the obscuration or entire disappearance of the canal towards the alveolar extremity of the rostrum and finally by the supposed circumstance that concentric rings of the rostrum were interrupted by the canal. That this peculiarity of the canal is not to be found in Oppel's original specimen has already been pointed out by Rothpletz who, however, has observed it in other specimens.

Neumayr's views were emphatically opposed by G. Boehm<sup>1</sup> who declared that *Belemnites Gerardi* is a genuine *Canaliculatus*.

As far as the canal is concerned I can entirely concur with the correctness of G. Boehm's assertions. The individual concentric rings of the guard show regular inflexions at the canal; the specimens in which the canal seems to cut right through the concentric rings are old specimens and, as already remarked by G. Boehm, this feature most probably results from an exfoliation of the thinned-out lamellæ at the edges of the very deep canal.

With respect to the ostracum lamella G. Boehm did not have the opportunity of making any decisive observations, and the Spiti Shale material is not in a suitable condition for investigating the delicate ostracum lamella. The canal of the forms belonging to the group of *Belemnites Gerardi* is so deep that it frequently causes the rostrum to split, and thus prevents the examination of the delicate ostracum lamella. Some observations, which, unfortunately could not lead to any definite result, were made on a specimen which, although attenuated to a certain extent in the direction of the alveolar extremity, appears to belong to the *Belemnites Gerardi* group. At that part of the specimen where the investigation was carried out the alveolus has a dorsoventral diameter of 14 mm., whilst the diameter of the rostrum is 21 mm. The canal experiences here a slit-like contraction, and the individual concentric layers of the rostrum bend round nearly at right angles as they approach the narrow canal. On the inner surface of the canal we observe a calcareous lamella which seems to thicken towards the canal and apparently belongs to the ostracum. It is not possible, however, to ascertain clearly whether the substance of this calcareous mass penetrates into the rift of the canal.

A similar thickening of the inner side of the canal is also to be observed in another specimen with an alveolar diameter of 11.8 mm.; but in this case the thickening, clearly belongs to the fibrous mass of the guard. This tallies exactly with G. Boehm's illustration of a specimen from Misol (*loc. cit.*, p. 54, text-figure 19).

The problem concerning the ostracum lamella does not yet admit of a solution and should be made the subject of special palæontological investigation. The uncertainty regarding this point does not, however, preclude our uniting the *Gerardi* group with the European *Canaliculati*, as has been lately advocated by G. Boehm. At present there do not exist safe grounds for merging the *Gerardi*

<sup>1</sup> *Palaeontographica*, Supplement A, IV, pp. 53—55.

group into that of the *Absoluti* nor to ascribe to this group, which is so rich in individuals, a Russo-Boreal derivation in accordance with Neumayr's ideas.

Oppel and Waagen looked upon *Belemnites subhastatus*, as the closest ally of *Belemnites Gerardi*, but G. Boehm has suggested that the latter is perhaps nearer related to *Belemnites canaliculatus*. The length of the canal of *Belemnites Gerardi* and the fact that the cross-section of the rostrum of this species undergoes no distinct attenuation near its alveolar extremity favour a comparison with *Belemnites canaliculatus*. Nevertheless the special features of *Belemnites Gerardi* entitle it to a position of specific independence both with respect to *Belemnites canaliculatus* and *Belemnites subhastatus*.

Far more difficult than the elucidation of the relationships of the *Gerardi* group to other groups is the systematic distribution of the forms actually included within the group. In addition to *Belemnites Gerardi* Oppel and Rothpletz the following species probably belong to this group: *Belemnites aucklandicus* Hauer<sup>1</sup> *Belemnites africanus* Tate, *Belemnites tanganensis* Futterer,<sup>2</sup> possibly also *Belemnites kunkotensis* Waagen and *Belemnites orientalis* Waagen. Whether Waagen's *Belemnites Gerardi* really corresponds with the Himalayan species is somewhat doubtful, since the canal of this form is rather narrow, judging at least from Waagen's figure.

Of the greatest importance are those forms of this group which G. Boehm<sup>3</sup> has described from the Oxfordian of the Wai Galo and from the upper Lagoi on Taliabu. G. Boehm distinguishes the following species: *Belemnites alfuricus* G. Boehm, *Bel. galoi* G. Boehm, *Bel. taliabuticus* G. Boehm, *Bel. Sularum* G. Boehm, *Bel. moluccanus* G. Boehm. The differences between these forms, especially between the first three, and again between the last two are, however, almost imperceptible, as admitted indeed by Boehm himself, so much so that the differences can sometimes scarcely be expressed in words.

