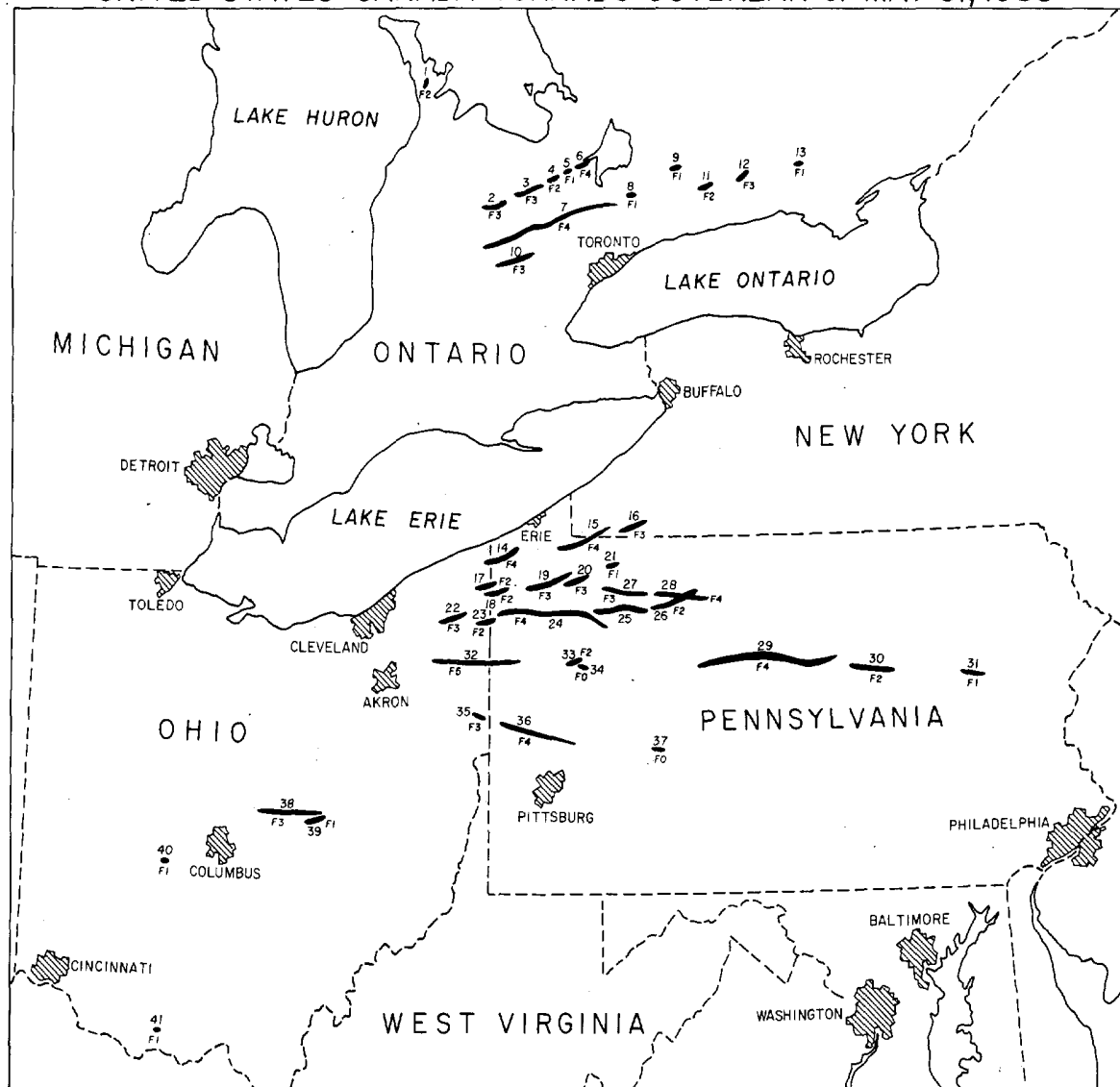


2. TORNADO OUTBREAK in the UNITED STATES and CANADA on May 31, 1985

On the afternoon of May 31st, thunderstorms along and ahead of a strong cold front produced the most devastating outbreak of tornadoes since the Superoutbreak of April 3-4, 1974. Most of the tornadoes occurred in two separate areas, one between Lake Ontario and Georgian Bay in Canada, and the other centered in northwestern Pennsylvania (see map below). Of the 41 tornadoes mapped, 1 was F5, 9 were F4, 11 F3, 9 F2, 9 F1, and only 2 were F0. 74 deaths and over 850 injuries occurred in the United States alone.

UNITED STATES-CANADA TORNADO OUTBREAK of MAY 31, 1985



No.	TORNADO NAME	8. Wagner Lake	17. Dorset	26. Lamont	34. Emlenton
1. Rush Cove	10. Alma	9. Reavoro	18. Linesville	27. Tidioute	35. Middleton
2. Hopeville	11. Ida	19. Saegerton	20. Centerville	28. Kane	36. Beaver Falls
3. Corberton	12. Rice Lake	21. Thompson Run	29. Moshannon State Forest	37. Penn Run	38. Utica
4. Borden	13. Minto	22. Mesopotamia	30. Watsontown	39. Cooperdale	40. London
5. Essa	14. Albion	23. Kinsman	31. Holenback	41. West Union	
6. Barrie	15. Corry	24. Atlantic	32. Wheatland		
7. Grand Valley	16. Busti	25. Tionesta	33. Big Bend		

