

A Science Service Feature

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? WHY THE WEATHER ?

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SNOWSTORMS LIMITED

When a heavy snowstorm is raging it is difficult for us to remember that it is probably very limited in its extent. Similarly, when we read of a city farther west being buried in snow it is very natural for us to expect heavy snow here soon. Conditions favoring heavy snowfall are even more restricted than those responsible for heavy rainfall, for there is a double temperature limit on abundant snowfall compared with a single one on rainfall. For a large deposit of snow the temperature cannot, of course, be much above freezing at any level through which the snow falls, neither can the temperature where the snow is forming be so low as to limit the available vapor to small figures. The best conditions for snow, therefore, are found where the temperatures are close to the freezing point in the snow cloud and little, if any, above freezing down below.

In any storm the temperature differences between north and south are usually so pronounced that a heavy snow belt cannot be much over 100 miles wide. Farther south as the storm moves along must be a belt of denser snow or sleet and then rain, while to the north the greater dryness necessitates a rapid reduction in amount. Another factor is also involved in the restriction of heavy snowfall at one time, and that is the rate of cooling of the damp air from which the snow is being precipitated. It is obviously impossible for air to be rapidly ascending and cooling over a large region at the same time: a great enough quantity of air cannot flow into any region fast enough.

Thus a traveler may leave central New England during a snowstorm and in the course of a very few hours pass out of the snow zone and after crossing perhaps a glittering sleet and glaze belt emerge into a bare belt beyond.

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