

A NEW IDENTITY FOR THE SILURIAN ARTHROPOD *NECROGAMMARUS*

by PAUL A. SELDEN

ABSTRACT. Restudy of the enigmatic arthropod *Necrogammarus salweyi* Woodward, hitherto considered to be a crustacean or myriapod, reveals that it is the infracapitulum (fused labrum and palpal coxae) and palp of a large but unspecified pterygotid eurypterid.

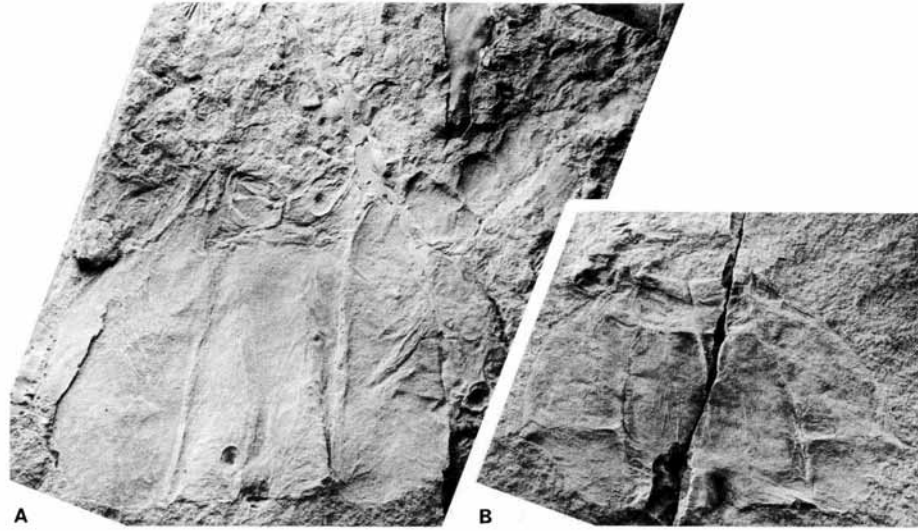
IN the quest for the oldest representative of a taxon the fossil record commonly presents a number of poorly preserved specimens of doubtful assignation. Such is the case with the myriapods (Almond 1985), but one contender, *Necrogammarus salweyi* Woodward, can now be rejected with certainty.

N. salweyi was collected by Mr Humphrey Salwey in Church Hill quarry at Leintwardine, Herefordshire. The fauna there occurs in a channel-fill of Lower Leintwardine Beds (middle Ludlow) cut down into Middle Elton Beds (see Whitaker 1962), hence the age of lower Ludlow assigned to the specimen by its first describers, Huxley and Salter (1859, pp. 25, 97, pl. 13, fig. 17). They considered the specimen to be a crustacean and not a *Pterygotus*, but since it had been 'accidentally introduced into this plate' (Ibid., p. 97, referring to pl. 13, fig. 17) they probably thought it was eurypterid in the first instance. Woodward (1870) redescribed the specimen as an amphipod crustacean and named and sketched it. Peach (1899) did not see the specimen but refigured it and referred it to the Diplopoda because it appeared to show diplosegments and a uniramous limb. In the *Treatise* it was mentioned under Crustacea Peracarida *incertae sedis* (Hessler 1969), but was discussed in connection with myriapods again, and refigured, by Rolfe (1980). Both Rolfe (1980) and Almond (1985) preferred to regard *Necrogammarus* as a possible aquatic relative of the myriapods.

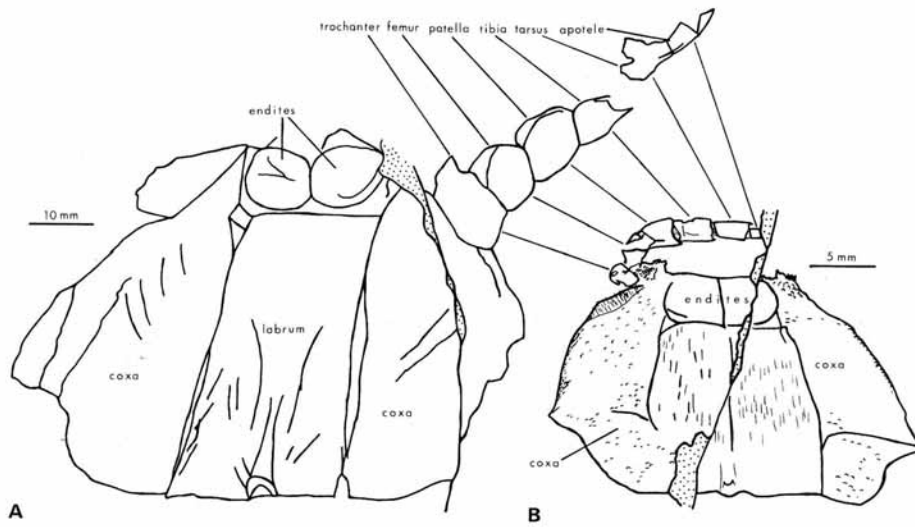
No photograph of *Necrogammarus* has hitherto been published, but when Almond showed a colour slide of it at the Palaeontological Association's annual meeting in Cambridge, 1984, I immediately recognized it as part of a pterygotid eurypterid. Investigation of the feeding mechanism of *Erettopterus bilobus* (Salter) (unpublished except for the biomechanics of the chela system: Selden 1984) had revealed that this species, and probably other pterygotids, possesses only three pairs of slender walking legs (limbs III, IV and V) and that limb II is a small palp. The palpal coxae and labrum are fused into a discrete plate; such a structure occurs in other chelicerates (e.g. Racinulei: van der Hammen 1979) and is termed the infracapitulum. As in other Chelicerata the infracapitulum is intimately associated with the chelicerae in *Erettopterus*, but the arrangement is complex, not yet fully understood, and is not described herein. It is obvious, however, from a comparison of text-figs. 1 and 2 that *Necrogammarus* is the infracapitulum and attached palp (of one side only) of a large pterygotid eurypterid.

