

XXVI.—*Note on Myxine capensis.*

By C. TATE REGAN, M.A.

(Published by permission of the Trustees of the British Museum.)

*MYXINE CAPENSIS* was recently described by me from a single specimen from the Cape of Good Hope, taken at a depth of 110 fathoms ('Annals,' (8) xi. 1913, p. 398). The dentition could not be described, and it was not certain that the presence of seven pairs of branchial pouches was normal and characteristic of the species. Dr. L. Peringuez, Director of the South African Museum, has very kindly sent me two examples of the Cape hag-fish, taken off Cape Point at a depth of 175 fathoms. Both have seven branchial pouches and ten teeth in each series, the two most anterior united. The larger measures 320 mm. (93 mm. to the branchial aperture) and the smaller 250 mm. (73 mm. to the branchial aperture). The pores number  $31 + 67 + 10$  and  $30 + 64 + 12$  respectively.

*Myxine capensis* is nearest to *M. australis*, Jenyns, from Chile and Patagonia, but differs from that species (and from all others of the genus) in having seven pairs of branchial sacs instead of six.

XXVII.—*A new Species of the Crustacean Genus Thaumastocheles.* By W. T. CALMAN, D.Sc.

(Published by permission of the Trustees of the British Museum.)

*THAUMASTOCHELES ZALEUCUS* (Willemoes-Suhm), one of the most remarkable of deep-sea Crustacea, was described from a single perfect female specimen and fragments of a second which were dredged by the 'Challenger' off Sombrero Island, West Indies, at a depth of 450 fathoms. In 1906 Dr. Doflein referred to the same species a male specimen from Sagami Bay, Japan, and four years later Miss Rathbun recorded a female from a depth of 350 fathoms in the same locality. Dr. Doflein mentions that Mr. Owston, the well-known dealer in Yokohama, from whom his specimen was obtained, had previously sent another to England. This refers, in all probability, to a specimen now in the Zoological Museum of the University of St. Andrews, to which my attention has been called by Prof. W. C. M'Intosh, F.R.S. I am greatly

indebted to Prof. M'Intosh for allowing this precious and fragile specimen to run the risks of a journey to London, in order that I might compare it directly with the 'Challenger' type. The result has been to show that the West-Indian and Japanese forms are quite distinct, though closely allied, species. Brief summaries of their distinctive characters are given below, followed by some more detailed notes on the St. Andrews specimen.

*Thaumastocheles zaleucus* (Willemoes-Suhm).

*Astacus zaleucus*, Willemoes-Suhm, in Wyville Thomson, Nature, viii. 1873, p. 247, fig. 1; Milne-Edwards, Ann. Sci. Nat., Zool. (5) xix. 1874, Art. 7, 2 pp., pl. xx.; Willemoes-Suhm, Trans. Linn. Soc. London, ser. 2, Zool. i. 1875, p. 48, pl. x. fig. 1.

*Thaumastocheles zaleucus*, Wood-Mason, Proc. Asiatic Soc. Bengal, 1874, p. 181; Spence Bate, Rep. 'Challenger' Macrura, 1888, p. 47, pls. vi., vii. fig. 1.

Third segment of antennular peduncle more than  $1\frac{1}{2}$  times as long as second, its width less than half of its length. Penultimate segment of antennal peduncle extending well beyond tip of scale, more than twice as long as distal segment. Spiniform teeth on fingers of larger cheliped inclined alternately to either side of the plane in which the fingers lie. Palm of smaller cheliped more than half as long as fingers. Dactylus of second and third peræopods two-thirds of length of upper border of palm.

*Holotype*: female, total length (rostrum to telson) 110 mm., from 'Challenger' Station 23, off Sombrero Island, West Indies, 450 fathoms (Brit. Mus. Crustacea, reg. no. 88. 22). *Paratype*: chelipeds (first pair) and left third maxilliped of another individual from the same locality.

*Thaumastocheles japonicus*, sp. n.

*Thaumastocheles zaleucus*, Doflein, Zool. Anz. xxx. 1906, p. 521, figs. 1-4; Rathbun, Bull. Mus. Comp. Zool. Harvard, lii. 1910, p. 314, pl. vi.

Third segment of antennular peduncle hardly longer than second, its width more than two-thirds of its length. Penultimate segment of antennal peduncle just reaching tip of scale, one and a half times as long as distal segment. Spiniform teeth on fingers of larger cheliped lying in the plane of the fingers. Palm of smaller cheliped less than half as long as the fingers. Dactylus of second and third peræopods equal or nearly so to upper border of palm.

*Holotype*: female, total length 174 mm., in Zoological

Museum of University of St. Andrews, "Off Yenoshima, Odawara Bay, Japan, 200 fathoms, July 1898, Mr. W. Balsillie." Length of carapace and rostrum 62 mm.; of larger chela 118 mm.; of smaller chela 56 mm. This specimen is the largest yet recorded in the genus.

