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Private Railways in Switzerland - 4

by Brian Hemming

In this issue we have a bumper selection which deals with the remaining eight Swiss mountain railways defined as such because they are entirely rack operated from end to end. The other mountain railway, the Monte Generoso (MG), was dealt with in *Private Railways - 1*.

In dealing with Swiss mountain railways, superlatives come to mind. In this selection each has something special. There is the first mountain railway in Europe and the second in the world, the Vitznau-Rigi-Bahn; the first electric mountain railway in the world, the Gornergratbahn; the only largely steam operated mountain railway in Switzerland, the Brienz-Rothorn-Bahn; the steepest rack railway in the world, the Pilatusbahn and last but no means least, the highest station in the world (Jungfraujoch) and the highest railway workshops in the world (Eigergletscher) both of which are on the Jungfraubahn. Amongst their

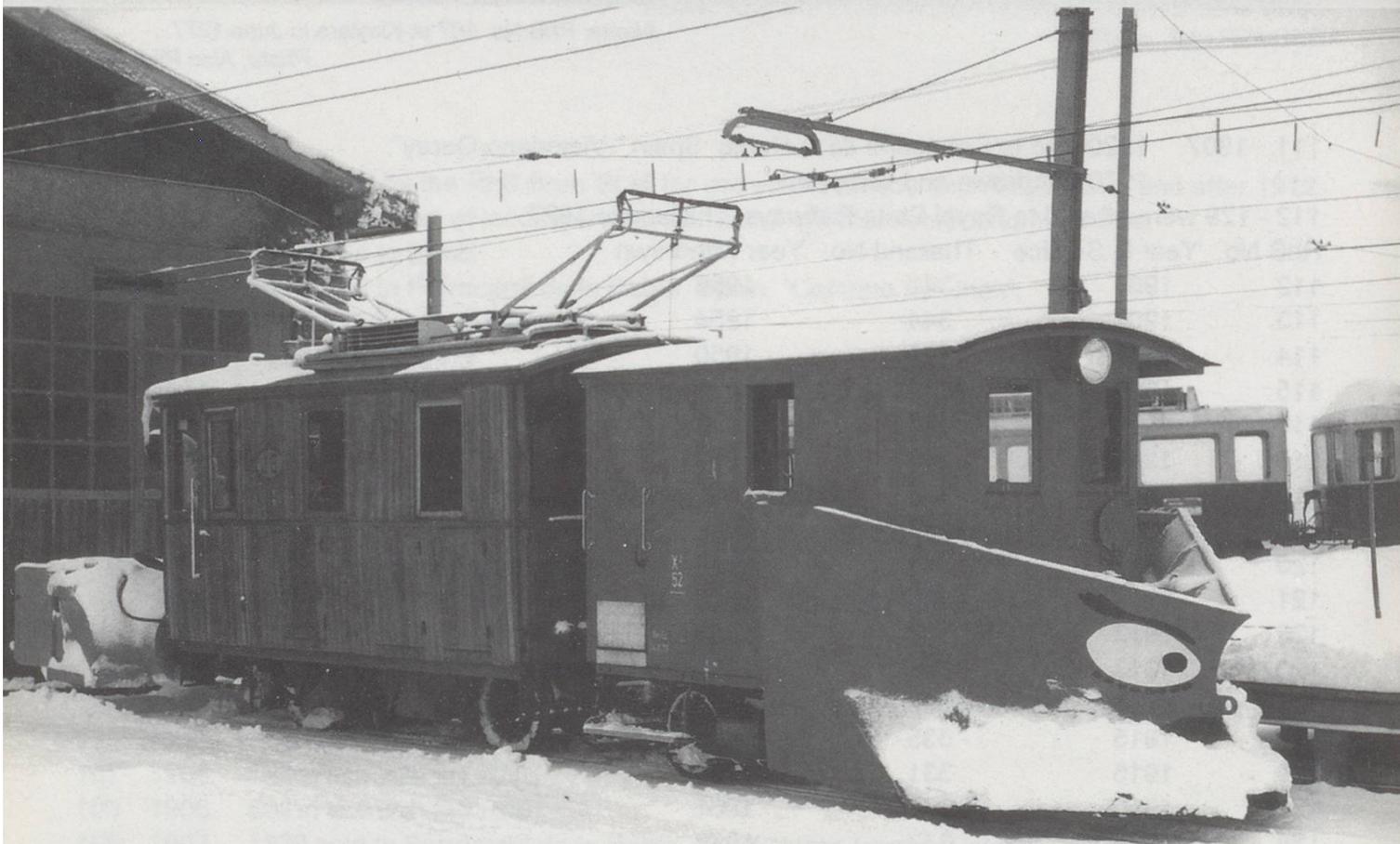
number operate two of the three newest and most efficient steam locomotives in Europe; one each being on the Brienz-Rothorn-Bahn and the Chemin de Fer Montreux-Glion-Naye.

The eight railways covered rise to a total height of 11,717 metres or over 38,000 feet. Sadly none are covered by the Swiss Pass, but reduced fares can be secured using the Swiss Pass or other reduced fare cards. Fares, like the inclines, are rather steep, but the journeys are invariably unforgettable and usually rewarded by stunning views from the summits where the opportunity invariably exists for refreshment.

There is reference in the texts to "Rowan trains", these are best described as a carriage with an axle or bogie at one end, with the other end supported by the locomotive or another carriage.