As in the case of G. Boehm's specimens, those which I have had to deal with are also very difficult to sort out. The horizons and localities from which the various specimens were obtained, are evidently, in many instances, rather wide apart. Very elongated slender forms occur side by side with moderately thick or else very ponderous cylindrical ones, and the variety at first conveys the impression that several species can be evolved from amongst this diversity of forms. But on closer inspection we soon find that even the most extreme forms appear to be connected with each other by every intermediate gradation. The difficulties are further increased by the fact that in almost every instance the exact geological horizon is unknown. Lastly, the material, although plentiful, is not very well preserved. The large alveolar fragments are invariably disconnected from their respective rostrum and the fragmentary rostra themselves are often broken and weathered.

<sup>1</sup> Reise der oesterreich. Fregatte Novara, Geolog., section I, part II, p. 99, pl. 8, figs. 2, 3.

<sup>2</sup> Beiträge zur Kenntniss des Jura in Ostafrika. *Zeitschrift der deutsch. geol. Gesellsch.* 1895, vol. 46, p. 30, pl. 5, figs. 2, 3.

<sup>3</sup> *Palaeontographica*, Supplement IV, Die Südküsten der Sula Inseln Taliabu und Mangoli, Stuttgart, 1907, p. 53, etc.

Under such unfavourable conditions, I should have preferred to follow Oppel's example and unite all the specimens under the name of *Belemnites Gerardi*, reserving the attempt to discriminate between possible separate species until fresh material has been collected with better regard to its stratigraphical distribution. Since however the majority of the Spiti forms evidently correspond exactly with the forms described by G. Boehm from the Sula Islands, we find ourselves compelled to come to some definite decision with respect to these. We have attempted to follow the diagnoses of G. Boehm, but have failed to attain satisfactory results. It is far from improbable that the more slender forms which G. Boehm has designated under the name of *Belemnites alfuricus* may eventually turn out to represent a distinct species. On this supposition we have assigned the name of *Belemnites alfuricus* to the most slender forms of the *Gerardi* group. All the remaining forms have had to be united provisionally under the name of *Belemnites Gerardi* for want of definable differences.

The relation of *Belemnites Gerardi* to the forms from the Sula Islands is far more distinct than to *Belemnites africanus*, *Bel. orientalis*, *Bel. aucklandicus*, and *Bel. tanganensis*. In *Bel. aucklandicus* the canal is narrower and shallower, the cross-section of the guard more nearly circular, the guard itself is smaller. The rostrum of *Belemnites tanganensis* Futterer is slightly attenuated towards the alveolar extremity indicating an approximation to the *Hastati*, and in connection therewith the dorsoventral diameter of the middle portion of the rostrum is somewhat less than the transverse diameter. *Belemnites africanus* from the Neocomian Uitenhage-formation exhibits the same external form as *Belemnites Gerardi*, but the canal does not extend down to the apex of the rostrum. *Belemnites orientalis* Waagen from the Dhosa Oolite possesses a conical rostrum and shallower canal.

Although we have to concede that these forms are specifically distinct, the frequency of canaliculate Belemnites in the Upper Jurassic and perhaps also in the Lower Cretaceous of the Indo-African and Indo-Australian regions deserves special attention, as will be explained more in detail when stating the general remarks on *Belemnites Gerardi*.

#### BELEMNITES (BELEMNOPSIS) GERARDI, Oppel.

(Plate XCIII, figs. 1, 2, 5a, b, 7a—c, 9a, b, 10a—c, 11, 12a, b, 13a, b; Plate XCIII A, figs. 1a—c, 2a, b, 4a, b, 5a—c.)

