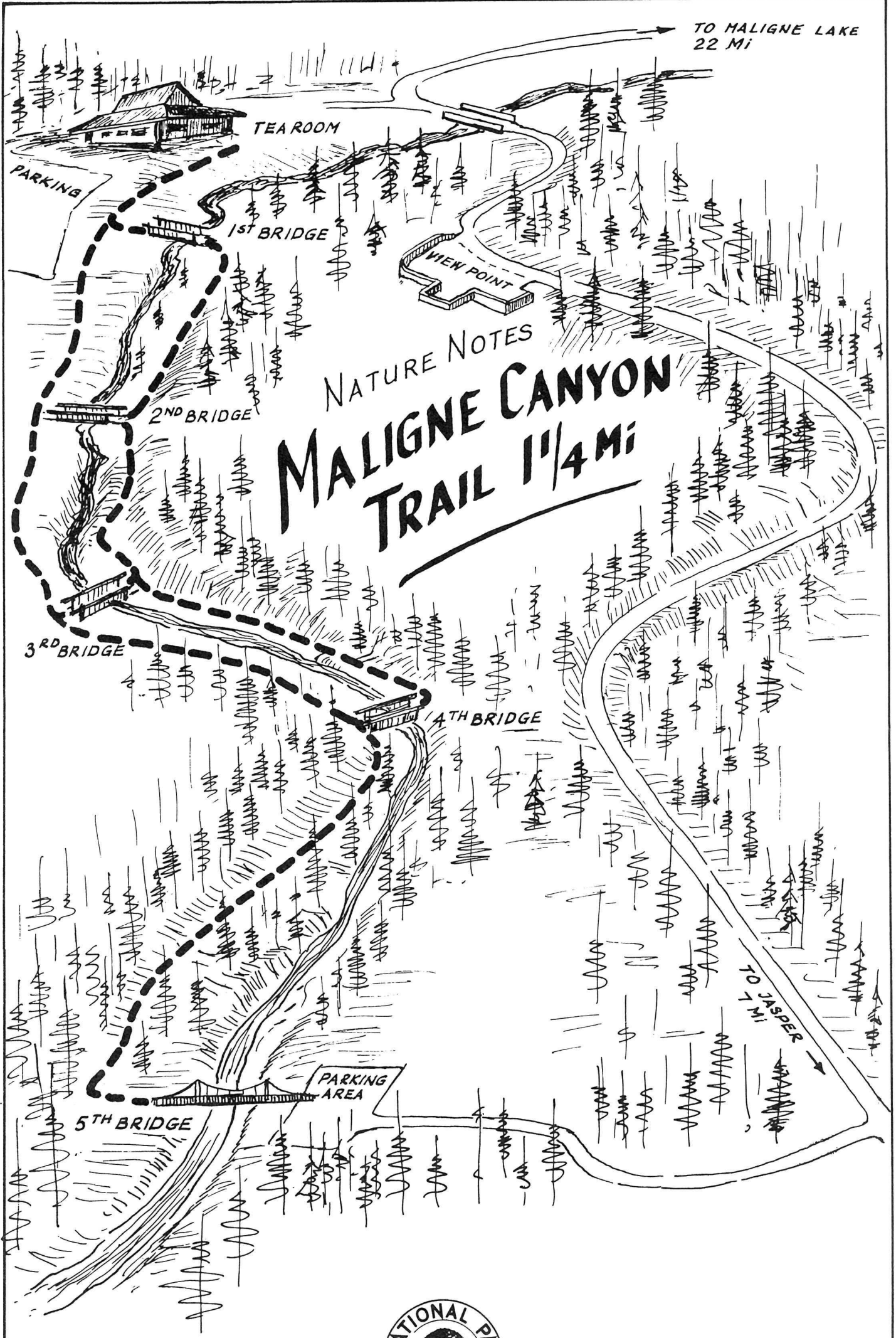


TO MALIGNE LAKE
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JASPER NATIONAL PARK

MALIGNE VALLEY AND CANYON

This pamphlet is written in the hope that visitors who take the complete walk down the canyon or walk only a portion of the distance will gain greater appreciation of the wonders of nature. To use the information outlined here to best advantage, it is suggested that visitors read the pamphlet first before beginning the walk down the canyon. Also provided for your convenience is a sketch map of the canyon. A slow, leisurely walk and careful observation will be most rewarding.

The Maligne Valley is one of the most interesting in Jasper National Park, not only on account of its remarkable canyon but also because of its two beautiful lakes - Medicine and Maligne.

The Maligne River was named in 1846 by Father de Smet, a Belgian missionary. He referred to it as the "Maline" River (French for bad), reportedly because of the treacherous ford present at its junction with the Athabasca River.

Maligne Valley -

Between Colin Range on the north-east and Maligne Range on the south-west the Maligne River flows north-west from Maligne to Medicine Lakes. The valley has a broad 'U'-shaped cross-section, which is typical of valleys modified through erosion by glaciers. The Maligne Valley glacier has now receded to the mountains around the south-west end of Maligne Lake.