Two pterygotids are known from Church Hill: *P. arcuatus* Salter and *E. marstoni* Kjellesvig-Waering, as well as numerous pterygotid fragments (Kjellesvig-Waering 1961). It is not possible to assign *Necrogammarus* to either of these species since they are diagnosed solely on features of chelicerae, coxal gnathobase, and metastoma. It may belong to one of these species, or be a new form; in any case, it was evidently a large animal.

Acknowledgements. I thank R. A. Fortey, British Museum (Natural History) and A. W. A. Rushton, British Geological Survey, for the loan of specimens in their care.



TEXT-FIG. 1. Infracapitulum and palp of pterygotid eurypterids. A, *Necrogammarus salweyi* Woodward, British Museum (Natural History) In 43786, holotype; Church Hill quarry, Leintwardine, Hereford; Lower Leintwardine Beds, middle Ludlow, $\times 1$. B, *Erettopterus bilobus* (Salter), British Geological Survey GSM 59651; Logan Water, Lesmahagow, Scotland; Priesthill Group, Llandovery/Wenlock, $\times 2$.



TEXT-FIG. 2. Explanatory drawings for text-fig. 1. A, *Necrogammarus salweyi* Woodward. B, *Erettopterus bilobus* (Salter). For explanation of homologous terms see Selden (1981).

REFERENCES

- ALMOND, J. E. 1985. The Siluro-Devonian fossil record of the Myriapoda. *Phil. Trans. R. Soc.* **B309**, 227-237.
- HAMMEN, L. VAN DER. 1979. Comparative studies on Chelicerata I. The Cryptognomae (Ricinulei, Architarbi and Anactinotrichida). *Zool. Verh. Leiden*, **174**, 1-62.
- HESSLER, R. R. 1969. Peracarida. In MOORE, R. C. (ed.). *Treatise on invertebrate paleontology. Part R. Arthropoda 4(1)*, R360-R393. Geological Society of America and University of Kansas Press, Boulder, Colorado, and Lawrence, Kansas.
- HUXLEY, T. H. and SALTER, J. W. 1859. On the anatomy and affinities of the genus *Pterygotus* and description of new species of *Pterygotus*. *Mem. geol. Surv. U.K., Monogr.* **I**, 1-105, 16 pls.
- KJELLESVIG-WAERING, E. N. 1961. The Silurian Eurypterida of the Welsh Borderland. *J. Paleont.* **35**, 789-835.
- PEACH, B. N. 1899. On some new myriapods from the Palaeozoic rocks of Scotland. *Proc. R. phys. Soc. Edinb.* **14**, 113-126.
- ROLFE, W. D. I. 1980. Early invertebrate terrestrial faunas. In PANCHEN, A. L. (ed.). *The terrestrial environment and the origin of land vertebrates*, 117-157. Systematics Association Special Volume No. 15. Academic Press, London and New York.
- SELDEN, P. A. 1981. Functional morphology of the prosoma of *Baltoeurypterus tetragonophthalmus* (Fischer) (Chelicerata: Eurypterida). *Trans. R. Soc. Edinb.* **72**, 9-48.
- 1984. Autecology of Silurian eurypterids. In BASSETT, M. G. and LAWSON, J. D. (eds.). *Autecology of Silurian organisms. Spec. Pap. Palaeont.* **32**, 39-54.
- WHITAKER, J. H. MCD. 1962. The geology of the area around Leintwardine, Herefordshire. *Q. Jl geol. Soc. Lond.* **118**, 319-351.
- WOODWARD, H. 1870. On *Necrogammarus salweyi* (H. Woodward), an amphipodous crustacean from the Lower Ludlow of Leintwardine. *Trans. Woolhope Nat. Fld Club*, **1870**, 271-272, 1 pl.

PAUL A. SELDEN

Department of Extra-Mural Studies
University of Manchester
Manchester M13 9PL

Typescript received 13 September 1985

Revised typescript received 6 November 1985