

New Hampshire Mountain Rescue Service did the carryout. (Source: George Hurley, Mountain Guides Alliance)

Analysis

There have been several accidents at the Cave Wall, one other this summer. The route is graded 5.6 but it's hard for the grade and the crux (the Cave Wall) is impossible to protect well. A .5 Tricam will fit in an old piton hole but it is marginal as protection. The other option is to avoid the wall by climbing as deep in the chimney as possible, placing pro in the chock stones. (Source: George Hurley, Mountain Guides Alliance)

FALLING ROCK

New Hampshire, Cannon Cliff

In May, a climber was injured by rockfall on the upper part of Union Jack on Cannon. Other climbers have reported loose rock on Cannon, including on the Whitney-Gilman arete, Fugue, and Vertigo. Routes on Cannon are more dangerous than most routes of the same grade on cliffs at lower elevation. Of the seven deaths on Cannon, five have involved loose rock. (Source: George Hurley, Mountain Guides Alliance)

PROTECTION PULLED OUT, FALL ON ROCK

New Hampshire, Cathedral Ledges

On July 31 a leader was having trouble getting into the lower of the two V slots on Double Vee (9+) on the upper left wall of Cathedral. He placed a small TCU (three cam unit) and hung from it. As he pulled up on the TCU, it pulled out. In the nine meters of crack below there were two nuts. The highest also pulled out. The other nut was a #1 wire which took some of his weight as the climber hit the ledge and probably kept his injuries from being worse. He broke his left wrist and compressed his thoracic vertebrae. (Source: George Hurley, Mountain Guides Alliance)

Analysis

Protection at the top of this route is difficult to place and the climbing is awkward. More and better protection just below the V slots would have helped. (Source: George Hurley, Mountain Guides Alliance)

(Editor's Note: A New Hampshire winter hike turned into a mountaineering event. While on a winter traverse of the Presidential Range in December, a woman suffered a broken leg when she fell against a rock. The accident happened just below Thunder Storm Junction, 1.9 km from Gray Knob, in a rain storm with winds around 110 km per hour. She and the rest of the party, under the able guidance of Bill Aughton, were wearing crampons for the snow, ice, and frozen ground. It took 13 hours to complete the rescue.)

FALL ON ROCK, EQUIPMENT FAILURE

New Mexico

Recently, an REI customer had an accident while rock climbing in which a carabiner broke. (He was not injured, fortunately.) The customer returned the carabiner to the Albuquerque store, and our testing lab examined the carabiner to find out what went

wrong. This story explains some of the problems that were discovered—you may want to share the prevention information with your customers in the future.

The customer slipped when he came to the top of a rock pitch. When the force of his fall came on the protection a meter below, he felt only a quick jerk as a carabiner broke, and he plummeted until his next piece of protection held. Instead of a short fall, he took a heart-stopping nine meter fall. He was shaken, but fortunately not seriously injured.

Why did the carabiner break? Similar ones (the carabiner was not an REI one) had tested just fine in the REI Test Lab, a result Quality Control Engineer Cal Magnusson confirmed with further analysis after the accident. So what happened? This is what we learned.

The non-locking carabiner returned to our Albuquerque store was in two pieces. By examining the two parts, seeing how they fit together, and comparing with other carabiners tested to the point of destruction, Cal concluded that the carabiner's gate was not closed when the total force of the fall came on it.

Closed carabiners are strong, especially in their long direction, usually 4,000 pounds (1800 kg) or more. But open carabiners are much weaker, sometimes holding only 1,000 pounds (450 kg) or less.

Why did the carabiner open? There are three possibilities.

The first is that the carabiner wasn't properly closed to begin with—the sling or rope was stuck in the gate.

The second possibility is that the carabiner was opened during the fall by the rope or sling twisting over the gate at the moment of impact. This can occur when the protection is at an odd angle, and usually results in the carabiner becoming unclipped.

A third prospect is that the snap of the fall banged the carabiner against the rock, whipping the gate open just as the rope came tight. To see how this can happen, take a carabiner and rap it on your hand. Just when it hits, the gate will come open. If the timing and forces are just so, this can happen when the carabiner takes the fall.

Rock climbers love uncertainty, but not in their carabiners. While we are still uncertain why this one was open, these are some of the lessons to be learned.

- Make sure every carabiner is properly closed. Listen for the characteristic “click” as they are placed. Visually inspect them.
- Make sure that every anchor system is free of funny twists or turns that could cause abnormal loading on the carabiners. Imagine what a fall would do and construct or modify your set up accordingly.
- If you see the possibility of a carabiner banging against the rock, use carabiners with stiff gates. Better still, use two carabiners with gates opposed or a locking carabiner.

Fortunately, carabiner failure is rare; however, it is not unknown. Be careful. And share the information with your customers to be certain they understand what can occur when rock climbing. (Source: Bill Summers article in *Compass*, January 1990. REI monthly employee publication)

FALL ON ROCK, NUT PULLED OUT, NO HARD HAT

New Mexico, Sandia Mountains

On September 16, Jim Ladd (40) and John Wright (39) had underestimated the time for approaching the South West Ridge route on the Needle (they had left the car at 1100) as they were having a difficult time locating the beginning of the route, elected