

# THE ANNALS

AND

## MAGAZINE OF NATURAL HISTORY.

[FIFTH SERIES.]

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“..... per litora spargite muscum,  
Naiades, et circum vitreos considite fontes:  
Pollice virgineo teneros hinc carpite flores:  
Floribus et pictum, divæ, replete canistrum.  
At vos, o Nymphæ Craterides, ite sub undas;  
Ite, recurvato variata corallia trunco  
Vellite muscosis e rupibus, et mihi conchas  
Ferte, Deæ pelagi, et pingui conchylia succo.”  
*N. Parthenii Giannettasi Ecl. 1.*

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I.—*Observations upon Professor Ernst Haeckel's Group of the "Physemaria," and on the Affinity of the Sponges.* By W. SAVILLE KENT, F.L.S., F.Z.S., &c.

It was scarcely to be expected that Mr. Carter would quietly surrender into Prof. Ernst Haeckel's hands, for the further exposition of his celebrated "Gastræa" theory, that interesting organism, *Squamulina scopula*, which he (Mr. Carter) a few years since pronounced, and still holds, to be a Foraminifer. The brusque and, it must be admitted, somewhat discourteous manner in which the learned professor disposes of Mr. Carter's arguments in support of the view which he adopts has also naturally led to the protest that appears in the last October number of the 'Annals.' In this protest, however, Mr. Carter does not appear to have made the most of his own position, nor, indeed, to have clearly defined the one maintained by Prof. Haeckel.

Though unable at the present moment to refer to the article which has so greatly perturbed Mr. Carter's equanimity, I was fortunate enough to obtain in May of this present year, and still have by me, a copy of Prof. Haeckel's 'Biologischen Studien,' zweites Heft, 1877, containing a chapter entirely devoted to the consideration of the so-called *Squamulina scopula* and its supposed allies. It is upon these forms collectively that the author bestows the title of the *Physemaria*;

III.—*Notes on Sessile-eyed Crustaceans, with Description of a new Species.* By the Rev. THOMAS R. R. STEBBING.

[Plate V.]

*Caprella fretensis*, n. sp. (Pl. V. fig. 1.)

The head of this species has a small rostrum, acute in appearance when viewed laterally, but obtuse when seen from above. The eyes are small, ovate, slightly protuberant within the narrow bounds of the head, which is distinguished from the first pereion-segment only by a minute groove above, the sides being continuous and converging backwards to the junction of the first with the second segment; the latter is long and narrow, widest near its termination, where it receives the insertion of the second gnathopods. The third, fourth, and fifth segments are considerably shorter than the second; in one specimen they are also decidedly shorter than the combined head and first segment, but in another specimen they are nearly equal to them; the third and fourth segments are widest at the branchial vesicles, the fifth at the end where the legs are attached; the sixth segment is the widest of all, but only about half the length of the fifth; the seventh is no longer than the sixth, and much narrower. The pleon is half concealed by the hinder margin of the last pereion-segment; it occupies about a third of the width of that margin, beyond which can be seen a pair of minute style-like processes or one-jointed pleopoda, and between these a more conspicuous pair with short convergent peduncles and divergent oval rami.

The upper antennæ have the first joint longer than the head, and stout by comparison with that somewhat insignificant organ. The second joint is much longer, the third somewhat shorter than the first; the second is a little, and the third a good deal furred on the under margin, chiefly towards the distal end. The flagellum, of fourteen articulations pretty uniform in length, tapers gradually to a point; almost all the articulations carry two "olfactory" filaments. The lower antennæ do not reach to the end of the second joint of the peduncle of the upper. The first portion that projects distinctly from the head is a very short joint; to this succeeds one twice its length, but still short. The next is nearly double these two combined, more slender, curved, and ornamented with two rows of cilia beneath. The next portion is still longer and has longer fringes. The piece that succeeds to this is of equal length but diminished breadth and shorter fringes. Lastly follows a short, narrow, unfringed piece,