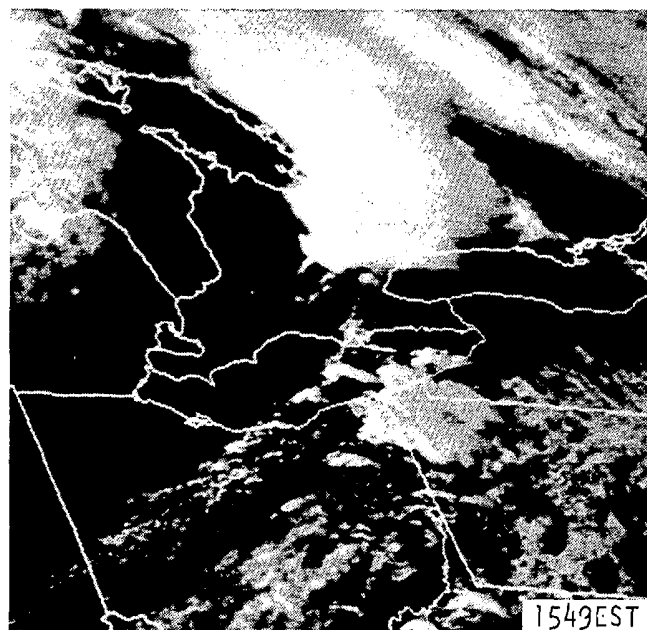
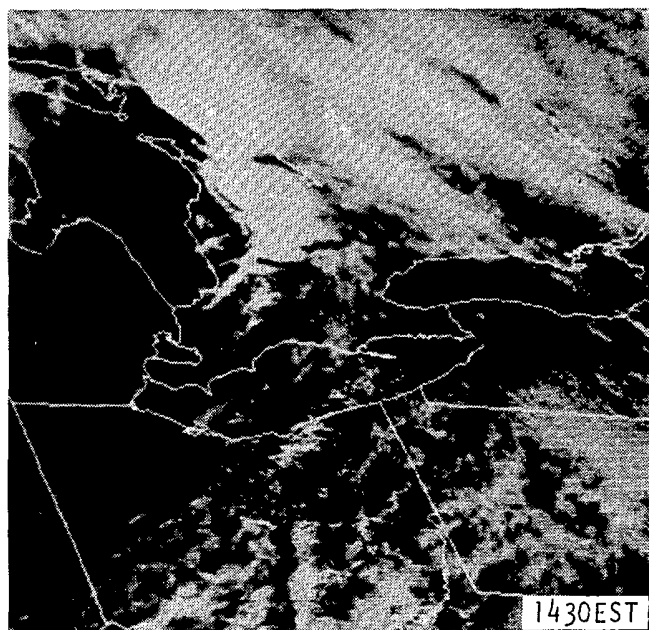
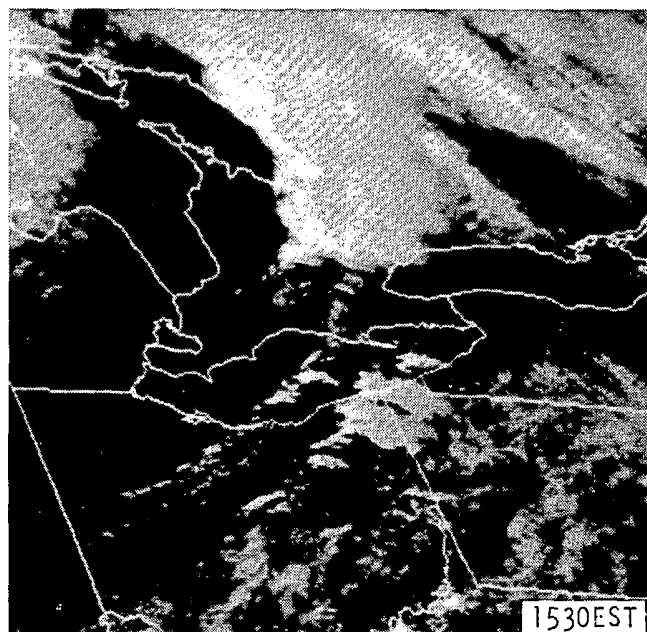
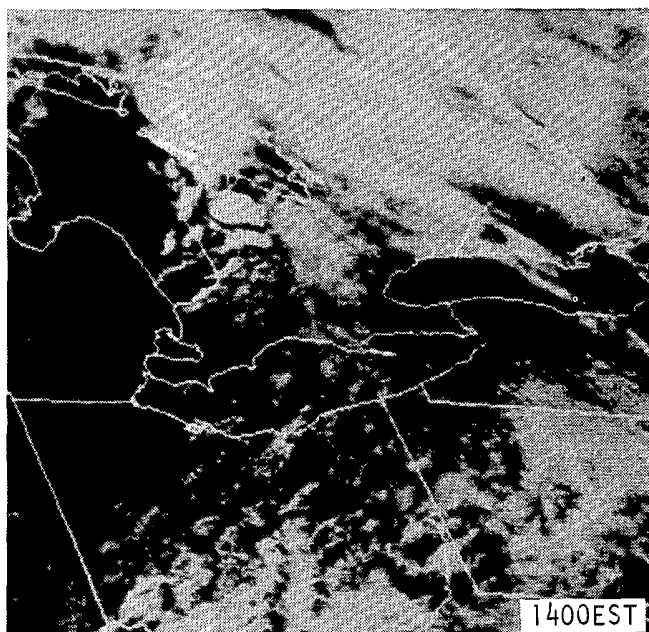
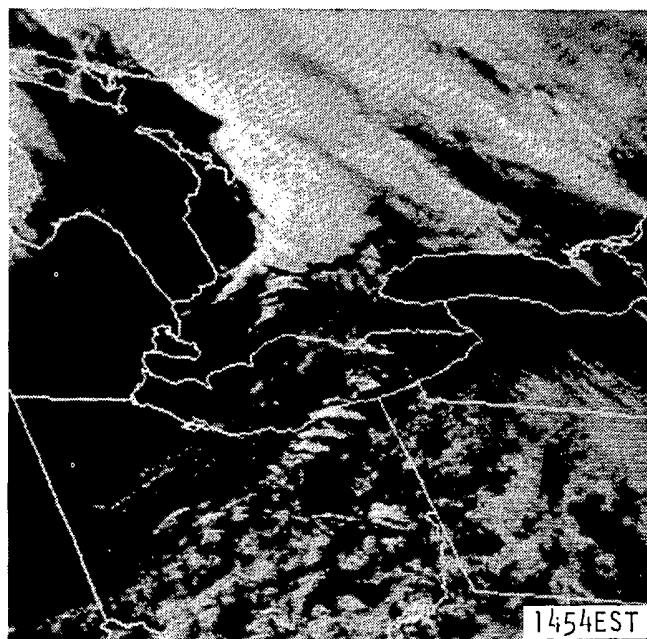
---This outbreak map was prepared at the University of Chicago based on the following data sources available as of October 8, 1985:

Aerial and ground surveys of Ohio, Pennsylvania and New York tornadoes by Duane Stiegler, University of Chicago and Greg Forbes, Pennsylvania State University. Aerial survey of Canadian tornadoes by Brian Smith, University of Chicago and the Canadian Weather Service.

