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A Science Service Feature

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? WHY THE WEATHER ?

Dr. Charles F. Brooks,
of Clark University,
discusses:

WEIGHT OF SNOW ON ROOFS

How great is the weight of accumulated snow and ice which roofs must support in winter? In the northeastern United States and eastern Canada about the maximum to be expected is 50 lbs. per square foot on a flat roof, which is the weight of a layer of water nearly 10 inches deep. Near New York architects allow for 40 lbs. per square foot. A steeply sloping roof will provide a larger receiving surface for a given amount of snowfall, and so will have to support less per square foot than a horizontal roof. Another advantage of the steep roof is that it facilitates the sliding off of snow and ice, though in cities wire snow holders are commonly used to prevent this. In the Sierras and Cascades the weight of snow may reach 250 lbs. per square foot, a ton for every 8 square feet, or three times the maximum for eastern North America. It is not surprising, then, to find houses built with very steep roofs in such places as Crater Lake, Oregon. Objects buried in deep snow are often wrecked by the pressure. For instance, the Weather Bureau observer at Summit, California, reported that the substantially built steel and sheet iron rain gage looked as if a tornado had struck it when he dug it out of the snow in March, 1915. Even the guy wires were broken.

Collapsing of roofs occurs in unusually snowy winters, especially where snowfall is usually light and where consequently a relatively less substantial type of construction is the rule. For example, at Seattle, Wash., Feb. 2, 1916, on the third day of a heavy snowstorm following previous snows, the dome of the St. James Catholic Cathedral collapsed under the weight of $2\frac{1}{2}$ feet of snow. The tragedy attending the collapse of the Knickerbocker Theater in Washington, D.C., occurred just before the end of the 28-inch snowfall of Jan. 27-29, 1922, when the added weight on the roof had reached about 15 lbs. per square foot.

(Tomorrow: Snow and Temperature)
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