tipped with two or three short, hooked, compound setæ. The cilia of the fringes just mentioned appear to be finely plumose. The first gnathopods are inserted just below the eyes; so that the dorsal groove-line, which marks the termination of the head, is well to the rear of them. Of these limbs the basos is narrow, scarcely so long as the hand; the two following joints are short and insignificant; the wrist is also short, but broad and cup-shaped. The hand is well developed, longer than broad, swollen out, except at its junction with the finger; here and along both edges it has a good crop of bristles. Its ventral surface also shows some very short stiff-looking down, and near the base two stout divergent spines, between which the finger closes down. The finger itself is broad, as long as the hand; its outer edge curved, its inner edge nearly straight, serrated with blunt serrations. The whole gnathopod is very small. Not so the second pair, although in these the thigh is scarcely longer than the breadth of the second segment. The wrist also is a small rectangular piece, almost square; but the hand is of great size, nearly as long as the segment to which the limb is attached. The narrowest part of this elongate hand is at the base; the anterior margin is nearly straight. The hinder margin is broken a little beyond the middle by a triangular process surmounted by a small spine; beyond this process the margin runs on with some slight sinuosity to its angular termination, where it turns to meet the finger-joint. The massive finger is set on at right angles to the anterior margin; and when it is closed the great swelling curve of its outer edge is brought round into the recess formed by the process above mentioned; while, under the same circumstances, the convex portion of its inner curve is overlapped by the distal angle of the hand. The portion of the hand between the distal angle and the triangular process is furred with long hairs. The branchial vesicles are narrowly ovate. The fifth, sixth, and seventh pairs of legs scarcely differ in any respect except size, the sixth being larger than the fifth, and the seventh than the sixth. In the seventh the thigh is nearly as long as the segment to which it is attached; the following joint is quite small; the triangular metacarpus is about the same size as the thigh, and carries a small group of setæ on the distal exterior angle; the wrist is shorter, somewhat squared in shape, but broadest distally; it has pairs of short setæ or spines along the inner edge: the hand is twice the length of the wrist; it has a concave palm commencing at a third of its length from the wrist, with two broad, blunt, serrated spines at its origin, and four pairs of spines along its edge, which, when highly magnified, seem

to be more or less finely pectinate, with whip-like ends. The back of the hand carries three or four groups of setæ. The finger is strong and curved, and matches the palm in length.

This species bears a strong general resemblance to *Caprella æquilibra*, as described by Messrs. Bate and Westwood; but, whereas in that species "the head is round and unarmed," here the head has a small rostrum; in that the second pereion-segment "is armed inferiorly, in the ventral median line, with a long straight tooth," of which there is no trace in the present species. In *Caprella æquilibra* the hands of the second gnathopods have the palms two thirds of their length, instead of less than half, and are figured with the greatest width near the base, while in our species the hands, contrary to what is usual among the Caprellidæ, widen distally. The third, fourth, and fifth segments are not unusually short as in *C. æquilibra*.

The two specimens which have supplied the above details were dredged at Salcombe in August 1875, in the estuary, whence the specific name.

The pair of spines at the palm of the hinder legs seem to be correlated in an interesting manner with the generic distinctions which have been established by various authors in the family of the Caprellidæ. Thus, in both the known forms of *Proto* they are placed at the origin of the palm, are rather slender, with the inner margin very finely pectinate, and terminate in a strong, though slightly curved, double hook. In *Protella* of Dana and Spence Bate, = *Ægina* of Krøyer and A. Boeck, the species *P. phasma* has them at the base of the palm as in *Proto*, but short and simple, except for one minute notch not far from the apex. In *Caprella acanthifera* of Bate and Westwood, the *Æginella spinosa* of A. Boeck, they are long and slender, situated more than halfway down the inner margin of the hand, and have the distal portion of their own inner margin finely serrate. They are both preceded and followed by other pairs of finely pectinate spines with whip-like ends. In the accepted species of *Caprella*, as far as I have had an opportunity of examining them, namely in the forms known as *C. linearis*, *C. lobata*, *C. tuberculata*, *C. acutifrons*, as well as in the new species just described, the pair of spines under discussion agree in position at the origin of the palm, and are alike in being more or less boldly serrate on the inner margin, while they exhibit slight specific differences in regard to comparative length, breadth, and bluntness. Finally *Caprella typica* of Spence Bate, = *Podalirius typicus* of Krøyer and of A. Boeck, is

*Ann. & Mag. N. Hist. Ser. 5. Vol. i.* 3

described as having the joints of the hinder legs slender, naked, and destitute of spines. A specimen in my possession, of *C. lobata*, has on one side of one of its hands an extra spine, illustrating the possibility of variation in an animal not under domestication.

