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THREE PLATES TO ILLUSTRATE THE SCALPELLIDAE AND
IBLIDAE OF INDIAN SEAS, WITH SYNONYMY
AND NOTES.

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The three plates now published were prepared about five years ago, to be issued with an account of the Scalpellidae and Iblidae of Indian seas, which was to be arranged on the same lines as my account of the Lepadidae published in these *Memoirs*.¹ As soon, however, as the Surgeon Naturalist on the 'Investigator' began to dredge in shallow water off the coast of Burma,² it became clear that our knowledge of these barnacles was still very incomplete so far as the eastern side of the Bay of Bengal was concerned, and it seemed best to defer the publication of the monograph until further material could be obtained.

It had been arranged by the Government of India that the 'Investigator' should be entirely devoted to zoological work for one month in every year, and that a considerably enhanced grant should be made to the Surgeon Naturalist for apparatus and books, but war broke out and the scheme has had to be postponed indefinitely.

In these circumstances I think it best not to defer the publication of the three plates any longer, seeing that all the species figured in them have now been described and that in the case of two³ of these species no figures have hitherto been issued.

The plates are numbered VI, VII and VIII because they are to be regarded as a continuation and final instalment of the "*Illustrations of the Zoology of the R.I.M.S. Investigator*", in which five previous plates have already been devoted to the Cirripedia. These were published in two series in 1907 and 1908 respectively.

A preliminary account of the Indian species of *Scalpellum* (*s.l.*) has already been issued in Vols. V and IX of the *Records of the Indian Museum*.⁴

The figures have been drawn by Babu A. C. Chowdhary, S. C. Moudul and D. N. Bagchi, who have devoted their usual skill to their preparation.

¹ "An account of the Indian Cirripedia Pedunculata. Part I.—Family Lepadidae (*sensu stricto*)."
Mem. Ind. Mus., II, pp. 61-137, pls. vi, vii (1909).

² See Annandale, *Rec. Ind. Mus.*, X, p. 273 (1914).

³ The names of these species are marked with an asterisk in the lists that follow.

⁴ "The Indian Barnacles of the subgenus *Smilium*, with remarks on the classification of the genus *Scalpellum*": *Rec. Ind. Mus.*, V, pp. 145-155 (1910); and "The Indian Barnacles of the subgenus *Scalpellum*": *Rec. Ind. Mus.*, IX, pp. 227-236 (1913).

The following is a list of the species figured here:—

<i>Mitella mitella</i> (Linn.)	<i>Scalpellum pacificum</i> , Pilsbry.
<i>Scalpellum (Smilium) squamuliferum</i> ,	„ <i>albatrossianum</i> , Pilsbry.
Weltner.	„ <i>curiosum</i> , Hoek.
„ „ <i>bengalense</i> ,	„ <i>laccadivicum</i> , Annandale.
Annandale.	„ <i>lambda</i> *, Annandale.
„ „ <i>acutum</i> , Hoek.	„ <i>longius</i> *, Annandale.
„ <i>alcockianum</i> , Annandale.	<i>Lithotrya nicobarica</i> , Reinhart.
„ <i>velutinum</i> , Hoek.	<i>Ibla cumingi</i> , Darwin.

All the specimens figured, except the *Mitella* (which is from the Gulf of Siam) and one example of *Ibla cumingi* from the Persian Gulf, are from the seas of British India.

Family SCALPELLIDAE.

Mitella mitella (Linn.).

(Plate VII, fig. 1.)

