

## XIII.—On some Arctic Species of Calanidæ.

By JOHN LUBBOCK, Esq., F.Z.S.

[With a Plate.]

AMONG the Crustacea collected by Dr. Sutherland in the Arctic Ocean, during the late cruise of the *Isabel*, commanded by Captain Inglefield, are the following species of Entomostraca:—*Arpacticus uniremis*, Gaimard?; *Anomalocera Patersonii*, Templeton; *Calanus arcticus*, Baird; *C. magnus*, n. s.; *C. borealis*, n. s.; *C. plumosus*, n. s.; *C. elegans*, n. s.; *C. longus*, n. s.

Gaimard has figured, but not yet described, the above-mentioned *Arpacticus*, so I do not feel quite sure about the species.

Unluckily I have not been able to find the eyes in any of these species of *Calanus*, for the spirits of wine seem to have removed all traces of them. Considering that *C. arcticus* was the only one as yet described from that part of the world, the large proportion of new species is not surprising.

*Calanus magnus*, n. s. Frons rotundatus. Cephalothorax magnus, 6-articulatus, postice rotundatus, in medio acutus. Antennæ anticæ corpore paulo longiores, setis longis. Abdomen 4-articulatum, stylis brevibus. Pedes biremes primi, ramis 3-articulatis; quinti ramis 2-articulatis.

Long.  $\frac{2}{5}$  unc.

Hab. Mare Arct. N. Lat.  $76^{\circ} 10'$ – $77^{\circ}$ , W. Long.  $60^{\circ} 6'$ – $71^{\circ} 37'$ .

This species may at once be distinguished from all Dana's species, both of *Calanus* and *Rhincalanus*, by having 6 cephalothoracic and 4 abdominal segments, long antennary setæ, and the 4 posterior cephalothoracic segments of unequal size. The species figured by Gaimard in his 'Voyage en Scandinavie' all have the cephalothorax rounded behind, and in *Cetochilus septentrionalis* the head forms a distinct segment. The general shape of the cephalothorax seen from the side is a long ellipse, the second segment being the broadest part. The anterior segment is much the largest, then the second, and after that the others gradually decrease in length as well as in breadth. The posterior is rounded and obtusely pointed in the centre. It is the largest species of *Calanus* that I know.

The anterior antennæ are a little longer than the body, and about 24-jointed. The fourth segment, counting from the apex, has a small hair on each side at the apex. The third has two small ones on the anterior, one of which as usual is lanceolate, and one long one on the posterior side at the apex. The second has a long one on each side, that at the posterior being however the largest. The apical segment bears several rather long hairs.

The second pair of antennæ consists as usual of a basal part and two rami, which are nearly of equal size. The largest is 2-jointed. The basal segment bears two long hairs on one side and a little tuft of shorter ones on the other. This little tuft is present also in all the *Calani* I have been able to examine, in *Diaptomus Castor*, and in a South American *Diaptomus* not as yet described. The apical segment bears about 12 long hairs. The second branch consists of about 7 segments, only partially divided from one another, of which the first and the last are the largest. There are 3 long hairs at the apex and about 9 along the margin.

The second pair of maxillæ are a somewhat triangular plate, which shows traces of being divided into 3 segments, and bears about 20 setose hairs.

The third pair of maxillæ, or first pair of feet according to Dana, are cylindrical, and consist of 7 segments gradually decreasing in size.

All these organs are attached to the first cephalothoracic segment, the other 5 each bear a pair of natatory legs.

The natatory legs consist each of a 2-jointed basal part and 2 rami. In this species the rami of the first pair each have 3 joints, and the outer one is rather longer than the inner (Pl. V. fig. 6).

The rami of the fifth pair are reduced to 2 segments, and the basal part is armed on its inner margin with a row of short stout teeth (fig. 1).

The abdomen has 4 segments, of which the anterior is the largest, and the second next. The lamellæ are not much longer than the last segment.

Colour ?

*C. plumosus*, n. s. Frons rotundatus. Cephalothorax magnus, 6-articulatus, postice rotundatus, in medio acutus. Antennæ anticæ corpore paulo longiores, setis longis. Abdomen 4-articulatum, stylis brevibus. Pedes biremes primi, ramis 4-, quinti ramis 3-articulatis.