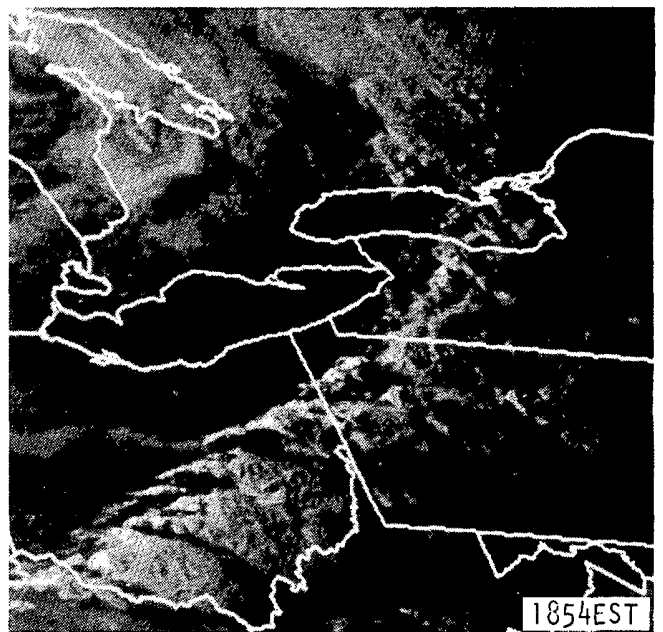
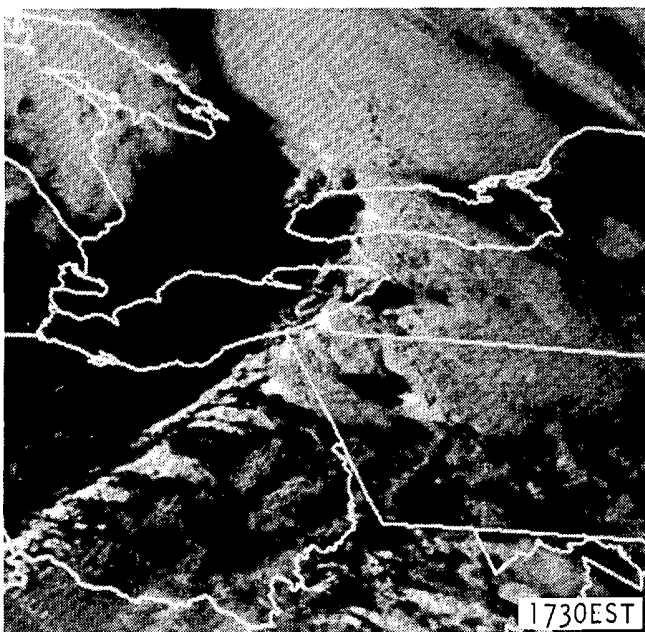
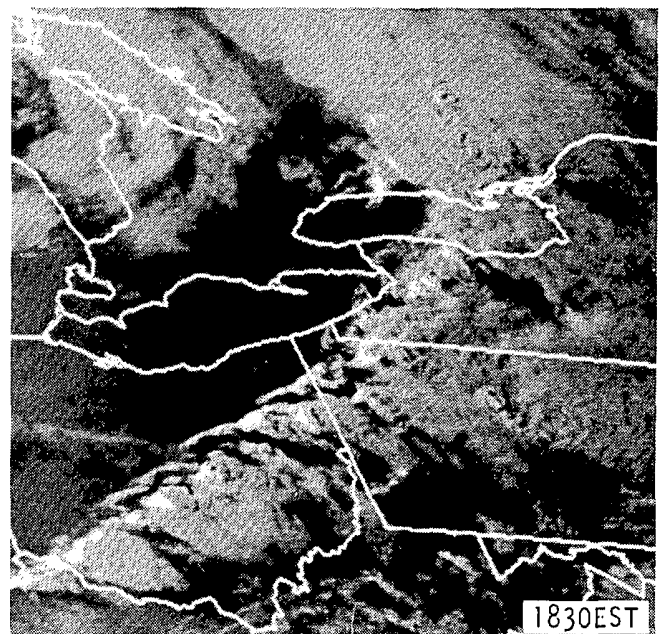
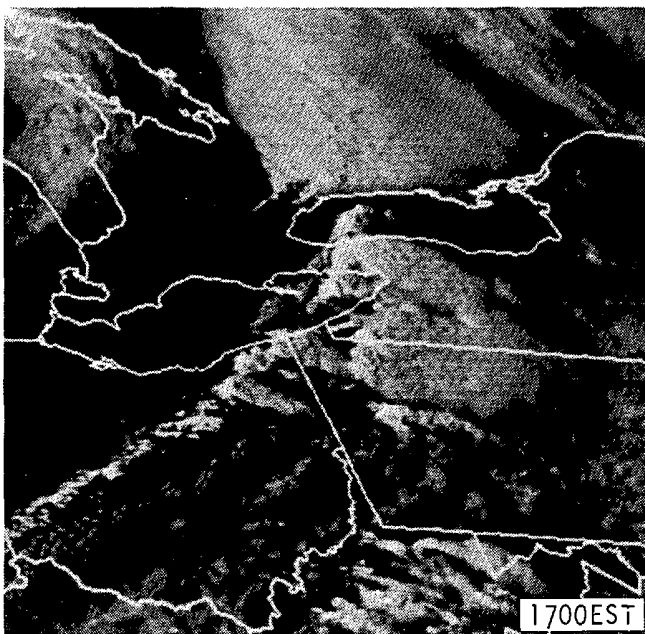
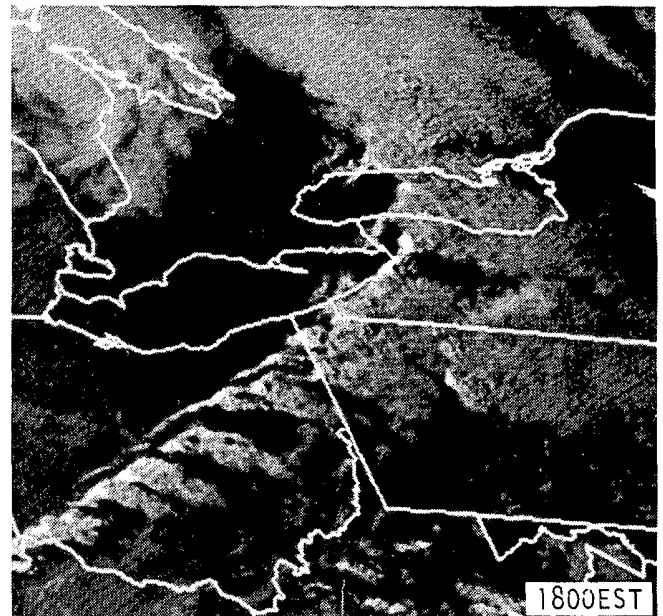
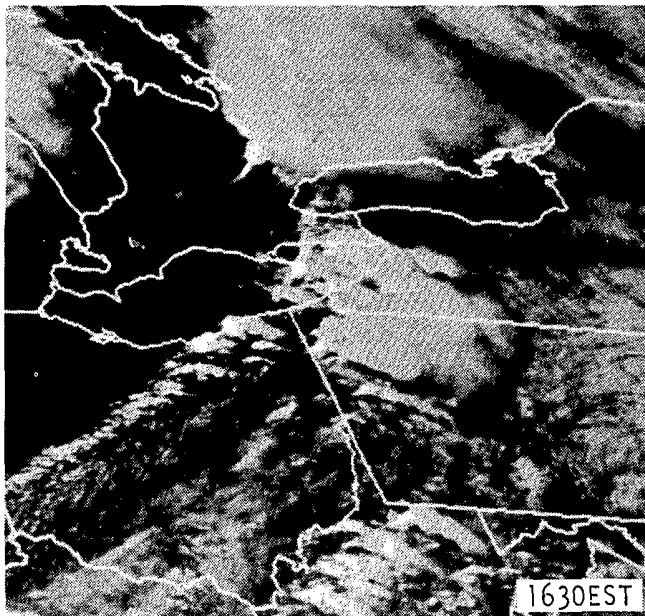
*Discrepancies between the above map and the individual state reports have not yet been resolved. Revisions will appear in a future issue.

