

TRÜMMELBACH-WATERFALLS

GENERAL

All the Trümmelbach Falls except the lowest were invisible to human eyes, and unapproachable, from the last Ice Age about 15'000 years ago until they were first rendered accessible in 1877. They were hidden inside the mountain, which is why the name „Trümmelbach“ does not convey a visual impression, as is the rule with waterfalls, but an acoustic one. „Trümmelbach“ comes from „Trommelbach“ meaning a stream that sounds like a drum.

The amount of water in the falls varies greatly. From December to March there is just a little stream trickling down under thick sheets of ice. After frosty nights in April and October the flow of water measures only a few dozen litres a second. But between April and June, when the snow melts, and between June and September, when the glacier ice melts, as well as after heavy rain and thunderstorms, as much as 20'000 litres a second may come thundering through the rocky defile. The little stream becomes a mighty river.

The water that roars and tumbles down in summer is frozen into silence during the winter. Then only the rocks speak to us.

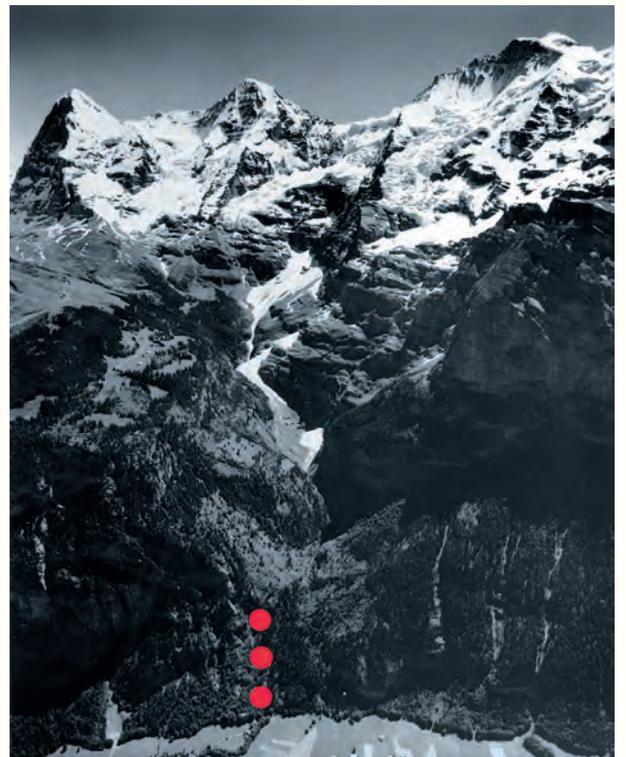
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DRAINAGE AREA

The catchment area of the Trümmelbach is the glaciercovered north and west walls of the Mönch (4099 metres), the Jungfrau (4158 metres) and the Eiger (3970 metres) and also the sources that rise on the Lauberhorn (2472 metres) with the extensive Wengernalp. The whole area measures about 24 square kilometres, half of which is covered with ice, névé and eternal snow. Nowhere else in the Alps can one so safely and easily approach the faces of high mountains. The difference of altitude from the bottom of the valley near the Trümmelbach (820 metres) to the peak of the Jungfrau is 3338 metres, although as the crow flies the distance is only about 5 kilometres. Such a phenomenon does not occur anywhere else in the Alps.

The Trümmelbach is born in eternal ice and snow. In summer its waters are, so to speak, „the milk of the glaciers“.

Rocks are constantly falling onto the glaciers from the rocky precipices above them, like a steady rain. The glaciers convey this debris down to the valley and the pressure of the ice crushes it into pebbles, sand and loam. The loose scree accumulates at the sides of the glaciers, and at their lower ends, to form moraines. It is the loam and sand washed out of the glaciers and the moraines by the melting snow and ice that make the water look like milk. The amount of debris transported down the mountain each year in this way is enormous. Scientists at the Hydraulics Experimental Laboratory of ETH (Federal Institute of Technology), Zürich, have worked out that the Trümmelbach carries about 20'200 tons, or over 20 million kilograms, of material into and out of the valley every year. Much of this ends up at the bottom of the capacious Lake of Brienz. The clay, sand, gravel and boulders carried along by the river grind away at the rather soft limestone along its banks and erode it. Here we can see at work the mighty natural forces that formed the Alps and still are forming them. The Trümmelbach gorge is like a giant crevasse in the limestone. On its black bed the water in summer is whitish glacier milk and in autumn it is crystal-clear, blue and green. But it is always covered with clouds of foam as it roars down from one rocky basin to the next.



