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## DESTRUCTIVE THUNDERSTORM OVER AMBALA ON 18 MAY 1950

### 1. Introduction

A severe dust-cum-thunderstorm accompanied by hail and winds of gale to hurricane force swept over Ambala between 2200 and 2230 IST on Thursday, 18 May 1950. It proceeded from a north to northwesterly direction originating somewhere at the foot of the Simla Hills, 30 to 40 miles from Ambala, crossed Ambala and moved away in a southeasterly direction. The verbatim report of the Met. Assistant on duty at the I.A.F. Met. Office, Ambala when the storm occurred, is appended at the end of this note. From the destruction caused, it appears that the squall associated with the storm attained its maximum velocity of about 60 to 70 knots over a short distance, near Ambala only. The maximum damage to buildings and other structures, trees, etc., was caused to the Indian Air Force Station, Ambala and to the adjoining electrical installations on the road. The tail end of the destructive path, was the "Roy Market", to the southeast of the Air Force Station (See Fig. 1). No major damage, however, was caused in between the Air Force Station and the Roy Market except that a large number of trees were blown off.

### 2. Synoptic situation

This thunderstorm was associated with the movement of a low pressure area from Rajasthan to Bihar. At 1730 IST on the day of occurrence, there was a sharp wind discontinuity from the ground and extending upto about 5500 ft above Ambala, across Dalhousie, Ludhiana, Ambala, Delhi, Aligarh, Kanpur and further on. The discontinuity was between the continental air from west to northwest and comparatively more moist air from southeast. The seasonal trough of low pressure was over Ambala and adjoining areas.

### 3. Warning

A forecast warning to Air Traffic Control and to neighbouring stations was issued in the evening. Consequently, the duty crew had checked up that all the parked aircrafts were either inside the hangars or properly picketed.

### 4. Damage

Figs. 2 to 13 on pages 237-238 show the major damages caused to buildings and other installations of the Indian Air Force Station. The following points were specially noticed when the damage caused was surveyed—

- (a) The northwestern door of Hangar No. 7 (Fig. 7) which came right in the path of destruction was completely wrenched from its rails, lifted bodily and thrown at a distance of about 250 yards
- (b) A large trolley (Fig 4) weighing about 2 tons was completely lifted off from the ground and thrown about 100 feet away where it landed upside down
- (c) Large pieces from the roof of the Flying Control building were picked up from a distance of 200 yards
- (d) Hailstones broke up practically each and every glass pane facing the wind. The hailstone damage to the rudder of a Liberator aircraft parked in the open is shown in Fig. 13. A large number of birds were also killed by hailstones
- (e) All the iron electric poles on the road outside the Air Force Station were bent down at right-angles from their base. (Photographs not available)

The magnitude and extent of damage are a clear proof of winds having reached hurricane force. Luckily, the storm was short-lived.

The destructive effects of the thunderstorm were due principally to the following factors :

- (i) The pressure and the shearing action of the high wind could not be withstood by anything that protruded above the surface of the earth, in its path of destruction
- (ii) The flying debris with fantastic momentum caused enormous damage even outside the track of the storm
- (iii) Violent impact by large-sized hailstones

### 5. Why such high winds ?

The physical or meteorological cause how the wind speed in the squall associated with this thunderstorm gained such an enormous velocity could not be ascertained. The winds of hurricane force are known to be associated with "Tornadoes", but in this particular case, the characteristic funnel cloud was entirely missing. A destructive thunderstorm of this type visited Ambala last on 3 June 1944, when similar damage was caused to Ambala Cantonment. The local inhabitants do not remember having seen any other violent storm like the above two during the last 15 to 20 years.

F/o K. CHANDRA

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December 9, 1950.

