

Roof Ice Dams

by Mike Lennon

Illustrated by Sally Groom

About every fifth winter a phenomenon occurs which leads to a considerable amount of bizarre homeowner behavior. Water suddenly begins dripping inside the house, usually occurring around windows on exterior walls. In a panic, homeowners arm themselves with brooms, shovels, and even water hoses and attack the perceived source: snow and ice on roof edges and in gutters. Their attacks are futile, often damaging the house and causing personal harm. This is a situation that can be prevented but cannot be practically relieved once it occurs.

The phenomenon is called "ice-damming," a much misunderstood problem. Ice damming or the accumulation of snow and ice on the roof edges and in the gutters is not the problem. Instead the true problem and the source of the water damage is "snow-water." The damages from this seeping water can be devastating. Plaster crumbles, paint peels, and a mildew odor lingers. Even structural failure can occur due to rotting within the wall itself. Effective corrective measures must be directed at stopping the formation of "snow-water."

The role of the roof-snow is complex. It acts both as insulation and the source of water which may freeze into a dam or seep into the house. Heat rising into the attic space warms the roof sheathing and melts the covering snow from the under-

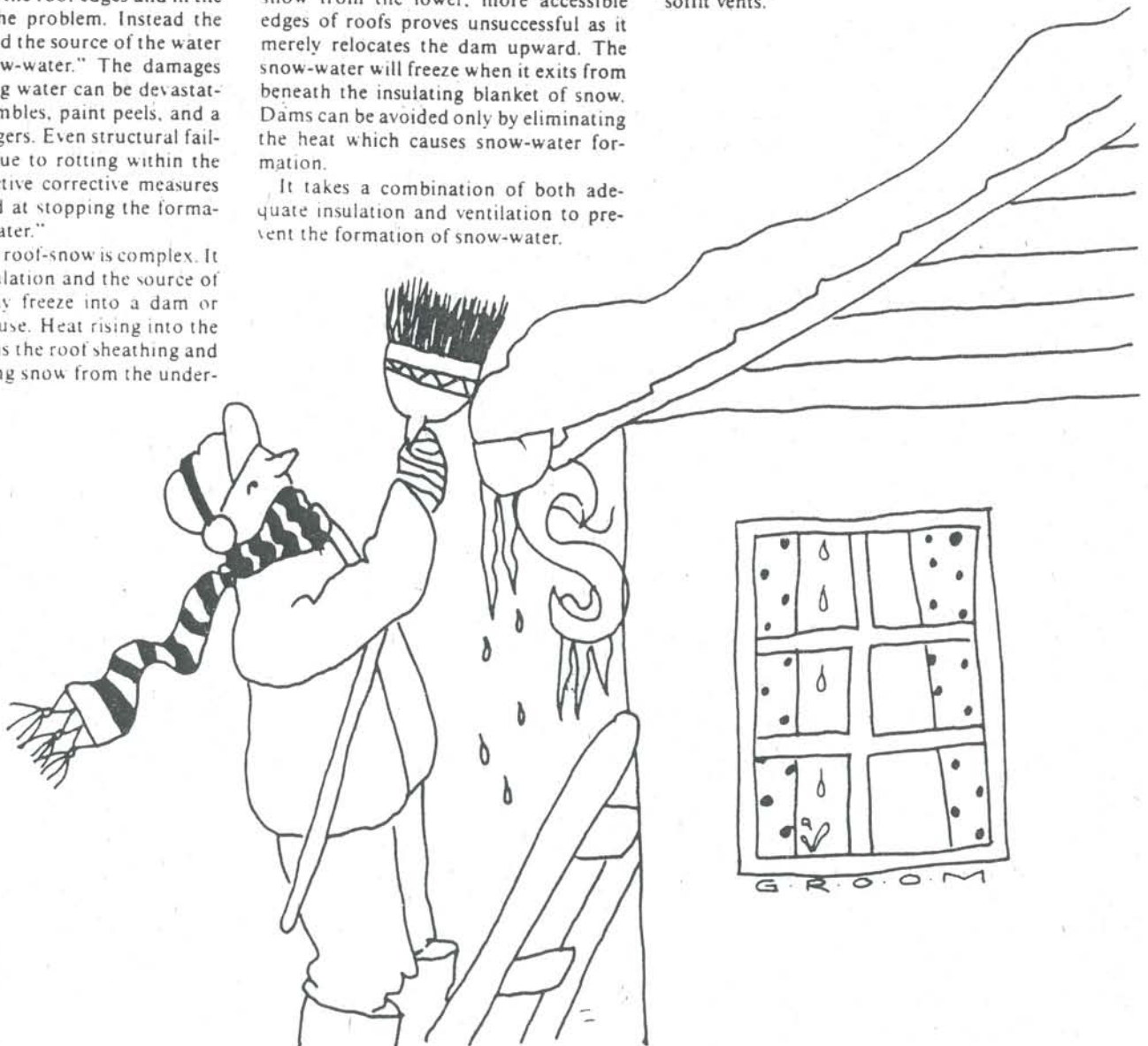
side. This "snow-water" then flows down the roof under the protective insulation of the covering snow. This will occur harmlessly unless the snow-water passes over an area which is cold enough to freeze it into ice. During severe weather the lower edges of roofs that project beyond the outside walls or the gutters will be cold enough since they are not affected by heat rising within the house. Ice that forms here may gradually build into a considerable mass which blocks or "dams" subsequent snow-water flowing down the roof. If enough water is trapped behind the insulation it ruins its effectiveness and accelerates the formation of snow-water by permitting more heat to reach the attic.

