A Century through the Alps

The railway line parallels the much newer road in the Reuss Valley.

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ONE of Switzerland's most fascinating railway lines celebrates its centenary this year. The line, which is as remarkable for its scenery as for its civil engineering, is the St Gothard.

From Lucerne, the line follows the shores of the lake of Lucerne and the Zugerzee to the junction at Arth-Goldau. At Schwyz the line turns south and journeys through about 60 tunnels with a total length of 45 kilometres, including the celebrated tunnel of St Gothard, to Airolo.

Few lines give the Swiss Federal Railways more problems than the St Gothard line. The tracks are constantly threatened by snow, ice and avalanches, and protective measures cost many millions of francs, to say nothing of the maintenance costs.

Despite all the protective walls, strategically sited forests and other precautions, the line is often affected, sometimes seriously. In 1933 the tracks were covered by thousands of tonnes of rock to a depth of four metres.

The most remarkable part of this remarkable line starts at Gurtnellen where the line climbs some 370 metres to Göschenen – an incline of 50 per cent if taken in a straight line. To climb to an altitude of 1154.5 metres, the track must follow a convoluted course of circles and loops.

First, the line describes a complete circle entirely inside the mountain in the Pfaffensprung tunnel. Then the route follows the river Reuss through a smaller tunnel to a viaduct over the river to the Wattingen tunnel.

Inside the tunnel the tracks describe almost three-quarters of a circle, recross the river and pass through a short tunnel to the station at Wassen.

Leaving Wassen, the tunnel of Leggistein turns the track through another large loop so that it is again heading south towards the station at Göschenen and the great St Gothard tunnel itself.

This astounding feat of civil engineering carries a dual track to Airolo. It is 15 kilometres long, eight metres wide and six metres high with an electric power station in the middle.

The St Gothard Railway Company was founded in 1871 at Lucerne to build a central alpine route from north to south and, after some argument, the present route was chosen.

By PETER E. SLATER

Work began simultaneously at Göschenen and Airolo on June 4, 1872, under the direction of the great Genevan entrepreneur Louis Favre of Chêne-Bourg. He and his 3,000 workers toiled against bitter cold outside the mountain and heat inside the workings. Water frequently flooded the galeries, disease and accident took their toll and as always the accountants were breathing down their necks.

Work progressed at a mere 70 centimetres a day until a drilling machine and dynamite increased the rate to six metres. The cost in men and money was immense. Nearly one life for every 100 metres, 177 in all – including Louis Favre himself – was lost. The financial cost was Sfr. 67 million or Sfr. 4,500 per metre.

When the last rock was removed on February 29, 1880, the workers, who wanted Louis Favre to be the first to pass through the tunnel despite his death in July of the previous year, passed his portrait through the opening.

The world marvelled at what was then the longest tunnel on earth. The two halves met in the middle of the mountain with an error of only 33 centimetres in width and five centimetres in height.

On Christmas Eve, 1881, a ballast train became the first train through the tunnel, which was officially opened on May 27, 1882. The entire line was inaugurated on June 1 of the same year. It became part of the Swiss Federal Railways in 1909.

The steep inclines of the line demanded that the most powerful locomotives were chosen to haul the trains. Initially, steam was used to provide the motive power but Switzerland, with little coal of her own, had to import most of it. The severe disadvantages of this was brought home during the First World War and other resources had to be found.

Fortunately, Switzerland had large reserves of "houille blanche" or hydro-electric power, and it was not long before electricity ousted steam.

Today, an electric locomotive, probably the most powerful in the world, can pull an 800 tonne train at a remarkable 80 km/h.

Although traffic has been affected by the new motor routes of recent years, the line still provides the service which it has provided for the past 100 years. Long may it continue to serve "La belle Suisse".