TORNADO OUTBREAK in the U.S. and CANADA ---- continued

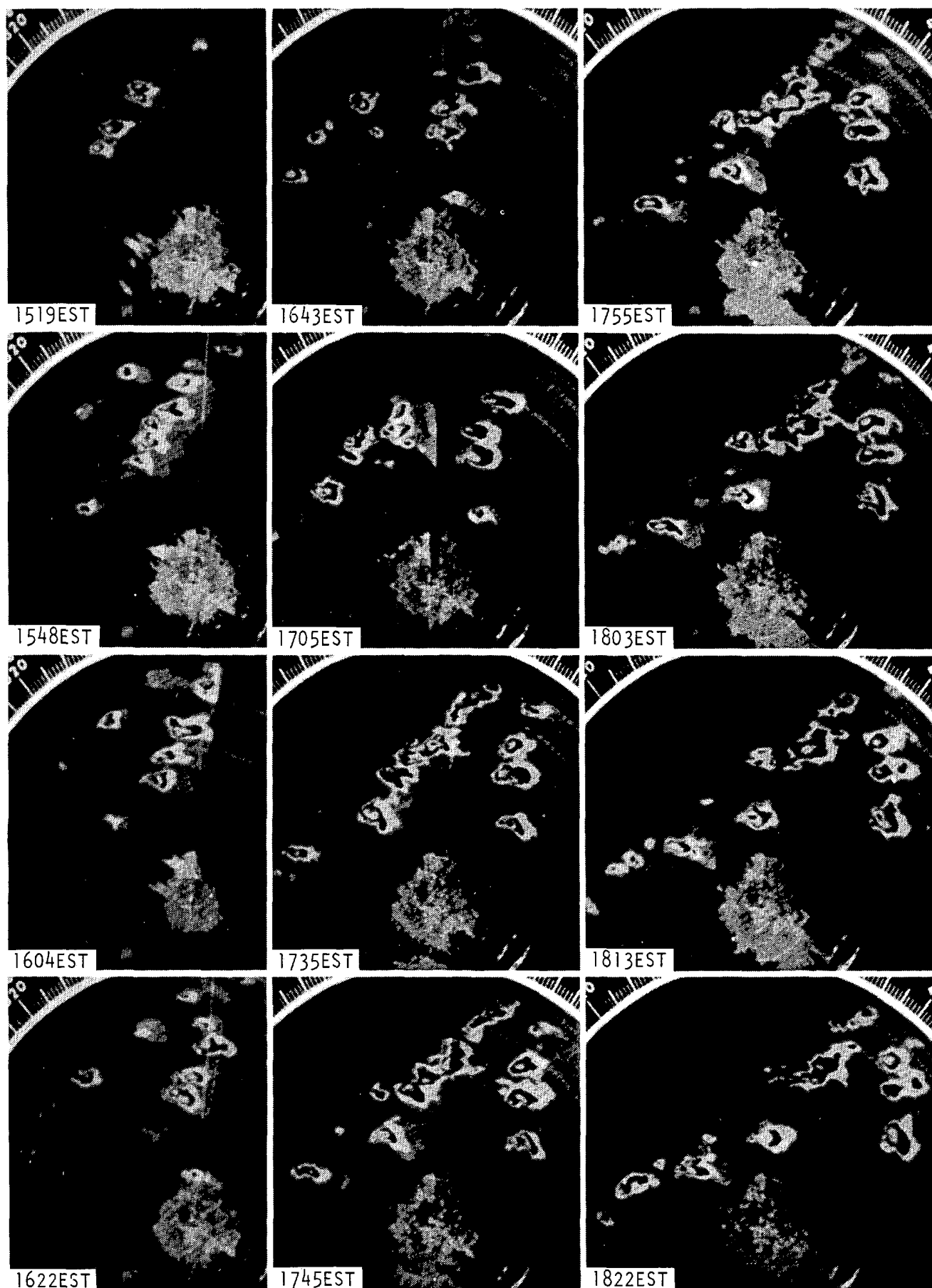
On this and the opposite page are GOES 6 satellite, visible images taken at approximately half-hour intervals during the tornado outbreak on May 31st. Thunderstorms began developing southward along an eastward-moving cold front during the late afternoon. Note the division between the northern part of the thunderstorm line, which developed first and corresponds to the Canadian Tornado area, and the thunderstorm cluster that developed along the south shore of Lake Erie, accounting for the separation of the tornado areas. Many of the U.S. tornadoes accompanied thunderstorms that formed in the warm sector ahead of the cold front, rather than along it. ---Photos produced by McIDAS, University of Wisconsin.



