

# Sudden and complete extinction

## The demise of the dinosaurs

*A paleobiologist and an astrophysicist probe the mass disappearance of the largest animals known to man.*

Most scientists agree that extinctions did take place on an unusual scale. But 64 million years is a long time ago. What single happening or combination of events completely wiped out perhaps as much as 75 per cent of Earth's life species, practically depleting ocean life, but leaving terrestrial plant life almost intact? How did the dinosaurs — the largest animals that ever existed — up to 26 m long and weighing as much as 45 t each — suddenly disappear from the face of the earth after having inhabited it for 160 million years? Why did smaller animals survive?

Although these questions have been debated for centuries, the answers, even today, are not clear-cut. There is, for instance, no definite consensus on just how long the extinction period lasted and estimates range all the way from one year to millions of years. The majority of experts opt in the direction of the latter, but Dr. Dale Russell,

Chief of Paleobiology at the National Museum of Natural Sciences, is one exception. "Some of us," says Dr. Russell, "think that these extinctions could have taken place over a very short period of time — in terms of thousands of years. One reason for this is that it is theoretically more plausible to obliterate a great range of species with a sudden dramatic environmental shift rather than with pressures that begin gradually and endure for a long time because natural selective processes then become operative and organisms have a way of adapting." The ice ages are a good example of how animals and plants can respond to geological upheavals that extend over long periods of time. In the last million years, there have been many ice ages, but up to 12,000 years ago, very few species had become extinct because of the movement of the ice sheets. Only more recently have large numbers of animal extinctions taken place as a direct result of human over-exploitation of a food source.

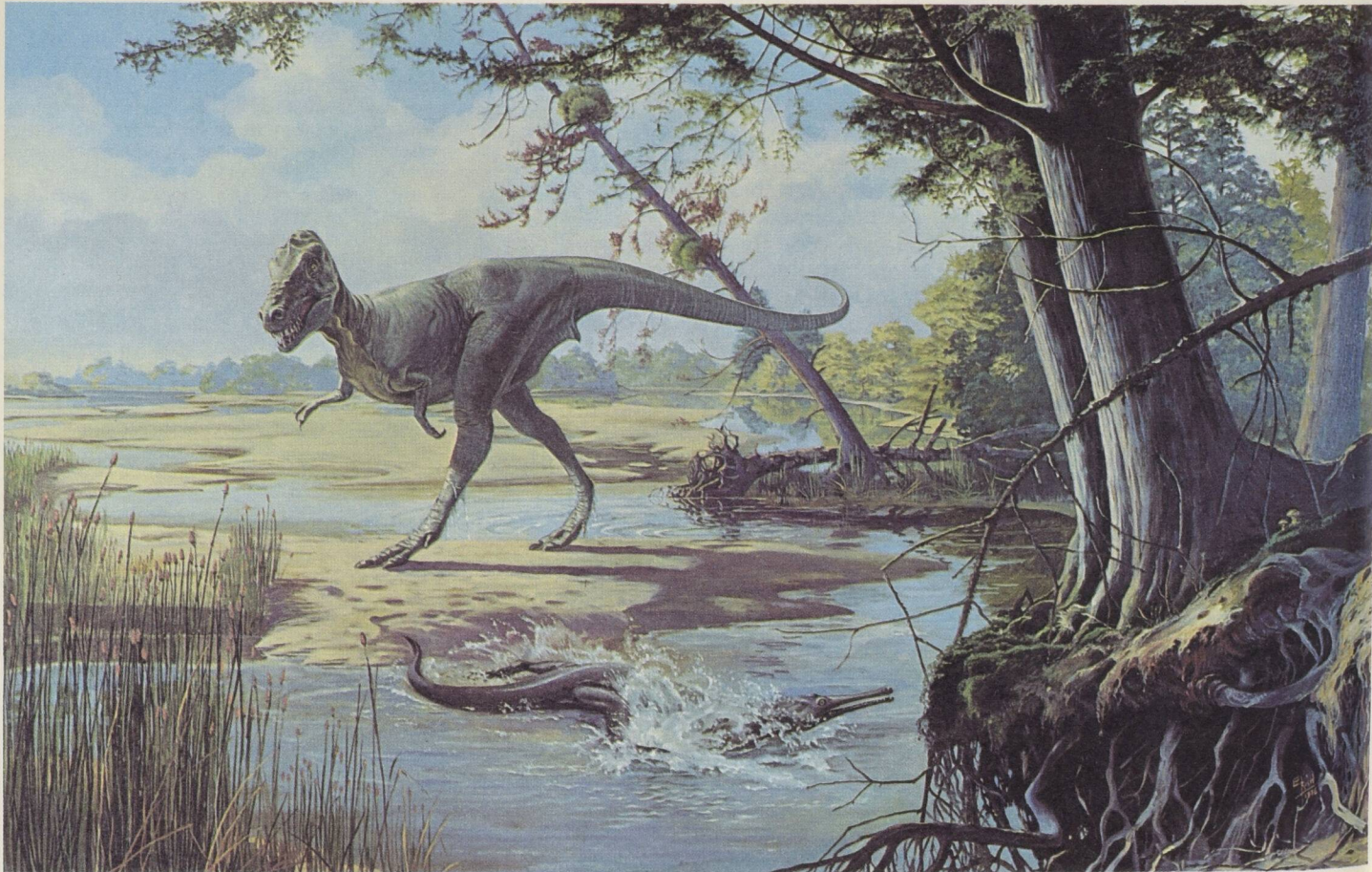
Various theories have been put forward as to the cause or causes of the

demise: epidemics, depletion of the food supply, changes in plant life upon which the dinosaurs fed, and decline of herbivorous dinosaurs which would have had disastrous effects for the flesh eaters that fed upon them. But the most "popular" explanation is that changes in the configuration of continents and ocean basins increased climatic variation all over the earth and as a consequence many extinctions took place.

"Perhaps 80 per cent of researchers would be satisfied with this and go on to other topics of research," says Dr. Russell. "But it is my firm conviction that they are poorly advised in so doing. I think the problem deserves very close and careful attention because it is not at all clear that this commonly-

**The heavy-headed tyrannosaur *Daspletosaurus* that inhabited marshlands was agile, swift and dangerous.**

**Le tyrannosaure *daspletosaurus*, dont la tête était disproportionnée par rapport au corps, et qui habitait les marécages, était agile, rapide et dangereux.**



Painting by Elly Kish/Peinture d'Elly Kish