

# Galaxy

SCIENCE FICTION

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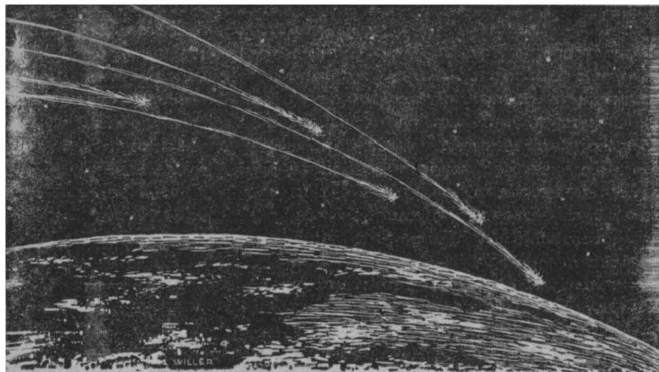
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**THE PUPPET MASTERS**  
by Robert A. Heinlein

*Am Sells*



## THE METEORIC STREAM

By WILLY LEY

Like cops, astronomers usually aren't around when big things happen—which may explain reports of Flying Saucers!

**T**HEY fell into the atmosphere like a swarm of angry missiles from the Moon. Just where they hit the atmosphere first is not known, but it must have been somewhere out over the Pacific Ocean. Then they were seen over Saskatche-

wan, going east. They were, it was established later, some 35 miles above sea level and they moved, as became apparent afterward, with that velocity which mathematicians and physicists call the "circular velocity." At that velocity, the degree of curva-

ture of a ballistic trajectory is the same as the degree of curvature of the Earth's surface, so that the altitude above sea level does not change. Expressed in figures the circular velocity is a little less than five miles per second.

If it were to happen today, there would be frantic phone calls to newspapers and to police stations about a missile attack, or flying saucers. But the date was the 9th of February, 1913.

It was seen from Saskatchewan all the way across the Great Lakes to the Bermuda islands, and by ships out at sea beyond Bermuda. Unfortunately much of western New York State, Pennsylvania and Maryland happened to be covered by an unbroken overcast that evening. If the sky had been clear all along the path of the meteoric procession, it could have been seen by some thirty million people. Because of the overcast, only 141 observations could be put on record. All but six of them came from Canada and mostly from Ontario; one came from Michigan; one from New Jersey; two from Bermuda and two from ships at sea.

**T**O the regret of all astronomers, not a member of the astronomical fraternity was a witness to the event. And only one of the witnesses used some optical aid: a high school boy in Trenton,

N.J. had the good sense to run back into his room to get an opera glass.

The cloud layer and the absence of trained observers handicapped the investigation of the phenomenon a good deal. But by collecting diligently everything that could be learned, Professor C. A. Chant of the Royal Astronomical Society of Canada did succeed in putting a rather complete picture together. As seen in western Ontario, this is what happened:

At about 9:05 on the evening in question, there suddenly appeared in the northwestern sky a fiery red body which quickly grew larger as it came nearer, and which was then seen to be followed by a long tail. Some observers state that the body was single, some that it was composed of two distinct parts, and others that there were three parts, all traveling together and each followed by a long tail.

The front portion of the body appears to have been somewhat brighter than the rest, but the general color was a fiery red or golden yellow. To some the tail seemed like the glare from the open door of a furnace; to others it was like the illumination from a searchlight; to others like the stream of sparks blown away from a burning chimney by strong wind.

Many of the observers said later that they thought at first that somebody had fired a large sky-rocket, partly because of the color which reminded them of burning fireworks, partly because of the

long tail, in which they believed they saw sparks. But a sky-rocket lasts for just so long and then falls, while this fiery red body did not.

Before the astonishment aroused by this first meteor had subsided, other bodies were seen coming from the northwest, emerging from precisely the same place as the first one. Onward they moved, at the same deliberate pace, in twos or threes or fours, with tails streaming behind, though not so long nor so bright as in the first case. They all traversed the same path and were heading for the same point in the southeastern sky. Gradually the bodies became smaller, until the last ones were but red sparks, some of which were snuffed out before they reached their destination. Several report that near the middle of the great procession was a fine large star without a tail, and that a similar body brought up the rear.

To most observers the outstanding features of the phenomenon was the slow majestic motion of the bodies; and almost equally remarkable was the perfect formation which they retained. Many compared them to a fleet of airships, with lights on either side and forward and aft; but airmen will have to practice many years before they will be able to preserve such perfect order . . .

While all witnesses agreed on the general picture, the date, the time and the direction of motion, there was considerable disagreement on the number of bodies. Most witnesses said "fifteen or twenty;" a number went higher, thinking that there must have

been "between fifty and a hundred," while a few witnesses maintained that there had been "thousands." This, aside from the simple fact that some people have better eyes than others, depended on how the counting was done.

