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The Furka-Oberalp & Schöllenen-Bahn

by Giles Della Gana

The route over the Furka and Oberalp passes was known to the Romans. It remained a mule-track until the nineteenth century when a 179 km road from Brig to Chur was built between 1850 and 1867. A service of horse-drawn postal coaches was established in 1871. Travellers were obliged to change vehicles and spend the night in Andermatt. In 1886 Roman Abt (1850-1933) came on to the scene with a proposal for a standard-gauge railway from Brig to Airolo via a 6.3 km summit tunnel under the Nufenen pass. This was followed in 1893 by a proposal for a tramway from Meiringen to Andermatt.

During 1903 and 1904 an electric metre-gauge line from Meiringen to Visp , via Brig and a 2.3 km summit tunnel under the Grimsel, was proposed. The project was reduced in scope to a line from Brig to Gletsch and a concession was granted to Xavier Imfield, R. Zehnder and the Alioth company on 21st. July 1907. A further concession was granted to the Alioth company, in association with Muller, Zeerleder and Gobat, on 8th. October 1908, for a metre-gauge line from Gletsch to Disentis/Munster, to join the projected RhB line from Ilanz. The two projects were united on 27th. May 1910. The route's strategic importance was recognised immediately and the new company was urged to lower the summit to allow all-year operation. This was not to be achieved until 1982 however.

A construction contract was awarded to Societe des Constructions des Batignolles in 1908 though it was to be two years before work started. Although the original intention was for a purely adhesion line, Abt rack was eventually adopted for steep sections. The main task was the boring of the Furka summit tunnel work which begun during the summer of 1911. By the spring of 1912, after about 160 m had been driven at the western end, moraine material under great pressure was encountered. The workings were abandoned and a new tunnel started approximately 100 m to the south. This caused serious delay and additional cost. The planned electrification was abandoned, the use of steam by substituted. In June 1914 work on the Uri heading was suspended after a collapse, work in the Wallis heading having already stopped owing to a shortage of materials. Operations restarted early the following year but were impeded by a shortage of Italian labour owing to that country's entry into World War I.

The Brig to Oberwald section on 1st. June 1915, under the title of Brig-Furka-Disentis (BFO), with the section on to Gletsch opening on 1st. July the same year, though the uncompleted line had been used to assist the movement of troops during the previous year. However by July 1916 the construction capital had been exhausted and any further work was to be suspended for nine years! The government made up the operational deficit until the end of 1923 when the Federal Court of Justice ordered a meeting of the company's creditors which then went into liquidation. Serious consideration was given to abandonment.

Fortunately a group of prominent people came forward to encourage the formation of a syndicate to resuscitate the project. This was achieved in October 1924 under the leadership of August Marguerat (1880-1952), a director and engineer of the VZ. This syndicate was composed of the VZ, RhB, SchB, the Canton of Vaud and local bodies in Graubunden, Vaud, Uri and Wallis. Finance was obtained from the Federal government, the Cantons of Graubunden and Wallis together with the RhB. The Furka-Oberalp company was constituted on 17th. April 1925. The Gletsch to Disentis/Muster section was finally opened on 4th. July 1926. Completion was overseen by E. Beanascon, chief engineer of the RhB.

Now the railway was confronted by the folly of not having lower summits. The section between Oberwald and Sedrun could only be worked during the summer. In addition to a direct loss of revenue further costs were incurred by the dismantling every October and the re-erection the following May of the line's most famous piece of civil engineering, the collapsible Steffenbach bridge, between Tiefenbach and Realp. Constructed of three 12 m steel spans, it was

built in 1925 by Thedor Bell & Co, replacing what was intended as a permanent three 10 m span stone viaduct swept away by an avalanche on 16th. May 1916.

The extension of the VZ into Brig in 1930 allowed the introduction of what is arguably Switzerland's most famous train, 'The Glacier Express', in 1931. Though the BVZ line into Brig was electrified from the outset and the RhB line along the Vorder Rhine to Disentis/Muster had been similarly equipped since 1922, the FOB was obliged to work the train over the 2160 m Furka and 2048 m Oberalp summits with steam traction. Though electrification was considered in 1930 it was the coal shortages of 1939 that forced action. With funds provided by the government the line was electrified with the 11,500 volt single-phase 16 2/3 Hz system of the BVZ and RhB. Andermatt to Oberalpsee and Tschamut-Selva to Disentis/ Muster were electrified from 21st. October 1940, the gap between Oberalpsee and Tschamut-Selva being closed on 29th. May 1941. That year also saw electrification of the Realp to Andermatt section from 3rd. October, the Brig to Niederwald section, from 11th. October and Niederwald to Oberwald from 14th. November.Oberwald to Realp was electrified on 1st. July 1942. Associated work to allow year-round services between Disentis/Muster and Andermatt consisted of the realignment of track and construction of avalanche galleries and tunnels at Oberalpsee and above Tschamut.

