the edge without being tied in. Had he succeeded, he would likely have been pulled off his stance. Even if his top piece had held, the 30-foot fall would almost certainly have caused him to let go of the rope, and both climbers would have fallen to the ground.

If Pat had set up an anchor at the top of the pitch, either climber could have attempted to solve the problem safely. The two climbers were about 100 feet apart and the jam was about 40 feet below the belayer. If the follower had been more experienced, she could have prusiked up the rope to the jam and attempted to pull the rope out of the crack. Or, since the jam was only 40 feet below the belay ledge, the belayer could have tied off the rope and rappelled down on the free end to work on it. Or, he could have prusiked down the taut side of the rope. Although neither climber was carrying prusiks or a cordalette, they were carrying slings, which could have been used to tie a Kleimheist hitch to ascend or descend a taut rope. All of these options, of course, assume that the leader can construct a solid anchor. Since he did not, yelling for help was probably their best option.

The leader described himself as a 5.12b climber with 15 years of experience. The follower described herself as a 5.8 climber on her first multi-pitch route. (Source: Tom Moyer, Salt Lake County Sheriff's SAR)

(Editor's Note: Similar to the above, on July 25, two climbers were top-roping a short climb just a few yards from the road in the Birches area of Big Cottonwood Canyon when their rope became stuck. One was left hanging in his harness about 20 feet from the ground. None of the climbers present knew how to assist him, so they flagged down a sheriff's deputy on the canyon road.

A pair of prusiks and the knowledge of how to use them would have allowed the climber to solve his own problem in minutes instead of needing to call for a rescue.)

RAPPEL ERROR, ROPE FAILED—INADEQUATE EQUIPMENT

Utah, Millcreek Canyon

On August 16, "Jim" (28) and "Kirk" (32) set up a sport-rappel at a small crag in Millcreek Canyon. They used an old cotton rope from Kirk's toolbox and tied off natural features at the top of the crag for an anchor. About halfway down, Jim bounced hard during his rappel and the rope broke. He fell about 20 feet, crashing through a small tree on the way and glancing off his partner at the base of the crag. Kirk was able to grab him at that point and stop him from tumbling further down the slope.

Jim was secured in a bean-bag vacuum splint and lowered two pitches down steep scree to the Millcreek road. He is lucky to have escaped with only a broken ankle, abrasions, and lacerations.

Analysis

Kirk was watching the rappel from the bottom when the rope broke. He was certain that it did not break at an edge. We later tested the tensile strength of the rope at Black Diamond Equipment. The rope was one-half-inch in diameter (13 mm) and in poor condition. Nine pull-tests were done unknotted—over three-inch drums. Failure loads ranged from 304 to 378 pounds, with an average break strength of 352 pounds.

A rappeller can easily generate rope tensions around double body-weight with only a moderate amount of bouncing. It is extremely fortunate that the failure did not happen earlier in the rappel. (Source: Tom Moyer, Salt Lake County Sheriff's SAR)

(Editor's Note: It's nice to know that "old cotton rope" can do even this well. Whether the two fellows had much climbing experience was not revealed. Let's hope they didn't.)

EARTHQUAKE

Washington, Mount Index

Chris Olson (28) was exactly where you don't want to be when a 6.8-magnitude earthquake hits: Standing on a 12-inch ledge 130 feet up a rock wall.

"I thought I was dead," he said. "It felt like the entire rock ledge I was on was going to peel right off the wall and take us with it."

An experienced climber, Olson was halfway up the wall standing on a ledge and helping his girlfriend's brother, Jim Shokes, who was about ten feet below him on a much narrower ledge. Olson was anchored to the top of the wall by a rope but was vulnerable to falling if the rock gave way.

"I was trying to belay him up to me when the shaking started," Olson said. "The granite wall was rockin' and a rollin'."

Olson said Shokes yelled at him that there must be a train coming. The tracks are right below the wall, which climbers often call "Godzilla."

"But I knew it was something more than a train," he said. "I thought it was probably a rock slide because I've seen and heard them before, and it felt like that. But I didn't hear anything.

"Then I thought Mount Rainier was erupting. I've worried about that because I've worked at Rainier the past couple of years. But I knew it wouldn't be shaking that hard all the way up there." That's when it hit him: Earthquake!

"All you could do was hang on," he said. "I could see the rock I was hanging on moving in and out. I thought it was over for me." About 50 feet to the right, he saw the entire area being peppered with rock. To the left, about 100 feet away, a huge boulder came down the side of the rock wall and hit the railroad tracks below. Then all Olson could see was dust clouds bellowing up from below.

"It felt like forever hanging on there," he said.

He turned to look behind him and saw an avalanche on Mount Index, where a deep slab of snow and ice slid down the mountain to Lake Serene.

"There were little dust clouds popping up all over in the woods from rock slides," he said. "It really looked like we were getting bombed." Once the shaking stopped, after about 20 to 35 seconds, Olson estimated, Shokes grabbed the ledge Olson was standing on.

"He pulled himself up, and we roped together and rappelled back down the wall," he said. "At the bottom, we threw our stuff in bags and left promptly."

When they got to the bottom of the wall, Olson's girlfriend, Mary Shokes, and his four-month-old daughter, Isabella, had just come from town to meet them. Mary had climbed the wall earlier and was walking back to town with the baby when the quake hit.