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XLIV.—On *Pherusa fucicola* (Leach).

By ALFRED O. WALKER.

THE confusion that has arisen about this species is so great that it appears worth while to make an effort towards clearing it up. It was first described by Leach in 1814 in the 'Edinburgh Encyclopædia,' vol. vii., art. Crustaceology, and in the Trans. Linn. Soc. vol. xi. part 2, 1815, p. 360. In the latter he describes the genus *Pherusa* as follows:—"Antennæ superiores setâ nullâ ad articuli quarti basin. Cauda superne haud fasciculato-spinosa. Manus filiformes." The only species, *P. fucicola*, is described as follows:—"P. testaceo-cinerea aut griseo-cinerea rubro-varia. Habitat inter fucos in Danmoniaë australis mari rarius." The definition of the genus only differs from that of *Amphithoë* (as pointed out by Stebbing in his invaluable 'Challenger' Bibliography) in the substitution of "manus filiformes" for "manus ovatæ."

In the 'Encyclopædia Britannica,' 1816, Supp. pl. xxi. *Pherusa fucicola* is figured. The first gnathopods are very slender, while the second are much longer, the wrist and hand together forming an elongated oval, of which the wrist occupies more than one third the length. It cannot be said that this figure agrees with Leach's definition of the genus ("manus filiformes") or of the Subdivision II. in which he places it, the definition of which is "*Pedum paria duo antica in utroque sexu monodactyla conformia.*" Only one other Amphipod is figured, viz. *Melita palmata*, Montagu. This has no secondary appendage to the upper antennæ and no finger on the hand of the second gnathopod. These figures therefore are of little or no scientific value.

Desmarest ('Considérations sur la Classe des Crustacées, p. 268, pl. xlv. fig. 10) translates Leach's description and gives a figure which appears to be an indifferent copy of that in the Encycl. Brit., the hand of the second gnathopod being again large and ovate.

Milne-Edwards (Hist. Nat. des Crustacées, 1840, vol. iii. p. 32) says that *Amphithoë fucicola*, Leach, is distinguished by the great inequality between the first two pair of feet, the first pair being filiform and the second, though much thicker ("plus grosses"), being still slender ("grêles") and elongated. This description seems to be founded on the figure in the Encycl. Brit. and not on Leach's description. Milne-Edwards does not appear to have seen the species.

In 1857 Costa ('Amfipodi del Regno di Napoli,' p. 209, pl. iii. fig. 2) described *Amphithoë micrura*, adding that it

seems "very near to *Pherusa fucicola*; but if the figure given by the authors"—he does not say what authors—"is exact, ours differs from it by the first two pair of feet being equally small." These had been previously described as "filiform." He also says of the abdominal segments, "furnished on the back with a short and delicate spine near the base of the fifth segment, and another on the posterior margin of the sixth observable when highly magnified."

In 1862 Spence Bate ('Catalogue of the Specimens of Amphipodous Crustacea in the British Museum,' p. 145, pl. xxvii. fig. 10 [not fig. 9, as stated both in text and plate]) describes *P. fucicola*, Leach. He had previously stated that the genus *Pherusa* differs from *Atylus* only in having an entire instead of a cleft telson. He refers to this species *Amphithoë Jurinii*, M.-Edw., and *A. fucicola*, Leach (Milne-Edwards, Ann. des Sci. Nat. 1830, vol. xx. pp. 376, 377), notwithstanding that this author makes these two species quite distinct. Spence Bate also refers *A. microura*, Costa (v. supra), to *A. fucicola*, from which, however, it differs in the antennæ, the peduncles of both pair in Costa's species being very much longer in proportion to the flagella than in *A. fucicola* as described by Spence Bate, and in the last three pleon-segments, which appear to be extremely short in *A. microura*, while they are figured as somewhat long in Bate's figure.

We have therefore apparently here three distinct species referred to *Pherusa fucicola*, Leach, of which only one, *A. Jurinii*, M.-Edw., seems at all to agree with Spence Bate's description and figure.

In 1862 Spence Bate and Westwood published part 6 of the 'British Sessile-eyed Crustacea.' At p. 252 they repeat Bate's statement that the "chief distinction between *Pherusa* and *Atylus*" is the "entire central caudal plate" in the former genus. At p. 255 they describe and figure *P. fucicola*, Leach, "from the typical specimen of Dr. Leach in the British Museum." They admit that it "differs from the figure given in the 'Catalogue of Amphipoda in the British Museum' in a few details, the most important of which are the length of the last pair of caudal appendages and the length of the inferior antennæ." They omit to mention that the telson, as figured by them, is *deeply cleft*, and that consequently the typical species of Leach's genus *Pherusa* cannot belong to that genus as defined by Spence Bate and themselves.

By the courtesy of the authorities of the British Museum I have been able to make as careful an examination of the

specimens in that collection which are labelled *Pherusa fucicola*, Leach, as it is possible to do without dissection. There are three specimens in spirit labelled *P. fucicola*, Leach, in Spence Bate's writing. These are evidently the species described in the Brit. Mus. Cat. p. 145, as above mentioned, and differ entirely from the same species as described by Bate and Westwood in the 'Brit. Sessile-eyed Crust.' In the only specimen in which the antennæ are perfect the lower are considerably longer than the upper, though described in the Catalogue as "scarcely as long as the upper." This is not, however, of much importance, as it depends on the length of the flagellum, which varies much with age and sex in many species.