The majority of the specimens of this exceedingly common species are of medium size and correspond in their dimensions with those illustrated by Oppel. Boehm's *Belemnites taliabuticus* excellently represents this medium stage, in which the guard has a diameter of 10—15 mm. This stage is connected by a complete series of transitional forms with thicker specimens in which the diameter of the guard measures 20 to 28 mm. Thicker specimens of this kind are designated by G. Boehm as *Belemnites sularum* and *Belemnites moluccanus*. They are of rarer occurrence than the rostra of medium and small size. The existence of transitional

forms and the absence of definable differences indicates that the less common, stout, large specimens should in all likelihood be regarded as full-grown specimens of the same species. Moreover we not unfrequently find very small specimens in which the relative breadth of the canal is very disproportionate as compared with the diameter of the guard. The guard, at all stages, is more or less rod-shaped; in young specimens the lower end is drawn out into a long, fine point, while in old and thick specimens it is somewhat truncated and rounded. The cross-section increases from the apex towards the alveolar extremity, at first rapidly, further on very gradually and finally remains almost constant. There is only rarely a slight tendency towards a hastate form, in which case one observes a very slight contraction of the cross-section at the commencement of the alveolus.

In immature individuals the cross-section is circular. Later on a slight flattening sets in on the flanks and the dorso-ventral diameter becomes somewhat greater than the lateral one. Although the difference between the two dimensions is only slight, yet it communicates a characteristic appearance to the middle stages of growth. In full-grown specimens the cross-section acquires again a more circular shape and there is either no noteworthy difference between the dorso-ventral and the lateral diameters, or the lateral slightly exceeds the dorso-ventral diameter.

The ventral furrow is characterized by its remarkable breadth and depth. It is bordered by bluntly rounded edges and reaches right down to the apex of the guard, where it becomes gradually shallower, especially in older specimens. At the alveolar end of some specimens the canal assumes the shape of a narrow and deep groove. Lateral grooves, which, in general, are not distinctly developed in canaliculate Belemnites, appear here also to be wanting. (Compare with the description of *Belemnites* sp. ind. and with Pl. XCIII, fig. 8, and Pl. XCIII A, fig. 3.) The apical line has a subcentral position.

The alveolus penetrates into the guard to a considerable depth, constituting a cone whose angle is at first  $15^{\circ}$  to  $14^{\circ}$ , further on narrowing down to  $13^{\circ}$ . The septa follow one another at first in close succession, but the distance between them gradually increases until it amounts to as much as 8 mm. The last septa of the largest phragmocones, which attain a dorso-ventral diameter of 60 mm., follow each other again at somewhat closer intervals. The cross-section of the phragmocone is at first subcircular, becoming gradually more elliptical, the dorso-ventral diameter being appreciably greater than the lateral one. The longest amongst the available phragmocones were not found connected with any rostra, but as already pointed out by Blanford, there is every reason to believe that they belong to *Belemnites Gerardi* as they agree in their characters with smaller phragmocones, undoubtedly belonging to this species, and also because *Belemnites Gerardi* is the only common belemnite of the Spiti Shales.

*Belemnites Gerardi* has been found in many localities. The bulk of the specimens occur in the Belemnite Beds at the base of the Spiti Shales. Stoliczka already noticed the occurrence of the Belemnites at the boundary between the Spiti Shales and the Tagling Limestone. The majority of the specimens of the

Schlagintweit Collection examined by A. Oppel are from Kalabagh, where according to Oppel they are found together with forms of *Macrocephalites*. The latter are probably forms of the Oxfordian Stage. The Belemnite Beds of the Spiti Shales examined by Diener and Griesbach may well be referred to the Oxfordian Stage, a subject which will be discussed at greater length in a subsequent chapter. *Belemnites Gerardi* is, however, not restricted to this horizon, but is distributed throughout the whole of the Lower and Middle division of the Spiti Shales. It appears to occur even in the highest stage of the Spiti Shales; at any rate we have before us a strongly weathered fragment from the Upper Spiti Shales of Lochambelkichak (Tithonian-Neocomian), which probably belongs to *Belemnites Gerardi*; the identification is, however, not quite certain. In the islands of Taliabu and Mangoli also *Belemnites Gerardi* occurs in Oxfordian strata. The exact horizon of the occurrence at Rotti is not known.

The locality of many of the specimens is unfortunately unknown. In the following we enumerate all the localities which are explicitly stated: Spiti Valley, Niti, Chidamu, (Belemnite Beds); Chanambaniali, (Lower Spiti Shales); Kuti, (lowest Belemnite Shales); Jandu, Sherik River, (Hundes); Ting Jung La, (Hundes); Chikkim, (Spiti); Sirkia, (South-Hundes); Laptal; Chojan (2nd Stage); Saddle of Manirang, (Spiti); between Ting Jung La and Chhota Hoti.