Long.  $\frac{5}{10}$  unc.

Hab. Mare Aret. N. Lat. 77°, W. Long. 71° 37'.

This species much resembles the preceding. The second maxillæ, mandibles, and maxillipeds are similar. The second pair of antennæ differ in having another small segment at the apex of the larger ramus. The hair at the apex of the penultimate segment is about the same size as the rest, while in *C. magnus* it is much longer than the corresponding hair of the preceding segments.

The first pair of natatory legs (fig. 4) have 4 segments to

each ramus, and the secondary setæ are larger than in the other species. The inner side of the large ramus also in all the legs has on the second segment a row of short hairs resembling the setæ on the longer ones.

The fifth pair (fig. 5) have the rami 3-jointed. They have small spines on the base like the corresponding pair of legs in *C. magnus*.

Colour ?

*C. borealis*. Frons rotundatus. Cephalothorax magnus, 6-articulatus, postice rotundatus, in medio acutus. Antennæ anticæ corpore paulo longiores, setis longis. Pedes biremes antici, ramis 2-articulatis; postici unum tantummodo segmentum habent. Abdomen 3-articulatum, stylis brevibus.

Long.  $\frac{1}{4}$  unc.

Hab. Mare Arct. N. Lat.  $76^{\circ}$ - $78^{\circ}$  40', W. Long.  $70^{\circ}$ .

The apical hairs of the anterior antennæ are short. The posterior antennæ resemble those of *C. magnus* (Pl. V. figs. 2, 3).

Colour ?

*C. elegans*. Frons rotundatus. Cephalothorax angustus, 6-articulatus, postice rotundatus. Antennæ anticæ corpore paulo longiores, setis longis. Pedes biremes primi ramis 2-articulatis, ultimi maris unum tantummodo segmentum habent; fœminæ pedes postici parvissimi. Abdomen 2-articulatum.

Long.  $\frac{1}{9}$  unc.

Hab. Mare Arct. N. Lat.  $62^{\circ}$  11', W. Long.  $52^{\circ}$ .

This species appears only to have occurred in one place, where it was abundant. The individuals are all about the same size, and I do not think it can be the young of any other species (Pl. V. figs. 7, 8, 9).

Colour ?

*C. longus*. Frons rotundatus. Cephalothorax 5-articulatus, postice obtusus sed non rotundatus. Antennæ anticæ corpore breviores, setis brevibus, apicalibus tamen longis. Pedes biremes antici ramis 3-articulatis. Pedes postici minimi. Abdomen longum, angustum, 3-articulatum.

Long.  $\frac{1}{6}$  unc.

Hab. Mare Arct. N. Lat.  $76^{\circ}$ - $76^{\circ}$  30'.

Of this species there are only three specimens, but it is very distinct from any of the others; the length of the abdomen being its most striking characteristic.

The anterior antennæ are about as long as the cephalothorax,

and slender; all the hairs are short except two, one on each side of the apical segment.

The second antennæ have the 6-jointed ramus rather longer than the other.

The third pair of maxillipeds are rather small, and consist of 6 segments, of which the basal has 10 setose hairs arranged by pairs.

The natatory legs increase in size from the first, which are only  $\frac{1}{30}$  inch in length, to the fourth, which are  $\frac{1}{7}$ th. The rami are 3-jointed.

The fifth pair (fig. 10) are small,  $\frac{1}{80}$  inch in length. They consist of a basal segment, then a swollen part, which appears to represent the second basal segment; then a narrower part, probably homologous with the larger or outer ramus. It has a constriction in the middle, and bears three hairs at the apex, and a short one externally at the middle.

The abdomen 3-jointed, long, without the lamellæ  $\frac{1}{20}$  of an inch in length; the lamellæ themselves are  $\frac{1}{80}$ , *i. e.* as long as the preceding abdominal segment, and each bears 5 plumose setæ, 4 at the end and 1 on the external side.

In the basal segment of the abdomen is an oblong vesicle; it is present in all the species, but is very conspicuous in this one. I neither know its structure nor its use, but from its position, I imagine it is connected with generation.