The bottom of the Maligne Valley gradually falls from 5,500 feet above sea level at Maligne Lake to 4,750 feet at Medicine Lake, and to 3,800 feet near the head of Maligne Canyon. This represents an average drop of about 80 feet per mile. In comparison, however, from the Tea Room, in one mile the Maligne River drops more than 400 feet to reach the level of Athabasca Valley.

During the ice age, which ended about 10,000 years ago, the Athabasca Valley was enlarged by flow movements of the very large Athabasca glacier. The Athabasca glacier, being much larger than the Maligne glacier, deepened its valley to a much greater extent. Thus, when these glaciers melted, the Maligne River entered the Athabasca Valley at a higher altitude. The original fall where the Maligne River flowed into the Athabasca Valley has been changed through erosion of its channel into the deep canyon seen today.

Maligne Canyon -

The Maligne Canyon is an excellent illustration of the erosional power of water. The erosion appears to be due to a combination of solution (dissolving action) of the massive, limestone bedrock by water, similar to water eroding a channel in ice, but very much slower; and mechanical grinding and abrasion of the bedrock by silt, sand, and gravel in suspension. The gorge is about one-half mile long and is 152 feet deep at one point. In places the walls are less than 10 feet apart.

The canyon is eroded in sedimentary rock which consists of layers of limestone (calcium carbonate). Because of their distinctive characteristics such as type of rock, style of bedding, coloring and weathering habit, Geologists distinguish these layers of limestone rock by referring to them as the Paliser formation. Fossils from these rocks indicate that

these limestones belong to the Devonian period of the geological time scale, and are more than 350 million years old. Fossils and rock layers suggest that they were laid down in a large, shallow, inland sea. The upheaval began some 70 million years ago while the canyon formation began about 50 million years ago.

Outstanding Features of the Canyon -

In the river bed near the Tea Room one can find several samples of fossils embedded in the large flat rock. Careful observation will reward the visitor with views of several fine fossils.

A very short distance down the canyon from the Tea Room one may see several round, cauldron-like depressions called pot-holes. These have been formed and are in some cases still being formed by the action of water swirling sand, gravel and stones in a circle. The material in suspension grinds the rock away leaving a hole similar to one drilled with a large auger. In some places the pot-holes were formed in a line and eventually reached a size where the sides washed out causing them to join and form a deep channel. The channel in which the water is presently flowing shows evidence of this action.

At the first foot-bridge one may see the largest single drop in the canyon. The waterfall here is about 75 feet while the depth of the canyon is 123 feet. Just above the falls and a short way up the channel several logs may be seen wedged between the walls of the canyon. These represent the height of the river in the 1960 season and were in fact, jammed here by the river. On the other side of the bridge the narrowness of the canyon is emphasized. Here may be seen three large rocks wedged between the walls. These rocks are possibly some that have rolled into the canyon from the loose debris which was deposited by glaciers. Also in this area one may see a rather unique tree growing from the edge of the canyon.

While moving along the canyon edge from the first to second foot-bridge, it is possible to see evidence of frost action on the canyon walls. Large cracks appear in several places and eventually large pieces of rock will drop from the wall. The rough appearance of the canyon wall is a result of frost action. Water seeps into small cracks, freezes, and the resulting pressure from the freezing forces the cracks to open wider. Eventually, a piece of the wall loosens and drops into the canyon.

The second foot-bridge crosses the canyon at its deepest point. The depth here is 152 feet. On the upstream side of the bridge one may see what remains of one of the very large pot-holes. Here also good examples of erosion by solution are evident. On the downstream side of the bridge there is much evidence of plant growth on the sheer walls of the canyon. Orange colored lichen, moss, ferns, grasses and several large trees may be seen growing on the small ledges and in cracks in the rock. At this point also, one may see a decided slope in the rock strata.

On the upstream side of the third foot-bridge another but smaller fall is located. Here the depth of the canyon is not so great but it is much narrower than at points upstream. Between the third and fourth foot-bridges one may see a large tree which has fallen across the canyon and continued its growth so that it forms what appears to be a natural bridge. The top of the tree growing toward the sunlight caused the curve in its structure. From the fourth foot-bridge and also downstream from it, water can be observed issuing from the side of the canyon wall. In some cases

the amount may be small and appear to seep out, but in several places it rushes out in a turbulent stream. This water probably has its source at Medicine Lake - nine miles up the valley, and flows underground coming out into the canyon at this point and farther down stream. Also along this section of the canyon the visitor may look upward and obtain a good view of the cross-section of the canyon wall. Bed rock is visible here and glacial deposit can be seen above this.

Moving along the footpath a short distance one soon comes to the fifth foot-bridge. When this point has been reached visitors have walked completely along the canyon. From the fifth foot-bridge to the Athabasca River the Maligne River flows in a shallow river bed. The return trip up the canyon offers different views, if from the fourth foot-bridge to the first foot-bridge the opposite side of the canyon is followed.