1758. *Lepas mitella*, Linné, *Syst. Nat.* (10th ed.), p. 668.
 1851. *Pollicipes mitella*, Darwin, *Mon. Cirr.*, *Lepadidae*, p. 316, pl. vii, fig. 3.
 1905. *Pollicipes mitella*, Gruvel, *Mon. Cirrh.*, p. 19, fig. 22.
 1907. *Pollicipes mitella*, Hoek, *Siboga-Exp.*, mon. XXXIa (*Cirr. Ped.*), p. 121.
 1907. *Mitella mitella*, Pilsbry, *Bull. U.S. Nat. Mus.*, No. 60, p. 6.
 1910. *Pollicipes mitella*, Annandale, *Vid. Med. nat. Foren. Kjöbenhavn*, p. 181.
 1912. *Mitella mitella*, Krüger, *Abh. d. II. Kl. Kong. Akad. Wiss. München*, II Suppl.-Bd., 6 Abh., p. 8, taf. ii, figs. 10, 11.
 1913. *Pollicipes mitella*, Hoek, *op. cit.*, Introduction, p. xv.
 1916. *Mitella mitella*, Joleaud, *Ann. Mus. Hist. Nat. Marseille*, XV, p. 25, pl. v, figs. 17-21.

Curiously enough this common species, which is abundant at some places in the Gulf of Siam and also occurs in the Malay Archipelago and in the western part of the Indian Ocean, has not been found in the seas of British India. The specimen figured is from the Gulf of Siam.

Scalpellum (Smilium) squamuliferum, Weltner.

(Plate VI, figs. 1, 2.)

1894. *Scalpellum squamuliferum*, Weltner, *Sitz.-Ber. naturf. Freunde*, p. 80, figs. 1-5.
 1905. *Scalpellum squamuliferum*, Gruvel, *Mon. Cirrh.*, p. 56, fig. 59.
 1907. *Scalpellum squamuliferum*, Annandale, *Illustr. Zool. 'Investigator,' Crust. (Entom.)*, pl. ii, fig. 4.
 1908. *Scalpellum squamuliferum*, *id.*, *ibid.*, pl. iii, figs. 4-6.
 1908. *Euscalpellum (?) squamuliferum*, Pilsbry, *Proc. Acad. Nat. Sci. Philadelphia*, p. 108.
 1910. *Scalpellum (Smilium) squamuliferum*, Annandale, *Rec. Ind. Mus.*, V, pp. 147, 151, fig. 2.
 1911. *Scalpellum squamuliferum*, Stewart, *Mem. Ind. Mus.*, III, p. 37, pl. iv, figs. 1-6; pl. v: pl. vi, figs. 1-6 and 9.
 1913. *Scalpellum squamuliferum*, Hoek, *Siboga-Exp.*, mon. XXXIa, Introduction, p. xv.
 1916. *Scalpellum (Protoscalpellum) squamuliferum*, Joleaud, *Ann. Mus. Hist. Nat. Marseille*, XV, p. 41.

Scalpellum (Smilium) bengalense, Annandale.

(Plate VI, figs. 3, 4; pl. VII, fig. 3; pl. VIII, figs. 1-5.)

1906. *Scalpellum bengalense*, Annandale, *Ann. Mag. Nat. Hist.*, (7), XVII, p. 395.
 1907. *Scalpellum bengalense*, *id.*, *Illustr. Zool. Investigator*, *Crust. (Entom.)*, pl. i, fig. 5 (young).
 1908. *Euscalpellum bengalense*, Pilsbry, *Proc. Acad. Nat. Sci. Philadelphia*, p. 108.
 1910. *Scalpellum (Smilium) bengalense*, Annandale, *Rec. Ind. Mus.*, V, pp. 146, 153, fig. 1.
 1911. *Scalpellum bengalense*, Stewart, *Mem. Ind. Mus.*, III, p. 44, pl. vi, figs. 7, 10.
 1913. *Scalpellum bengalense*, Hoek, *Siboga-Exp.*, mon. XXXIa, Introduction, p. xiv.

Scalpellum (Smilium) acutum, Hoek.

(Plate VII, fig. 4.)

1883. *Scalpellum acutum*, Hoek, 'Challenger' *Zool. Rep.*, VIII (*Cirripedia*), p. 80, pl. iii, fig. 19, pl. viii, fig. 12.
 1902. *Scalpellum longirostrum*, Gruvel, *Cirrh. du 'Travailleur' et du Talisman*, p. 70.
 1907. *Scalpellum (Smilium) acutum*, Hoek, *Siboga-Exp.*, mon. XXXIa (*Cirr. Ped.*), p. 64, pl. vii, fig. 1.
 1908. *Smilium acutum*, Pilsbry, *Proc. Acad. Nat. Sci. Philadelphia*, p. 107.
 1910. *Scalpellum (Smilium) acutum*, Annandale, *Rec. Ind. Mus.*, V, p. 154.
 1913. *Scalpellum acutum*, Hoek, *op. cit.*, Introduction, p. xiv.