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GEOLOGIE

The rock eaten away by the Trümmelbach consists of thick beds of limestone (2). These were deposited as calcareous mud 140 million years ago, in the Upper Jurassic period, in the shallow sea that then covered the entire European continent. 100 million years later, the Bernese, Oberland region was included in the process that led to the creation of the Alps. The folding of the earth's crust led to the limestone (2) being covered over by several mighty strata (3) that had been deposited further to the south (the Wildhom layer), which compressed it. The plications and flow lines are still clearly visible on the polished walls of the Trümmelbach. They testify to the enormous pressures to which these strata (3) were exposed as the Alps were formed. Even the earth's crust



below the limestone layer, consisting of crystalline primeval rock (1), which had at one time formed the bed of the shallow Jurassic Sea, was caught up in this folding movement. Coarse flakes of primeval rock were thrust upwards and today constitute the peak of the Jungfrau (1). They rise up high above the marine deposits that originally covered them.

However, the Alps did not attain their present height until later, about 10 million years ago, when compaction by uplift commenced that is still going on. At the same time rain, snow and ice began to wear away the mountain peaks and to carry the rock down to the lowest levels. This is the key to an understanding of the history of the Alps, which can be studied by examining the steep slopes of valleys to find out what kinds of rock they consist of and the way they are piled up in strata on top of each other. 500'000 years ago the glaciers of the Ice Ages began to carve out the valleys we know today and to clear away a lot of the old debris. The smooth rocky walls of the Lauterbrunnen valley bear witness to the erosive force of the ice that at one time filled the valley right up to its rim (4).

Today the Staubbach and its sister stream pour freely as waterfalls over cliffs hollowed out by the ice. But the Trümmelbach already began to bore away at the rock while the valley was still full of ice (4). The melting snow and ice that poured off the sides of the glacier set in motion a so-called moulin, or glacier mill, which must have continued over much of the last Ice Age and fortunately was not blocked off by the scree of a moraine. Through the shaft formed by this moulin the water from the melting snow and ice on the surface found its way down to the base of the glacier and then bubbled out from beneath the ice somewhere near Lauterbrunnen.

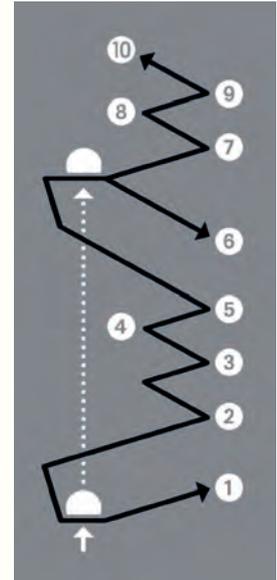
In this way the Trümmelbach has been thundering through the rock for the last 15'000 - 20'000 years, as an expressive testimony to the last Ice Age.

by Prof. Dr. Hottinger,
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DEVELOPMENT

In 1877 - 1886 the lowermost falls were rendered accessible by flights of steps and bridges. The tunnel lift, which from the technical point of view is a funicular with a counterweight, was constructed in 1913, at the same time as the access to the 3 upper falls. The flight of steps at the top of the tunnel, the gallery and lookouts were built in 1986. The lower part of the gorge was connected to the upper half during the winter of 1990. From the interior of the mountain, rugged rock formations and 3 additional falls became visible. With that, it is now possible to walk along some 600 metres of path in the Trümmelbach Gorge. The way has been opened to 10 falls; the difference in height between the lowest and the highest fall is 140 metres. The tunnel lift is 105 metres long and rises about 100 metres, so that its gradient is approximately 45 degrees. It can carry about 40 persons and the journey takes 60 seconds, i.e. the capacity is about 500 persons per hour. The energy-saving counterweight is as heavy as the cabin would be if it held about 15 persons. The walls and roof of the cabin are made of glass. The lift was constructed in 1983, and is the third one since the original construction in 1913.



