

tricate himself from the sliding snow. With slight assistance he was able to climb to an adjacent rock rib with large ledges but was unable to continue the descent. He was evacuated the remaining 1,500 feet to the valley floor next morning and flown to a hospital by helicopter. Injuries included a broken knee cap and minor crack of the pelvis associated with a massive bruise of the hip. Campbell was wearing a hard hat which was cracked in the accident and undoubtedly saved him from serious head injuries.

The party had made a technical ascent of Blanca and chose this as the descent route. The danger of avalanche was not recognized in time. The steeper upper parts of the slope seemed free of slide hazard; there was little wet snow on them, rocks kicked from above caused no action, and there were no signs of spontaneous slides on nearby slopes. As the slope became more gentle an increasing depth of wet snow was found, which was in fact poorly bonded to a hard snow surface beneath. The slide began, as one climber sat down to see if a glissade was possible, with a fairly clean break and about three feet of snow sliding. The slope was between 25 and 30 degrees. A large party had ascended this slope, a standard route, the same day and was thought to have descended by it. In fact they had recognized the dangerous snow conditions near where the slide started and had elected to descend by an alternative route. The climber who started the slide was able to get out of it without difficulty, since only snow below him was moving, while Campbell, who was a hundred feet lower down was caught and immediately carried over the ledges.

*Source:* George Bell.

*Analysis:* The cause of the accident was the failure to recognize the hazard. The slope being descended should have been treated with more respect in view of the warm weather, late hour (1700), and the fact that the party had not ascended it and was thus not sure of the snow conditions. Party was unroped, but it is doubtful that a man in the slide could have been held.

*Colorado, Rocky Mountain National Park, Pagoda Peak.* On 18 June Dave Whiteman and Steve Day started off from Black Lake at 0445 to climb the west ridge of Pagoda. They cramponed up the snow tongue to the Pagoda — Chiefshead col which they reached at 0700. They noted a strong wind on the ridge and summit so they roped up at the top of the col and started up the west ridge carrying coils. The wind was terrible. After negotiating the second small pinnacle on the ridge (4th class), they came upon the first large pinnacle. It looked like tough climbing so they decided to descend to the right (south) to go around the base of the pinnacle and then attempt to regain the ridge on the other (east) side. Once they got below the pinnacle the wind died off and they had a clear view of the Broadway-type horizontal ledge that continued on around the Keplinger Lake cirque. They decided to carry through on their plans to attempt to regain the ridge rather than to take the temptingly easy walk along the ledge and the easier climb to the summit along the south ridge.

Steve then put up three leads in an attempt to reach some dark gullies which they thought would lead them back to the west ridge. The first two leads were uncomfortable due to the cold rock and the necessity of climbing without gloves on the 5th class leads. Steve led the third lead and

placed about four pitons for protection. The lead was about 5.6. The sun started to shine and the temperature rose. It began to look as if they would have pretty good weather after all. Steve placed a two-inch aluminum bong-bong (the type with holes drilled in the sides) for an anchor and then belayed Whiteman up. It became apparent once they looked over their position that they were in a cul-de-sac and that there was little hope for continuing this line towards the ridge. Whiteman got on belay and Steve tried to reach a handhold at the limit of his reach on a short overhand above the ledge. The hold was insufficient and they made a firm decision to descend. The last lead was too hard to down-climb so they decided to set up a rappel and sacrifice the bong-bong. The bong-bong was driven straight down behind a large flake (approximately 12x12x2 feet) which marked the lower limit of the sloping ledge they were on. Whiteman set up a single strand rappel with the 150-foot perlon, a hero loop, a carabiner, and an undetermined length of pull down cord. Whiteman volunteered to rappel first to figure out how long the pull-down cord was. He could only rappel to the end of the pull-down cord, of course, and they figured it was longer than one-half of a rope length (75 feet) but shorter than one rope length (150 feet). He determined to be very cautious on the rappel since a single-rope rappel is inherently dangerous due to the danger of the rope being cut when rappelling over sharp rock protuberances. (They had such an experience in McHenry's Notch in 1966). He basically down climbed, using the rappel mostly for balance and not putting any real strain on the rope. He found a good ledge 70 feet below Steve and off to one side. The pull-down cord turned out to be 90 feet in length and there were no good ledges within that range.

