

RE-EXAMINATION OF TWO ARTHROPOD SPECIES FROM THE TRIASSIC OF BROOKVALE, NEW SOUTH WALES

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SUMMARY

The two fossil arthropod species, *Austrolimulus fletcheri* Riek and *Synastrus brookvalensis* Riek, are re-examined and reconstructions based on their apparent structure are presented for comparison with related species. A modified reconstruction of *Euthycarcinus kessleri* Handlirsch is also included for comparison with *Synastrus*.

The Triassic sediments at Brookvale have yielded a small but most interesting fossil assemblage consisting mainly of fish, insect and plant remains but including a "unio", a stegocephalian head, a syncarid, Conchostraca (Wade, 1935) and the two arthropod species reviewed in this paper, a xiphosuran and a branchiopod.

The fossil assemblage is in accord with a freshwater origin of these sediments and the xiphosuran was most probably an inhabitant of freshwaters rather than a transient from marine or brackish waters. The well preserved nature of all the fossils and their completeness, combined with the relatively large size of the insect wings, would seem to indicate undisturbed water conditions at least at the time the fossils were embedded and very probably indicates drying-out of the water body. The suggestion that the body of water was drying out is supported by the manner of preservation of one of the specimens of *Synastrus brookvalensis* Riek. In this individual arthropod the thin lateral body wall is wrinkled and deflected back, as though the animal had crawled through drying mud before it succumbed.

The insect fossils are mostly complete, well preserved wings, in some of which the pigmentation pattern is still evident. This is not usual in fossil wings, though it is known to occur in other deposits. It is very probably a reflection of some unusually favourable conditions of preservation which resulted also in the preservation of the uncalcified cuticle that occurs in xiphosurans, Conchostraca and other Branchiopoda. The insects have been described in a number of papers by Tillyard (1925), McKeown (1937), Riek (1950, 1954) and Evans (1956, 1963).

The two arthropods reviewed in this paper were described by Riek (1955, 1964). The xiphosuran is known from a single complete specimen. There are three specimens of the unusual branchiopod and, although one of these is complete, some details of its external morphology remain unknown, for this is the specimen referred to above in which there has been considerable distortion prior to preservation.

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