

CASE ANALYSIS OF A HISTORIC KILLER TORNADO EVENT IN KANSAS ON 10 JUNE 1938

Charles A. Doswell III and Harold E. Brooks
NOAA/ERL National Severe Storms Laboratory
Norman, Oklahoma

1. INTRODUCTION

Although the tornado of 10 June 1938 has been known about, at least anecdotally, within the scientific community since it was brought to light in 1939 by Metro-Goldwyn-Mayer, this potentially rich source of historic information has lain fallow. It is within this rich field of mobile, American thinking that we undertake this effort. A team of scientists with courage, brains, and even heart brought the resources to bear on the challenge.

The history-making documentary footage made available by Metro-Goldwyn-Mayer has been subjected to careful analysis. As noted by Grazulis (1993; pp. 879-880), the tornado in question was part of an outbreak in Kansas on that day, including a violent killer tornado near Clyde, Kansas, and a "barn shifting" F1 tornado in Rooks county. It seems that shifting human structures was a common feature of tornadoes on that fateful day. Note that information about the tornado we are documenting apparently was not available to Grazulis, as he has not listed the single fatality associated with the event (the listing on p. 880 in Harvey, Marion, and Chase counties). We believe we can explain why this casualty was not recognized.

An examination of the footage and the information it conveys about the damage

suggests the event is correctly classified by Grazulis as an F2 tornado

2. THE TORNADO

This certainly was not the most intense tornado of the day. We do not have images along its entire path, which began near Peabody, KS and ended near Elmdale, KS (Fig. 1).

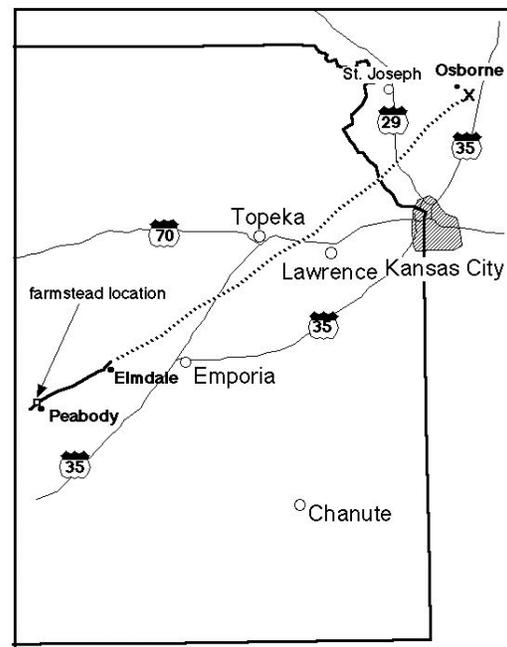


Figure 1. Track of the tornado (solid line) and approximate path of the airborne house. The Gale farmstead from which the house came is indicated.

However, during the time it interacted with the Gale farmstead northwest of Peabody, the visual appearance of the tornado was sinuous and ropelike (Fig. 2).



Figure 2. Photograph of tornado approaching the Gale farmstead.

The appearance of a tornado is not an unambiguous indicator of its intensity, but this appearance is not inconsistent with its known damage. In particular, the Gale farmhome was shown clearly to have become airborne during the twister (Fig. 3).

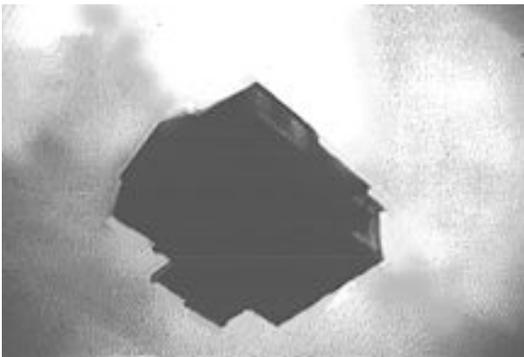


Figure 3. The Gale home, in flight.

The fact that the entire home was lifted off its foundation is almost certainly evi-

dence of inadequate attachment of the home to its foundation (Marshall 1993). This evidence is bolstered by a number of flying objects during the event including a certain Ms. Gulch (Fig. 4), who was to be the tornado's only fatality.



Figure 4. Ms. Gulch, as flying debris.