In recent years the FOB has been the scene of tunnelling every bit as epic as the work of the pioneers of a century ago. Work began on the Furka Base Tunnel, between Oberwald and Realp, in 1973. However serious errors had been made during the preparatory geological survey, the effect of the depth on the rock to be tunnelled through was underestimated, a decision to save money by not drilling 1500 m bore holes to sample rocks was to prove extremely expensive in the long run. It was assumed that 90% of of the tunnel's length required little or no lining, in the event over 90% had to be lined. This was carried out using elements of the New Austrian Method, also employed on sections of the Channel Tunnel and London Underground's Jubilee Line extension, involving sprayed concrete reinforced with steel mesh and rock anchors. It was badly needed as the walls deformed and detached granite slabs endangered construction work. Steel supports bent and at the Realp end solid rock turned into granules. At the same time water flowed in at a rate of 200 litres per second. The constructors were fortunate in that they had what was known as the 'Bedretto Window', a 2.8 m x 2.8 m tunnel driven from Ronco in the Bedretto valley. This gave access to the centre section of the tunnel providing two extra working faces. There was a proposal to break-out this gallery to a size to match that of the main tunnel and incorporate it in the route of a branch line down the Bedretto valley to Airolo.

As if the engineering difficulties were not enough, a political storm broke and serious consideration was given to the abandoning of the project. However work was pressed on to a successful conclusion. Opened on 26th. June 1982, at 15,407 m in length the Furka Base Tunnel at the time of writing the longest operational railway tunnel entirely on (or under) Swiss territory. The bored section of tunnel includes 12,586.6 m with a height of 5.91 m and a width of 4.5 m, some 988.9 m (referred to as 'elliptical') with a height of 6.71 m and width of 5.88 m, 915.7 m accommodating double-track 8.84 m wide and 7.15 high and 890.2 m of 6.55 m height and 7.3 m width. It is interesting to note that motor vehicles are transported in perfect safety on shuttle-trains composed of simple flat wagons with open sides. The journey between Oberwald and Realp takes longer than that between Cheriton and Coquelles where inordinately complex car-carrying vehicles are employed. The cynic might wonder if this has something to do with the lack of entrenched Ro-Ro ferry operations across the Alps!

The year-round convenience of the new tunnel notwithstanding, there were those who thought the the scenic summit route was too good to be abandoned. The Dampffbahn Furka-Bergstrecke (DFB) was set up with the aim of reopening the line. Taking over responsibility for the line from the FOB in 1987, a base was established at Realp as it was felt that the eastern ramp would be easier to return to operation. The section from Realp to Tiefenbach was reopened on 31st. July 1992 and on to the portal of the summit tunnel at Furka, on 30th. July 1993.

The area around Andermatt is sometimes referred to at 'The Roof Of Europe' forming a high

Above: A Furka-Oberalp train in Göschenen station, the opposite side of the station is the SBB Gotthard main line.

altitude cross-roads. In medieval times it was what might be termed a marshalling area for pilgrims. In later times horse postal bus services were established, that from Brig to Chur having already been mentioned. Unfortunately just as Andermatt was beginning to develop as a tourist centre, the north-south link was cut owing to the opening of the Gotthardbahn. The service on this axis was reduced to twice daily runs to Goschenen to connect with the new railway.

After false starts a company was constituted in Altdorf on 24th. June 1912, to build a line from Goschenen up the Scholenen gorge to Andermatt, obtaining a federal subvention in the process. Work, which commenced in May 1913, was delayed by the outbreak of World War I. The military authorities quickly recognised the importance of the line and insisted that it should be capable of accommodating FOB and RhB Rolling stock. Tunnels were enlarged and the minimum radius increased from 60 to 80 m, a further Sw.Fr 300,000 being granted to cover this extra work.

The Schollenen-Bahn (SchB) opened on 12th. June 1917 being electrified at 1,200 volts DC, though this was to be changed to 11,500 volts AC 16 2/3 Hz from 17th. October 1941, from the start. The steeply graded line was equipped with Abt rack. Initially the railway worked during the summer only but winter operations commenced from 1925 after the completion of extra avalanche galleries the previous year. The SchB amalgamated with FOB on 1st. August 1961.

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