#### BELEMNITES (BELEMNOPSIS) ALFURICUS, G. Boehm.

(Plate XCIII, figs. 3 *a*, *b*, 4, 6.)

*Belemnites alfuricus* G. Boehm. *Palaeontographica*. Supplement IV, Pl. VIII, figs. 4, 5, 7, 11, pp. 55, 57.

Certain rostra belonging to the group of *Belemnites Gerardi* in its wider sense are remarkable for their slenderness. The alveolus forms a more acute angle, the guard is comparatively long and somewhat more strongly flattened laterally than in the common form of *Belemnites Gerardi*. Even with a length of rostrum such as would already correspond with a considerable thickness in the case of the normal form of *Belemnites Gerardi*, the present form still maintains its slender outline.

The present form is perhaps even more slender than that illustrated by Boehm.

Immature specimens of *Belemnites alfuricus* can scarcely be distinguished from specimens of *Belemnites Gerardi* at the same stage of development. A more careful stratigraphical exploration of the Spiti Shales may perhaps enable us to formulate a more precise diagnosis, but at present there appears to be little hope of success in this direction.

The slender build of *Belemnites alfuricus* recalls *Belemnites kunkotensis* Waagen; it is easy, however, to distinguish the latter species from *Belemnites alfuricus* owing to the more pronounced dorso-ventral depression of its rostrum and its shallow canal.

*Belemnites alfuricus* is represented by several specimens three of which were found in Jandu, Sherik River. The original specimens are from Spiti, but the exact locality has not been noted.

## BELEMNITES, sp. ind.

(Plate XCIII, fig. 8; Plate XCIII A, fig. 3 a—d.)

The collections from the Spiti Shales include a few belemnites which perhaps indicate the existence of a second species in addition to *Belemnites Gerardi*. Of the two figured specimens the larger one is distinguished by its conspicuously hastate shape. At the alveolar extremity the canal is very deep, near the apex of the guard it is very narrow and shallow. The flanks exhibit feeble, but distinct traces of the lateral grooves. The alveolar portion of the smaller specimen is not preserved, but a slight attenuation in an upward direction is nevertheless recognizable. In this specimen the canal is rather deep and the dorso-lateral grooves are particularly distinct. In addition to these specimens there are two more fragments also exhibiting the dorso-lateral grooves and showing a tendency towards a hastate configuration.

The canal of the larger figured specimen exhibits the same characteristics near its alveolar extremity as that of *Belemnites Gerardi*. Moreover the specimen is greatly exfoliated near its upper end and not quite regularly developed, conveying the impression that it may merely represent a pathological individual of *Belemnites Gerardi*.

The three other specimens which show a tendency towards the development of a hastate form are also characterized by the presence of dorso-lateral grooves, and we know that these lines occur much more frequently and distinctly amongst the *Hastati* than amongst the *Canaliculati*. It is therefore possible that these specimens represent a separate species. Nevertheless, I feel inclined to look upon them as pathological variations of *Belemnites Gerardi*. The available material is too deficient to permit a definite settlement of the question.

Spiti Shales; exact locality not noted.

## DIPLOCONUS, sp. ind.

(Plate XCIII A, fig. 6 a, b.)

A single phragmocone appears to belong to the rare genus *Diploconus* and deserves therefore a few words' notice notwithstanding its deficient state of preservation. The phragmocone tapers towards its lower extremity at an angle of about 33°. The chambers increase very little in length in an upward direction; they are usually lower than in the majority of *Belemnites* and are deflected upwards on the dorsal side. Hence, a side view shows the septa not as horizontal lines, but running obliquely towards the "axis" of the phragmocone. The

siphuncle, of which some traces still subsist (see fig. 6 *b*), is almost strictly marginal; it indicates the middle line of the ventral face. The exact shape of the cross-section cannot be ascertained owing to a partial distortion of the specimen, but generally speaking it is subcircular.

Unfortunately neither the guard nor the ornamentation of the phragmocone has been preserved. The generic identification is therefore doubtful, but there is a possibility of its belonging to *Diploconus*. The contrast with the phragmocone of *Belemnites Gerardi* is very striking. At any rate, this specimen proves that *Belemnites Gerardi* was not the only Belemnoid form of the Spiti Fauna.

*Diploconus* has been described by Zittel<sup>1</sup> from the Upper Tithonian of Stramberg. If the generic determination which at present is only conjectural should turn out to be correct, the mediterranean element of the Spiti Fauna would thereby be strengthened.

