

# APE CAVE, U. S. A.

- Kent Henderson

## INTRODUCTION

Ape Cave is the longest known intact lava tube in the Americas (12,810 feet). It is located in Washington State within the Mount. St. Helens National Volcanic Monument, to the south of the volcano. It was unaffected by the massive 1980 Mount. St. Helens eruption. Curiously named (there are no apes in North America, at least zoologically speaking), Ape Cave was named after an outdoor adventure group, The St. Helens Apes, who explored it in 1946.

## THE TOUR & INTERPRETATION

The cave is divided into two main portions, creatively named the Lower Cave and Upper Cave. Regular tours are run by U. S. Forest Service guides to the Lower (downslope) Cave, which extends 4000 feet. It has a relatively level floor, and is easily negotiated. Guides accompany visitors to the floor of the cave with a requisite number of pressure lanterns, and accompany their party downslope about 300 feet, providing excellent interpretation in the process. The guide then departs, leaving the visitors free, as they wish, lamps in hand, to make their own way to the end of the cave. This procedure has the advantage of tested safety, the provision of high quality information, plus it allows visitors a sense of adventure. In total, the tour is an superb experience. In addition, first rate interpretive signage is located near the cave entrance.

## GEOLOGY & FEATURES

Mount St. Helens is one of the most active volcanoes in the United States. Its most recent eruption occurred on 20 Mach 1980, accompanied by an earthquake measuring 4.1 on the Richter Scale. The blast removed 1,300 feet from the height of the mountain, destroyed 150,000 square acres of forest, and killed 57 people. Ape Cave itself was formed in a previous eruption 1,900 years ago. As with lava caves generally, it formed when flows of pahoehoe basalt crusted on top with the hotter lava beneath draining away to leave an open tunnel. Lava is an excellent insulator, so once a lava stream is roofed over, it is possible for the lava below to flow through the tube for great distances with little heat loss. In the case of Ape Cave, which carried lava for a considerable period, the lava stream was able to erode downward, cutting into the pre-flow land surface. The cutting action caused many sections of the cave to possess passages with a high, narrow cross section. A interesting feature of the cave are sections of wall lining which have fallen

away, exposing hard soil which was baked red by the heat of the overlying lava.

As the lava level dropped, hot gasses caused some wall surfaces to melt forming a dark shining glaze, and in some places the glaze slumped to form pleated ripple patterns. During this period, small lava stalactites formed and with lava stalagmites below. Other lava formations are not common in Ape Cave, and tend to be small also. Unhappily, many have been removed by early souvenir hunters. The walls of the tube features lateral flow marks, indicating the stages of lava decline, very much like as a ring is produced in a bathtub. An interesting feature towards the end of the Lower Section is a Lava Ball (known as The Meatball). This block of solidified lava was carried along in the lava stream and became wedged in a narrow section of passage twelve feet above the floor as the flow receded.

The sandy floors of the Lower Cave were created when volcanic ash and pumice from later Mount St. Helens eruptions were washed through from the lower entrance (see the adjacent map). At the lower end of the cave, the passage progressively narrows and is divided by a lava diaphragm with both an upper and lower level. The lower end is blocked by sand, which is reworked by seasonal streams.

In the Upper Section, involving nearly 7000 feet of passage, the traverse is more difficult than its lower counterpart, mostly due to rock breakdown. This breakdown occurred once the walls and ceiling started to cool. It was caused by contraction-cracking, and where it extended to the surface entrances or skylights were formed. The cave roof averages 20-30 feet in thickness. The upper section is also open to self-guiding, but Forest Service guides recommend the easier Lower Section, which seems to satisfy most tourists.

Possibly the most interesting feature of the cave is its "cave wind", which has been measured on occasions at speeds up to seven miles per hour. This is caused by seasonal variance in the inside and outside air temperature, and is not dissimilar to occurrences common in karst caves. Scratch marks are a feature of the first few hundred feet of the Lower Section cave floor. These tend to be up to six inches long, run parallel to each other, and to the tube walls, and confound the explanation of tourists. They have been caused, over very long time periods, by the cave wind blowing the ceiling drip water laterally from what would otherwise be a vertical descent, causing "pendulum-like" water incisions on the cave floor.