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# 75 YEARS OF THE GOTTHARD RAILWAY

(Conclusion)

## 4. Traffic and Operation.

### A. Generalities.

The Gotthard Railway with its main trunk line Immensee-Chiasso represents the shortest connection between the important centres of industry situated to the north and to the south of the Alps. Its extremely favourable geographical position, between two highly developed countries complementing each other in many ways, could not fail to make it the most important transit line between Northern and Southern Europe. It shortened the lines for traffic from Northern and Eastern Italy to Northern Switzerland and, in transit through our country, to Germany, Belgium, Holland, Northern France, Great Britain and Scandinavia. It has, also, given a new opening to the exports and imports of our national economy.

The commercial development of the Gotthard Line took its directions from the International Gotthard Agreement of 1869, as had been the case, also, in regard to the actual construction. The stipulations of this Agreement limited, of course, the Swiss tariff sovereignty to a certain extent, in so far as the Subventionary States, German and Italy, had asked for a preferential treatment to be granted to their transit traffic in exchange for the financial assistance they had given for the construction of the line (see paragraph 1. Foundation and Financing).

The whole network of the Gotthard Railway, including its main feeder lines, Basle-Lucerne, (Basle)-Aargau-Muri-Immensee, Zürich-Thalwil-Zug-Arth-Goldau, Pino and Locarno-Bellinzona, comprises 469 km., or 291½ miles of line. This amounts to 16 per cent of all the SBB lines taken together, or to about one-sixth of the whole SBB network (2,927 km., or 1,819 miles).

### B. Passenger Traffic.

#### The Structure of Traffic and its Development.

The intense exchange of commodities between North and South led in itself, of course, to a corresponding volume of passenger traffic, as the necessary business relations had to be established and maintained. In addition to this, the different kind of climatic conditions and scenic aspects, on this and on that side of the Alps, attracted an ever increasing number of tourists, who mainly followed the "Call of the South". The populous southern regions, on the other hand, led to a steady flow of emigrants going northwards. The Gotthard Line belongs indeed to one of the creations of man which most closely links up people of different Nations, and it has, thereby, promoted — and is still promoting — an economical, political and cultural adjustment and exchange between North and South to the benefit of all concerned. Seen from a purely Swiss point of view, the Gotthard Line is of considerable importance to the political state policy of Switzerland, be it only by creating closer bonds between the Italian speaking Swiss in the Canton Tessin and those in the remainder of the country.

### Development of Traffic.

The founders of the Gotthard Line had reckoned with about 250,000 passengers a year, but events exceeded their expectations by leaps and bounds. Already in the first year of operation, in 1883, over a million people had been conveyed over this line. In 1900, passenger traffic passed the two-and-a-half million mark; five years later the number of three million passengers was reached, and in the year previous to nationalisation of the GB, in 1908, it came to 3,860, 209 passengers. The figure for 1956 probably runs into five millions, including 2,500,000 transit passengers. The Gotthard Line is, in fact, dealing with about 22 per cent of the total passenger traffic of the SBB.

### Development of Operation.

In 1882, the first Gotthard "Expresses" covered the journey Lucerne-Chiasso via Rotkreuz, the direct line via Meggen not yet being built, in seven hours and fifty-five minutes, which, for the 231 km. (143½ miles) coming into question, works out to an average travelling speed of 31 km./h., or 19¼ m.p.h. (the net running time was six hours and fifty-three minutes). Without the stops at intermediate stations, totalling 50 minutes in those days, the average running speed would then have come to 35.1 km./h., or 21½ m.p.h.

In 1884, the fastest train covered the journey Basle-Chiasso in nine hours and fifty minutes, which, up to 1903, had been reduced to seven hours and eleven minutes (average travelling speed 44.8 km./h., or 27½ m.p.h.). After the electrification of the Gotthard Line, in 1924, the fastest train made the same journey in six hours and twelve minutes (average travelling speed 51.8 km./h. or 32 m.p.h.). To-day, the Scandinavia/Holland-Italy Express (Swiss train no. 54) requires for the journey Basle-Chiasso just about five hours (speed for the throughout journey 64.2 km./h., or 39½ m.p.h., average running speed 69 km./h., or 42½ m.p.h.).