TORNADO OUTBREAK in the U.S. and CANADA ---- continued

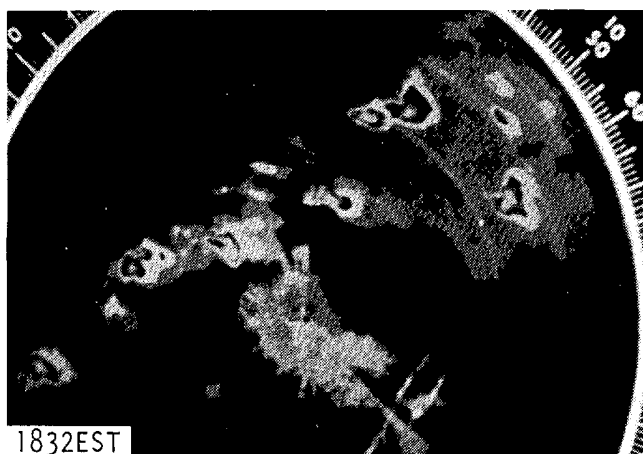


TORNADO OUTBREAK in the U.S. and CANADA ---- continued

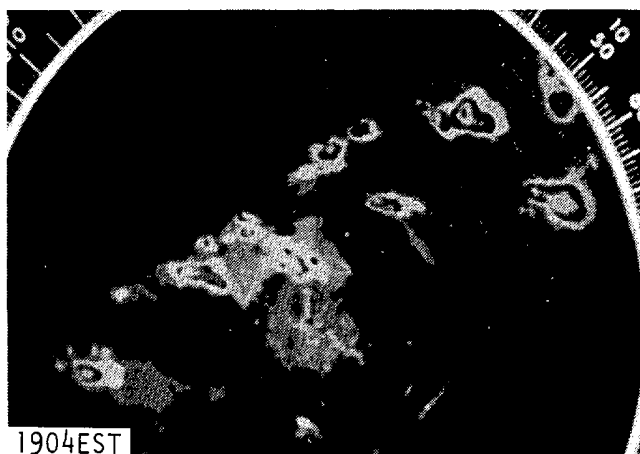


A sequence of PPI scope images taken from the WSR-57 radar at Pittsburgh, Pennsylvania during the tornado outbreak on May 31st. The individual cells, many of which reached level 6 intensity, often exhibited characteristics associated with rotating thunder-

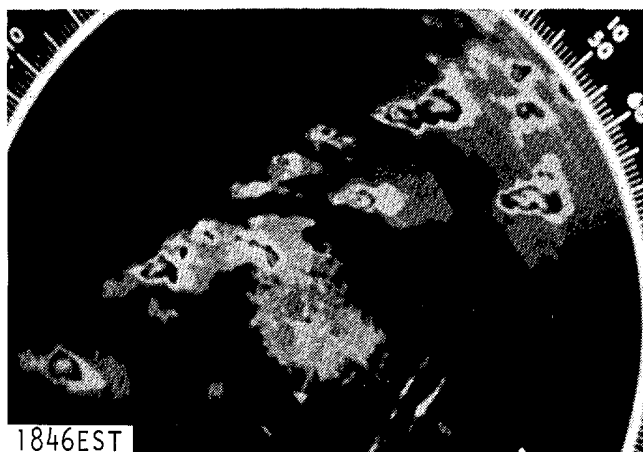
TORNADO OUTBREAK in the U.S. and CANADA ---- continued



