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Hail Shells

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In the BULLETIN for Mar., 1941, v. 22, p. 116, D. L. Arenberg described hail with liquid water inside that he observed on Blue Hill Aug. 23, 1940. I can now report another case, at Silver Lake, N. H., June 28, 1942. A sharp shower moving slowly from the mountains a few miles NW developed into a thunderstorm with hail from 11:15 to 11:25 a.m., locally whitening the ground. The precipitation was 0.46 in. The hail was rather flat, and ranged in size mostly from $\frac{1}{8}$ to $\frac{7}{8}$ inch in greatest diameter, $\frac{1}{4}$ to $\frac{2}{4}$ in. crosswise, and 3/16 to $\frac{3}{8}$ in. in thickness. The largest stones were with some sharp points on the periphery, more or less irregular in outline and had protuberances like nearly clear rime on one side. One had five from $\frac{1}{8}$ to $\frac{1}{2}$ inch in diameter sticking out about $\frac{1}{8}$ in. from the central portion $\frac{1}{2}$ inch in diameter. The general shape and the bubbly interior, though with clear ice margins, gave every impression that the hail was simply of hastily frozen large wet snowflakes.

In fact, some of the hail consisted of only a hollow shell $\frac{1}{8}$ to $\frac{1}{2}$ in. thick, but $\frac{3}{4}$ in. across and $\frac{1}{4}$ in. thick, evidently a hailstone which was still partly liquid when it struck, but which had cracked open and let the water out. I found one stone that had the unfrozen water still in it, for the bubbles moved about as it was tilted. As the hail melted some of the stones became complete rings of ice. The outer edge of the hail had frozen more than the inner portions, presumably because of the greater flow of air.

The smaller stones had a nearly spherical core of hard cloudy ice $\frac{1}{4}$ inch in diameter, with a tapering equatorial shelf of clear ice $\frac{1}{8}$ in. wide.

The air temperature before the storm was about 70° F and the air calm. There was a mod NW squall when the hail began and a SE squall when it ended as the storm moved on to the southeast. The air temperature fell to about 60° F. The hail was all melted in an hour.