400 meters of galleries, 5 tunnels, 30 meters of bridges, 16 flood lights, 32 spot lamps.

All the work was done with the greatest care and in such a way as to minimize the human impact on the surroundings, or even to render it entirely invisible, in order to emphasize the grandiose natural beauty of the falls. That is also why the shafts of electric light are directed solely at the walkways, rocks and water. In the precipitous sides of the gorge, which are virtually inaccessible to man, one finds primeval mountain woodland with Alpine roses, rare ferns and lilies. In cold rainy weather and in winter this provides shelter for ibex and chamois.

Trümmelbach is included in the Federal Inventory of Monuments and Landscapes of National Importance.

TRÜMMELBACH-WATERFALLS

LITERATURE & ARTS

The Trümmelbach-Waterfalls in the literature.

Among the most beautiful brooks is the Trümmelbach or so-called „Trümmelkind“ whose name is derived from its special origins. It springs from the rounded ice mass in the Rothenthal valley next to the Jungfrau and flows from southeast westwards, passes over flat and rocky ground and finally plunges some 15 feet from a rock wall to form a wide and deep basin. The waters then become shallow and quiet and join with other nice brooks before emptying in the Lütschinen. This Trümmelbach is turbid because of its falls and a beautiful rainbow often presents itself in its mist.

„The Glaciers of Switzerland“
Gottlieb Sigmund Gruner, 1760

We visited the Trümmelbach, which is still but little known, but well deserves to be, since this waterfall is of quite exceptional beauty. We walked along the rapidly flowing river and heard the muffled din of the falls. Soon we were standing by the rocky gorge, which was as black as the night. Out of the darkly yawning abyss the torrent came thundering forth. We stood for a while in silence and watched the foaming floodwaters, which bounced angrily from one shiny black rock to the next, and then, seagreen in colour, merged to bubble out of a deep hollow that had been bored into the rock. The sound of the water beating against the black pillar of the cliff resembles the beating of a drum, and that is how the waterfall got its name. The water in this gloomy gorge comes from far above, from the foot of the Jungfrau ...

Frederike Brun, 1799

The Trümmelbach Fall, the runoff from the Jungfrau glacier, surging out of a narrow crevice and discharging itself in a low but powerful fall into the valley. In order to gain the complete impression, one must get very near to the southern wall of rock where a guardrail has been put up and where children request a few centimes for its upkeep. The view from the bridge (50 centimes), which can be reached by the path on the right bank, is also unusual. The falls are one hour's distance from Lauterbrunnen. A few hours of leisure in Lauterbrunnen could not be better filled than with a walk to the Trümmelbach Falls ...

„Handbook for Travellers“
by Karl Baedeker, Coblenz, 1855

What's throbbing up on that cliff yonder?
It's as though the earth's insides
are quaking.
The water`s din roars unceasingly,
a far-off thunderstorm awaking.

„Pastor of the Glaciers“
Gottfried Strasser, Grindelwald, 1893

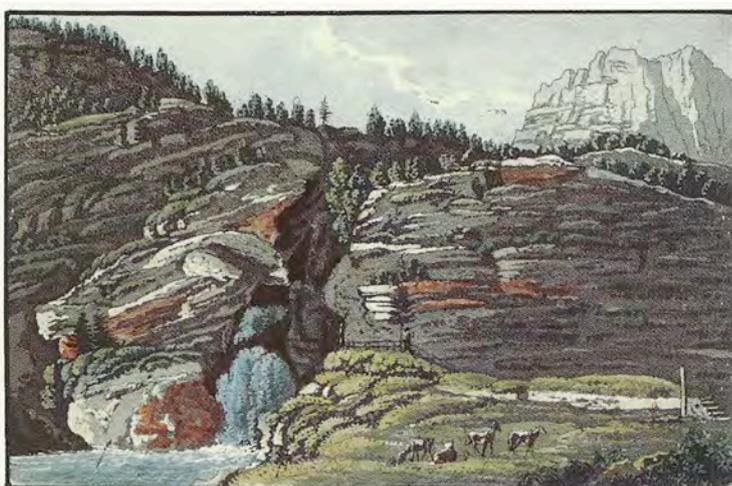
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LITERATURE & ARTS

