

THE SYLACAUGA, ALABAMA METEORITE: THE IMPACT LOCATIONS, ATMOSPHERIC TRAJECTORY, STREWN FIELD AND RADIANT. Harold Povenmire Florida Fireball Network 215 Osage Dr. Indian Harbour Bch., Fl. 32937.

The Sylacauga Meteorite fell at 18:46 U.T. on November 30, 1954. The Hodges fragment struck Mrs. Ann Elizabeth Hodges after penetrating the roof of her house in Oak Grove, Alabama. This was the first well authenticated case of a human being being struck by a meteorite. This fall was written up briefly by the geologists who were on the scene (1). Two fragments were recovered and their find locations are now located on topographic maps. The atmospheric trajectory, radiant and strewn field parameters are described.

The skies were clear at Sylacauga at 18:46 U.T. when a bright, slow moving fireball appeared in the southern sky. The sonic booms nearly knocked a boy off his bicycle in Montgomery, Al. At approximately 19 km altitude, the fireball which had fragmented into at least three pieces ceased to be visible except for its white dust train. The dark flight lasted approximately 130 seconds(2)(3).

It is interesting to note that many persons from Montgomery to Sylacauga reported that they had television interference at the time of the meteorite fall. This phenomenon has been noted on other fireballs analyzed by the Florida Fireball Network.

The largest fragment of this H4 chondrite penetrated the roof of a 140 year old frame house and struck Mrs. Hodges on the left hip(4). The location of this house was scaled from the U.S.G.S. 7.'5 Sylacauga West, Al. 1980 topographic map. The coordinates are long. 86 degrees 17' 40."2 N., Lat. 33 degrees 11' 18."1 N. at an elevation of 180 m.

The McKinney fragment (1.68 kg) was located the next day at long. 86 degrees 17' 20."7 W. and lat. 33 degrees 13' 08."4 N. at an elevation of 161 m. The straight line distance between these points was 3750 m(5). The prevailing winds were from the west.

The atmospheric trajectory was computed from visual reports using both the graphic and mathematical methods from Olivier(6). The radiant was high in the southern sky in the constellation of Ophiucus. It came from an azimuth of approximately 180 degrees (perhaps slightly east of this if one low weight observation is included). The radiant was determined to be at approximately R.A. 261 degrees, Dec. +5.0 degrees (1950.0).

This is very near the southernmost declination of the ecliptic. This meteorite crossed the Earth's orbit at solar long. 247 degrees 42' 58."9 (1950.0). Since the meteorite came in on the sunward side of the Earth, it had passed perihelion and was traveling outward from the Sun. Since it probably passed perihelion when it was north of the celestial

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equator, it would have crossed the Earth's orbit at its descending node. A comparison with known near Earth asteroid orbits indicates that (1685)Toro is probably the best match.

The strewn field of this fall should be an ellipse with the long axis in a north-south direction centered on long. 86 degrees 17' 30" W. It should have a minor axis of at least 3 km. The southern end should be at lat. 33 degrees 09' and extend northward to 33 degrees 20' N.

A third fragment is believed to have impacted somewhat to the northwest but has not been recovered. This is a large area but the observations support these parameters.

The final resting place for the Hodges fragment is in the University of Alabama-State Museum of Natural History at Tuscaloosa. The McKinney fragment is in the Smithsonian. Mrs. Hodges is buried in Baptist Charity Cemetary at Hazel Green, Alabama with a very small undistinguished headstone.

References

1. Swindel, G.W. and Jones, W.B (1954) The Sylacauga, Talledega County, Alabama aerolite: A recent meteorite fall that injured a human being. *Meteoritics* 1 125-131.
2. Halliday, I. et al. (1978) The Innisfree Meteorite and the Canadian Camera Network *Jour. Royal Astr. Soc. of Can.* Vol. 72 No. 1 pp. 15-39.
3. Halliday, I. et al. (1989) The typical meteorite event, based upon records of 44 fireballs. *Meteoritics* No. 24 pp. 65-72.
4. Graham A.L. et al. (1985) *Catalogue of Meteorites* 4th ed. University of Arizona Press, Tucson p. 339.
5. Povenmire, H. (1990) Sylacauga Meteorite Fall *Jour. Ala. Acad. of Sci.* Vol. 61 no. 2 pp. 50-59.
6. Olivier, C.P. (1925) *Meteors* Williams and Wilkins Baltimore, Md.