

Cosmic catastrophe is as close as an intercepting orbit

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NOW that the Christmas pudding has safely settled and the stomach has regained its usual resilience, I might be forgiven for raising the topic of catastrophes. Astronomical, not gastronomic.

Cosmic catastrophes have been in and out of the news quite a lot in recent years, especially with the theory that a huge meteorite impact put an end to the age of the dinosaurs.

Last year a Soviet scientist predicted a similar fate for mankind, placing the date early in the 22nd century, which is very worrying for us youngsters. He asserted that Phaethon, an asteroid discovered in 1983, is the villain to watch out for.

Interestingly, Phaethon appears to be the parent body of the Geminid meteors which intercept Earth every December. So the collision potential of Phaethon has to be taken seriously.

However, the chance of Phaethon and Earth arriving at the same place at exactly the same time is more than 50,000-1 against, assuming the respective orbits actually intersect, which at the moment they don't.

Phaethon is about 5km in diameter. That makes its mass about 200 billion tonnes. At a collision speed of 20km a second, about what one would expect, the energy release on impact would be the equivalent of 10,000 megatons of TNT: roughly equal to the destructive power of the whole arsenal of nuclear weapons detonated simultaneously.

The impact site would be scarred by a crater about 100km in diameter. Debris would rain down over an area at least the size of Asia.

The seismic shock would flatten most cities of the world, with further havoc resulting from the air blast in the first thousand kilometres.

The most prolonged danger would certainly arise from the resulting 'nuclear winter' effect. Whether our stricken planet would become uninhabitable or not is hard to say. Certainly its capacity to support even one-tenth of the current population could be extremely doubtful.

The last time our globe suffered such a blow may have been about 70 million years ago when the dinosaurs were wiped out. The celestial body responsible for the catastrophe would have been about the size of Phaethon. Much larger, and it would have wiped out all but the very lowliest lifeforms on our planet.

Smaller bodies strike Earth rather more frequently. A few tens of thousands of years ago a large meteoroid a few hundred metres in diameter struck the plateau of Arizona, forming the Barringer Crater near Winslow.

It is thought by some that Indian legend describes the event: the imagery is suggestive enough. If so, it would rank as the biggest impact of a celestial body in the span of human history.

We could have another next week. Objects up to about 1km diameter are almost impossible to locate in interplanetary space.

We know that there must be tens of thousands of them swarming around the Sun and occasionally one may get in our way. Until some new super-efficient interplanetary surveillance radar is perfected, there is no way of telling when it will happen. Have a Happy New Year!

<http://www.barringercrater.com/>

