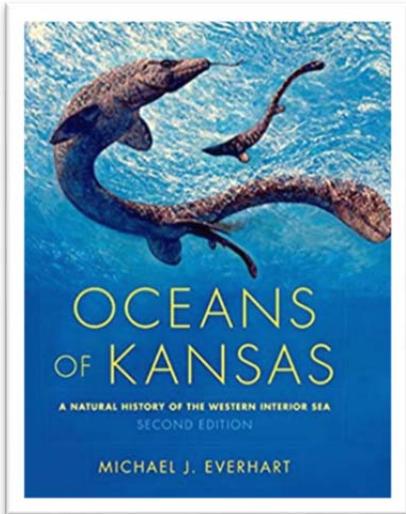


BOOK REVIEW

By Brian R. Pratt



Oceans of Kansas, a Natural History of the Western Interior Sea

Second Edition

Michael J. Everhart

Indiana University Press

Hardback, 427 p.

USD 50.00

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My first encounter with the ancient oceans of Kansas was as a master's student on a field trip in April 1978. I had come down from St. John's, Newfoundland, to attend the AAPG meeting in Oklahoma City. Who knew this unfamiliar and seemingly unprepossessing badlands landscape could house such interesting geology! I learned a lot and got to meet some of the luminaries of the time when participation on field trips was routine, and I still use some of my samples in teaching. And now, unexpectedly, here in Saskatchewan I live above the same ancient ocean. On my window sill is an ammonite mold encrusted with oysters, I'm pretty sure from the Niobrara Chalk, demonstrating that the primary aragonite shell dissolved just under the sea floor while the sediment filling the conch lithified, and this dinner plate-sized steinkern became a tiny island of hard substrate in the vastness of carbonate ooze. Such an interesting ocean it was.

The first edition of *Oceans of Kansas* was published in 2005. The specimen photographs were in black and white. The second edition is almost 100 pages longer. It is copiously illustrated with 220 color figures and

numerous reproductions of engravings and lithographs from eighteenth and early nineteenth century papers, plus some pen and ink reconstructions. Both editions have bound in the middle the same set of color paintings of the animals in their habitat, mostly with one in the process of harming another, as we come to expect in dino-art. The specimen photographs and snapshots of museum displays do the job, although I would have preferred the scales to be less obtrusive. Color is not always better than carefully taken and judiciously adjusted black and white photographs, but no matter. The field photographs draw in the reader because they bring out the nitty gritty of fossil hunting and extraction. This edition needs to be seen anew, despite much of the same text and many of the same illustrations. Moreover, it is handsomely produced and printed on coated paper, and this means the illustrations are crisper than they were before.

There are 13 chapters. Each one begins with a narrative of ancient animals doing what they did in the Cretaceous sea, with the protagonist belonging to the group that is the subject of the chapter; things always end up badly for someone of course. Then each

chapter deals with the morphology of the fossil group in combination with the history behind collection and research about that group as unearthed in Kansas, with information and insight added by discoveries elsewhere. Study of the vertebrate fossils of Kansas goes back to 1859, and ramped up after the Civil War and access became easier due to newly built railroads. Paleontological effort waned through the first half of the twentieth century, being conducted largely by George F. Sternberg, but collectors and researchers have been busy in recent decades, and there is a lot of fascinating paleontology here.

After the introductory two chapters the third one deals with the invertebrates, plants, and trace fossils. The fourth to sixth deal with sharks, fishes, and turtles. The next six describe in turn the elasmosaurs, pliosaurs, mosasaurs, pteranodons, birds, and dinosaurs. There is a variably rich fossil record of these groups, although understandably the dinosaur fossils are few, belonging to carcasses that drifted out to sea. All manner of subject matter is covered, from the fossils themselves to coprolites, gastroliths, inferred life habits, and so on. The result is an impressive piece of scholarship. The main text is engaging, not only from the interesting historical background and technical information but also from the participation of the author, Michael J. Everhart, in many of the more recent discoveries. Personal anecdotes are woven in. In the 2005 edition the final chapter, a short epilogue, described the disappearance of the Western Interior Sea and then provided a brief discussion of the Chicxulub impact from the point of

view of scale. The same text is repeated in the 2017 edition, so evidently the author still feels that the impact's role in the end-Cretaceous mass extinction has yet to be resolved to his satisfaction. Food for thought.

The book's subtitle is "a Natural History of the Western Interior Sea." One could regard this as somewhat of a misnomer, as the book is overwhelmingly devoted to fossil vertebrates, but to do justice to the invertebrates would demand a separate book. Same for details about the sedimentology, cyclostratigraphy, diagenesis, and so forth. The author points out that most of the vertebrate fossils have been collected from the Smoky Hill Chalk, which comprises the upper part of the Niobrara Chalk, so this book does not claim to cover the whole Cretaceous section either. The text is authoritative and balanced but it is dense with literature references, figure citations, taxonomic names and their authors' names, and measurements in both imperial and metric units, with all the attendant punctuation, so it is not unexpected that small typographical errors have crept in. There are nearly 45 pages of references organized chapter by chapter.

As well as libraries and academic and amateur vertebrate paleontologists, I can imagine this book will be selling fairly well in natural history museum shops to natural history-minded people who want to get a taste of what lies behind the exhibits and picture books.