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# THE CANTERBURY SWARM

## STARS

By Marcia Bartusiak

**T**ired of worrying about the threat of nuclear holocaust? Modern-day astronomers are providing us with plenty of alternatives.

Some have even speculated that our sun has a dim stellar companion, nicknamed Nemesis. Theory holds that its periodic passage through the distant cloud of icy debris surrounding our solar system triggers a barrage of comets that hurtles toward Earth every 26 million years or so. The sudden disappearance of the dinosaurs 65 million years ago may have been linked to a direct cometary hit, which stirred up a globe-spanning dust cloud that turned our planet into a frigid, sunless world (see Stars, August 1984).

Fortunately, this "death star," if it exists, isn't due back for another 15 million years. But don't breathe a sigh of relief just yet. If astrophysicist Kenneth Brecher, of Boston University, is correct, Earth may encounter a minibarrage of rocky chunks from another source. This attack is due in 58 years.

Many centuries ago, says Brecher, a massive comet circling within the inner planets underwent a series of breakups.

One piece that still orbits the sun every 3.3 years is Comet Encke, named after the nineteenth-century German astronomer who first plotted its relatively tiny orbit. Other fragments from the parent comet, Brecher theorizes, drifted away, gradually peppering a volume of space some 10 million miles across. "They lost their gas and ended up looking like asteroids," he explains, and guesses that the smallest pieces are the size of a bowling ball, while the largest could cover a football field.

According to his model, perhaps as many as 10,000 of these boulders travel together in an eccentric orbit similar to Comet Encke's—following a route just inside Earth's orbit past Mars—like a swarm of bees. Brecher has dubbed the group the Canterbury Swarm, in honor of Gervase of Canterbury, the medieval chronicler who may have unwittingly reported a swarm member crashing into our moon.

Gervase duly noted in his records that five monks told him that "the upper horn of the new moon seemed split in two and a flame shot from it" just after sunset on June 25, 1178. What were they witnessing?

Nearly eight centuries later, in 1976, planetologist Jack Hartung would report that a lunar crater, Giordano Bruno, could mark the site of that twelfth-century impact. The crater's size indicates that the blast released the energy of a multimegaton nuclear bomb, hundreds of times more potent than standard nuclear weaponry.

The earth itself may have collided with another giant Canterbury fragment on June 30, 1908, when a mysterious explosion near the Stony Tunguska river, in Siberia, flattened thousands of square miles of forests. Other researchers have already blamed the explosion on Comet Encke's debris, since the Tunguska event coincided with a meteor shower of dust particles left in Encke's orbit.

What was our latest encounter with the swarm? Brecher believes it occurred in June 1975, when seismometers left on the moon by the Apollo astronauts started quivering as meteoroids rained on the lunar surface during a five-day storm.

His suspicions are based on a predictable pattern. "The 1178, 1908, and 1975 events occurred at the same time of the year, and the objects came from the same direction," Brecher points out. From these historical clues, the Boston researcher made his estimates of the mass, size, and orbit of the theoretical swarm.

Since the earth and the swarm have different orbital periods, they don't meet up each year, but rather every 67 years. Brecher predicts that next summer Earth will be passing within 20 million miles of the orbiting cluster, a good opportunity for optical and infrared astronomers to take some photographs and confirm his theory.

But June 2042 will be the big date to mark on your calendar. According to Brecher's calculations, that's when Earth is scheduled to pass through the swarm. If we're lucky, this cosmic tête-à-tête will be marked by just a few fireballs blazing through the skies as some of the swarm's debris burns up in our atmosphere.

But the Siberian catastrophe serves as a reminder of the other possibilities. "My guess," Brecher says, "is that there will be a one-in-ten to a one-in-a-hundred chance of another Tunguska event." ☐



The Tunguska event: Was that mega-explosion in Siberia the result of a comet's return visit?