They decided that, since it would be safer (presumably) to rappel on a double rope, Steve should re-rig the rappel. He pulled down the pull-down cord and saw to it that the two ends of the doubled rope were even.

Steve put on the climbing pack and began the rappel by leaning back. Whiteman heard him yell and saw him fall backwards and tumble about 80 feet. He hit some outsloping ledges at this point and began to roll. He then hit a three-foot flat ledge very hard which slowed his fall. He rolled off this ledge and ended up about 200 feet below the rappel point when the rope tangled in some loose boulders on one of the ledges.

Whiteman was certain that Steve was dead due to the length and severity of the fall. He was lucky enough to be in a position where he could climb unassisted the remainder of the distance down the Broadway-type ledge and walk over to Steve. Steve was dead and it became clear that there was nothing that could be done at this point. He lowered Steve to a more substantial ledge, pounded a piton, and anchored the body to the ledge. He retrieved the climbing pack and the ice-axe he would need to descend to Black Lake and surveyed the scene. It was clear that the bong-bong had failed at the beginning of the rappel. The pin was still attached to the rappel rope and was only about six feet from Steve's brake bar. He descended to Black Lake and then hiked out to notify the authorities.

*Source:* Dave Whiteman.

*Analysis:* (Whiteman). I had rappelled on the same piton. I feel that the piton failed because the friction in the double-rope brake system put an upwards pressure on the piton. This caused it to pull out from its posi-

tion behind the flake at the start of the rappel. Had the pressure on the piton been from below, the piton would have held.

The weather conditions were good at the time of the accident. It was partly cloudy, but the wind had stopped. The accident occurred at 0900. We were both *experienced* mountaineers and had done a great deal of climbing together. We were climbing within our abilities, had the best of equipment, and considered that we had a good margin of safety.

A forced rappel is one of the most dangerous maneuvers in rock climbing since the last rappeller cannot be belayed unless additional equipment is left in place on the rock. The angle piton which failed appeared to be well placed in a good granite crack and apparently had not shifted when we used it as a belay anchor. I rappelled on the piton and there was no indication that it was unsafe. A thorough check of the piton before rappelling might have prevented the accident.

*Colorado, El Dorado Springs Canyon.* On 24 November Mark Schemmer (18) was rappelling off the "Rosy Crucifixion" at dusk when his hammer became slightly tangled in his rappel rope, after having already cleared a rope tangling problem. His rappel system was a swami seat and brake bar, and he had a fully independent chest harness with prussik safety to one of the rappel ropes. To free the hammer, he let his weight be taken by the prussik and chest harness, but the latter slipped up under his armpits and upper arms; his weight was supported by his upper arms only. As circulation was reduced in his arms, they became useless. At this point on the rappel, the rock face was overhanging slightly, and he was dangling completely free from the rock. Schemmer's partner, Rod Black, who had already rappelled off with some problems of rope tangling, was unable to use the rope to pull Schemmer to the rock for weight relief, and Schemmer did not work a hitch in a rappel rope around a boot to take his weight and relieve his arms. With Schemmer isolated and helpless, Black descended the rest of the route for assistance. Rescue was accomplished later. Victim was lowered to a litter and evacuated. Victim also suffered from hypothermia. Several weeks after accident he still had some paralysis in his hands.

*Source:* W. G. May, Rocky Mountain Rescue Group.

*Analysis:* Schemmer had the technical ability to climb this difficult route, but on his rappel he lacked the experience and insight to, first, take precautions that would have prevented the minor problem of the hammer getting tangled, second, recognize that allowing his weight to go to his safety would make continuing the rappel difficult when hanging free, and third, have knowledge of a technique to transfer his weight off his safety and back to his brake bar. He had adequate equipment to perform self-rescue.

*Wyoming, Grand Tetons, Moran Canyon.* On 14 July Van Yancey (19) was in a belay position when a test pull from below pulled him from the position and *his single nut anchor pulled out*. He fell about 20 feet landing on his hands and the back of his neck. He rolled an additional 25 feet down a rock and grass covered slope. Members of the party put Yancey on an improvised litter and carried him a quarter mile to a meadow where he