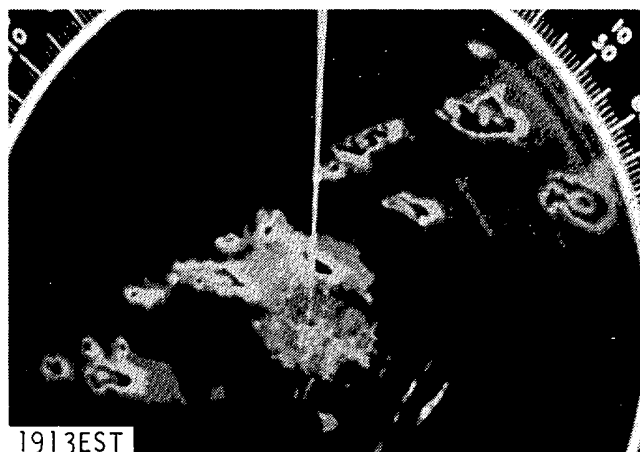
1832EST



1904EST



1846EST



1913EST



1853EST



1922EST



1855EST



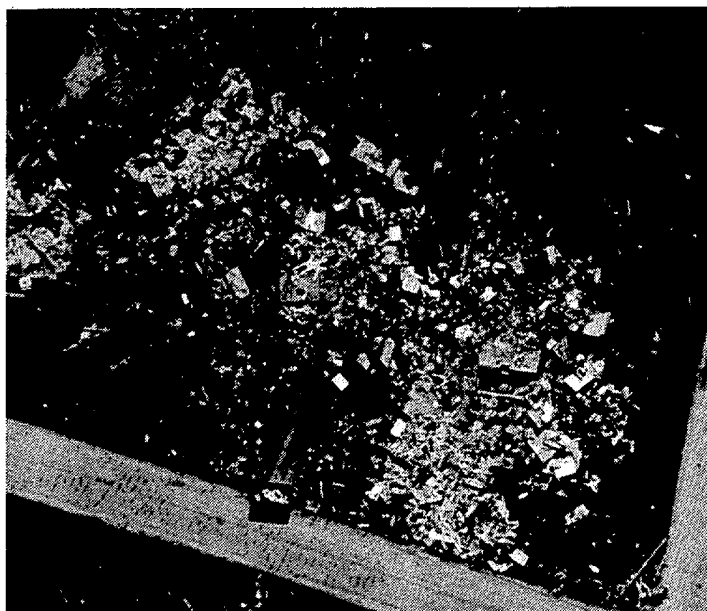
1929EST

storms. Many displayed features such as trailing appendages or hooks which are additionally indicative of tornado production. ---Radar microfilm from NCDC.

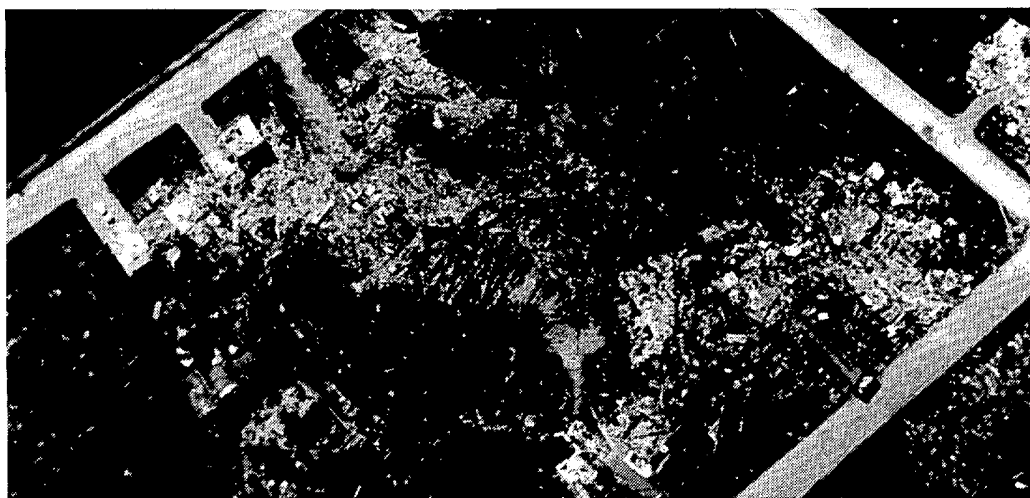
TORNADO OUTBREAK in the U.S. and CANADA ---- continued



A factory that took a direct hit from the Barrie Tornado in Ontario, Canada.



View along the path of the Barrie Tornado where it moved from a residential into an industrial area (left), and a close view of two of the leveled homes (right).



Barrie homes that suffered the worst damage inflicted by the tornado, some having only the foundation left.

---All photos by Brian Smith, University of Chicago.

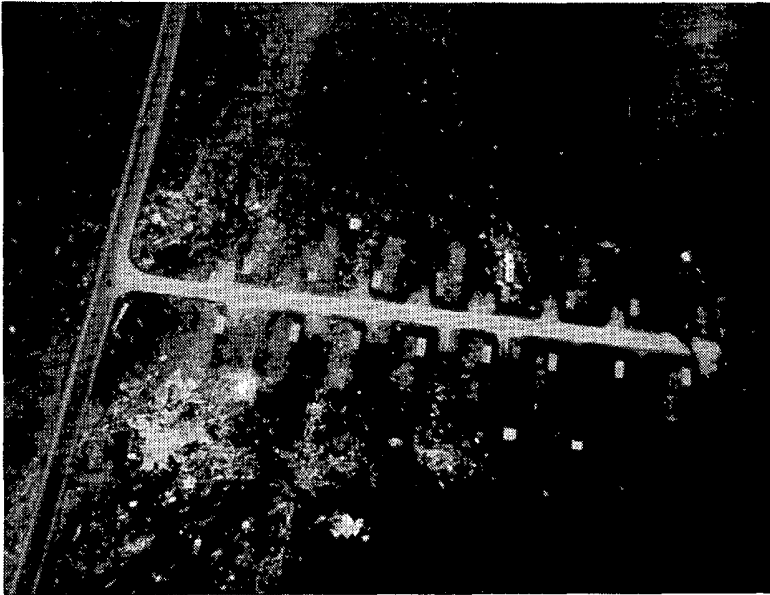
TORNADO OUTBREAK in the U.S. and CANADA ---- continued



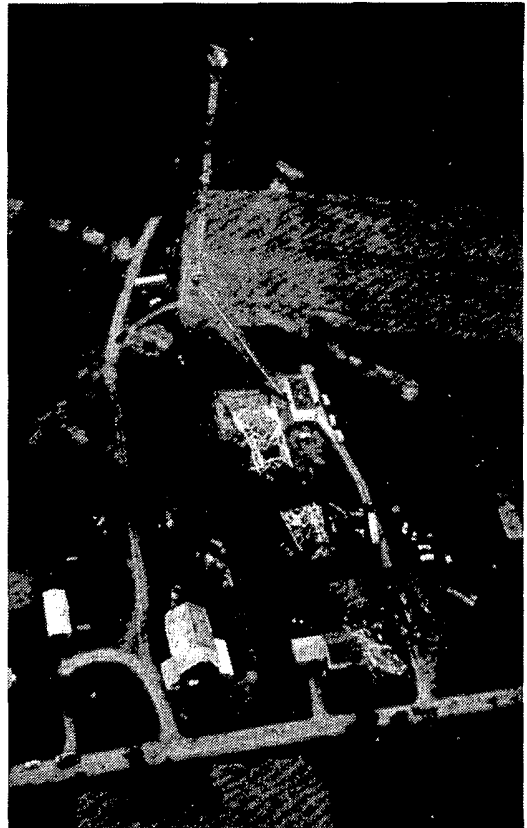
Above are two aerial views of Albion, Pennsylvania, looking northeast along the tornado's damage track from the southwest edge of town (left) and through the center of Albion (right). Below are destroyed homes along Albion's main street.