The first GB time-table, dated 1st June, 1882, included two pairs of fast trains. The GB was the first Railway Company to introduce a pair of fast night-trains right from the beginning; the two trains (1st and 2nd class only) met in Airolo at 1.55 a.m.

In 1886, there were already three pairs of fast trains in operation throughout the year, one of them including, for the first time, through coaches Paris-Milan. In 1908, a year before the nationalisation, the GB time-table showed eight fast trains in each direction and, in 1914, two fast trains were added. In order to be able to cope with the continuing expansion of traffic, the load and the number of trains were steadily increased. The tunnel section Göschenen-Airolo was used, in 1883, by ten, and in 1908, by twenty passenger trains. As traffic continued to increase and the electrification offered new possibilities, still further passenger trains were added, especially from 1933 onwards. The average number of passenger trains operating over the tunnel section Göschenen-Airolo, in 1955, was fifty-seven.

The passenger trains carried: in 1882, a load of about 92 tons at a speed of 33 km./h., or 20½ m.p.h.; at the end of the steam-traction period, a load of 140 tons (locomotive series A 3/5) at a speed of 40 km./h. (24½ m.p.h.); in 1956, an average load of 400 tons and a maximum load of 600 tons at a maximum speed of 125 km./h. (77½ m.p.h.), as compared with the maximum speed of 90 km./h. (56 m.p.h.) at the end of the last century.

The Gotthard Line deals with one-fifth of the gross-ton kilometres effected by the SBB in passenger traffic.

#### Motor-car Conveyance through the Gotthard Tunnel.

The extraordinary development of motor-car traffic brought about a corresponding demand for the conveyance of motor-cars through the Gotthard Tunnel, particularly in winter, when the Alpine passes are closed. Such transports have been dealt with, ever since 1924, on the same system as consignments of luggage, thus allowing dispatch outside the office hours applicable to goods traffic.

How this kind of traffic has continually increased, especially after the Second World War, may be seen from the following figures, referring to the number of motor-cars conveyed in each year: 1938 = 8,865, 1948 = 23,151, 1952 = 48,035, and 1956 = 102,750.

On the 2nd April (Easter Monday), 1956, thirty-two special motor-car-conveyance trains in each direction (or a total of sixty-four) had to be added to the already numerous passenger and goods trains, in order to assure the transportation of 2,210 motor-cars, without too much delay. Work is in progress, at the present time, to enlarge the loading facilities at Göschenen and Airolo to such an extent that the conveyance of motor-cars may be carried out in the most efficient and speediest manner.

### C. Goods Traffic.

#### Structure of Traffic.

Goods traffic is of predominant importance to the Gotthard Line, although this Alpine route represents a thoroughfare for tourists par excellence.

The commodities transported over the Gotthard by means of pack-animals and carts, prior to the building of the railway line, consisted mainly of raw cotton, wine and rice, coming from the south, and of cheese, finished cotton goods, products of the still young machine industry, and a considerable number of cattle, coming from the north. This exchange of goods mainly concerned Switzerland, and did not attain any great volume.

The International Gotthard Conference of 1869 had reckoned with a future goods traffic of about 400,000 tons a year, of which 60 per cent would fall on transit. After the opening of the railway, the actual volume of goods traffic attained a level which exceeded the most sanguine expectations. The construction of the railway had indeed transformed the Gotthard into one of the most productive transport routes. This result was, also, made possible by the continuous progress of industrialisation and by the concurrent extension of the markets feeding this new traffic line. The goods to be transported were mainly made up of Italy's traditional import and export commodities, whereby the flow from north to south exceeded that in the other direction. In the main,

goods traffic north-south consisted of bulk commodities, such as coal, wheat, iron, metallurgy of iron, and machines, whereas from south to north came foodstuffs, flax, hemp, colouring earth and stone (granite and marble). Following the economic development of the surrounding States, the transports of merchandise of all types continued to increase. Especially to be noted was the ever increasing part which countries like Holland, Belgium, German and Switzerland were taking in Italy's foreign trade. Needless to add that the Gotthard Line brought immediate benefits to many Swiss private railways, also.

