

less counterpane of snow, and fed by the glacier itself.

"On turning around to retrace our steps to the cave a view of Mount Sir Donald and the Great Glacier greeted our eyes that can never be forgotten.

"As we neared the cave again we came upon a natural bridge under which the Cougar creek flows for a distance of 350 ft. The bridge is called 'Cougar Bridge' on the map. Immediately north of this bridge are two cascades, which start several hundred feet up the side of Cougar mountain and descend with many slides and leaps and join Cougar creek just below the bridge. These cascades have been named 'Whistler Falls' because of the great number of whistlers, hoary marmots, that have their burrows in the neighbourhood.

"Passing down Cougar creek 100 ft. and turning back to look at the end of the bridge, a beautiful scene meets the eye. The opening in the rocks out of which the water quietly and mysteriously flows, the snow-covered banks and the falls in the foreground make this a very attractive spot.

"Another 100 ft. further down the stream brought us to a beautiful little fall immediately opposite 'Entrance No. 1' of the cave. Cougar creek, even now, during very high water, divides as it comes over the falls: a part of it flowing over the overhanging rocks at the right in the picture, enters the cave at 'Entrance No. 1.'

"From 'Entrance No. 1' down Cougar creek to the west end of the second natural bridge, is to be found a rare specimen of Nature's handiwork. It is a water channel cut into solid rock, with many round potholes in the channel and along the sides. For the first 160 ft. the descent is very moderate, but the next 150 ft. it descends on the dip of the strata, which is 30 degrees to the east. Through a series of large and deep potholes, joined by openings through their sides, the water plunges, whirls and roars until lost under the west end of the second natural bridge. The channel has been called 'The Flume,' owing to its resemblance to the flume of a mill.

"The second natural bridge has been named the 'Mill Bridge,' because immediately where the water enters under the bridge there is a roaring sound of a restless force such as is heard at many water-wheels. The length of this bridge is 243 ft.

"At the west end of the bridge, Cougar creek passes into a cavern about 170 ft. deep, which continues for a distance of 234 ft., where it abruptly ends, and Cougar creek enters the cave. It is called 'The Canyon' on the map.

"On the surface immediately to the east of this canyon are the beautiful waterfalls which I have named 'Bear Falls,' 'Upper Goat Falls' and 'Douglas Falls,' the last in honour of Mr. H. Douglas, superintendent of the Canadian National Park.

"From a point about 1,000 ft. south of the cave and along Cougar creek a very interesting view meets the eye. The falls in the upper part of the picture are 'Lower Goat Falls.' At their foot is 'Entrance No. 4' to the cave, through which all the water from the falls at once disappears.

"The trees forming the forest about the cave are nearly all balsam firs, which create a spicy fragrant atmosphere, peculiarly their own. They range in age from 150 to 250 years, are tall, and are perfect specimens of this attractive tree."

Mr. Ayres stated that it is his intention to revisit the cave in August, when the water will be lower, for the purpose of making a more extended examination.

The following paper on

AN IMPROVEMENT IN MINE MAPS,

by Mr. D. W. Brunton, of Denver, Colorado, was read by that gentleman:—

"The maps of our large mines are usually prepared with the greatest care, and it is somewhat singular that, in comparison with the great amount of time and money spent in surveying and platting, so little actual use is made of them. Almost the only purpose for which a completed survey-map is afterwards consulted, is the determination of the relative positions of the different workings to each other, and to the boundary lines of the property.

"After the completion of such a map of the survey, it should be made the beginning of another, and in most cases a far more important undertaking, namely, its utilization as a starting point for a complete inventory of the company's underground possessions. The ordinary mine-survey map, being nothing but a record of what has been done, is, in one sense, only ancient history. To increase its value, such additions should be made as will render it a complete statement of the amount and value of ore in sight at any particular time, and a guide for future developments. Comparatively little extra labour is involved in this undertaking, since the larger and more expensive part of the work has already been completed when the mine has been surveyed and mapped. The necessary additions consist in working out, and platting on the maps, the geology of the mine as exposed in the workings, in such a manner that the geological survey may be of daily use in the development and operation of the mine.

"The first step towards the production of a geological map consists in tracing individual level-sheets from the general or composite map. The area to be included, outside of the property in question, will depend very much on local conditions; but for geological, legal and commercial reasons, it should be extended as far as reasonably practicable. The scale to be adopted likewise depends on local conditions and individual preference; but experience has shown 40 ft. to the inch to be a very convenient scale. Where the area to be included would necessitate a map of more than 30 in. wide by 36 in. long it is better to divide it into different sections, the maps of which can then often be made somewhat smaller, say 24 by 30 in., which is a very convenient size.

"The individual level-sheets should be very carefully made, so as to register perfectly, and should be perforated (preferably on the left-hand side) to pass over three pairs of arch files, secured to the left-hand side of a very thin panelled frame, about 1 in. larger all round than the maps, somewhat after the