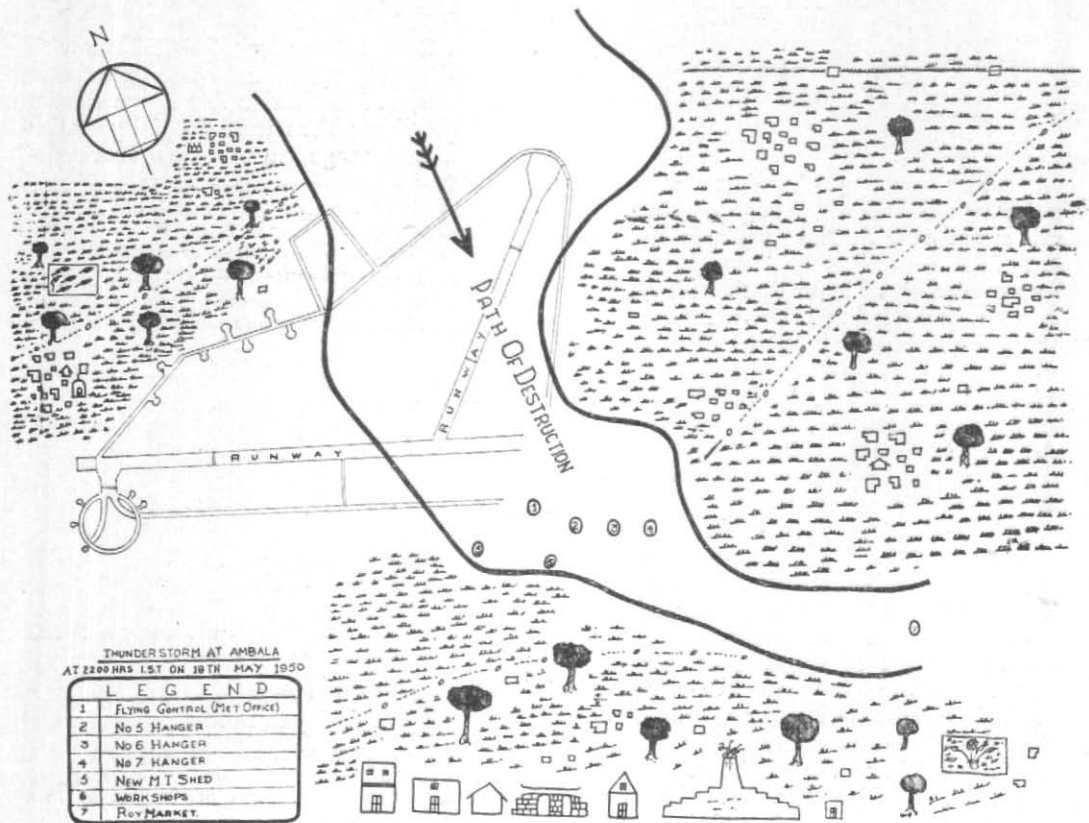


Fig. 1

## APPENDIX

*Verbatim report of Cpl. Chauhan, B.S. (41560), Met. Assistant on duty at the I.A.F. Met. Office, Ambala, when the storm occurred on 18 May 1950.*

At about 1930 IST, patches of altocumulus clouds suddenly appeared, the sky being practically clear before. Owing to lot of dust in suspension in the atmosphere, no clouds were discernible near the horizon. By 2030 IST, altocumulus clouds increased in amount to  $\frac{1}{2}$ ths and presence of cumulonimbus near hills towards north and northeast, was suspected. It was, however, confirmed soon as distant lightning flashes were seen at quick intervals.

2. By 2150 IST, cumulonimbus had developed considerably, and it appeared that a line-squall sort of cloud with thick black rolls was rapidly advancing towards the station. Just at that time, thunder was also heard and the lightning flashes gained tremendous intensity. The storm suddenly took an ominous shape. Rolls of thick dust started rising and the cumulonimbus covered the whole sky quickly. Visibility became practically nil due to duststorm, and the sky was not at all discernible

for some time. Severe dust-cum-thunderstorm started at 2200 IST. Surface wind suddenly changed from SEly to N/NWly, estimated speed being 60 to 70 knots.

3. After 5 minutes, heavy showers accompanied with hailstones started. Hailstones were about  $1\frac{1}{4}$  inches in diameter. The storm continued for about half an hour after which it moved towards south-east. There could still be seen thick cumulonimbus clouds with fracto-nimbus whose base was less than 2000 feet.

4. The actual condition of the sky and clouds could not be observed distinctly while the storm was over the station, due to the thick dust covering the whole atmosphere at first, and the heavy downpour of rain and hail later. But it looked like a line-squall at first and thick ragged bad weather type of clouds just after the passage of the storm.