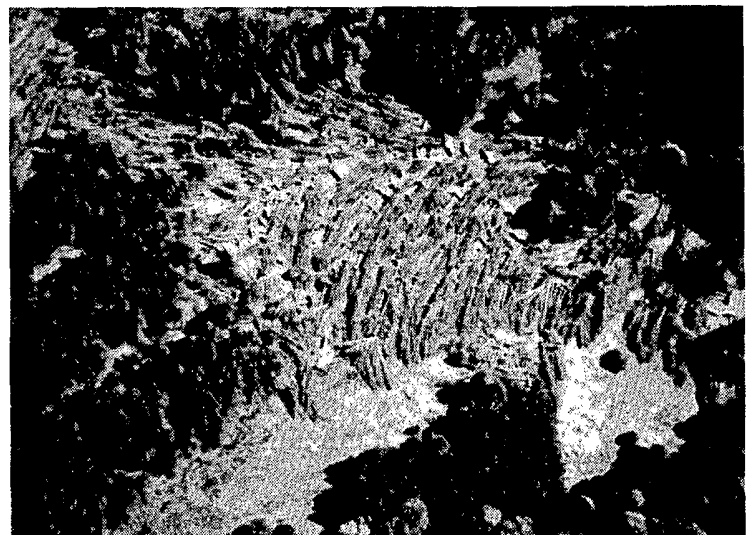
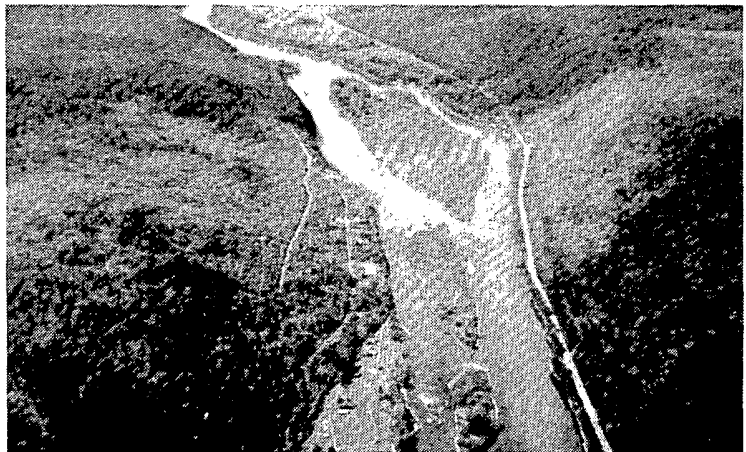
TORNADO OUTBREAK in the U.S. and CANADA ---- continued



Destruction was complete for this mobile home park just west of Atlantic, PA. A communications tower (right) that was toppled by the tornado east of Atlantic was quickly replaced with a temporary tower within three days after the tornado. Atlantic, being a small town, was practically totalled.



Patterns of trees downed by the Tionesta Tornado show the fan-like shape of a microburst (foreground, above) next to the tornado track, the point where the tornado crossed the Allegheny River (above right), and a small vortex pattern near the tornado's end (right).





Destruction caused by the Wheatland Tornado included this petroleum tank farm (left and above) on the west edge of Niles, Ohio. Some of the tanks were bounced a considerable distance.



Warehouse damage in Niles included the collapse of the end of one building as the tornado clipped its edge.

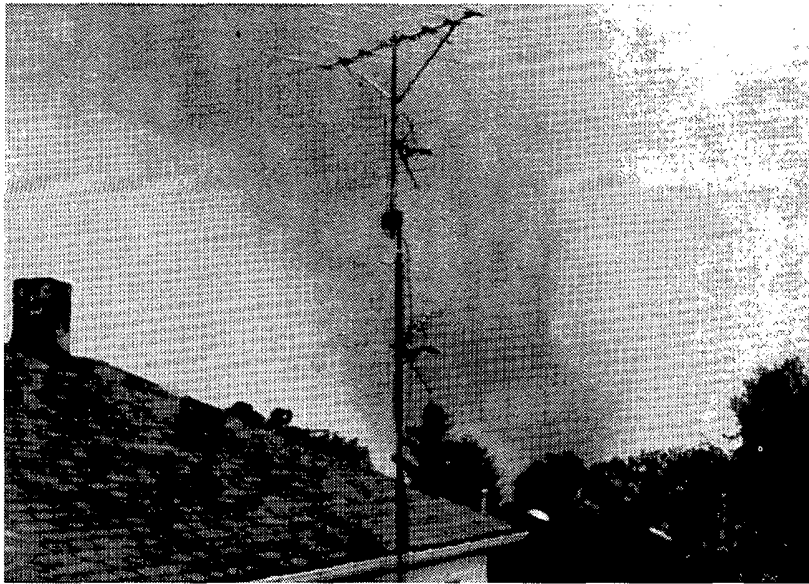
At right is typical damage and/or destruction that was received by many of the homes in Niles.





A residential area of Niles, Ohio that was obliterated by the Wheatland Tornado.