The main portion of traffic over the Gotthard Line concerns imports, exports and transit goods.

To-day, general merchandise exceeds bulk commodities, in as much as Italy has, for a number of years, reduced wheat growing and promoted, in its place, the production of fruit and vegetables.

#### Development of Traffic.

The GB transported 454,621 tons of goods in 1883, the first year of operation. Apart from some short periods of an unimportant falling-off before nationalisation, goods traffic increased continually. It amounted to 825,000 tons in 1895, passed the million mark ten years later, and had trebled its volume (from 455,000 tons to 1,586,000 tons) by 1908.

During both World Wars and the intermediate depression during the late twenties and the early thirties, goods traffic suffered considerable drawbacks. The early thirties, especially, were marked by great ups and downs. The greatest volume of traffic was attained in 1941. It continued on a high level until 1944, fell off very much again in 1945, and improved again after the Second World War. From 1947 onwards, transit consignments to and from Italy have been gradually increasing in numbers. The economic life of Europe made a speedy recovery after the Second World War and has shown no depression, so far, that would in any way be comparable to the after-effects of the First World War. So the volume of traffic on the Gotthard Line has reached a high level and is still increasing.

The Gotthard Line, although providing also for the requirements of our own exports and imports, serves mainly for the conveyance of transit traffic. The importance of this form of traffic to Switzerland is made clear from the fact that, in 1954, the total volume of goods conveyed in transit through Switzerland accounted for 18 per cent of the total net tonnage handled on the entire network of the SBB — without taking the transport distance into account.

Taking the gross weight and the distance into consideration, the Gotthard network, including its feeder lines starting at Basle, Zurich, Luino and Locarno, has accounted, in 1954, for an average of 930,000 gross-ton kilometres (577,880 gross-ton miles) *per day*, corresponding to 37.2 per cent of the total goods traffic of the SBB network. This works out, by the way, to 22,438 gross tons of freight for each kilometre of line of the Gotthard route. To the 37.2 per cent, just mentioned, or about one-third of the total freight traffic of the SBB, must be added the passenger traffic. In this case, the share of the Gotthard Line represents about one-fifth of the figure calculated for the whole network of the SBB. The Gotthard Line's share of the total passenger and



Photo C.F.F.

The youngsters of Uri at Fluelen.



Photo C.F.F.

General-Manager Wichser speaks at the Monument Vela at Airolo.



Photo C.F.F.

The Cortege in Bellinzona.

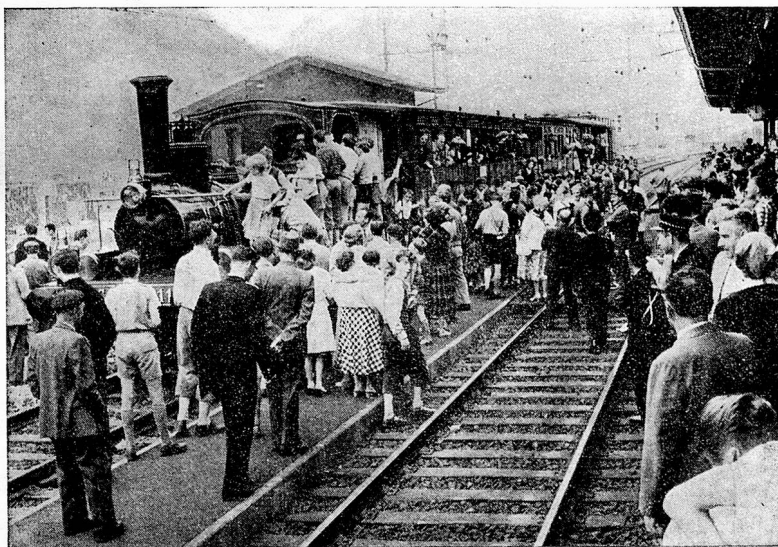


Photo C.F.F.