The Trümmelbach-Waterfalls in art. Part 1



„La Chute du Trommelbach“
by Paul Julius Arter, 1797–1836

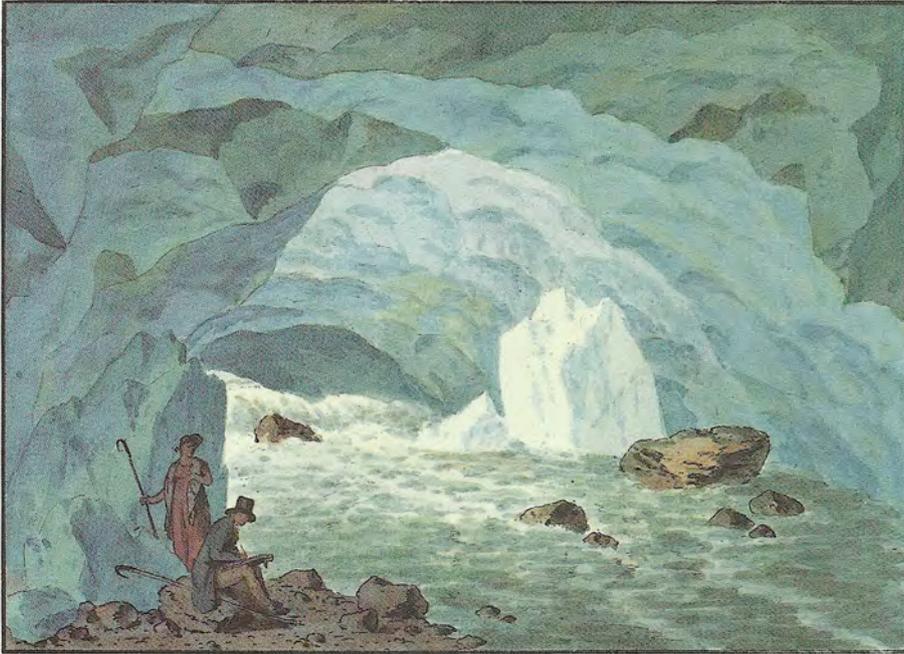


„Le Trimlete-Bach dans la Vallée
de Lauterbrunnen“
by Johann Jakob Sperli, 1770–1841

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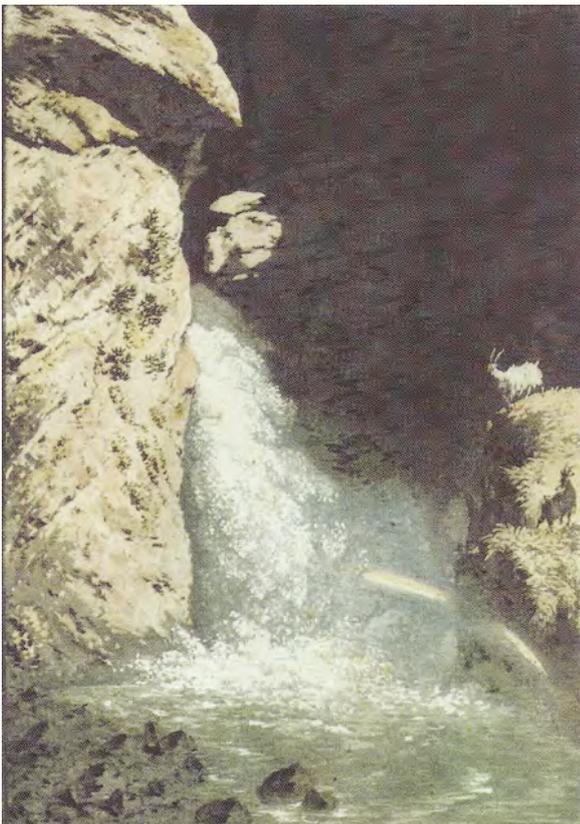
The Trümmelbach-Waterfalls in art. Part 2



SOUS LE GLACIER

„Sous le Glacier”

by Frank Niklaus König, 1755-1832



„Le Trümel-Bach”

by Frank Niklaus König, 1755-1832