*Stimpsonia chelifera*, Spence Bate. (Pl. V. figs. 2 & 3.)

This species has been already figured and pretty fully described by Mr. Spence Bate in his Museum Catalogue, and by Messrs. Bate and Westwood in their well-known work. Nevertheless the examination of several specimens taken on the shores of Torbay has brought to light some peculiarities that seem well worthy of notice.

The secondary flagellum of the upper antennæ is not uniaarticulate, but two-jointed, the second articulation being rather the longer, and the two together slightly exceeding in length the first articulation of the principal flagellum. In the lower antennæ there is a character which appears to develop itself only in the adult male. The long penultimate joint of the peduncle is at the base as deep as the thick deep joint which precedes it; this dilatation is slight on the upper margin, where it affects the whole thickness of the joint, but is considerable on the lower margin, where it takes the form of a large flattened lobe. The preceding joint has its distal margin more or less deeply indented in all specimens, as if prepared to give a suitable holdfast to its dilated successor; but from the variety of the dilatations themselves it may be inferred that they are only acquired in very advanced age.

In the first gnathopods the long infero-distal process of the wrist varies greatly in length, sometimes not reaching nearly to the extremity of the hand. In the space between this process and the hand, but nearer to the latter than the former, there is a small tooth, with long setæ springing from both sides of it. Three or four transverse rows of setæ line the lower margin of the wrist. The inner margin of the hand does not follow the uniform curve of the outer margin, but, beginning with a concavity, bulges centrally; it has three rows of setæ. There are three other groups on the inner face of the hand, and two groups on the outer margin, one centrally, the other distally placed. The coxæ of these gnathopods have the infero-anterior angle produced under part of the lower margin of the head.

The second gnathopods have a small process at the anterior distal angle of the basos. The almost rectangular metacarpus has its distal margin fringed with setæ of various lengths, without regularity in the line of insertion; along its lower

margin the elongated wrist is adorned with several transverse rows of adpressed setæ. There is one row away from the margin near to the junction of hand and wrist. The lower margin of the hand exhibits similar rows of setæ; the waved palm is set with cilia on both sides. In respect of this second pair of hands the Torbay specimens, with more or less variation among themselves, differ all of them from that described by Mr. Spence Bate from Salcombe. The thumb-like process curves in towards the finger instead of out and away from it; its inner edge is perfectly simple, without any of the semispiral grooving figured by the author just mentioned; it has a quite blunt or truncate extremity, within which is inserted a strong, bent (or in some cases straight), movable spine. The length of the thumb seems to depend on the age of the animal, that specimen in which it is longest having other marks of advanced life upon it: thus, the wrist-process of the first gnathopods is very long, the finger-points of the second gnathopods are worn, and the penultimate joint of the lower antennæ has the large dilatations before described. A specimen in my collection, unobservantly assigned to *Aora gracilis* till its true character was detected by the Rev. A. M. Norman, has an interesting peculiarity in this second pair of gnathopods. One is of the usual form; but the other has the palm nearly straight, not waved, without any thumb or terminal hinged spine. This is an approach to the character of the female. The gnathopods of the female differ very considerably from those of the male. The two pairs are very similar in general construction; but the first are much the larger. In both, the hands are subequal to the wrists or a little larger. The hands and wrists are fringed on the lower margin as in the male. Both these joints are broad, and about twice as long as they are broad. There is no process to the wrist, or thumb to the hand, but at the lower extremity of the palm a movable spine in both pairs of gnathopods. The finger is internally serrate in each; and that of the first gnathopods considerably overlaps the palm.

There is on the whole a close resemblance between the female of this species, the female of *Aora gracilis*, and the female of *Microdeuteropus anomalus* as figured and described by Messrs. Bate and Westwood.

The pereopoda are alike in both sexes. The first two pairs have the metacarpus and wrist much broader than the hand; the hand narrows distally. In the three following pairs, of which the last is considerably the longest, the wrist is shorter than either metacarpus or hand. At the extremity of the hand there is a long bunch of cilia. The telson, seen

from above, has the hinder margin rounded in the middle, but produced to an angle on each side of the convexity, neither of these divisions being produced beyond the other. On each of the angular portions there is an upright hair. The peduncles of the last uropods are short and thick, with three little close-set spines distally; they extend but a little way beyond the telson. Each peduncle carries a pair of equal branches scarcely longer than itself.