Scalpellum alcockianum, Annandale.

(Plate VI, fig. 5.)

1906. *Scalpellum alcockianum*, Annandale, *Ann. Mag. Nat. Hist.*, (7), XVII, p. 392.
 1907. *Scalpellum alcockianum*, *id.*, *Illustr. Zool. Investigator*, *Crust. (Entom.)*, pl. i, fig. 2; pl. ii, figs. 2, 2a, 2b.
 1907. *Scalpellum alcockianum*, Pilsbry, *Bull. U.S. Nat. Mus.*, No. 60, p. 25.
 1913. *Scalpellum alcockianum*, Hoek, *Siboga-Exp.*, mon. XXXIa, Introduction, p. xiv.

I am describing shortly in the *Journal of the Straits Branch of the Royal Asiatic Society* a form from the western part of the Malay Archipelago closely allied to this peculiar species, which seems to be related also to *S. giganteum*, Gruvel, from the Atlantic. The Indian species is distinguished from all other members of the genus by the great length of its anal appendages.

Scalpellum velutinum, Hoek.

(Plate VI, figs. 6, 7.)

1883. *Scalpellum velutinum*, Hoek, 'Challenger' *Zool. Rep.*, VIII (*Cirripedia*), p. 96, pl. iv, figs. 10, 11; pl. ix, figs. 7-9.
 1883. *Scalpellum eximium*, *id.*, *op. cit.*, p. 100, pl. iv, figs. 6, 7; pl. ix, figs. 10, 10*.
 1898. *Scalpellum sordidum*, Aurivillius, *Bull. Soc. zool. France*, XXIII, p. 190.
 1902. *Scalpellum alatum*, Gruvel, *Cirrh. du 'Travailleur' et du Talisman*, p. 57.
 1907. *Scalpellum velutinum*, Pilsbry, *Bull. U.S. Nat. Mus.*, No. 60, p. 26, pl. iii, figs. 2, 3.
 1908. *Scalpellum (Arcoscalpellum) velutinum*, *id.*, *Proc. Acad. Nat. Sci. Philadelphia*, p. 109.
 1908. *Scalpellum velutinum*, Annandale, *Illustr. Zool. Investigator*, *Crust. (Entom.)*, pl. iv, fig. 7.
 1911. *Scalpellum velutinum*, *id.*, *Ann. Mag. Nat. Hist.*, (8), VII, p. 588.
 1913. *Scalpellum velutinum*, *id.*, *Rec. Ind. Mus.*, IX, p. 229.

Scalpellum pacificum, Pilsbry.

(Plate VII, fig. 7 ; pl. VIII, fig. 11.)

1906. *Scalpellum tenue*, Annandale (*nec* Hoek), *Herdman's Rep. Pearl Oyster Fisheries*, V, p. 142.
 1907. *Scalpellum pacificum*, Pilsbry, *Bull. Bur. Fish. U.S.A.*, No. 617, p. 182, pl. iv, figs. 3, 4.
 1913. *Scalpellum pacificum*, Annandale, *Rec. Ind. Mus.*, IX, p. 230.

Scalpellum albatrossianum, Pilsbry.

(Plate VI, fig. 9.)

1907. *Scalpellum albatrossianum*, Pilsbry, *Bull. U.S. Nat. Mus.*, No. 60, p. 54, fig. 19.
 1908. *Scalpellum albatrossianum*, Annandale, *Illustr. Zool. 'Investigator', Crust. (Entom.)*, pl. iii, fig. 10.
 1913. *Scalpellum albatrossianum*, *id.*, *Rec. Ind. Mus.*, IX, p. 232.