Ms. Gulch was crushed when the house finally descended. This fact was not recorded by Grazulis (1993); our explanation for this oversight is presented in the next section. Ms. Gale, who survived the fall of the house, was also injured by flying debris within the house when it was lifted off the foundation. Although she required no hospitalization, it appears that some of her experiences after the tornado struck her home are suggestive of lingering cerebral injuries that were not detected during her diagnosis.

3. THE PATH OF THE HOME

As shown in Fig. 1, the flying home was airborne for a considerable distance. In fact, the home came to rest in Osborne, MO. Ms. Gulch's demise (Fig. 5) was thereby in another state, so it is understandable that news of this death did not make the record in Kansas.

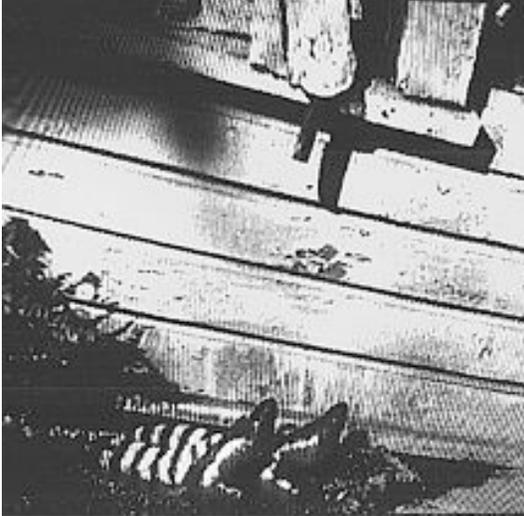


Figure 5. [not for the fainthearted]. Ms. Gulch's feet protruding from under the Gale house after it landed near Osborne, Missouri.

Also, it is a peculiarity of the region that in the vicinity of Osborne, the town name is pronounced "AHHZ-bun," with the second syllable given such a low emphasis that those who are hard of hearing or whose cerebral functions are impaired may not even hear the second syllable. Ms. Gale was observed by her foster parents to be seriously confused by her misadventures, believing them to have occurred in some odd location known as "Oz." Therefore, it is not at all surprising that Ms. Gale mispronounced the town name. Moreover, the under-sized inhabitants (poor nutrition?) tended to speak with high-pitched voices that are unlikely to be heard clearly. Unfortunately, it is not known by what path Ms. Gale returned to the farmstead near Peabody.

4. DISCUSSION

Unfortunately, the footage available does not permit detailed photogrammetry. The debris cloud is too amorphous to permit detailed analysis and the image clarity is inadequate to resolve debris

aggregates and cloud tags adequately, given the relatively primitive optics of the day. The storm was strong enough to remove the Gale home from its foundation and loft it a distance of approximately 180 mi (~300 km). This might well be an unrecognized record distance for lofting of such a large object (see the Tornado Debris Project). However, it is clear from Fig. 3 that the home was not firmly attached to its foundation.

The process by which Ms. Gale returned to her home is not clear. In her confused state, Ms. Gale kept saying "There's no place like home." and asserting that that phrase, plus the shoes she acquired from the dead Ms. Gulch, was responsible for her return.

Although this tornado was clearly overshadowed by other, more violent tornadoes that day, it is noteworthy owing to the unusual events experienced by Ms. Gale and Ms. Gulch, and for the footage obtained of the tornado. Movie footage of tornadoes before 1950 are, of course, quite rare. Metro-Goldwyn-Mayer (and having recently acquired the copyright, Turner Films) deserves the gratitude of the scientific community. Many members of that community have enjoyed seeing this rare old footage, including the authors, naturally.

5. ACKNOWLEDGMENTS

We would like to thank all those who have been involved in the process of identifying and preserving historical tornado movies. Our thanks also go to Tom Grazulis, whose efforts to create a data base of historical tornadoes brought the discrepancy in the death reports to our attention.

6. REFERENCES

- Grazulis, T.P., 1993: *Significant Tornadoes 1680-1991*. Environmental Films, St. Johnsbury, VT, 1326 pp.
- Marshall, T.P., 1993: Lessons learned from analyzing tornado damage. In *The Tornado: Its Structure, Dynamics, Prediction, and Hazards* (Church et al., Eds.), *Geophys. Monogr.* **79**, Amer. Geophys. Union, 495-499.