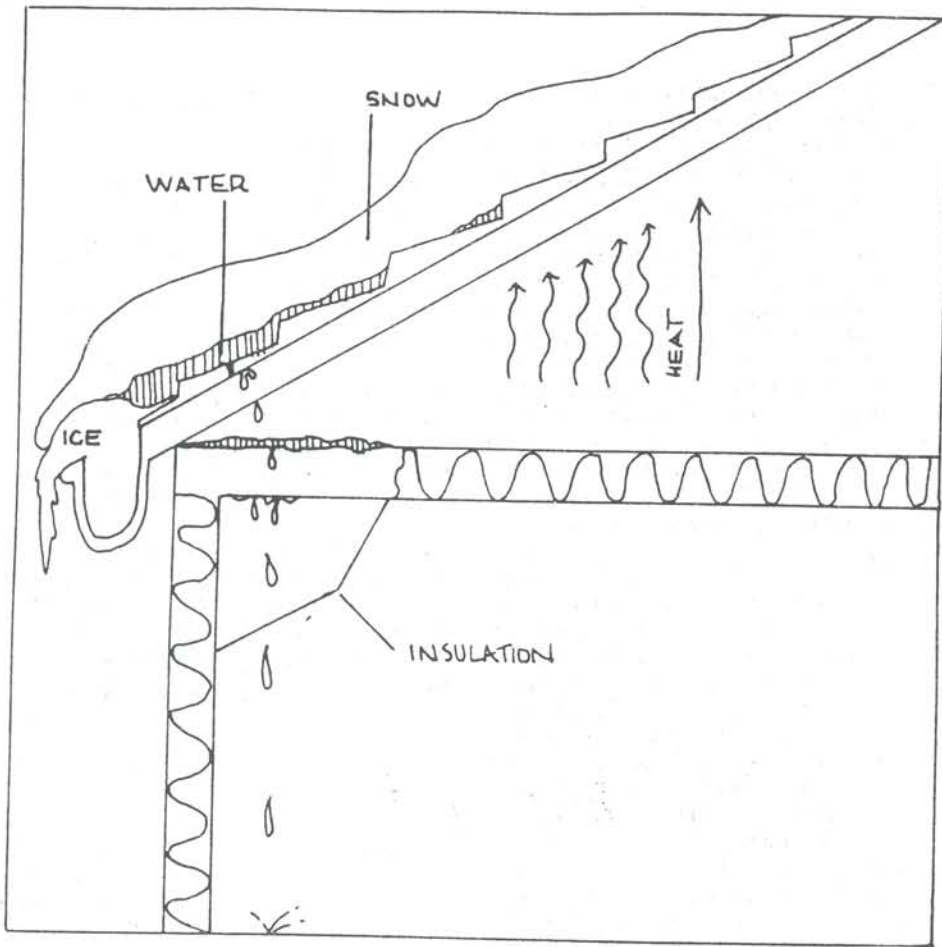
Removing snow from the roof would solve the problem, since it is the source. Unfortunately there is no known safe method of doing this. Likewise clearing snow from the lower, more accessible edges of roofs proves unsuccessful as it merely relocates the dam upward. The snow-water will freeze when it exits from beneath the insulating blanket of snow. Dams can be avoided only by eliminating the heat which causes snow-water formation.

It takes a combination of both adequate insulation and ventilation to prevent the formation of snow-water.

If your attic floor has only four inches of insulation (regardless of type) you will need to add more. The most practical material for the do-it-yourselfer is rolled blankets of fiberglass six inches thick. Use foil faced blankets only if your attic floor has no insulation whatsoever; otherwise use the unfaced type. This is to avoid a vapor barrier between insulations. Tuck the blankets between the floor joists. Allow three inches of air space around any lights or heating fixtures that may project up through the lower ceiling—trapping their heat with your insulation may create a fire hazard. If the attic is floored the job is usually best left to a contractor.

With luck your house will have a projecting overhang. Large overhanging roof projections, also called soffits, can lessen damage since seeping water rarely enters the house. They also provide space for "soffit vents."





Check the underside of the projecting overhang supporting the gutters for screened vents or louvers. If no vents exist, create them. Buy a three inch "hole saw" and a quantity of three inch diameter louvers from a hardware store. Attach the hole saw to your electric drill and cut three inch diameter holes every six inches all along the underside of the overhang. Your finished job should display holes down the center of the soffit from one end to the other. Push your louvers up into the holes and you are done.

This "soffit" ventilation allows air to enter under the lower edge of the roof sheathing and exit via the higher "gable" vents. The gable of a roof is the "A" shaped high area at each end of the house.

A house with no projecting overhang must turn elsewhere for ventilation improvements since there is no space for soffit vents. These houses will respond well to the installation of "ridge" vents. The ridge or peak of a roof is the highest point or line where the two slopes come together. Two inches of roof sheathing is cut away on each side of the ridge and along most of its length. A "vent-a-ridge" louver is then installed which allows attic heat to escape and prevents rain and snow from entering the attic. This type of ventilation is best installed by professional roofers and generally costs approximately \$25 per lineal foot.

The best ventilation possible for roofs is a combination of both soffit and ridge vents. It will prevent ice damming and will keep you cooler in the summertime.

Remember the concept, a "cold-roof" prevents the formation of "snow-water" and this is accomplished by a combination of adequate insulation and ventilation.

(below) An ice dam at the eave edge with inadequate thermal insulation. Melting snow backs up under shingles and drips into the wall and eave members. Flashing can prevent this.