*Cyclura venosa*.

I take this opportunity of noticing that *Cyclura venosa* from Australia, described in the Linnean Society's Journal, Zoology, vol. xii. p. 146, pl. vi., should be called *Cycloidura venosa*, the original name having been given in ignorance of its previous appropriation in another domain of zoology.

*Arcturus linearis*.

This species has been figured and described in the 'Transactions of the Devonshire Association' for 1874, but there wrongly named *Arcturus gracilis*, whereas it is a perfectly distinct new species. The specific name now chosen refers to the close resemblance between this product of the Devonshire waters and the *Arcturus lineatus* from Algoa Bay, South Africa, described in this Magazine, August 1873.

*Callimerus acudigitata*.

This species was described in this Magazine, in December 1876, both genus and species being new. It has been suggested to me that the generic characters ought to be separately stated; they are as follows:—Antennæ subequal; superior antennæ without secondary appendage; first pair of gnathopods simple; second pair having the carpus infero-anteriorly produced, the coxæ of the second pair covering those of the first. Penultimate pleopoda shorter than either of the other pairs. Telson simple.

EXPLANATION OF PLATE V.

*Fig. 1. Caprella fretensis*, n. sp. 1 *a*. Natural size in linear measurement. 1 *b*. Side view of head. 1 *c*. Pleon, seen from above. 1 *d*. Last segment of the pereion with the pleon, seen from below. 1 *e*. Ventral view of the pleon, more highly magnified. 1 *f*. Terminal portion of upper antenna. 1 *g*. Lower antenna. 1 *h*. Terminal portion, more highly magnified. 1 *i*. Maxilliped, seen from below. 1 *j*. First gnathopod. 1 *k*. Inner face of the same, more enlarged. 1 *l*. Second gnathopod. 1 *m*. Fifth leg. 1 *n*. Seventh leg. 1 *o*. Portion of palm of ditto, showing the

pair of serrate spines. 1 *p.* One of the serrate spines, highly magnified.

*Fig. 2.* *Stimpsonia chelifera*, Spence Bate. 2 *a.* Portion of upper antenna, showing secondary flagellum. 2 *b.* Mandible. 2 *c.* Maxilla. 2 *d.* Maxilliped. 2 *e.* Second gnathopod.

*Fig. 3.* Tail-piece of *Stimpsonia chelifera* (another specimen), seen from above. 3 *a.* One of the first gnathopods. 3 *b.* One of the second gnathopods. 3 *c.* The other of the second gnathopods.

#### IV.—On the Young of *Pityriasis gymnocephala*.

By Dr. F. BRÜGGEMANN.

THE sexes of this remarkable Bornean bird are known to differ in the colour of their plumage, the female showing some red spots on the abdomen. A *young* female, sent by Dr. George Fischer from Moeara Teweh, interior of S.E. Borneo, shows several peculiarities, which I think worth drawing attention to. Comparing it with the adult male, a specimen of which was also procured in the same locality by Dr. Fischer, the signs of its immaturity are found in the smaller terminal hook of the upper mandible, in the absence of horny tips to the feathers of the hind neck, in the lower stage of development of the rigid feathers on the fore neck, in the pale horn-colour of the feet and nails (the adult having the former yellowish and the latter blackish), and in the sooty-black (not deep-glossy-black) plumage. The narrow velvety edgings of the black feathers are also less pronounced; and the red colour in the plumage is a shade lighter than in the adult, rather scarlet than crimson.

All this is, of course, nothing curious; but the following characters were scarcely to be expected:—The crown of the head is entirely *bare*, without any trace of the papillæ with which it is crowdedly covered in the adult; of the large tuft of rigid brownish grey feathers in the auricular region there is no indication, the feathers on this spot being of *normal* structure and *red*, like the rest of the head-feathers; breast, belly, and flanks are scarlet-red, somewhat mixed, in an irregular way, with black, the basal part of the feathers, or the whole feather, excepting a broad border, being generally blackish; it may be observed that the red edgings, which are much decomposed, are gradually worn off. The red colour decreases in extent on the abdomen, where it is confined to the tips of the feathers. There are also traces of red edgings on the scapularies and wing-coverts. The thigh-feathers (which are of a uniform red in the adult) are black, mixed only in the upper part of the thigh with some red ones.