The very first body, for example, could have been counted as three by some, while most would probably count it as one, even though it seemed to consist of several parts. The most reliable statement is probably that of the pupil of Trenton High School, Cecil Carley, who used an opera glass. He wrote: "There were about ten groups in all and each group, as seen through the opera glass, consisted of from 20 to 40 meteors."

While each observation was not very good—from the professional point of view—all together contained enough pertinent information to calculate a number of figures. Some of them have already been mentioned. Over Canada, the meteorites were 35 miles high and moved with a velocity of about five miles per second. The distance between the various groups in the procession must have varied from a minimum of about 50 miles to a maximum of about 100 miles. The total length of the meteoric procession, therefore, was about 1,000 miles.

For any single observer in Canada, the fantastic display lasted

between three and four minutes. Whenever natural phenomena are reported by chance witnesses, the things they *don't* say are very often as important as the things they do report.

It is important in this case, for example, that not a single observer reported that a meteorite dropped out of the procession and fell to the ground. Some thought sparks were falling from the tails, and that is probably correct. But the main bodies stayed in place. Nor did any one of the Canadian observers report that the groups of the procession shifted while he was watching. Everyone saw the groups maintain their distance from each other. The sequence of the groups also did not change: a large golden red body (or bodies) first, then a number of smaller ones of similar appearance, a bright tailless body, then again some others, and small red ones last.

But while the procession traversed the cloud-covered eastern United States, a change did take place. The reports from Bermuda leave no doubt, as far as time of appearance and direction of travel were concerned, that the same meteoric procession was seen. But the description of the appearance differs markedly from the Canadian reports.

The large tailless body was now in the lead and was emit-

ting sparks. The others followed after it and were apparently not quite as bright any more.

There is, as we now know from high altitude rocket work, very little air resistance at a height of 35 miles. But over a distance such as the one from Toronto to Bermuda, even this slight air resistance must have made itself felt. The procession, traveling under kinetic energy only, had lost altitude. Professor Pickering calculated, from the Bermuda reports, that the procession was only about 30 miles above sea level when the islands were reached.

As regards the fact that the "fine tailless star," which had been in the middle of the procession when over Canada, was in the lead and sparking over Bermuda, Prof. Pickering arrived at an interesting conclusion. That tailless meteor, he said, was probably an iron meteorite, while all the others were either stony meteorites or so-called stony irons. An iron meteorite, having a higher specific gravity, has, of course, a greater kinetic energy than a body of lesser specific gravity traveling with the same velocity. Because of its higher kinetic energy, it had gradually forged ahead and assumed the lead.

The ships out at sea were not far enough beyond Bermuda for their crews to see a further step

in the history of the meteoric procession. If there had been a ship a thousand miles or so southeast of Bermuda—say on a line drawn from Bermuda to St. Helena—it might have reported a still lower altitude, and, in all probability, a longer interval between the tailless meteor and the other groups which followed. It was almost certain that the procession fell into the Atlantic Ocean before reaching the African coast.

That night was a night of large meteors. Three bright fireballs and one group were reported a few hours later, going west. A single bright fireball had been seen 45 minutes before the procession began, traveling in the same direction. And after the procession there was one going east.

From all this, Prof. Pickering concluded that during that night our planet had overtaken a swarm of relatively large meteorites, which traveled roughly along the orbit of Earth and with about the same velocity, relative to the Sun. The point is that the swarm extended over an area somewhat bigger than the diameter of Earth. Because of that, some were caught on one side of the planet and some on the other. The result, seen from the ground, was, of course, meteors going in opposite directions.

As is customary after a strange phenomenon, a number of re-

searchers invaded the libraries looking for similar events in the past. There were plenty of bright fireballs going east or going west. There were bright fireballs with long tails and bright fireballs without tails. There were fireballs which had disappeared below the horizon, and there were fireballs which had exploded in full view of the witnesses. Sometimes even pieces had been salvaged. But the researchers had to go back ten centuries to find another actual procession. It was seen in the vicinity of Cairo in 1029 A. D., only nobody had bothered then to write down details. The source merely said that "in the month of *Redjeb* (August) many stars passed, with a great noise and a brilliant light."

That does not mean, naturally, that another thousand years will go by until another meteoric procession occurs. It may happen next year, or next month, or tomorrow. But one almost wishes that there will be an overcast again, with only astronomical observatories sticking out through the cloud layer. Because now, with world tension as high as it is, nine out of ten observers would interpret such a procession as a military attack.

It would be like throwing a rock into a nest of hornets—a cosmic joke on blind-angry humanity.

—WILLY LEY