5. The anemometer and wind-vane were blown away at 2200 IST when wind measured had reached 40 knots.

6. It became fine and the wind once again changed to SEly after the passage of the storm.



Fig. 2

Flying Control Building (front view). The roof was completely blown off and all the glass panes were shattered. Wind instruments on top of the roof were blown off. The Met. Office is located in the ground floor of this building

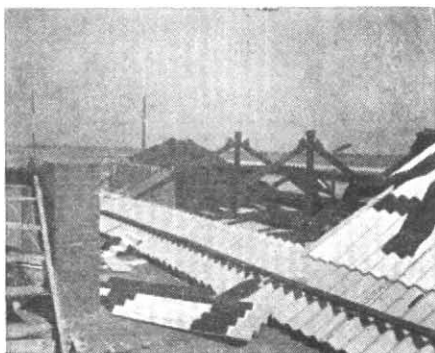


Fig. 3

Roof of Flying Control Building. Large pieces of this roof were picked up from a distance of 200 yards

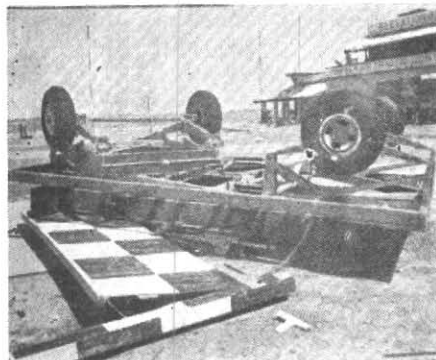


Fig. 4

This large trolley was completely lifted off from the ground and thrown about 100 feet away where it landed upside down

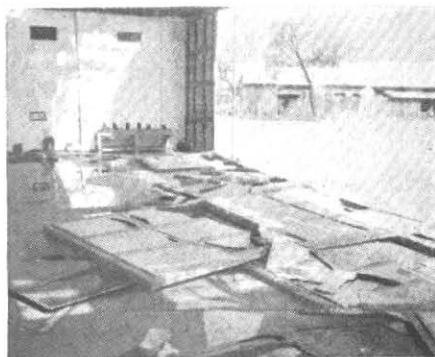


Fig. 5

No. 4 hangar. It was one of the buildings which suffered the maximum damage



Fig. 6

Side view of No. 4 hangar which suffered major damage. Glass panes shattered by hailstones can be seen

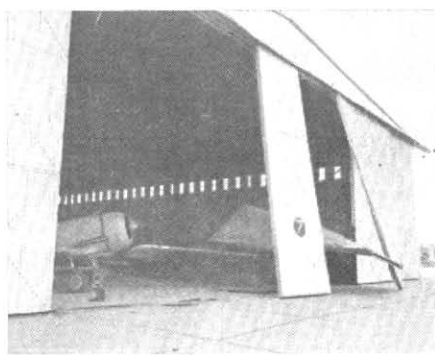


Fig. 7

No. 7 hangar as seen from the northwest. Two door panels were completely wrenched from their rails, lifted bodily and thrown at a distance of about 250 yards

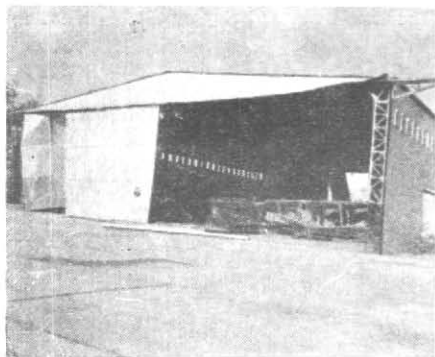


Fig. 8

No. 7 hangar as seen from southeast. The doors were blown off the rails.



Fig. 9

Workshop Building. It was almost completely wrecked.



Fig. 10

This newly constructed M. T. shed collapsed completely.



Fig. 11

Another view of the M. T. shed which collapsed completely.



Fig. 12

Entrance to the under-ground lecture room of the Flying Instructors' School



Fig. 13

Damage to one of the twin rudders of a Liberator aircraft due to hailstones. These hailstones were  $1\frac{1}{2}$  inches in diameter