Scalpellum curiosum, Hoek.

(Plate VIII, figs. 8-10.)

1906. *Scalpellum japonicum*, Annandale (*nec* Hoek), *Herdman's Rep. Pearl Oyster Fisheries*, V, p. 141.
 1907. *Scalpellum curiosum*, Hoek, *Siboga-Exp.*, mon. XXXIa (*Cirr. Ped.*), p. 79, pl. vii, figs. 8, 8a, 8b.
 1908. *Scalpellum curiosum*, Annandale, *Illustr. Zool. 'Investigator' Crust. (Entom.)*, pl. iv, fig. 8.
 1913. *Scalpellum curiosum*, *id.*, *Rec. Ind. Mus.*, IX, p. 233.
 1913. *Scalpellum curiosum*, Hoek, *op. cit.*, Introduction, p. xiv.

Scalpellum laccadivicum, Annandale.

(Plate VI, fig. 8 ; pl. VIII, figs. 6, 7.)

1906. *Scalpellum laccadivicum* and var. *investigatoris*, Annandale, *Ann. Mag. Nat. Hist.*, (7), XVII, pp. 393-395.
 1906. *Scalpellum subflavum*, *id.*, *ibid.*, p. 397.
 1907. *Scalpellum laccadivicum* and var. *investigatoris*, *id.*, *Illustr. Zool. 'Investigator', Crust. (Entom.)*, pl. i, figs. 3, 4.
 1907. *Scalpellum subflavum*, *id.*, *ibid.*, pl. i, fig. 6.
 1907. *Scalpellum polymorphum*, Hoek, *Siboga-Exp.*, mon. XXXIa (*Cirr. Ped.*), p. 80, pl. vii, figs. 9-11.
 1908. *Scalpellum (Arcoscalpellum) laccadivicum*, Pilsbry, *Proc. Acad. Nat. Sci. Philadelphia*, p. 110.
 1913. *Scalpellum laccadivicum*, Annandale, *Rec. Ind. Mus.*, IX, p. 235.
 1913. *Scalpellum laccadivicum*, Hoek, *op. cit.*, Introduction, p. xiv.

Scalpellum lambda,* Annandale.

(Plate VII, figs. 6, 6a ; pl. VIII, figs. 12-15.)

1910. *Scalpellum lambda*, Annandale, *Rec. Ind. Mus.*, V, p. 115.
 1913. *Scalpellum lambda*, *id.*, *ibid.*, IX, p. 234.

Scalpellum longius,* Annandale.

(Plate VII, figs. 5, 5a.)

1913. *Scalpellum longius*, Annandale, *Rec. Ind. Mus.*, IX, p. 234.

Lithotrya nicobarica, Rhdt.

(Plate VII, fig. 2.)

1851. *Lithotrya nicobarica*, Darwin, *Mon. Cirr.*, *Lepadidae*, p. 359, pl. viii, fig. 2.
1905. *Lithotrya nicobarica*, Gruvel, *Mon. Cirrh.*, p. 99.
1907. *Lithotrya nicobarica*, Hoek, *Siboga-Exp.*, mon. XXXIa (*Cirr. Ped.*), p. 122.
1913. *Lithotrya nicobarica*, *id.*, *op. cit.*, Introduction, p. xv.

I figure a specimen received in exchange from the Copenhagen Museum and labelled as being a co-type of Reinhardt's species. I have not seen the original description.

Family IBLIDAE.

Ibla cumingi, Darwin.

(Plate VII, figs. 8, 9.)

