

discovered just such a polymorphism on chromosome 4, which is linked to Huntington's disease, after screening with only three probes. That this led to the identification of the genetic disease locus made linkage analysis seem relatively easy and highly effective. But the hunt for mood genes has so far proved to be a dismal failure. Claims made for linkages to the X chromosome and chromosomes 11 and 18, based on studies of Amish, Israeli and Costa Rican pedigrees respectively, have not been substantiated. Frustrated, Barondes turns to Alzheimer's disease, susceptibility to which is increased by the presence of the apolipoprotein A4 genotype, to reassure us that gene linkage can be useful in studying mental disorders.

Because the linkage approach has failed to identify mood genes, the peremptory dismissal of the candidate gene approach is puzzling. However, this and other inconsistencies do not detract from the overall importance of *Mood Genes* as an interim account of an exciting gene hunt, written in comfortable and in parts racy prose by an authority in the field. The evidence for the genetic transmission of mood disorders is incontrovertible, so the hunt must go on. □

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Animal anomalies

The Garden of Ediacara: Discovering the First Complex Life

by Mark A. S. McMenamin
Columbia University Press: 1998. Pp. 284.
\$29.95, £23.95

The Crucible of Creation: The Burgess Shale and the Rise of Animals

by Simon Conway Morris
Oxford University Press: 1998. Pp. 242.
£18.99, \$30

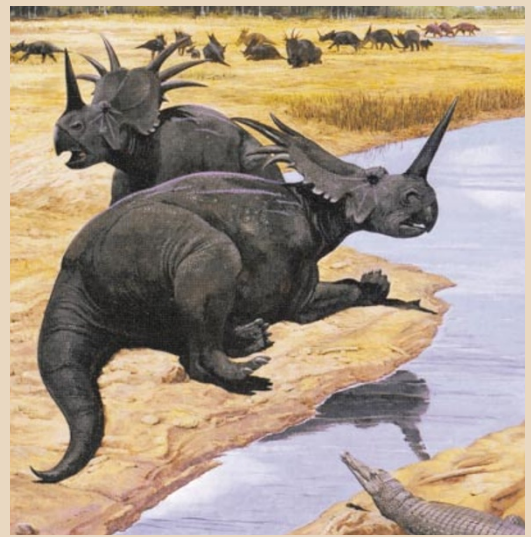
Douglas Palmer

Writing for a wide readership about obscure and extinct organisms without common names or modern analogues is peculiarly difficult. Nevertheless, the discovery of such fossils, especially when they are the remains of some of the earliest complex multicellular organisms, is so important that it warrants any serious attempt to tell their story. At least a book provides the scope to go beyond the constraints of the media soundbite.

The pitfalls of gross generalization and misrepresentation are only too well known. Recently, the main morning news programme on British radio raised the question of whether 'intelligent' life, as it was put, had evolved twice in the distant past. Furthermore, it was claimed that the first wave of 'innocent and peaceful, sentient beings' was

Past masters

Artist's impression of two resting *Styracosaurus albertensis*, taken from *The Horned Dinosaurs: A Natural History* by Peter Dodson, which is now out in paperback from Princeton University Press at \$19.95, £15.95. A "comprehensive" and "even-handed" work, wrote Angela Milner in a review of the original hardback edition (*Nature* 384, 426; 1996).



wiped out by the second wave, consisting of our ancestors, armed with tooth and buckler.

Behind the 'news' story is the publication of Mark McMenamin's *The Garden of Ediacara*, a popular account of his interpretation of the problematic soft-bodied organisms called the Ediacarans. He has based his ideas on those of the German palaeontologist Dolf Seilacher, who coined the term Vendobionta to describe what he sees as the curiously alien nature of these fossils as neither animals nor plants. Accordingly, the Ediacarans were a failed evolutionary experiment and were unceremoniously hustled off the stage of life by the advent of the more familiar Cambrian biota of arthropods and 'shelly' molluscs. Ediacarans have been found around the world, mainly in late Precambrian marine sediments dating from 600 million to 544 million years ago, but they are now known to have survived into Cambrian and possibly younger deposits.

It is a hard task to inform a non-specialist reader about the Ediacarans with their unusual mode of preservation in sandstones. The task is made even more difficult because there is now an intellectual free-for-all on the Ediacarans, unconstrained by much in the way of data. Ediacarans have variously been ascribed to lichens, protozoans, cnidarians, annelids and arthropods.

McMenamin is at his best when he has a good story to tell, such as his 1995 discovery of *Cyclomedusa* fossils from late Precambrian sediments 600 million years old in northern Mexico. A traditional tale, it has a sequence of trial and tribulation for the narrator 'hero' in his quest for the 'holy grail'. But too often his narrative approach as journalist, observer and confidant is not as satisfying as that adopted by Simon Conway Morris in *The Crucible of Creation*.

Conway Morris is concerned mainly with exploring the nature of the Burgess Shale organisms of middle Cambrian age, around 520 million years old. But his wide-ranging experience of other Cambrian deposits and

their biotas allows him to tell with authority a much broader story of their role in animal evolution. No doubt some academics' eyebrows will be raised by the intrusion of personal belief but, as much as anything else, this book is an account of an intellectual journey and not an academic paper. His authorial voice is a complex mix of omniscient narrator and guide/teacher, at times demanding or dismissive but always enormously informative and questioning.

Conway Morris has the advantage that the Burgess Shale fossils are now better defined than the Ediacarans, with plentiful, biologically based data and a good understanding of the taphonomy (*post mortem* processes of burial and fossilization) of the animals, both essential prerequisites for interpreting the fossil record. This has not always been so: as little as 20 years ago there were considerable misconceptions about some of the weird and wonderful creatures of the Burgess Shale, such as *Anomalocaris* and *Hallucigenia*.

When Stephen Jay Gould published his *Wonderful Life* in 1989, he claimed that so many of the forms of life present at that time were wiped out by extinctions that, if the tape of life were replayed, there would have been a very different set of survivors. Furthermore, chance would mitigate against humans being among them. Conway Morris argues against Gould's historical contingency, claiming that "it does not have such a meaningful effect on the totality of life" and "a different message can be read from the Burgess Shale".

Part of this argument extends back to the Ediacarans. Conway Morris makes a strong claim for at least one biological contact between the Ediacaran *Charniodiscus* and *Thaumaptilon*, a sea-pen from the Burgess. Perhaps the difficulties will be resolved only if other Ediacarans are found in a similar mode of preservation to the Burgess. □

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