There are also three dried specimens marked *Pherusa fucicola*, Leach. These are believed to be Leach's original type specimens. They are described in the 'Catalogue of the Crustacea in the British Museum' by Adam White (1847) as being from Col. Montagu's collection.

This, as will be seen, is a matter of great importance. An examination of these specimens (which are undoubtedly those from which Bate and Westwood described their *P. fucicola*) reveals the following facts:—

1. That Leach was in error when he stated that there was no secondary appendage to the upper antennæ ("setâ nullâ ad articuli quarti basin") and that the same mistake was made by Bate and Westwood.

There is such an appendage, but, being very slender and lying close along the flagellum, it is easily overlooked.

2. That Bate and Westwood were in error in describing the "posterior pair of pleopoda" (uropoda) as "having the rami equal." On the contrary, one of the rami is reduced to a mere scale on the upperside of the other branch. It is this that forms the distal portion of the apparent double telson figured by these authors.

3. That the same authors have transposed the gnathopods—the one marked "*i*" is the first and that marked "*h*" is the second.

The consequences of these errors are far-reaching, for, on comparison with the *Gammarella Normanni* of the same authors (Brit. Sessile-eyed Crust. p. 333), it becomes evident that this is the same species. But Stebbing has shown (Ann. & Mag. Nat. Hist., July 1874) that *G. Normanni* is the female of *G. brevicaudata*, M.-Edw., which has the second gnathopods furnished with a very large ovate hand! And here I may say that the Brit. Mus. type specimens agree with Bate and Westwood's and Stebbing's descriptions of *Gamma-*

rella brevicaudata ♀ to the smallest detail. The solitary species therefore on which Leach founded his genus *Pherusa* disagrees in almost every particular both with his definition of the genus and of the subdivision in which he placed it!

Under these circumstances, and in accordance with no. 11 of Strickland's Rules for Zoological Nomenclature, adopted by a strong committee of the British Association in 1865, it seems clear that *Pherusa fucicola*, Leach, should be discarded from our lists. In this rule it is laid down that "definition is necessary before a zoological term can acquire any authority," and that "Definition properly implies a distinct exposition of essential characters, and in all cases we conceive this to be indispensable." It is certain that Leach's description of *Pherusa* does not comply with the above conditions.

There appears, however, to be no reason why the genus *Pherusa* as defined by Spence Bate in the Brit. Mus. Cat., and which, as we have seen, is entirely distinct from *Pherusa* of Leach, should not retain its place under the name of the former author.

Dismissing *P. fucicola* of Milne-Edwards and the figure of Desmarest as of no value, being founded on the erroneous figure in the 'Encycl. Britannica,' the synonymy of this species will then stand as follows:—

Genus PHERUSA, Bate, 1862.

Pherusa Jurinii, M.-Edwards.

Amphithoë Jurinei, M.-Edwards, Ann. des Sciences Naturelles, 1830, vol. xx. p. 376.

Amphithoë Jurinii, M.-Edwards, Hist. Nat. des Crustacées, iii. p. 30, pl. i. fig. 2 (1840).

Amphithoë norvegica, Rathke, Acta Academia Nat. Cur. Leopold. Carol. 1843, vol. xx. p. 84, pl. iv.

Paramphithoë norvegica, Bruzelius, Skand. Amphip. Gamm. p. 77 (1859).

Pherusa fucicola, Bate, Brit. Mus. Cat. Amphipoda, p. 145, pl. xxvii. fig. 10 (1862).

Calliope norvegica, Bate, Brit. Mus. Cat. Amph. p. 150.

Calliopius norvegicus, Boeck, Skand. og Arkt. Amphipoder, p. 348, pl. xxii. fig. 6 (1876).

Pherusa fucicola, Carus, Prod. Faunæ Mediterr. vol. i. p. 404 (1885).

It may be asked why I have not displaced *Pherusa*, Bate, in favour of the older genus *Paramphithoë*, Bruzelius. I reply that *Pleustes*, Bate, 1858, is still older, and, as amended by

Ann. & Mag. N. Hist. Ser. 6. Vol. vii. 29

Boeck, would probably answer quite as well. But a complete revision of the Pleustidæ, Atylidæ, &c. is much wanted, and until this is done I prefer to disturb existing genera as little as possible.

I have very little doubt that *Calliopius norvegicus*, Boeck, should be referred to the above species. Meinert ('Naturhistorisk Tidsskrift,' 1877-8) and Zaddach ('Meeresfauna Preuss. Küste') consider that *C. norvegicus* cannot be distinguished from *C. leviusculus*, Kröyer. In this I cannot agree with them. The two species differ completely in the antennæ, the first and second gnathopods, and the form of the hinder margin of the third pleon-segment. The nodule or tooth on the third joint of the peduncle of the upper antennæ is only found in the male.

The type specimen in the British Museum now stands as follows:—

Genus GAMMARELLA, Bate, 1857.

Gammarella brevicaudata, M.-Edwards.

[*Pherusa fucicola*, Leach?]

Amphithoë micrura, Costa, l. c. (♀).

For other synonyms see Norman, Ann. & Mag. Nat. Hist. 1889, ser. 6, vol. iv. p. 128.

It will be seen that Costa fell into the same error as Leach and Bate and Westwood in overlooking the secondary appendage of the upper antennæ both in his *Amphithoë micrura* and *A. semicarinata*.

I have to thank Dr. A. M. Norman, F.R.S., and the Rev. T. R. R. Stebbing for valuable suggestions, and Mr. R. I. Pocock, of the British Museum, for his kind assistance in the examination of the type specimens.

Colwyn Bay,
March 20, 1891.