1851. *Ibla cumingii*, Darwin, *Mon. Cirr.*, *Lepadidae*, p. 183, pl. iv, fig. 8; pl. v, figs. 1-8.
1902. *Ibla quadrivalvis*, Lanchester (*nec.* Cuvier), *Proc. Zool. Soc. London*, I, p. 372.
1905. *Ibla cumingi*, Gruvel, *Mon. Cirrh.*, p. 147.
1907. *Ibla cumingi* and *I. sibogae*, Hoek, *Siboga-Exp.*, mon. XXXIa (*Cirr. Ped.*), pp. 47, 48, pl. iv, figs. 20-22; pl. v, figs. 1-8.
1911. *Ibla cumingii*, Stewart, *Mem. Ind. Mus.*, III, p. 47, pl. iv, fig. 7.
1911. *Ibla cumingi*, Annandale, *Rec. Ind. Mus.*, VI, p. 229.
1913. *Ibla cumingi* and *I. sibogae*, Hoek, *op. cit.*, Introduction, p. xiv.

EXPLANATION OF PLATE VI.

Scalpellum (Smilium) squamuliferum, Weltner.

FIG. 1.—Part of peduncle (magnified).

„ 2.—Anal appendage in lateral view (stained and magnified).

Scalpellum (Smilium) bengalense, Annandale.

FIG. 3.—Part of peduncle (magnified).

„ 4.—Male in lateral view (stained and magnified). The specimen figured was completely devoid of calcareous valves.

Scalpellum alcockianum, Annandale.

FIG. 5.—Outline of capitulum, of capitular valves and of first row of peduncular plates. A. Rostrum and rostral latera as seen from inside the capitulum. B. Carina and carinal latera as seen from inside the capitulum. All $\times 2$.

Scalpellum velutinum, Hoek.

FIG. 6.—The two mandibles of an Indian individual (highly magnified).

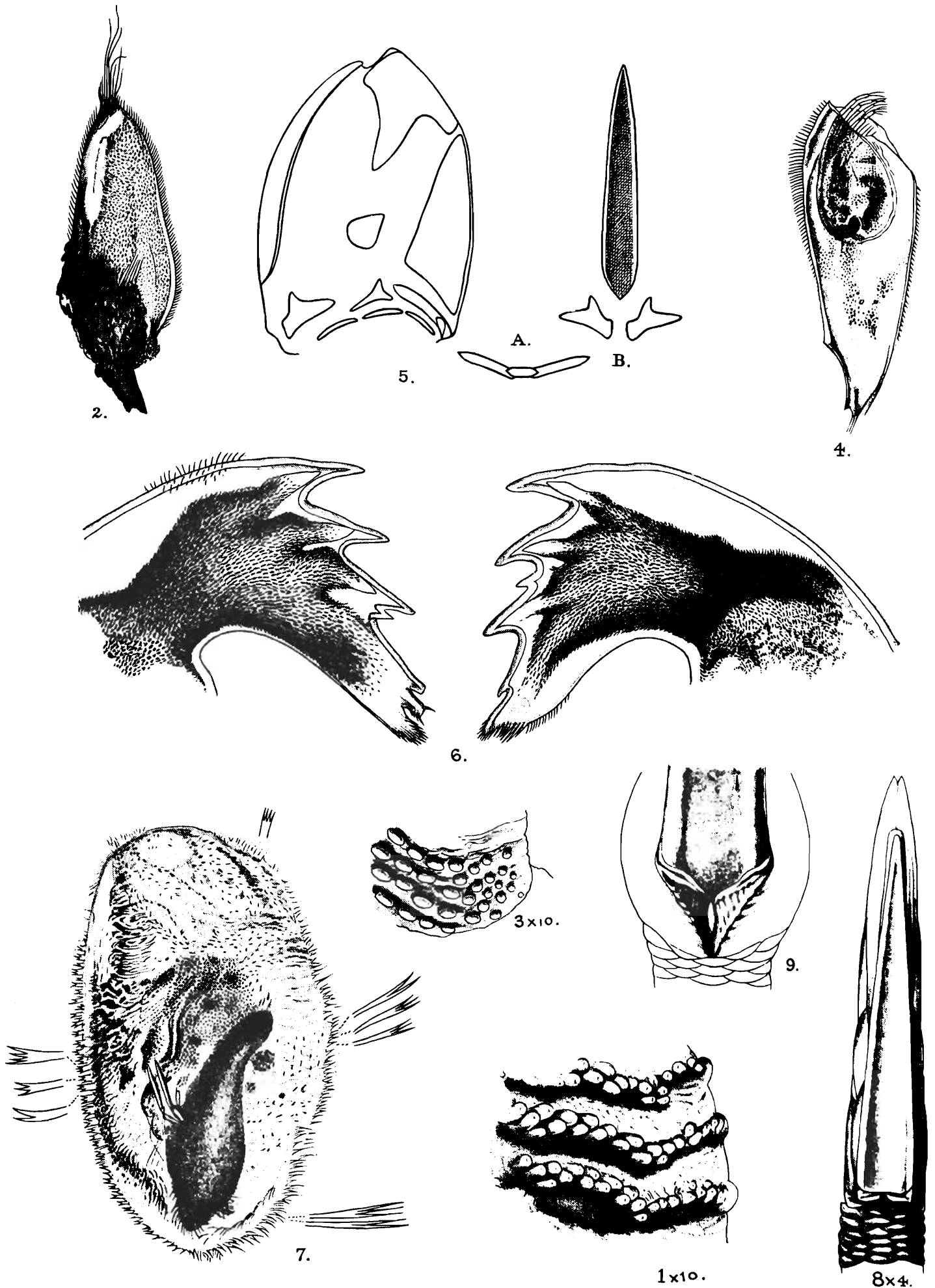
„ 7.—Male (highly magnified), with the spines from different regions still further enlarged.