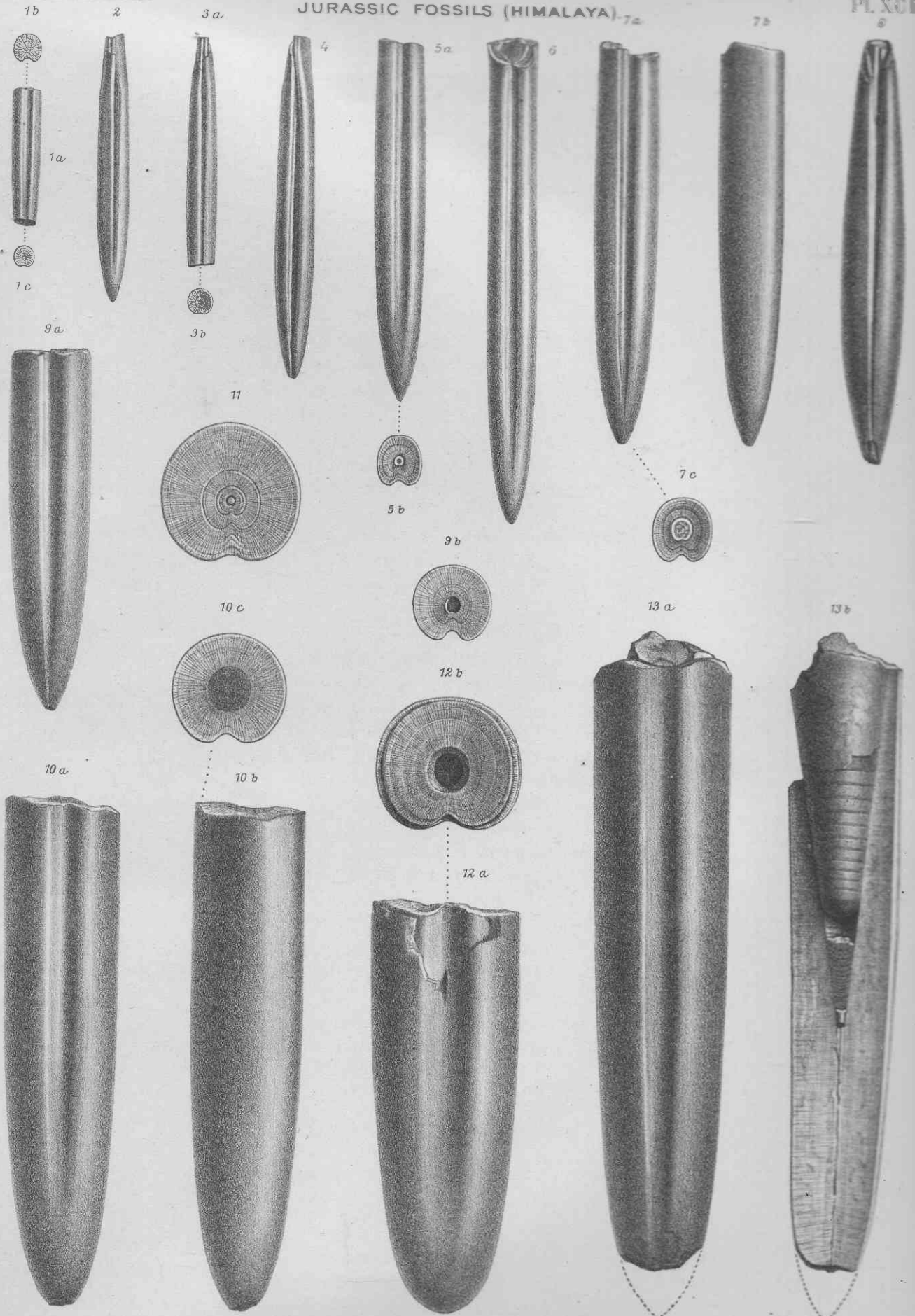
The exact locality of the specimen is not noted, but it is certainly derived from the Spiti Shales.

<sup>1</sup> Cephalopoden der Stramberger Schichten, p. 38, Pl. 1, figs. 14—17.

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PLATE XCIII.