The spines on the antero-lateral regions of the carapace are more numerous than in *Th. zaleucus*. The raised line which marks the anterior margin of the carapace shows on each side of the base of the rostrum an orbital bay, which, however, is smaller and more concealed by overlying fur than in the type of *Th. zaleucus*. The rostrum is turned upwards at the tip, not downwards as in Doflein's specimen, and there are about five pairs of marginal spinules concealed in the shaggy fur that covers it. The dorso-lateral ridges of the abdomen, which in *Th. zaleucus* are dentate or tuberculate on all the somites, are so here only on the first three, becoming low and smooth on the last three somites.

The arrangement of the teeth on the fingers of the larger cheliped requires further description. In *Th. zaleucus* (fig. I.) the teeth are set in a single row—that is to say, with their bases in line—for the greater part of the length of the fingers, but they slope alternately to either side of the plane in which the two fingers lie, so as to form two rows at an angle of about  $30^{\circ}$  with each other. Towards the proximal end of the fingers the bases of the two rows begin to move apart, and the arrangement becomes truly biserial. Throughout the greater part of each row large and small teeth alternate in regular order, so that the periodic arrangement, taking both rows together, may be represented by the formula A A B B A.

In *Th. japonicus* (fig. II.), on the other hand, the teeth are in a single row, and all lie in the plane of the fingers; they are of four orders of size, and are arranged with beautiful regularity (which only becomes disturbed towards the base and tip of each finger) in periodic sequence agreeing with that observed by Stahr\* and by Herrick† in the chelæ of the lobster. The sequence may be represented by the formula A D C D B D C D A. At the proximal end of the immovable finger is a single tooth set out of the line of the others and pointing obliquely towards the side that is ventral when the chela is extended. This tooth apparently corresponds to one

\* Jenaische Zeitschr. xxxiii. 1898, p. 457.

† Bull. Bureau Fisheries, Washington, xxix. 1909, p. 260

which, in *Th. zaleucus*, seems to be in series with the ventrally directed row, though it is larger than its neighbours and a little more inclined than they are.

The specimens described by Doflein and Miss Rathbun are identified with the species here described not only on account of the locality whence they were obtained, but also because the figures given by these authors show the teeth of the larger chela arranged as in the St. Andrews specimen. It is to be noted, however, that Doflein's figure shows the palm of the smaller cheliped to be more than half the length of the fingers. If this be correct, the character in question should be omitted from the specific diagnosis, or qualified by the words "in the female." In Doflein's figure, also, the smaller