Scalpellum laccadivicum, Annandale.

FIG. 8.—Dorsal view of capitulum and upper part of peduncle (magnified).

Scalpellum albatrossianum, Pilsbry.

FIG. 9.—Dorsal view of base of carina and adjacent parts in an Indian specimen (magnified).



EXPLANATION OF PLATE VII

Mitella mitella (Linn.).

FIG. 1.—Specimen from the Gulf of Siam. × 2.

Lithotrya nicobarica, Reinhart.

FIG. 2.—Co-type from the Nicobars.

Scalpellum (Smilium) bengalense, Annandale.

FIG. 3.—Mature specimen from the Bay of Bengal in lateral view (magnified).

Scalpellum (Smilium) acutum, Hoek.

FIG. 4.—Specimen on the root-spicules of *Hyalonema* from the Andaman Sea in lateral view (magnified). 4a. Dorsal view of the same specimen.

Scalpellum longius, Annandale.

FIG. 5.—One of the type-specimens in lateral view (magnified). 5a. Dorsal view of the same specimen.

Scalpellum lambda, Annandale.

FIG. 6.—Type-specimen in lateral view (magnified). 6a. Base of carina and carinal latera in dorsal view.

Scalpellum pacificum, Pilsbry

FIG. 7.—Indian specimen in lateral view (magnified). 7a. Base of carina and carinal latera in dorsal view.

Ibla cumingi, Darwin.

FIG. 8.—Specimen of the form *sibogae*, Hoek, from the coast of Burma (magnified).

,, 9.—Old and shrivelled specimen of the typical form from the Persian Gulf (magnified).

