

A NEW GENUS OF LATE PRECAMBRIAN POLYCHAETE WORMS FROM SOUTH AUSTRALIA

BY M. F. GLAESSNER*

Summary

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New material indicates differences between *Spriggina floundersi* Glaessner and *S.?* *ovata* Glaessner & Wade which are comparable with those between genera of living polychaete annelids. Accordingly, a new genus *Marywadea* is proposed for *ovata*. The evolutionary significance of the Sprigginidae is discussed briefly.

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Introduction

The representatives of the Family Sprigginiidae Glaessner (1958) are among the most remarkable elements of the Ediacara fauna from the Pound Quartzite of South Australia. The Late Precambrian age, stratigraphic position and geographic distribution of this rock unit and its fauna need no further discussion (Wade 1970; Glaessner 1971, 1972). The arthropod-like appearance of *Spriggina* is attracting increasing attention (Cisne 1975, p. 61; Stanley 1976, p. 58). The reconstruction of an ancestral crustacean by Hessler & Newman (1975) shows startling resemblances with *Spriggina*. Notwithstanding these, no convincing evidence has been discovered which would justify the transfer of the Sprigginiidae from Annelida to Arthropoda or prove a transitional position of this family between two phyla. New discoveries have, however, clarified and emphasized the differences between the type species *S. floundersi* and the species described *S.?* *ovata* described by Glaessner & Wade (1966). Its diagnostic characters have at least the same significance as those distinguishing genera of living Polychaeta and for this reason the following new genus is proposed. It differs from *Spriggina* in all characters listed in the diagnosis.

Taxonomy

Genus *Marywadea* nov.

Type species: Spriggina? *ovata* Glaessner & Wade 1966.



Fig. 1. *Marywadea ovata* (Glaessner & Wade). Latex mould of specimen from the Late Precambrian Pound Quartzite of Ediacara, S. Aust. x 2. (Outlines and surface slightly distorted during fossilization; anterior margin of the head pushed back causing truncation of the outline and wrinkling of the surface; some ventral structures may be obscurely visible. Note that all other specimens have smoothly curved anterior outline and smooth surface.)

* Centre for Precambrian Research, Department of Geology, University of Adelaide, Adelaide, S. Aust. 5000.

Diagnosis: Prostomium half-moon-shaped, not wider than the body with its appendages. Integument thin, wrinkled and possibly showing some underlying structures when compressed. Body consisting of up to 50 short, broad segments, occasionally with impressions of bundles of long, curved setae. A pair of oval impressions behind the prostomium suggests the presence of teeth. The posterior end of the body is broadly rounded.

Derivation of generic name: After Dr Mary Wade who earlier expressed the view that *ovata* may be generically distinct from *floundersi*; this has now been confirmed by new finds.

Localities: Ediacara Hills, Brachina Gorge, Bunyeroo Gorge, Mayo Gorge.

Number of specimens of M. ovata: 16.

Remarks

The Sprigginiidae are not arthropods as the head did not consist of the appropriate number of appendage-bearing segments and the trunk appendages are not distinctly jointed and end in acicular setae. The mouth was probably not

directed posteriorly, there was no labrum and there is no evidence of antennae or a caudal furca. On the other hand the head was conspicuous and relatively larger than in any known annelid and its integument was more strongly sclerotized in *Spriggina* (apparently less so in *Marywadea*). There is evidence of a simple pharynx in *Spriggina* and of two simple teeth in *Marywadea*, suggesting relations to Phyllococeomorpha; otherwise the Sprigginiidae are unlike living Annelida. Some evolutionary advance in the direction of a primitive arthropod is indicated, particularly in cephalization. It may be parallel to the unknown evolutionary lineage which had produced the two primitive arthropods known from the Ediacara fauna (*Praecambridium* and *Parvancorina*).

Acknowledgments

The specimen illustrated here was found by Mr D. Westlake in August 1975 at Ediacara. I am grateful to Mr J. Gehling, Murray Park College of Advanced Education, who presented to me casts and moulds of this and other specimens.

References

- CISNE, J. L. (1975).—Anatomy of *Triarthrus* and the relationships of the trilobita. *Fossils and Strata* (4), 45-63.
- GLAESSNER, M. F. (1958).—New fossils from the base of the Cambrian in South Australia. *Trans. R. Soc. S. Aust.* **81**, 185-188.
- GLAESSNER, M. F. (1971).—Geographic distribution and time range of the Ediacara Precambrian fauna. *Bull. geol. Soc. Amer.* **82**, 509-514.
- GLAESSNER, M. F. (1972).—Precambrian palaeozoology. *Univ. Adelaide Cent. Precambrian Res., Spec. Pap.* 1, 43-52.
- GLAESSNER, M. F. & WADE, M. (1966).—The late Precambrian fossils from Ediacara, South Australia. *Palaeontology* **9**, 599-628, pls 97-103.
- HESSLER, R. R. & NEWMAN, W. A. (1975).—A trilobitomorphic origin for the Crustacea. *Fossils and Strata* (4), 437-459.
- STANLEY, S. M. (1976).—Fossil data and the Precambrian-Cambrian evolutionary transition. *Am. J. Sci.* **276**, 56-76.
- WADE, M. (1970).—The stratigraphic distribution of the Ediacara Fauna in Australia. *Trans. R. Soc. S. Aust.* **94**, 87-104.