In passing I may remark, that Dr. Sutherland collected *C. arcticus* from N. Lat.  $59^{\circ}$  to  $78^{\circ} 30'$ , and from W. Long.  $29^{\circ} 30'$  to  $71^{\circ} 37'$ . In several cases Dr. Sutherland remarks, that when none were caught at the surface, after sinking the dredge two or three fathoms, "hundreds were obtained in a few minutes." The colour is red.

These species are on an average  $\frac{1}{4}$  of an inch in length, which is much larger than the average of the whole genus. The Arctic seas therefore seem very favourable to the development of the genus *Calanus*. The colour had in every specimen completely disappeared.

*Note.*—There is some confusion about the name *Calanus*. The genus was founded by Leach, with the type *C. Finmarchicus*, on erroneous characters. Dr. Baird, however, finding, that though Leach's reasons were ill-founded, others made it necessary to erect it into a new genus, dropped Leach's name *Calanus* and adopted a new one, *Temora*, for the same species. Dana in his work on Crustacea uses the name *Calanus*, as I have done in this paper. It is however doubtful whether the species which he and I have referred to *Calanus*, really belong to the same genus as *C. Finmarchicus*; there are no specimens of it in the British

Museum, but Dr. Baird thinks that the rostrum is not furcate like that of *Cetochilus*. Prof. Dana has no doubt that they are similar in this respect, but separates them because the eyes are in *Calanus* close together, in *Cetochilus* at opposite sides of the head. If Dr. Baird is right, then the above-described species will be *Cetochili*; or if they differ as to the eyes, will form a new genus. Till these points are decided, it will be convenient to consider them to be *Calani*. Dr. Baird referred *C. arcticus* to *Cetochilus* on account of its forked rostrum.

EXPLANATION OF PLATE V.

Fig. 1.	Fifth pair of natatory legs of	<i>Calanus magnus</i> .
— 2.	First ditto	<i>C. borealis</i> .
— 3.	Fifth ditto	<i>C. borealis</i> .
— 4.	First ditto	<i>C. plumosus</i> .
— 5.	Fifth ditto	<i>C. plumosus</i> .
— 6.	First ditto	<i>C. magnus</i> .
— 7.	Fifth ditto of the male of	<i>C. elegans</i> .
— 8.	Fourth ditto of the female of	<i>C. elegans</i> .
— 9.	Third pair of maxillipeds of	<i>C. elegans</i> .
— 10.	Posterior legs of	<i>C. longus</i> .
— 11.	Abdomen and posterior part of the cephalothorax of	
	<i>C. magnus</i> .	

XIV.—Description of a new Genus and Species of British Curculionidæ. By T. VERNON WOLLASTON, M.A., F.L.S.

Genus PENTARTHURUM, Woll.

*Corpus* angusto-cylindricum, sculpturatum, *Cossoni* formam simulans, sed ab illo certe distinctum: *capite* subporrecto; *rostro* prothorace parum brevior, parallelo, tereti, sat gracili, subrecto; *scrobe* parum profunda, decurva, usque ad oculorum marginem inferiorem retrorsum ducta; *oculis* parvis, rotundatis, lateralibus, leviter prominulis: *prothorace* elongato, subconico, mox pone apicem subito transversim constricto, necnon ad basin ipsam marginato: *scutello* minuto, subrotundato: *elytris* parallelis, ad apicem ipsum leviter acuminatis et singulatim subrotundatis. *Antennæ* breves, robustæ, versus medium rostri (in utroque sexu, nisi fallor) insertæ; *scapo* subrecto (vix incurvo), leviter clavato; *funiculo* 5-articulato, articulis latitudine vix crescentibus, 1<sup>mo</sup> et 2<sup>do</sup> sub-obconicis, 3<sup>o</sup>, 4<sup>to</sup> et 5<sup>to</sup> paulo brevioribus, transverso-obconicis; *capitulo* rotundato-ovato, solidissimo (articulis ægre observandis), piloso, necnon ad apicem spongioso. *Pedes* breviusculi, robusti, ad basin valde (præsertim *posteriores*) distantes: *femoribus* clavatis, muticis: *tibiis* rectis, ad apicem externum in uncum magnum robustum acutum inflexum productis: *tarsis*

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