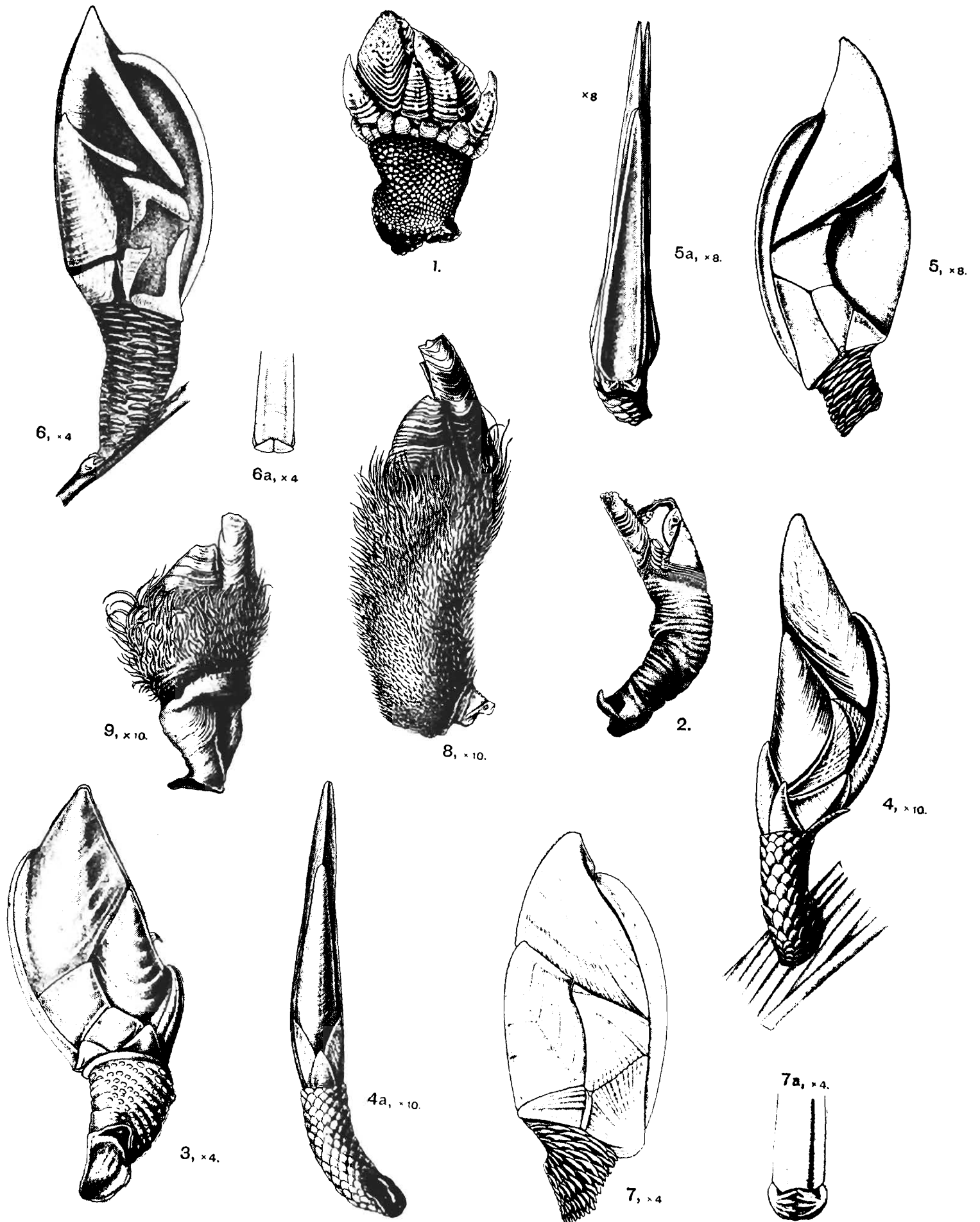


Photo-engraved & printed at the Office of the Survey of India, Calcutta, 1907

Indian Cirripedia (*Pollicipes*, *Lithotrypa*, *Sculpellum*, *Ibla*).

EXPLANATION OF PLATE VIII.

Scalpellum (Smilium) bengalense, Annandale.

- FIG. 1.—A pair of maxillae, showing variation. × 75.
,, 2.—Penis. × 30.
,, 3.—Tip of anal appendage. × 75.
,, 4.—Mandible. × 30.
,, 5.—Maxilla. × 75.

Scalpellum laccadivicum, Annandale.

- FIG. 6.—Anal appendage. × 30.
,, 7.—First cirrus. × 16.

Scalpellum curiosum, Hoek.

