

## Comment by the Editor

### *MESSENGERS FROM SPACE*

Everybody is a back-seat driver on this mundane sphere and, regardless of any amount of admonition, the unseen chauffeur follows the course prescribed by the immutable law of gravitation. The speed is terrific, but the planets take the curves in perfect equilibrium. The solar system is so nicely balanced and the orbits of the planets are so true that these celestial travelers implicitly obey the traffic rules of the heavens.

Nevertheless, the passage of the earth through space is beset with danger. Many irresponsible vagabonds weave in and out among the stars like drunken drivers. These dangerous rovers are the comets. More than a million of them infest our solar system. These denizens of space are enormous collections of gas and stony fragments. The head of a comet may be a million miles in diameter and the tail a hundred million miles long. Some comets travel in such large orbits that they come into view only once in a thousand years, while others return at rather frequent intervals. No one knows what would happen if the earth should col-



lide with a comet: probably nothing more serious than a brilliant shower of meteors.

Meteors may, indeed, be listed among the perils of the earth. Mysterious in origin, these derelicts of the heavens, commonly called "shooting stars", are extremely numerous. The universe is so full of such cosmic rubbish that the earth is constantly being pelted with cruising chunks of iron and stone. Millions of them fall into the atmosphere every day and are set gloriously ablaze by the friction of their swift journey through the air. But they usually cause no serious damage because most meteors, being no larger than pebbles, are burned up before they hit the ground.

Occasionally, however, huge meteorites have plowed into the earth's surface leaving great scars like the Canyon Diablo crater in Arizona. The largest meteoric fall of historic times occurred in northern Siberia in 1914. When the place was visited thirteen years later, more than two hundred craters were found, some over seventy-five feet across. For fifteen miles in every direction the ground was seared as if by a gigantic blow torch. And for twenty miles beyond the charred area trees had been uprooted by the violence of the explosion. What if that forty thousand ton meteorite had struck a city! And who knows but that the earth may sometime collide with a meteor-



ite so large that a new velocity and direction may be imparted to our planet's axial spinning and thus greatly change the present order.

Most of the meteoric material in space seems to bear no definite relation to the members of the solar system. Each particle or family of particles appears to be utterly independent of the others, speeding helter-skelter, insect-like in different directions. Sometimes, however, the earth passes through a swarm of meteors. These are probably the remnants of an old comet, for some of the meteoric swarms follow the orbits of comets that have disappeared. When the earth crosses the old path of Tempel's comet every thirty-three or thirty-four years, the whole sky is filled with shooting stars.

If the night of November 13th is clear and the moon is dark, as in 1833, the Leonid shower is positively terrifying. Even in 1867 when the moon was full this display of celestial pyrotechnics was a magnificent sight. Unfortunately the two Leonid showers since then were disappointing.

As a place for the observation of meteors, Iowa has been unusually favored. In less than half a century, four of the largest meteorites of North America, whose coming has been witnessed and recorded, fell within the borders of this State. Though only a few people saw the Marion meteor



in February, 1847, it attracted considerable scientific attention. On the evening of February 12, 1875, came the great Amana meteor, which for sheer brilliance has seldom been surpassed. The Estherville meteoric shower of May 10, 1879, was the largest of the iron-stone type that has been witnessed anywhere: the principal mass, which weighed four hundred and thirty-one pounds, penetrated the earth farther than any other in the world. Late in the afternoon of May 2, 1890, thousands of people within a radius of more than a hundred miles of Forest City saw a great fire-ball come roaring out of the western sky. For a moment it eclipsed the brightness of the sun.

Though the origin of meteors is mysterious, their substance is not strange. In all the enormous quantity of meteoric material recovered, no new element has been discovered. Stony matter, iron, and nickel are the usual materials of which meteors are made. If they come from other worlds, they tell few secrets. Is the whole universe composed of earthly stuff? Has life ever existed elsewhere? What a marvel it would be if a meteor should some day bear a fossil to the earth! These messengers from space carry more questions than answers.

J. E. B.