

# Lyell Meeting 2013

The Cambrian Explosion – understanding Earth systems  
at the origin of modern ecosystems

13 March 2013

A joint meeting of the Geological Society of London, the Palaeontographical Society, the Palaeontological Association and The Micropalaeontological Society

As consensus begins to emerge on the topology of high-level phylogenetic relationships amongst animal groups, molecular clocks are beginning to elucidate the slow fuse versus big bang debate relating to the origin of major animal groups, and it is now clear that the major animal clades diverged tens of millions of years before their first appearance in the fossil record. Understanding this macroevolutionary lag requires a multidisciplinary understanding of Cambrian Earth systems, in which a complex interplay of sea-level change, ocean geochemistry, biomineralisation and ecosystem engineering producing the major evolutionary diversification that characterises the early Cambrian. This involves a change from matground dominated ecosystems in the Ediacaran to the primitive but recognisably modern ecosystems associated with the Cambrian substrate revolution. Contemporaneously, the repeated but approximately synchronous evolution of biomineralisation in animal groups in the early Cambrian led to the first skeletons, and the selective opportunities provided by these novel structures. This meeting will bring together palaeobiologists, ichnologists, geneticists, geochemists and stratigraphers to re-assess the complex, non-uniformitarian processes that operated in ecosystems before, during and after the Cambrian Explosion. One aim will be to examine the varied feedback processes operating in these ecosystems and the changes that occurred across the Ediacaran–Cambrian boundary. In addition, recent suggestions of underlying mechanisms for these changes will be examined, including the Great Unconformity hypothesis that invokes the reworking of continental regolith during early Cambrian sea-level rise, transgression and continental inundation as an environmental trigger for the evolution of biomineralisation.

The meeting will be relevant to all who are interested in complex feedback processes within Earth systems, as well as those with a direct interest in the Ediacaran–Cambrian transition.

## Conveners:

Paul Smith (Oxford) and David Harper (Durham University)

## Speakers include:

Howard Armstrong (Durham University), Kevin Peterson (Dartmouth College), Peter Holland (University of Oxford), Robert Gaines (Pomona College, California), Greg Edgecombe (Natural History Museum), David Harper (Durham University), Duncan McIlroy (Memorial University of Newfoundland), Gabriela Mangano (University of Saskatchewan), Duncan Murdoch (University of Bristol), Nick Butterfield (University of Cambridge) and Martin Brasier (University of Oxford)

## Further information

For further information about the conference, please contact:

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