

Zeitschrift: Helvetia : magazine of the Swiss Society of New Zealand
Herausgeber: Swiss Society of New Zealand
Band: 83 (2017)
Heft: [1]

Artikel: Switzerland's underground. Part 1
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DOI: <https://doi.org/10.5169/seals-943470>

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Switzerland's Underground – Part 1

Introduction

Under Switzerland there is a second nation: a Switzerland beneath the earth – a hidden realm not visible from above; established over the past 150 years. If all the man-made caverns, ducts, galleries, bunkers and tunnels were put in a row, they would reach over 3,700 km (approx. Sydney to Perth). Many parts have only restricted access, and the common saying that Switzerland is as full of holes as Emmental cheese is actually quite correct!

This underground world reflects an important Swiss requirement – security! It provides for many diverse needs: fast and secure transport links (particularly in Winter); home bunkers to protect the civilian population; independent electricity supply; fortified sites providing armed military protection; secure research and development sites; safe storage of sensitive information and data; and the concealment of valuables.

Very few parts of Switzerland have been hollowed out for the value of any sort of mined raw materials - on the contrary, it has occurred solely for the value of the voids and hollows themselves, which fulfil many specific purposes. The Gotthard Rail Tunnel is one of the most prominent examples – travel time through this North-South mountain void has been substantially reduced.

However, sometimes the intentions behind creating these underground hollows have lost their worth over time. Hundreds of Swiss Army sites have eventually become redundant for various reasons: because of their age, weakness or incorrect positions; or simply because they were no longer needed. Some well-intentioned tunnel builds have even later been written off – a 5km stretch diverging off the main Furka Tunnel line was never used and has since been blocked off! As well, the 2km SBB Lenten Tunnel under Zürich was no longer needed around 1989 and so was unceremoniously filled in. An old Commando bunker in Canton Aargau was unexpectedly discovered



A part of the Oberhasli underground pump station



Part of the 'alpine labyrinth of tunnels' to access the underground Grimsel power stations

in 2011 during other construction work – and not even anyone in the Defence Ministry knew or found any record of its existence!

Water

20% of Switzerland's water is taken from lakes, forced past turbines and fed into reservoirs where it is stored to eventually become clean drinking water. The other 80% comes from underground springs and bores. Switzerland's drinking water circulates through a net of 53,000 km of underground pipes to reach every settlement and tap. Waste water is then fed through further underground channels to purification plants. Small hydro power stations have now even been established to make use of this fast flowing waste water, as in Chur.

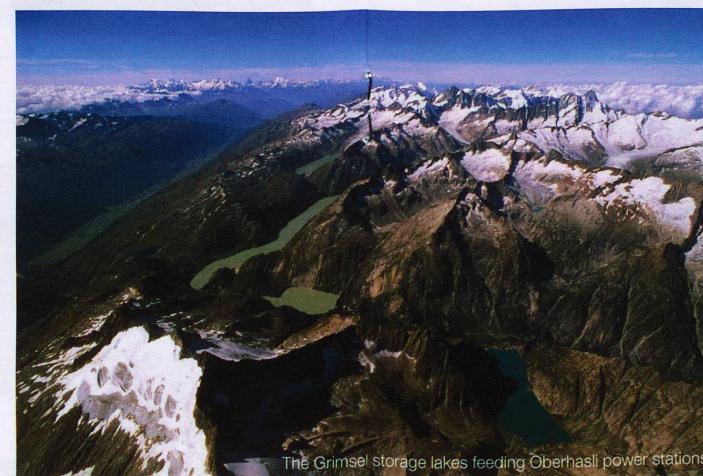
Hydro Electricity

A major portion of collected water is used to generate electricity and this occurs mainly underground. The 1300 plus large and small power stations basically function just like water wheels which turn the power generator. Every single drop of water travels past an average of 10 turbines on its journey from one station to the next. The water passes through multiple pipelines and ducts in the mountain massifs: from one valley to the other, from one reservoir to the next turbine.

