
This book shows a complete and very detailed review of one of the most important Mesozoic deposit exhibiting exceptional preservations.

The “Crato Fossil Beds” are situated in the Chapada do Araripe, a large plateau in North-Eastern Brazil. The Crato Formation is dated from the Lower Cretaceous (Aptian – Albian), and only its basal part, the Nova Olivera Member, yields exceptional fossils (Crato Formation Konservat Lagerstätte). The Nova Olivera Member consists of parallel millimetric limestones that were deposited in a very quiet and protected depositional environment, certainly below the wave base of a lagoon and probably in a water depth that exceeded 50 m. The lithology shows that the sea bottom was at least episodically under hypersaline and dysoxic conditions, which created the ideal circumstances for exceptional preservation of fossils. The “Crato Fossil Beds” bear the most diverse terrestrial faunas of the Cretaceous with more than 200 new species described during the last 20 years. The majority of these species consist of invertebrates with a large proportion of terrestrial forms (mainly insects associated with arachnids and chilopods) and several aquatic elements (crustaceans). The vertebrate fauna are comprised of fishes, anurans, turtles, lizards, crocodiles, pterosaurs and birds. The diverse flora is described in chapters on macrophytes ranging from ferns to some early angiosperms and palynomorphs. Finally, the last part deals with miscellaneous biota mainly composed of pellets and coprolites.

This book aims at summarising the different works undertaken since the discovery of the Crato Lagerstätte during the beginning of the 18th century, and particularly during the last 20 years. The first part of the book synthesizes geological, sedimentological and environmental data of the Nova Olivera Member. Because few studies concern the geology of the Crato Formation, some results are still subject to debate, mainly the environmental conditions responsible for the Crato Lagerstätte during the end of the Lower Cretaceous. Opinions differ about the depositional environment (lagoon/lake; hypersaline/brackish/fresh water) and the water depth (shallow/relatively deep) represented by the Crato Formation, although only the authors’ ideas are presented in details (deep lagoon with hypersaline waters). The second to the fifth part of the book, concerning the palaeontological study, is very detailed and sumptuously illustrated especially in the 32 colour plates. Virtually all the species described in the Crato Lagerstätte are represented in detail (pictures and Camera-Lucida drawing) but only a few of them are reconstructed (e.g. pterosaurs). The descriptions of the different taxa are precise, with developed remarks on the higher taxa; complete synonymy lists and an extended bibliography are provided at the end of each chapter.

The analysis of this exceptional deposit by a wealth of data and abundant illustrations, under the direction of D. M. Martill et al., provides the opportunity to delve deeper into Cretaceous terrestrial biota. Further studies on this Lagerstätte should reveal many key aspects of Cretaceous ecosystems including the coevolution of flowering plants and their pollinators.

Vincent Perrier

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