Zeitschrift: The Swiss observer : the journal of the Federation of Swiss Societies in the UK

Herausgeber: Federation of Swiss Societies in the United Kingdom

Band: - (1940)

Heft: 974

Artikel: A Swiss running shed

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DOI: https://doi.org/10.5169/seals-693661

ally in mountainous country such as the Rhaetian Alps.

In the summer of 1910, and again in 1927, a tremendous amount of damage was done by flooding. On April 29th, 1917, a train was struck by an avalanche near Davos, and ten persons were killed. More than once trains have collided with fallen rocks, and on August 3rd, 1931, a tremendous landslide struck a train between Filisur and Stuls. The track was destroyed over a distance of some 250 ft., and the driver of the train was killed. No passengers suffered severely, though the locomotive and two vehicles were thrown to a considerably lower level and much damaged. The heavy electric locomotive had, in the end, to be taken to pieces where it lay, and conveyed home via the mountain road which, at that point, ran below the railway, further down the mountain side. As far as is humanly possible, the Rhaetian Railway system is now protected throughout against such natural attacks, its defensive masonry work and avalanche-tunnels being on a scale in harmony with the long Albula Tunnel, with the great Wiesener, Landwasser, and other viaducts, and with the astounding loops and spirals on the Albula line south of Filisur.

Coming to locomotives and rolling stock, the Rhaetian Railway — or rather the Landquart-Davos — began its active life with five 2-6-0 tank engines, built in 1889, and capable of hauling a load of 45 metric tons up a 45 per cent. gradient at not less than 9.3 miles an hour. A similar, though larger engine, still does duty as station and yard pilot at Landquart to-day, the 2-6-0 type having been perpetuated over some years, the general design remaining little altered. In the early years of this century eight articulated Mallet compounds were built for the Albula line. Thereafter, the standard Rhaetian locomotive, as far as steam traction was concerned, was the 2-8-0 with a separate tender. The original design was a two-cylinder compound; latterly, boiler dimensions were increased and simple expansion, using superheated steam, became the rule. The last steam locomotive was built in 1915, by which time the company owned 57 engines altogether.

Electrification of at least certain stretches of the Rhaetian Railway was mooted as far back as 1906. The reasons for electrification were the same as those which have applied to so many Swiss railways — gradients, high cost of fuel, the existence of ample water power in the district served, and the possibility, with electric traction, of recreating energy by regenerative braking on down-hill stretches. These recommendations were all brought forward at a meeting of the company in March, 1905, but the scheme was nevertheless shelved.

It was not, however, dropped, and the Bevers-Schuls line, in the Engadine, was scheduled for experimental traction on the single-phase system (11,000 V., $16\frac{2}{3}$ cycles). The Brusio Power Station undertook to supply current for traction purposes, and a sub-station was erected at Bevers. Between August, 1911, and July, 1913, $38\frac{1}{2}$ miles of route in the Engadine were equipped for electric traction. Throughout the first war period, when, as now, steam traction was at a particular disadvantage, the electrified lines gave the highest satisfaction, and from 1919 to 1922 the whole of the system was converted to electric working.

A SWISS RUNNING SHED.

(" *Modern Transport*," 13.7.40.)

Only with the completion of the Manchester-Sheffield electrification on the L.N.E.R. will the British locomotive man come to know the peculiarities of the running-shed which accommodates a large number of both steam and electric locomotives. In Switzerland, where three-quarters of the main line system is electrically operated, such a thing is, of course, a commonplace. In fact, the average running-shed of the Swiss Federal Railways is distinguished by the fact that it exists for the convenience of handling and housing electric locomotives, and that it accommodates steam engines as a sort of side line. In the big running-sheds at Zürich, for example, there are stationed 156 electric locomotives of various types, and 40 steam locomotives. The former work on nearly all services radiating from Zürich; the latter, consisting of a very limited number of classes — 4-6-0, 2-6-2T and 0-6-0 shunting tanks — serve as reserve engines, as yard shunters, and on such relatively unimportant services as are still entrusted purely to steam traction. One of the first things one sees on approaching the shed, for example, is a 4-6-0 of 1916 vintage, gently simmering at the head of a breakdown train, and seemingly never moving. The atmosphere of the shed is electric, though not in the usual figurative sense of the phrase. It is designed to accommodate the electric locomotive to best advantage, and is not a steam shed adapted; rather, the steam locomotive seems to be there almost on sufferance. An electric locomotive's " shed day," infrequently as it occurs nowadays, is something of a revelation. It lasts six working hours. Formerly, a locomotive came in for light overhaul once a month; now, unless some unexpected defect occurs it takes place only once in three months. Every fourteenth day, a locomotive is due for cleaning, and the way in which this is carried out is another revelation.

At Zürich the cleaning-shed is an appendage of the main running-sheds, with which it is connected by a traverser. The old roundhouse, with a central turntable, is still fairly common in Switzerland, but it is definitely a survival from steam days. The cleaning-shed at Zürich can hold four electric locomotives at a time, on two tracks. There are the usual pits between the rails, and the working platforms on each side of the tracks are also at a lower level to facilitate access to the lower external parts. For the cleaning of working parts, hot water is employed at a pressure of 227.5 lb. per sq. in., and at a temperature of 80-90 deg. Centigrade (176-194 deg. Fahrenheit). The water in the tank is forced into the pipes leading to the cleaning nozzles by an electric compression unit. Formerly air was introduced under pressure close to the nozzles themselves, but this was found to induce an unwelcome cooling effect to the water before it did its work. The cleaning of the upper bodywork of electric locomotives and motor vehicles is carried out with thin oil. A feature of the cleaning-shed is the lack of obstruction. Save for the cleaning nozzle connections, the floor and pits are completely unencumbered. Nevertheless, the arrangements for lighting up the mechanical parts of locomotives are complete and most efficient. Along the walls are powerful electric lamps sliding on runways, the frame supporting each set of lamps being roughly triangular, while similar lamps are provided in the pits themselves.