

THE TEXAS METEOR OF OCT. 1, 1917

By J. A. Udden

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Conclusion: The event which has been recorded in the preceding pages began and ended within the limit of three or four seconds. It can be told in very short space also. The meteor was first seen some 110 or 120 miles above Burnet or some adjoining county. It traveled about 130 miles, with an initial velocity of some 35 or 40 miles a second, slantingly toward Kimble or adjoining counties, and exploded when about six miles above the ground. In its general behaviour as to light, sounds, and explosion, it resembled the stony meteorites. It is my belief that the sequence to this tale will be a description of some of the fragments into which the meteor broke, when they shall have been found in or near Menard, Mason or Kimble counties. (p. 56)

Appeared about 10.30 p.m. (p 5) The geographic center of the places reporting point of appearance in the zenith lies about 3 miles NE from the SW corner of Lampasas Co. (p. 16). The geographic center of the intersections of well observed beginning azimuths is about 12 miles SW from the middle point of the boundary between Burnet and Bell Co. This is 23 mi. to the E-SE of the first point determination. "The two determinations have probably equal value, and combining the observations of all the 19 persons who made them, it would appear that the meteor first began to glow above the station of Tumlinson on the GC&SF Rr., in the north part of Burnet Co." (p. 18) Beginning heights vary from 186 to 68 mi., average 115. (p 19). "Whatever may have been the cause of such apparently step-like increases in the light, the observations seem likely to be correct and deserve recording. One observer notes two distinct increments in the light, while five others seem to have noted only one. As this increase in brightness was observed in the central as well as in the peripheral regions where the meteor appeared, and almost with equal distinctness from all directions, it may be regarded as confirming the belief that its angle of incidence to the earth's surface was quite high. The step-like increases...must have taken place at considerable altitudes...suggest the existence of some stratification in the components of the earth's gaseous envelope..." (pp20-21).

A report that the meteor traveled a zig-zag course "must be regarded as an embellishment in the telling of the tale." 19 say the path was curved or slightly so; 26 describe it as straight. In a zone parallel with the vertical plane of the path, from E to W, and extending 50 miles away from it, the meteor appeared to 13 observers to follow a straight course. But at Brady and Burnet, on opposite sides and a small distance away from the vertical plane... a curving course is reported. As the path would appear much shortened from these two points, the curvature of its projection would be more apparent." Other observers farther away reported a curve; e.g., at Austwell, on the South Tex. coast, the meteor "Swerved to the right". (pp. 21-22).

‡ no such reports from points farther out in the area where meteor was seen (below horizon?)

Many of the observers disagreed as to the projected direction of the path, which strongly suggests that the path was at a high angle with the earth's surface. (p. 23). The meteor could not have been extinguished lower down than 5 miles above the earth's surface and not higher up than 7 miles. If we take the outer rim of the zone of conflicting reports (as to whether the meteor reached the horizon or went out before reaching it) for the periphery of a circular area beyond which the meteor appeared to reach the horizon...we are likely to assume true conditions. The curvature of the earth for the radius of this circle approximates 5.8 mi. This therefore seems to be the height at which the meteor ceased to be luminous. The center of the circle this peripheral zone limits is oddly to the north of the indicated area of fall, without doubt due to some extent to the topography of the region. The probable point of explosion is shown on a map to be in the SW corner of Menard Co. (but cf. location of end point). Many reports established a great breaking up or bursting of the fireball at or near the endpoint.‡ Three good observations fixed end height at 5.5, 9 and 7 mi., so that 6 or 7 must be right. J. H. Mathey, at Losoya, is mentioned as an amateur astronomer who made excellent observations. (pp. 24-26).

Three or four seconds seem best general estimate of duration; Udden leans to about 3. Taking a path length of 120 he derives 40 mi./sec. as initial velocity. (p. 28). The geographic center of the intersection of directions of end-point of 16 best observations is at the junction of Menard, Mason and Kimble counties. The three best observations, Mathey (above); W. D. Quinn, of Grandview; and Dr. S.L. Brown, of Austin, agree very closely and intersect in the SW corner of Menard county. As the explosion occurred some 6 miles above the ground, and as the meteor evidently traveled SW, the fragments...prob. fell in or near the NW corner of Kimble county... a more or less wooded upland used as pastures...sparsely inhabited, and frequented mostly by only ranchman interested in stock raising. (pp. 28-9).

The light was equal to sunlight in the end-region, and did not anywhere in the state fall much below the light of the full moon. Newspaper reports quoted tend to show the moon was shining brightly at the time, and perhaps was about at full. (Necessarily at least near first quarter because of the time of night.) (pp. 29-36 inc.)

All colors were mentioned, with white, blue and red leading in the order given. Red reported frequently from distant points is regarded by Udden as due to absorption. Color changes are perhaps similarly explicable, or perhaps...

Whether the meteor shed sparks along its path is not entirely certain, but seems to be established for the latter part of its course by the observers in the central region.

By a comparison of observers' reports of apparent size and distance (linear), and by setting up ratios of true distance: estimated distance, Udden tries to deduce a size for the meteorite. After considerable adjusting, he arrives at 5 feet for the diameter.

Sounds were heard--"heavy" ones in the central region, especially back along the meteor's path. There was a tendency for reports to mention a loud, sharp sound or explosion (or two--perhaps correlated with the two light and color changes?), followed by the characteristic rumbling. The elapsed time between sight and sound was as usual reported in an unsatisfactory way, but as worked out tended to confirm Udden's other results. A simultaneous whizz, odors, breaths of warm air, etc., were reported.

A train apparently remained visible for a time of the order of an hour in the central region. From one point it is definitely reported as a ring at the endpoint. In general the train seems to have assumed the shape of an L (turned otherwise for observers on the other side), probably on its side,

Arnold E. Zeiske of 5901 Palo Pinto Ave., Dallas, saw this from Ackerly, Tex., + is the observer from there mentioned by Udden. See his letter of 1936 4-2. Phone 3-9343. From Udden's article he thought it fell in many pieces near London, Kimble County.

W. D. Quinn, now at Smithfield, saw it from Grandview + is mentioned by Udden. Measures of his obs. from corner of 1st + Main Sts., Grandview, on 1936 12-20 gave alt 17° S 5° W as beginning, alt 2° or less azimuth S 45° W as end (behind barn, we measured top of roof of present barn which replaced one there at the time). Barometer set for 9° C. mag. dec.

Seen at Brady by Miss Elisa Y. Stibel (wrote 1947 1-25)
San Luis P. M. Ellis