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A New Early Devonian Spinose Phacopid Trilobite from Limekilns, New South Wales: Morphology, Affinities, Taphonomy and Palaeoenvironment

A.J. WRIGHT[1] & W. HAAS[2]

[1] Department of Geology, University of Wollongong, Wollongong, NSW 2500, Australia

[2] Institut für Paläontologie, Nussallee 8, 5300 Bonn 1, Federal Republic of Germany

ABSTRACT. *Paciphacops* (*Paciphacops*) *crawfordae* n.sp. is a distinctive spinose phacopid trilobite of late Pragian (Early Devonian) age from the deepwater, dysaerobic Rosedale Shale, Limekilns district, New South Wales. It is characterised by short occipital, genal and intergenal spines on the cephalon, and short thoracic spines on the axial rings and pleurae. Various combinations of such spines are developed in *P.* (*Paciphacops*) *serratus* Foerste (Lochkovian, New South Wales; Ludlovian, Kazakhstan?) and *P.* (*Paciphacops*) *claviger* Haas (Siegenian, Nevada), but the three species cannot be shown to be related.

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In 1969, Elizabeth Crawford collected shelly fossils from temporary exposures of shales belonging to the Rosedale Shale in the Limekilns district, near Bathurst, New South Wales (Fig.1). This collection included the eight known specimens of the new trilobite species which is the focus of this paper.

Setting and Stratigraphy

The stratigraphic succession in the Limekilns district (Table 1), where the Devonian strata between the Merrions Tuff and the Winburn Tuff (Table 1) have been assigned to the Limekilns Group by Packham (1968), was first mapped and studied by the late L.V. Hawkins (1953). The stratigraphic terminology was established by Packham (1968) and the age of the succession was discussed by Wright & Chatterton (1988). The area lies just inside the eastern margin of the Hill End Trough of Packham (1968), as indicated by the deepwater sedimentary rocks of the Limekilns sequence.

Devonian fossils occur in three units in the sequence, as summarised by Wright & Chatterton (1988, Table 1). The lowest fossils (?late Lochkovian; Wright &