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A REMARKABLE THUNDERSTORM AT WAIPAPAKAURI

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SUMMARY

At 1045 M, Wednesday, 18th August, 1948, a violent thunderstorm occurred at Waipapakauri airfield followed at 1048 M by soft hail. At 1050 M the hail gave way to large chunks of pure ice rangingfrom one inch to two inches in length. Although a weak cold front had been marked on the 0900 M analysis prepared at Wellington on that day it seems as if the thunderstorm was of local origin or at least only indirectly connected with the front. The Auckland radiosonde observations at 2300 M 17th August, indicated a saturated adiabatic lapse rate up to almost 400 mb. with indications of vertical instability.

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1. Condition of Sky: At 0930 M the total cloud was 9/10, the low cloud being TCu. and Sc. based at 1800 ft with the tops of the TCu. reaching a middle cloud layer of Ac-As. By 1030 the cloud appeared to be nimbostratus with isolated Cb's and TCu's giving occasional showers. Later events made it probable that the "nimbostratus" observed at 1030 was in reality a shelf of cloud associated with an approaching Cb. 1045 M saw the arrival of the thunderstorm with 8/10 Fs at 800 ft. beneath the thundercloud.

2. Precipitation: At 1045 M the showers began to increase in intensity and by 1048 M soft hail began to fall. This hail was, on the average, about 3/8 inch in diameter. By 1050 M the hail gave way to large chunks of pure ice rangingfrom 1 to 2 inches in length and from ½ to 1¼ inches in width. The ice was transparent and the chunks were peculiar in shape, some being like little clubs and others like starfish. All had, however, one thing in common - they were all composed of much smaller pieces of ice and had probably been joined together during turbulent flight within the cumulonimbus cloud. By 1055 M the hail again became prominent but by 1057 M all precipitation had temporarily ceased.

3. Wind: For the hour before, during the storm and for an hour later the wind remained a steady N.N.W. force 4 Beaufort and no exceptional gusts were recorded. At 1230 M the wind took a decided turn to the west, consequent on the passage of the main cold front, and by 1430 M the wind had backed still further to the W.S.W.

4. Rainfall: Between 0930 M and 1230 M the raingauge had recorded 0.43 inch, and of this, it is estimated that approximately 0.35 inch fell during the thunderstorm.

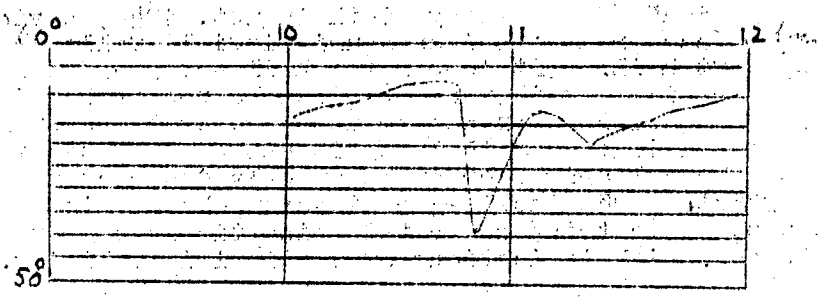
5. Autographic Records: Barograph and thermograph traces from 1000 M to 1200 M are shown in figures 1 and 2 respectively. It will be noticed that the barograph trace shows simply a steady fall of pressure and does not suggest anything in the nature of a cold front. The temperature also recovers its former value within an hour after the cessation of the storm, again suggesting that the storm was not frontal in nature.

6. Ice: The sketches in figure 3 give some idea of the actual size and shape of some of the lumps of ice that fell during the storm. The ice caused some destruction of plants and gardens

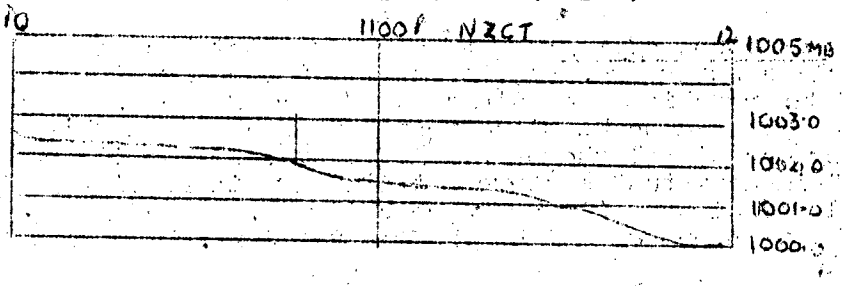
but no other damage could be ascertained. It is interesting to observe that no hail was reported at Awanui (3 miles to the south) or at Kaitaia (8 miles to the south), again suggesting the local character of the storm.

7. Acknowledgment: I have to thank Mr. J.W. Hutchings of Wellington for some remarks on the synoptic aspects of the storm.

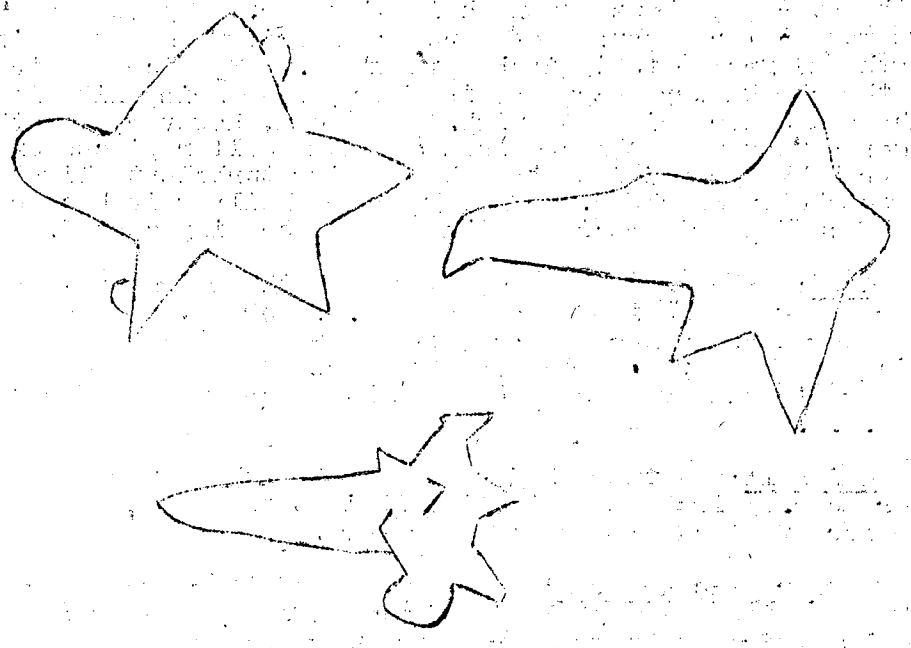
Thermograph. (Fig.2)



Barograph. (Fig.1)



Typical examples of pure ice. (Actual size) (Fig.3)



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