TORNADO OUTBREAK in the U.S. and CANADA ---- continued

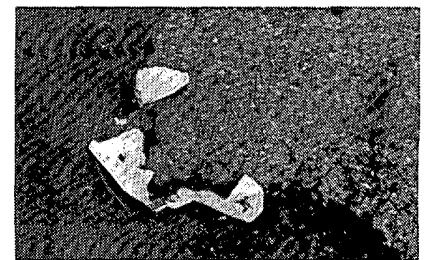
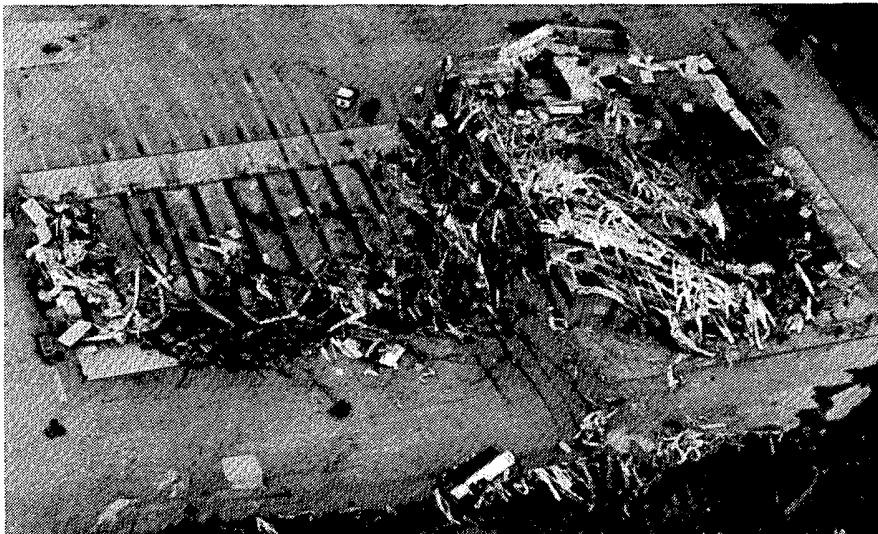


Rick Cione of Farrell, PA took this photo of the Wheatland Tornado as it moved through Wheatland. Destruction in Wheatland was so complete that much of the town resembled a bombed out battle field.

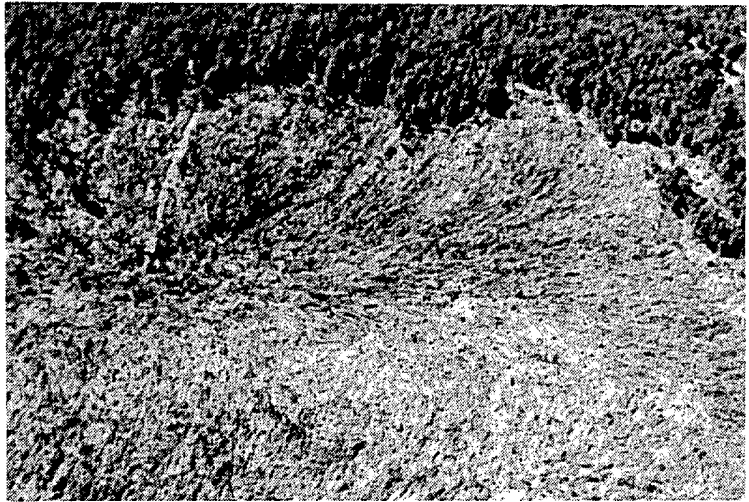
---Photo submitted by Matthew Goral of Hermitage, PA.



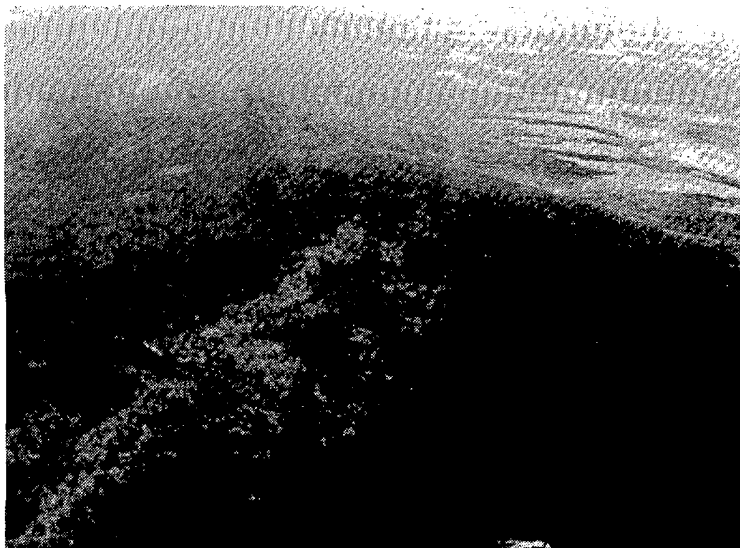
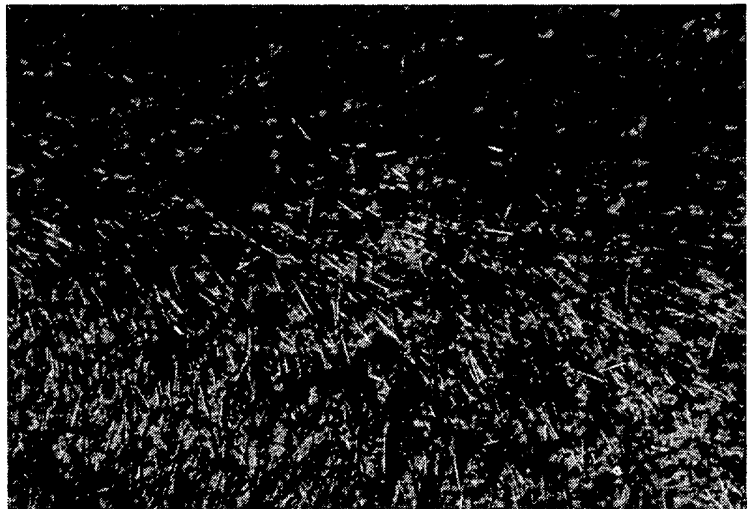
A Wheatland home that was blown loose from its foundation (left), and one where one person died and all that remains is the cellar and part of the foundation. ---Both photos by Matthew Goral, Hermitage, Pennsylvania.



A trucking plant on the east edge of Wheatland that was twisted beyond recognition. Asphalt was peeled and lifted from the parking lot (right) by the tornado's winds, and routing slips from the plant were found wedged under the remaining asphalt.



Above to right are increasingly closer views of the forest damage caused by the Kane Tornado. Devastation was so complete near the path's center that every tree was either uprooted or snapped off at the base. Many ended up defoliated and/or debarked.



The Watsonstown Tornado weakened as it climbed the mountain ridge above near Williamsport, PA; but reintensified as it made its way down the back side. The tree damage at right was part of a 75 mile-long path left by the Moshannon State Forest Tornado, which at times produced damage 1.5 miles wide.



---All photos on pages 11 through 16 are by Duane J. Stiegler, University of Chicago; except where otherwise noted.