Enthusiastic reception of the first train in service between Goeschenen and Airolo.

freight traffic of the SBB is thus brought to 28.5 per cent, or to about one-fourth (5.26 milliard gross-ton kilometres, or 3,268,441,000 gross-ton miles).

If we consider the *transit traffic* over all routes of the SBB, *totalling* 4,488,410 tons in 1955, we find that the share of the Gotthard Line, for the same year, came to 2,792,146 tons, or 62.2 per cent.

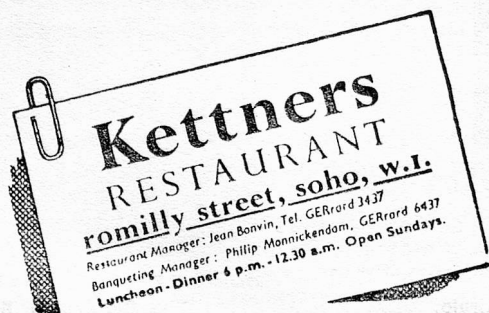
**Developments in the Field of Operation.**

The first freight trains, scheduled in 1882, carried a useful load of about 100 tons, and the fastest of them covered the journey Arth-Goldau-Chiasso in fifteen hours and thirty-nine minutes, at an average throughout speed of 12.6 km./h. (7½ m.p.h.). Twenty years later, the same journey required eleven hours and fifteen minutes (average running speed 23.3 km./h., or 14½ m.p.h.). Again twenty years later, in 1923 by using electric motive power, the corresponding figures had been reduced to seven hours and forty minutes (average running speed 34 km./h., or 21 m.p.h.). From then onwards, the express freight trains travelled faster and faster, until the section in question was covered, in 1938, in four hours and twenty-four minutes (average running speed 47 km./h., or 29¼ m.p.h.). The same category of trains are worked to-day from Chiasso to Arth-Goldau in three hours and twenty-nine minutes (average running speed 61 km./h., or 38 m.p.h.), or from Chiasso to Basle in five hours and nine minutes (average throughout speed of 64.7 km./h., or 40¼ m.p.h.). The maximum permissible speed of freight trains, which was 40 km./h. (24¾ m.p.h.) in 1900, is 90 km./h. (56 m.p.h.) to-day.

The *maximum load at the drawbar hook* permissible in 1895 was 320 tons. It had been increased to 515 tons by 1925, and could, as from that year, be increased to 860 tons (or even to 1,200 tons on level stretches) with the help of an intermediate assistance engine. At the end of the steam traction period, the strongest steam engine, series C 5/6, was hauling 320 tons on steep gradients (up to 26%, or 1 in 38) at a speed of 30 km./h. (18½ m.p.h.), without assistance. Following the introduction of electric motive power, the permissible load at the drawbar hook was gradually increased to 1,420 tons if intermediate assistance was available, or to 900 tons in the case of double-heading. The latest electric Gotthard engines, series Ae 6/6 (6,000 h.p.), haul — without assistance — 600 tons at a speed of 75 km./h. (46½ m.p.h.) over the steep gradients referred to above.

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Already in the second year of operation (1883), the GB had to double the original number of *ten freight trains*. In the course of the years, the average *daily number of freight trains* between Göschenen and Airolo (main tunnel section) had to be increased in both directions to: 32 in 1923, 33 in 1938, 39 in 1950, 59 in 1953, and to 85 in 1955. In 1955, eight-and-a-half 59 in 1953, and to 85 in 1955. In 1955, eight-and-a-half times more freight trains were running than in 1882.

The daily average, in regard to the number of freight trains circulating in 1954, was 54 for the section Erstfeld-Chiasso (165 km. or 102 miles) of the Gotthard Line and 20 for all the other lines of the SBB.

The overall density (including all categories of trains) on the tunnel section Göschenen-Airolo came to 145 trains in 1955, and a peak was attained on the 29th March (Maunday Thursday), 1956, with a total of 186 trains. On this peak day, every 7.7 minutes a train crossed the Gotthard Tunnel.

