

## **Ordovician cephalopods and inarticulate brachiopods from the Carnic Alps of Austria**

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Recent study in the Austrian Carnic Alps reveals a new fossil record of cephalopods and lingulate minute brachiopods. From the upper Ordovician Uggwa Limestone six species of ortho- and tarphycerid cephalopods (*Arionoceratidae* gen. et sp. indet., *Geisonoceras* sp., *Lituities?* sp., *Michelinoceras* sp. 1, *Michelinoceras* sp. 2) and three species of inarticulate brachiopods (*Acrotretella tenuis* sp. nov., *Lingulella* sp. and *Roweella?* sp.) are described. The faunal affinities of the described fauna will be discussed with respect to the latitudinal setting of the Proto-Alps during the Ordovician.

## **Permian Polaroids: snap-shots of ancient environments and animal activities**

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Ichnological evidence is particularly significant when deducing the biomechanics and behaviour of extinct animals. Many trace fossils are 'snap shots' of the activities of extinct animals and provide insights on the palaeoenvironment of the time. This theme is illustrated by two Permian ichnoassemblages.

The late Permian Ganfontein palaeosurface (near Fraserburg, Karoo, South Africa) represents a crevasse splay formed after a flooding event on a vast alluvial plain. Spectacular sedimentary structures indicate that shallow pools were left after the flood; their margins preserving the activities of the animals living on the flood plain. The traces include *Bradysaurus* and dinocephalian trackways, sinuous fish trails, the trackways of freshwater crustaceans (*Umfolozia*, *Tasmanadia*), scorpions (*Paleohelcura*, *Siskemia*) and beetles (*Permichnium*), and beaded worm trails.

The Lower Permian Robledo Mountains ichnofauna (New Mexico, USA), regarded as the most abundant and diverse assemblage of Permian terrestrial trace fossils in the world, represents a marginal marine setting including tidal flats, non-marine red beds and freshwater conditions. The vertebrate traces include temnospondyl amphibian, araeoscolid, ?diadectid and pelycosaur trackways (the latter of biomechanical significance) and enigmatic sidewinding snake-like (?aistopod) trails. The invertebrate traces include 14 ichnogenera of arthropod trackways, recording the activities of myriapods, arachnids, eurypterids, xiphosurans, crustaceans and several different types of insects, and various new undescribed arthropod resting traces.

## **All about (metazoan) Eve: A critical reassessment of the early fossil record of animals**

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