Construction of one such generating system, Oberhasli, in and around the Grimsel and Susten mountains, commenced in the 1920s and has expanded in size with increased

demand. Only the mountain lakes and transmission lines are visible though - most of the facility is situated underground. Inside these huge mountain ranges are over 100 km of road and rail tunnels, allowing secure passage, as well as ensuring continuous access to all the underground power stations. The water from the many mountain lakes travels through numerous waterways, reservoirs and pipelines to reach nine power stations totalling 29 turbines – all unseen - but now producing power for over one million people, as well as providing over 500 jobs.

The uninitiated would certainly become hopelessly lost within this alpine labyrinth, with many parts only accessible on



The Grimsel storage lakes feeding Oberhasli power stations

foot. Many cable railways and cable car lines have also since been established by the Oberhasli power company to improve access and some of these have now also become tourist attractions. Construction here is ongoing, with plans for more water catchments and power generators. The availability of this sort of renewable energy leaves Switzerland well positioned for future power needs, with the added advantage of maintaining price stability.

And the next innovative pump storage plants and reservoirs are already under construction - the Mammutwerken at Linth-Limmern, Canton Glarus, and Nant de Drance, Canton Valais. At the heart of each site will be the enormous underground caverns containing the actual generating plants: at 52m high and 32m wide; and 154m and 194m long respectively. The construction of many kilometres of underground access tunnels, galleries and pipelines will also be required, and each site will eventually produce the same amount of energy as the current atomic power station of Goesgin.

The underground voids currently housing Switzerland's hydro power stations, if put side by side, would be over 800 km long, equal to if a tunnel were built from Whangarei to Wellington!

Articled compiled by Beatrice Leuenberger – translated from articles in Schweizer Famille

More of Switzerland's Underground in the next issue of the Helvetica

Basler Fasnacht (Carnival)

The Basler Fasnacht starts on the Monday after Ash Wednesday at precisely 4:00 am with the so-called Morgestreich. The carnival lasts for exactly 72 hours and, therefore, ends on Thursday morning at 4:00 am. During this time the Fasnächtler (the participants) dominate the old town of central Basel, running free in the streets and restaurants. Basler Fasnacht is often referred to as die drey scheenschte Däag ("the three most beautiful days").



For spectators, there is the ever-present danger of being attacked from behind by a confetti-throwing Waggis, especially if not wearing a Carnival badge known as a Blaggedde (which sounds similar to plaque to French and English listeners). It is an unwritten law that masked and/or costumed participants are not subject to confetti attacks.

By the evening, the routes of the Cortège are ankle-deep in confetti. Even so, Basel's sanitation department succeeds in clearing away this mess within two hours during the night, so, by the following morning, there is little evidence of the previous day's events.

Marching brass bands playing Guggenmusik are another formation present during Carnival. Although the Guggenmusik groups do not participate on Morgestreich, they march and play throughout Fasnacht, starting with the Cortège on Monday, and are showcased on Tuesday night when they perform in Guggeconcerts in various locations.

It remains unclear exactly why Carnival starts one week later in Basel than elsewhere in Switzerland or Germany.

The common explanation is that after the Reformation in 1520, Basel continued celebrating its Fasnacht, while the other regions officially stopped. It is said, that in order to differ from the Catholic customs, Fasnacht was scheduled one week later starting in 1529. There are no documents from this era supporting this theory, and the resolutions from 1529 were not quoted until 200 years later.

Historians note that the Catholic carnival date was rescheduled six days earlier in 1091 in the Council of Benevent, because the Sundays were excluded from the 40-day fasting period before Easter, making Ash Wednesday the first day of Lent. From then until the 16th century, the two carnival dates existed. The first one, ending on Ash Wednesday, was known as the Herren- or Pfaffenfasnacht (lords' or priests' carnival) and was observed by those members of the higher echelons of society. The second, one week later at the old time, was known as

Continued on page 13