These averages do not, of course, give a correct picture of the real situation, as they do not present details regarding seasonal and daily fluctuations in freight traffic, which put a considerable strain on operation during certain periods. Thus, on the section Erstfeld-Bellinzona, in the month showing the least traffic in 1956, a total of 687,000 gross-tons of freight were conveyed, whereas the busiest month showed a total of 1,000,000 gross-tons. This works out at an average, per weekday, of 27,000 gross-tons in one month and of 40,000 in the other. On some very busy days, even 45,000 gross-tons were conveyed.

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**Food-Supply Traffic.**

In 1882, the Gotthard Railway conveyed about a 1,000 wagons of foodstuffs which had arrived at Chiasso from Italy. This number has increased, up to the present time, to 96,400 wagons, even if only fruits and vegetables are taken into consideration. After the Second World War, Italy has promoted the growing of fruit and vegetables to such an extent that to-day's volume of foodstuffs going from south to north is more than twice that of 1939. The conveyance of such perishables, calling for very speedy delivery, puts a great strain on the work at frontier stations and on the staff, operation, rolling stock, and railway equipment in general. By using the most modern locomotives, increasing the speed of trains, and reducing the stop-overs at intermediate stations, it has been possible, since 1926, to bring down the journey time of these freight trains very nearly to that of the express services available to passengers. In fact, the times of delivery for such perishable goods are:

Bologna to (via Basle German or French Station)				
Brussels	...	...	...	30 hours
London	...	...	...	50 "
Hamburg	...	...	...	38 "
Stockholm	...	...	...	77 "

Owing to the great efforts made in every direction and the favourable development of goods conveyance

over the Gotthard Line the Swiss Federal Railways (SSB) have been able to increase their total transit traffic by 71 per cent as compared with 1938. They will continue to adapt equipment and operation to the heaviest demands on this — and other — lines in order to maintain and to develop still further traffic which is of so great an importance to them and to Swiss national economy in general.

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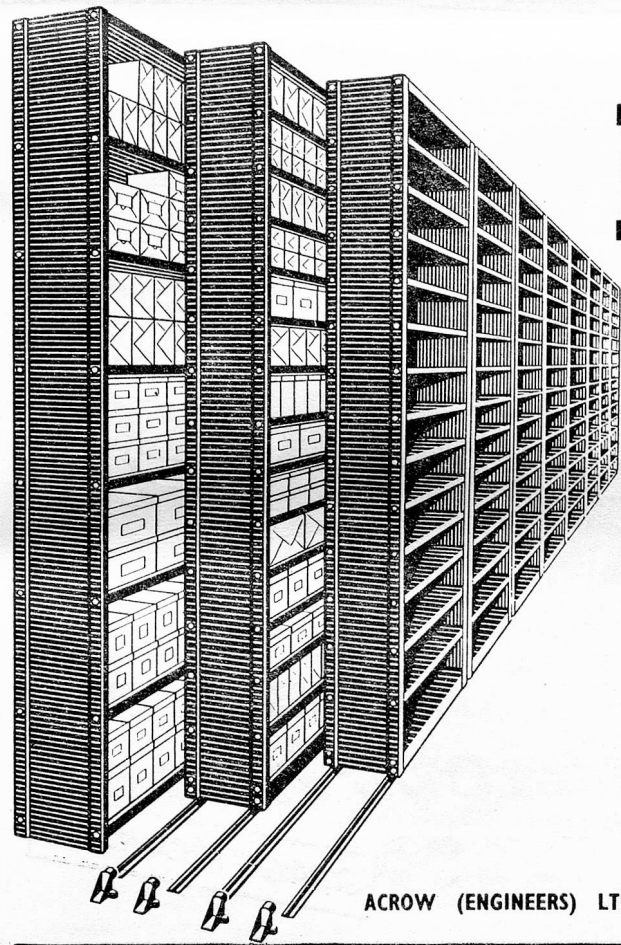
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