

Bone wars

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Keith Thomson

THE LEGACY OF THE MASTODON

The golden age of fossils in America

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Today, President Barack Obama might host lavish state entertainments in the East Room of the White House, but in 1808 the room was used for something that President Thomas Jefferson considered much more important: storage for a shipment of fossils of the American mastodon – a relative of the modern elephant. Jefferson had a lifelong obsession with the “Mammoth”, for he believed its size and strength was the perfect symbol for the young and independent nation. According to Jefferson, the mastodon was bigger, stronger and more ferocious than any other animal in Europe – proof that America was not a just degenerated version of the Old World, as French naturalists claimed.

Keith Thomson explains in this fascinating book that, in addition to his more famous achievements, Jefferson also launched American palaeontology. His determination sparked American interest in the field. Americans, however, continued to lag behind their European counterparts, because only a few people were interested in fossils and because they were not digging enough for quarries, canals and roads. The “secrets of the earth”, Thomson writes, remained hidden. It was only in the mid-nineteenth century when the importance of geological surveys (to understand the soil for agricultural use and to find commercially viable minerals) became evi-

dent that the United States began to catch up. Geological maps of the strata promised that the American West would be a treasure trove for fossil hunters.

The Legacy of the Mastodon also tells the story of the exploration of the West and the building of railroads. Closely following the engineers, settlers, traders and explorers were palaeontologists. As their trains passed fossil sites in Wyoming, passengers would wave from their carriage windows to the diggers who were busy pulling out dinosaur bones. As the tracks were driven across the continent, the wonders that were buried in the ancient layers were laid bare (in particular when routes were blasted through hills). But the rail companies did not just give access to these remote areas; they also often provided

free passage and transport of the fossils for the palaeontologists. When the first transcontinental railroad was completed in 1869, America had entered “the golden age of fossils”.

Thomson has written a beguiling group portrait of the surveyors, explorers, collectors and palaeontologists who shaped American science in the late eighteenth and nineteenth centuries. There are the early promoters such as Jefferson and Benjamin Franklin, and field collectors such as the gifted Ferdinand Vandiveer Hayden, who supplied the scientists in the cities in the East. Much of the second half of the book is dominated by the story of the “bone wars” between the “two giants” of American palaeontology, Edward Drinker Cope and Othniel Marsh. Thomson convincingly turns this well-known battle between two men into a triangle, adding Joseph Leidy, a trained physician and palaeontologist who “almost single-handedly” described all the first fossil vertebrates from the West.

Leidy published vast amounts of scientific descriptions – terse, dry and precise – but, averse to theory, he never attempted to explain his finds. By the 1870s, Leidy, Cope and Marsh were competing for fossils (field

collectors often worked for several patrons) as well as fighting for access to new sites. They arrived at the same places, and scrambled to be the first to dash off descriptions of their finds (the first person to describe a new species was allowed to name it). Over the years their fights grew fiercer, and Leidy eventually dropped out of the race, leaving Marsh and Cope to battle it out. The story ends in the 1890s, when the continent was settled and the US Census Bureau declared that there was no Western frontier anymore. It was the end of the era of “frontier fossil hunting”, Thomson writes, and the beginning of “a new world of synthesis” when scientists began to concentrate on the meaning of these early discoveries.

Keith Thomson gives his book scholarly gravitas, but he also has an eye for a good story. He brings to life the complexities of geology and palaeontology, explaining evolutionary theories and the challenges of naming new species along the way. But he never forgets the human aspect – describing Cope’s embarrassment when Marsh and Leidy declared that he had mistakenly placed the head of a large fossil on its tail rather than on its neck, or Marsh’s merciless ambition when he instructed his collectors to destroy any remaining bones in their site so that Cope wouldn’t be able to find and describe them.