- Fig. 1 *a—c*. BELEMNITES (BELEMNOPSIS) GERARDI Oppel.  
Page 386. Immature specimen. Natural size. *1a*, Front view. *1b, c*,  
Section through near the upper and lower extremities of the rostrum.  
From Spiti shales.
- Fig. 2. BELEMNITES (BELEMNOPSIS) GERARDI Oppel.  
Page 386. Front view of an immature specimen. Natural size. From  
Spiti shales.
- Fig. 3 *a, b*. BELEMNITES (BELEMNOPSIS) ALFURICUS G. Boehm.  
Page 388. *3a*, Front view of a young specimen. *3b*, Section through  
the rostrum at its lower end. Natural size. From Spiti shales.
- Fig. 4. BELEMNITES (BELEMNOPSIS) ALFURICUS, G. Boehm.  
Page 388. Front view. Natural size. From Spiti shales.
- Fig. 5 *a, b*. BELEMNITES (BELEMNOPSIS) GERARDI Oppel.  
Page 386. *5a*, Front view. *5b*, Section through the rostrum at its upper  
end. From the Spiti shales of Niti.
- Fig. 6. BELEMNITES (BELEMNOPSIS) ALFURICUS, G. Boehm.  
Page 388. Front view of a specimen from the Spiti shales. Natural  
size.
- Fig. 7 *a—c*. BELEMNITES (BELEMNOPSIS) GERARDI Oppel.  
Page 386. *7a*, Front view. *7b*, Side view. *7c*, Section through the  
rostrum at its upper end. Natural size. Jandu, Hundes.
- Fig. 8. BELEMNITES sp. ind.  
Page 389. Pathological specimen of *Belemnites Gerardi?* Natural size.  
From Spiti shales. (See also pl. XCIII-A, fig. 3 *a—d*.)
- Fig. 9 *a, b*. BELEMNITES (BELEMNOPSIS) GERARDI Oppel.  
Page 386. Specimen of normal size. *9a*, Front view. *9b*, Section  
through the rostrum at upper end. From Jandu, Hundes.
- Fig. 10 *a—c*. BELEMNITES (BELEMNOPSIS) GERARDI Oppel.  
Page 386. Full-grown specimen. Natural size. *10a*, Front view. *10b*,  
Side view. *10c*, Section through the rostrum at its upper end. From  
Jandu, Hundes.
- Fig. 11. BELEMNITES (BELEMNOPSIS) GERARDI Oppel.  
Page 386. Section through the rostrum of a full-grown specimen. From  
the Spiti shales.
- Fig. 12 *a, b*. BELEMNITES (BELEMNOPSIS) GERARDI Oppel.  
Page 386. Full-grown thick specimen. Natural size. *12a*, Front view.  
*12b*, Section through the rostrum at its upper end. From Jandu,  
Hundes.
- Fig. 13 *a, b*. BELEMNITES (BELEMNOPSIS) GERARDI Oppel.  
Page 386. Full-grown specimen. Natural size. *13a*, Front view. *13b*,  
Longitudinal dorso-ventral section of the rostrum, with phragmocone.  
From Jandu, Sherik river.