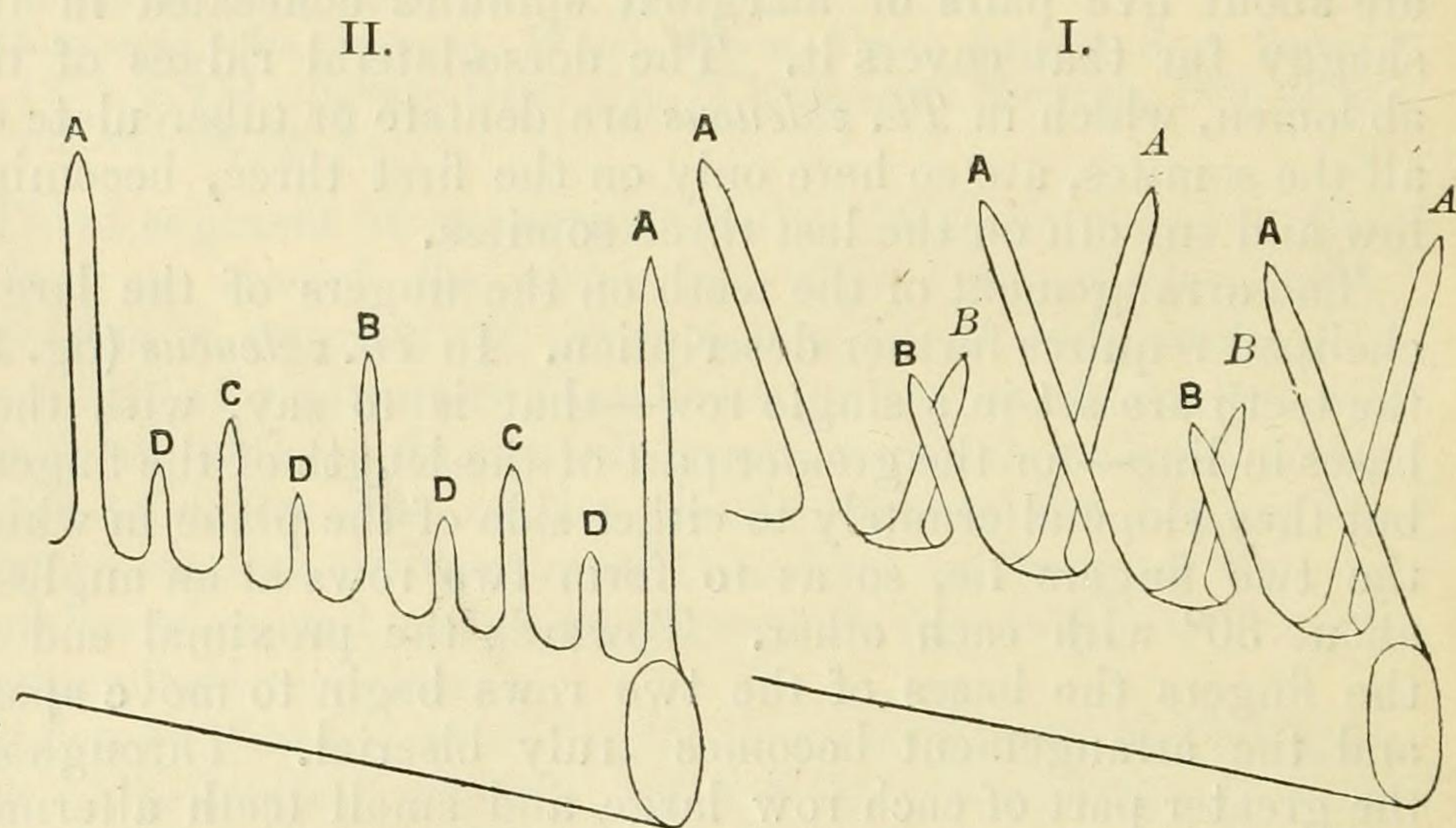


Diagram (not drawn to scale) showing arrangement of teeth on finger of large cheliped: I. *Thaumastocheles zaleucus*; II. *Th. japonicus*.

chela is nearly straight, as it is in the type of *Th. zaleucus*, while in the St. Andrews specimen of *Th. japonicus*, as in the photograph given by Miss Rathbun, the immovable finger is bent outwards so as to form an obtuse angle with the palm. In both species the last pair of peræopods are minutely but perfectly chelate. This character is apparently not confined to the female sex, as Spence Bate suspected it might be, since Doflein states that in the male specimen examined by him "Die Pereiopoden sind vollkommen wie nach der Beschreibung von Bate beim ♀."

In the female of both species there is, on the sternal surface of the thorax, between the bases of the penultimate pair of legs, a trilobed structure which, from the analogy of the

common lobster, is probably a *thelycum* or *receptaculum seminis*. It resembles that of the lobster \* in general form, but differs a little in the two species. In *Th. zaleucus* the posterior unpaired lobe (no doubt the "triangular pectoral plate" of Willemoes-Suhm's account) is relatively large and its anterior angle is acute, while the anterior paired lobes are depressed in the middle line; in *Th. japonicus* the posterior lobe is smaller, its anterior angle is obtuse, and the anterior lobes are elevated in the middle. It is possible, however, that these differences may not be specific, but may be due to differing degrees of maturity.

XXVIII.—*Descriptions of new Species of Mollusca.*

By G. B. SOWERBY, F.L.S.

[Plate III.]

THE eight Japanese species described in this paper, together with the six appearing in my last (*Ann. & Mag. Nat. Hist.*, June 1913), were collected and sent over by Mr. Y. Hirase, whose diligent researches have added much to our knowledge of the molluscan fauna of Japan. He has also recently built and furnished an excellent conchological museum at Kyoto.

*Glyphostoma glabriplicatum*, sp. n. (Pl. III. fig. 1.)

Testa elongata, albida, solidiuscula; spira elato-turrita; anfractus 9, convexi, gradati, spiraliter subtilissime striati, longitudinaliter plicati; plicis 8, crassiusculis, rotundatis, glabratis; anfractus ultimus brevis, infra contractus, brevirostratus; apertura brevicula; peristoma ad marginem acutum, extus crassivaricosum, intus plicatum; sinus posticus arcuatus, mediocriter profundus, latiusculus; columella rectiuscula, leviter plicata; canalis brevis, infra expansus.

Long. 14, maj. diam. 4 mm.

*Hab.* Osumi, Japan.

Shell with a short body-whorl and high turritid spire; the outer lip thickened by a strong varix, edge acute, interior of the aperture on both sides closely plicate.

In its general aspect this shell is very like *G. aliciae*

\* Calman, "Crustacea," Lankester's 'Treatise on Zoology,' 1909, p. 291, fig. 169.