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ABSTRACTS

global glaciations. The Ediacaran diversification may be interpreted as a recovery of marine microbiota after a major extinction caused by the global glaciations. However, the evidence of some persisting taxa, both of planktonic acritarchs and benthic cyanobacteria, speaks against the radical version of the Snowball Earth hypothesis assuming that oceanic photosynthesis and bioproductivity in the ocean collapsed for millions of years because of the ice cover blocking out sunlight.

Late Frasnian Atrypida (Brachiopoda) from the Ardenne shelf (southern Belgium)

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In southern Belgium, the atrypid brachiopods were decimated well below the Frasnian–Famennian boundary (Upper Devonian). Within the Late Frasnian formations of the Ardenne shelf, the following genera and subgenera have been recognized: *Costatrypa, Desquamatia (Desquamatia), D. (Seratrypa?), Pseudoatrypa, Radiatrypa, Spinatrypa (Spinatrypa), Spinatrypina (Spinatrypina?), Spinatrypina (Exatrypa), Waiotrypa,* and *Iowatrypa*. Their representatives are particularly abundant in the reefal environments. Godefroid & Helsen (1998) noted that their extinctions were linked to diachronous regional facies changes. Indeed, their demise occurred first within the Lower *Palmatolepis rhenana* conodont Zone (top of the Neuville Formation) on the southern flank of the Dinant Synclinorium, and in the Upper *P. rhenana* Zone (top of the Les Valisettes Formation) in the case of the Philippeville Massif. In these areas, the last atrypids have been collected just below the dark limestone bed(s) marking the base of the essentially shaly Matagne Formation expressing hypoxic bottom conditions during sedimentation. Additional data from the northern border of the Dinant Synclinorium and from the Vesdre Nappe showed that the atrypids vanished within the Lambermont Formation (Upper *P. rhenana* Zone), below a level of dark shales formerly included in the Matagne Formation by some authors. In the famous Hony section (northern border of the Dinant Synclinorium), the last occurrence of atrypids is ±9 m below the first Famennian limestone bed of the Early *P. triangularis* Zone.

GODEFROID, J. & HELSEN, S., 1998. The last Frasnian Atrypida (Brachiopoda) in southern Belgium. *Acta Palaeontologica Polonica*, **43**, 241–272.

Biodiversity and paleogeography of Middle Jurassic ammonites (Upper Aalenian to Middle Bathonian)

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The break up of the Pangea takes place in the Jurassic; the palaeoceanographic consequences are the opening of seaways, particularly at the place of the future Atlantic and Indian oceanic areas. Near the end of the Aalenian, the Ammonitina sub-order undergoes a strong faunal turnover. The last Hammatoceratoceae, a well known and diversified Liassic superfamily, gives birth to three distinct superfamilies which will dominate among others till the end of the Jurassic: Stephanoceratoceae, Perisphinctaceae and Haploceratoceae. The analysis of the worldwide corresponding radiation of these three major taxa puts in light differences and similarities between the biogeographic provinces usually recognised.

The counting of the species of each subfamily within the several palaeobiogeographic provinces emphasises faunal similarities in terms of total biodiversity between the several provinces. The North-Western Tethyan provinces share strong similarities between them and with the provinces of the South-West Tethyan margin. The Circum-Pacific provinces gather themselves, underlining their great faunal similarities.

The total time variation of the diversity is expressed by the counting of species in each biozone from the Late Aalenian to the Middle Bathonian. The primary and global signal of the diversity evolution obtained is then independently related to each palaeobiogeographic province. The comparison between the two signals shows the differences of the time evolution of the diversity in the several provinces. The maximum of diversity are often diachronous in the several listed provinces: Early Bajocian in North America; Late Bajocian on the North-West European platforms.

Finally, the palaeogeographic distribution of each ammonite subfamily is used to emphasise the evidence of the several seaways that would exist between the several provinces. The maps which has been constructed for the considered ammonite taxa show that peculiar seaways like the « Hispanic corridor » (Caribbean Tethys), the « South Gondwana » (South Pacific Sea) and the « North Laurasia » (Boreal Sea) bypasses could have been used by ammonites to invade several provinces.

Sponging off the poriferans: complex Ordovician ecosystems reliant on spicule-rich sediments

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For understanding the history of life, the development of complex shallow-water ecosystems during the Ordovician is one of the most critical areas in Palaeozoic palaeontology. Siliciclastic sediments often have a very intermittent record in shallow water, with poorly preserved and mixed fossil assemblages, and little lateral continuity. A study of the ecological patterns in well-preserved, shallow-water Llanvirn siliciclastics from the Builth Inlier volcanic island complex, central Wales, has revealed that the distribution of diverse communities is closely linked to the presence of abundant sponges. The gregarious hexactinellids *Brevicirrus*, and especially *Pyritonema*, modified the sediment by producing vast quantities of relatively large spicules (hexactines in *Brevicirrus*, monaxons in *Pyritonema*). These authigenic particles are often larger than the background sediment particles, and would have significantly stabilised the substrate; a similar phenomenon is known in modern polar deep sea floors. In some cases, bryozoans grew immediately around isolated spicules, and a variety of similar interactions are also preserved among other organisms. Further sediment-stabilising strategies followed, including monospecific crinoid thickets and substrate-encrusting bryozoans. The abundant faunas sometimes resulted in local bioclastic limestones. The

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