

fall, it is joined by the Spray. At this point, close to the Banff Springs hotel the river is diverted at right angles to the east and passes between Tunnel and Rundle mountains. The valley of the Spray river is floored with soft Permian and Jurassic shales. This valley is defined by a fault so that the beds in Sulphur mountain repeat those exposed in Cascade and Rundle mountains. The Fernie shales (Jurassic) are characterized in certain layers by an abundance of ammonites.

On the east slope of Sulphur mountain are situated the hot sulphur springs. The upper one is 500 feet above the town. The water comes from the orifice at a temperature of 114.2 degrees Fahr. This sulphuretted water has a marked medicinal effect, and many people visit Banff on this account. A second or middle hot spring is 200 feet lower down the slope, and a mile and a half farther to the northwest. This spring is not so strong as the upper one, and the temperature of the water is about 90° F. A third or lower spring is situated farther to the northwest and about 50 feet above Bow river. The water is at a lower temperature than either of the upper two. Locally this spring is spoken of as the "Cave and Basin," because the spring rises into a cavern about 20 feet in diameter. By means of an underground channel it escapes to a natural basin formed in calcareous tufa deposited. A second cave has been recently discovered a few yards farther up the slope. The interiors of these caves are coated with sulphur crystals. Other warm springs are located in the bottom of Bow valley, about the Vermilion lakes. All of these springs are located in the Intermediate Limestone (Devonian).

From the summit of Sulphur mountain can be seen the general monoclinel structure of this portion of the Rocky mountains. The successive ranges from the Cascade valley westwards represent westerly-dipping fault-blocks, which have become tilted along the east side. On the north side of Bow valley, the Cascade, Vermilion and Sawback ranges form distinct units, the same beds being repeated in each of these ranges.

Leaving Banff station, the railway follows along the broad, swampy valley of the Bow, on the right of which is a series of three small lakes, called Vermilion lakes. The range to the right is the Vermilion range, in which are exposed the westerly-dipping Devonian, Carboniferous, Permian and Jurassic beds.

Forty-mile creek follows a fault line which divides the Vermilion Lake range from the Sawback range. The depression to the right leads to Mt. Edith pass, beyond which can be seen Mt. Edith, which is made up of vertically-dipping Lower Banff Limestone. The steeply-dipping beds on the west of this creek belong to the Sawback formation. This formation lies conformably under the Devonian Intermediate Limestone, but the exact age is still doubtful, as no fossils have yet been found in it. Lithologically, a part of this series resembles the rocks of Silurian age in the Beaverfoot range to the west. To the south of the railway is the valley of Healy creek which extends to Simpson pass, and is the course followed en route to Mt. Assiniboine, the