Dark Matter's Role in Dinosaur Extinction

A Possible Cosmic Connection?

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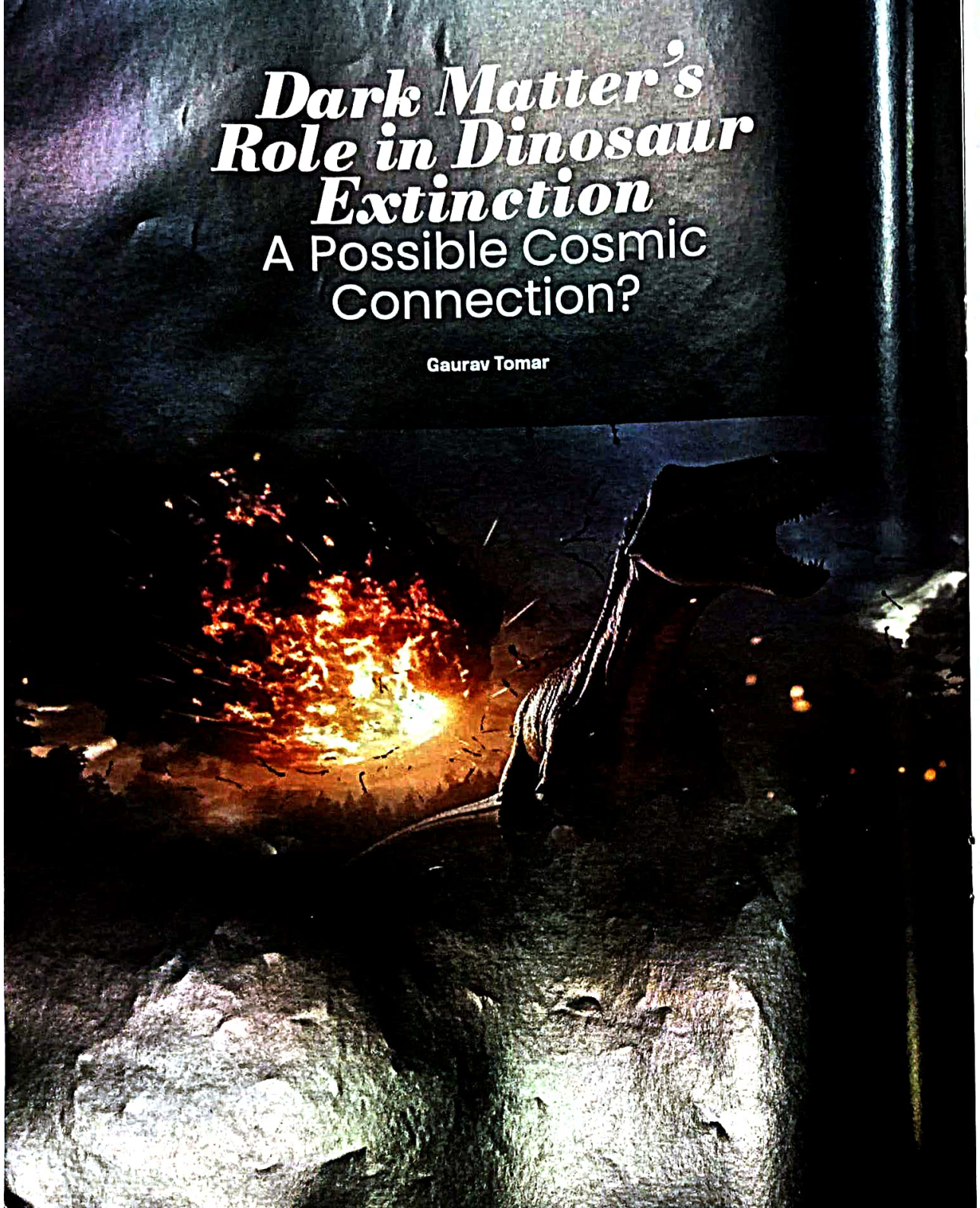

IN the annals of Earth's history, few events are as dramatic as the Tunguska Event of 1908, where a mysterious explosion in Siberia flattened over 2,000 square kilometres of forest. The event produced shock waves of about 5.0 on the Richter scale, killing thousands of reindeer in the fire that the impact left in its wake. Scientists have long puzzled over this phenomenon, suspecting a comet or asteroid disintegrated high in the atmosphere, releasing energy equivalent to a large nuclear bomb. In this case, it was 1000 times more powerful than the Hiroshima explosion.

This dramatic event shares chilling similarities with another cataclysmic event that occurred 66 million years ago, which triggered the sudden extinction of the dinosaurs. While some scientists have speculated that volcanic activity might be the cause, evidence increasingly supports the impact theory.

In 1970, Walter Alvarez, a professor at the University of California, along with his Nobel laureate father, Luis Alvarez, and collaborators, discovered a clay layer in Italy sandwiched between light-colour and dark colour limestone of sedimentary rock, called Scaglia Rossa, named for its pink colour. The layer was found to have an unusually high iridium content, 90 times higher than the surrounding limestone at Scaglia Rossa. Since the Earth is intrinsically low in iridium on the surface, without any cosmic extraterrestrial phenomena, it is impossible to explain this excess. Indeed, volcanos are good candidates for iridium exclusion from the mantle of the Earth. However, they cannot explain the estimated iridium of around 500,000 tons worldwide in the clay layer, suggesting its extraterrestrial origin. This layer, known as the K-Pg boundary, dates back 66 million years, coinciding with the dinosaurs' disappearance, and is observed worldwide. In Canada and Denmark, amino acids not present elsewhere on Earth were found in the K-Pg boundary, favouring its cosmic origin, possibly from a massive comet or asteroid impact.

The question arises: What led to the disappearance of dinosaurs, which thrived during the Mesozoic era from 252 to 66 million years ago? Is there any link between this ancient disaster and Tunguska's event across time and space?

About 50 tons of extraterrestrial material enters the Earth's atmosphere daily, carried by millions of small meteoroids. Occasionally, massive objects like asteroids and comets also get attracted to the Earth. It is difficult to distinguish between the two, as they could share the same size; however, they travel at different speeds due to their different origins in the Solar System. Asteroids visit Earth from the asteroid belt between Mars and Jupiter at speeds of 10-30 km/sec, while comets come from the outer solar system, moving up to 70 km/sec.

Since the Tunguska event shares chilling similarities with the cataclysmic disappearance of dinosaurs, it might share a common origin — an impact that occurred when a massive object, likely a comet or asteroid, struck the Earth. The Yucatan Peninsula in southeast Mexico is home to an enormous impact crater 180 kilometres across, created by an asteroid or comet that triggered the sudden extinction of the dinosaurs. Analysing the scale of devastation makes it challenging to determine whether an asteroid or comet caused it. However, the periodicity of impacts in Earth's history suggests that a comet might be a better candidate.