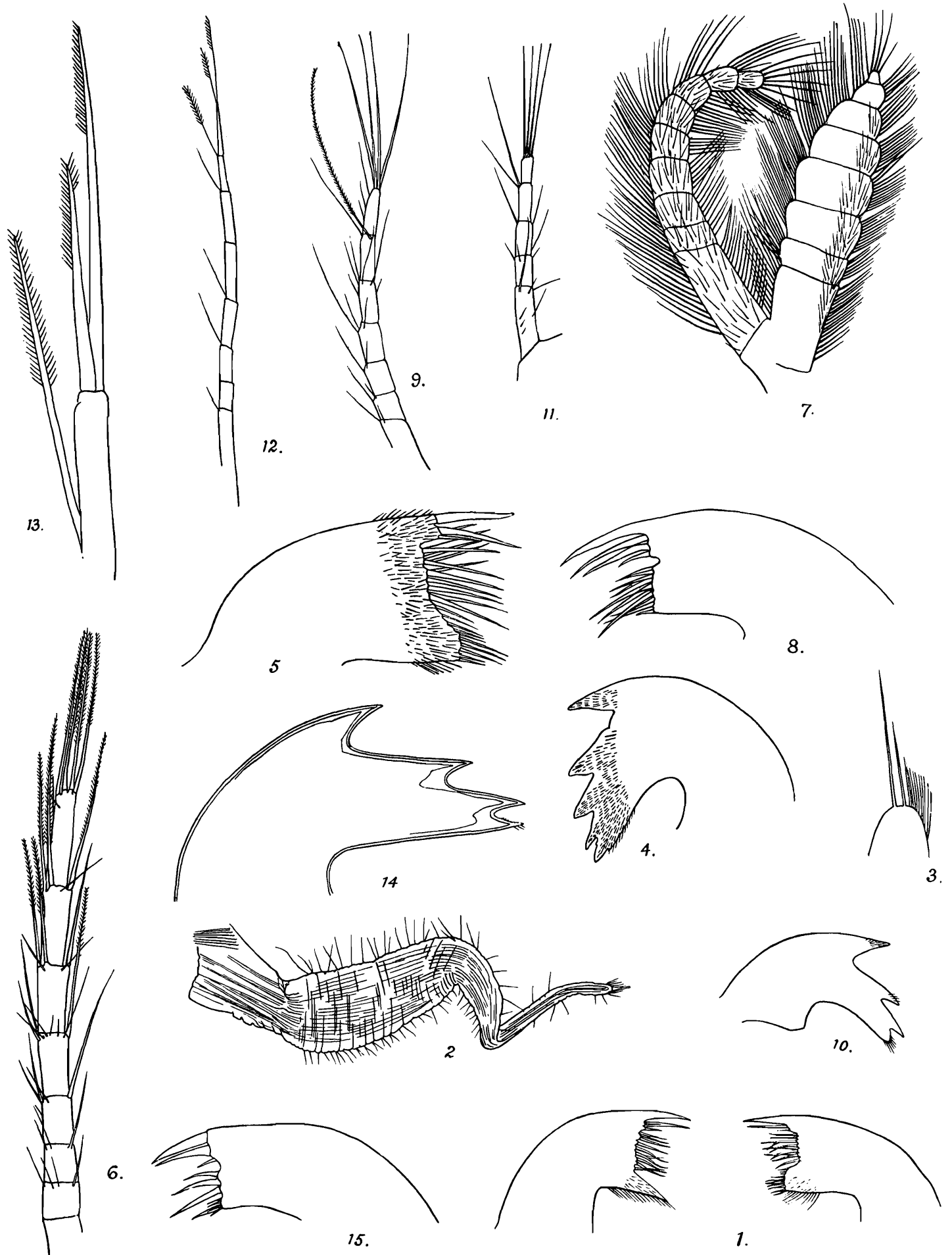
- FIG. 8.—Maxilla. × 75.
,, 9.—Anal appendage. × 30.
,, 10.—Mandible. × 30.

Scalpellum pacificum, Hoek.

- FIG. 11.—Anal appendage. × 30.

Scalpellum lambda, Annandale.

- FIG. 12.—Anal appendage in lateral view. × 35. The last segment is possibly distorted.
,, 13.—Terminal segment of same appendage viewed somewhat obliquely. × 157.
,, 14.—Mandible. × 190.
,, 15.—Maxilla. × 190.



D. N. Bagchi, *del.*

NOTE.

The plates with their respective explanations will be issued later.