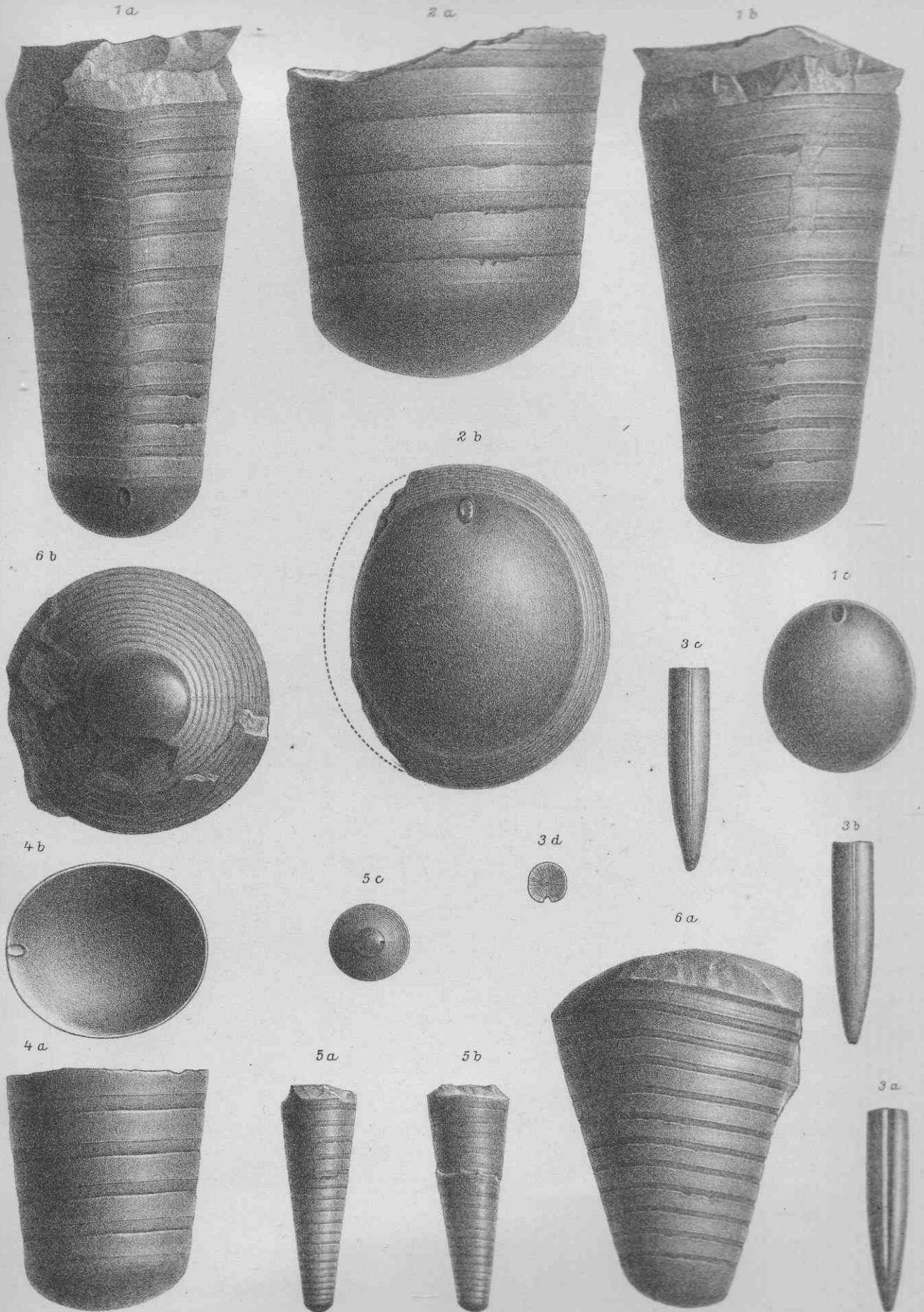


R. Mayer del. et. lith.

Albert Berger print.

PLATE XCIII A.

- Fig. 1 *a—c*. BELEMNITES (BELEMNOPSIS) GERARDI Opper.  
Page 386. Phragmocone of a full-grown specimen. Natural size. *1a*,  
Front view. *1b*, Lateral view. *1c*, Septum at lower end. Upper and  
Middle Spiti shales, Kuti.
- Fig. 2 *a, b*. BELEMNITES (BELEMNOPSIS) GERARDI Opper.  
Page 386. Phragmocone of a full-grown specimen. Natural size. *2a*,  
Lateral view. *2b*, View of lower end. Between Ting Jung La and  
Chota Hoti.
- Fig. 3 *a—d*. BELEMNITES sp. ind.  
Page 389. Immature specimen with well marked dorso-lateral grooves.  
Natural size. *3a*, Front view. *3b, c*, Side view. *3d*, Section through  
the rostrum at its upper end. (See pl. XCIII, fig. 8.) From Spiti  
shales.
- Fig. 4 *a, b*. BELEMNITES (BELEMNOPSIS) GERARDI Opper.  
Page 386. Phragmocone of an old specimen. Natural size. *4a*, Lateral  
view. *4b*, Septum at upper end. From Hundes.
- Fig. 5 *a—c*. BELEMNITES (BELEMNOPSIS) GERARDI Opper.  
Page 386. Phragmocone of a young specimen. Natural size. *5a*, Front  
view. *5b*, Lateral view. *5c*, View of lower end. From Jandu.
- Fig. 6 *a, b*. ?DIPLOCONUS sp. ind.  
Page 389. Phragmocone. Natural size. *6a*, Lateral view. *6b*, View of  
lower end, with a slight trace of the siphuncle on the right side. From  
Spiti shales.



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By

DR. VICTOR UHLIG,

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