*Below: Jungfraubahn He2/2 8 & X52 at Kleine Scheidegg
26/12/94*

Photo: Brian Hemming





ARB

Arth - Rigi - Bahn

The Arth-Rigi-Bahn was built to provide access from the Zugersee at Arth to the summit of the Rigi. It was opened throughout in 1875 with adhesion operation from Arth to Oberarth where, after a change of locomotive rack operation continued to Rigi Kulm. The adhesion section was extended to Arth-Goldau in 1881 to connect with the original Gotthardbahn line from Rotkreuz which was opened in 1882. Further changes came about with the arrival of the Gotthardbahn line from Zug and the building of a new high level station built over and at right angles to the main line station. The adhesion section was electrified in 1906 and the rack in 1907. The adhesion service from Arth was replaced by buses in 1959.

A basic hourly service now operates throughout the year from Arth-Goldau to Rigi Kulm using railcars and driving trailers. Historic stock is occasionally used on special services.

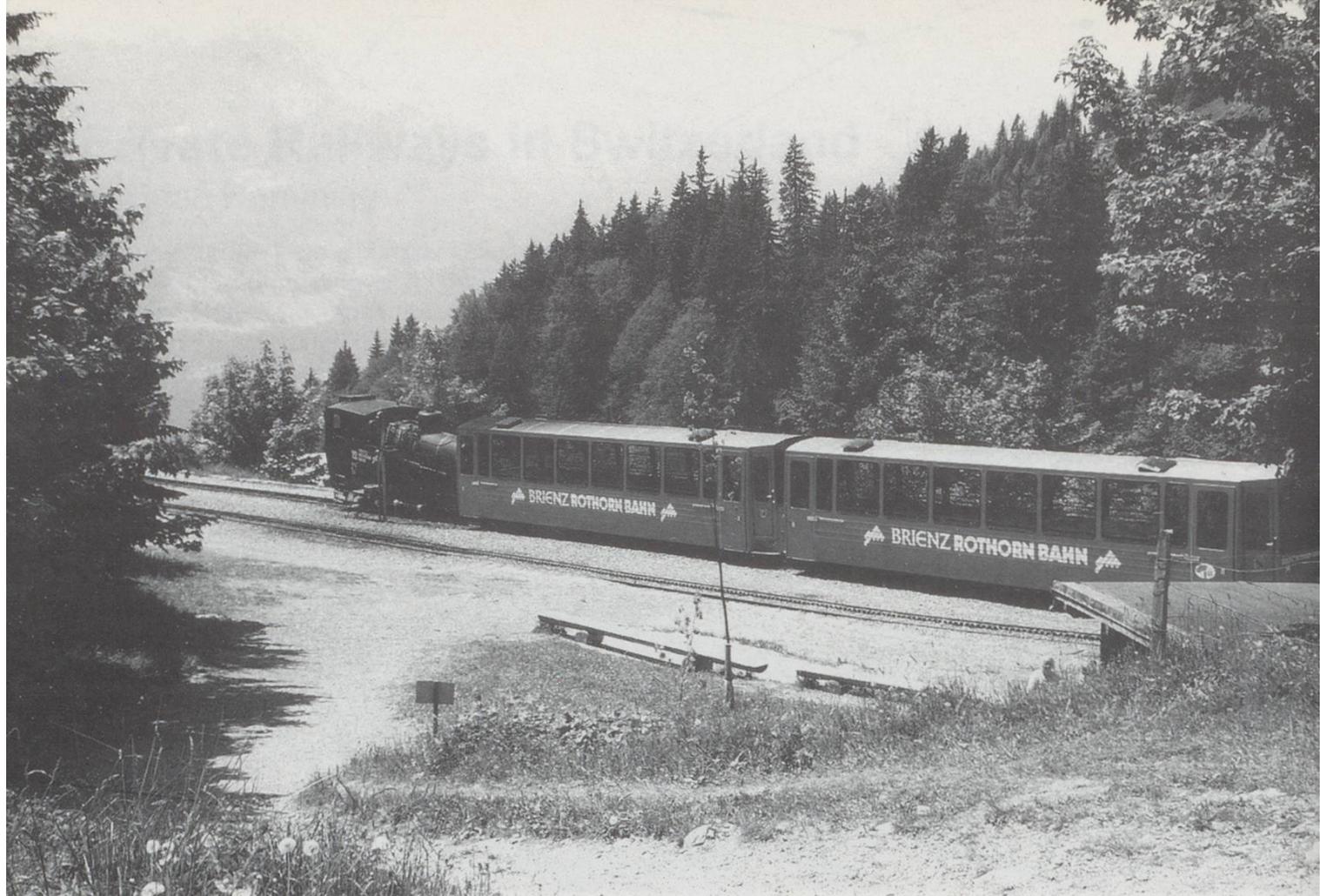
Rigi Kulm the Arth Rigi line on the left and right hand track is the Vitznau Rigi line.

Photo: Alan Pike OBE

Length: 8.6km
 Gauge: 1435mm
 Rack system: Riggerbach
 Voltage: 1500v DC
 Maximum gradient: 200‰
 Depot: Goldau, Rigi Kulm
 Works: Goldau
 Nearest mainline station: Arth-Goldau
 Kursbuch table: 602

Powered stock (blue and white or orange and brown)

Class	Numbers	Built
BDhe2/3	6	1911
BDhe2/4	7	1925
He2/3	8	1930
BDhe2/4	11, 12	1949
BDhe2/4	13, 14	1954, 1967
Bhe4/4	15	1982



The halt at Planalp

Photo: Alan Pike OBE

BRB Brienz - Rothorn - Bahn

The line took a year to construct and was opened in 1891 from Brienz to Rothorn. Five steam locomotives provided the service. Despite substantial financial support when the BRB was formed the results did not live to expectations and services ceased in 1914 following the outbreak of the First World War and a drop in tourist traffic. It was not until 1931 that the company was refinanced and the line reopened. In the next five years a further two steam locomotives were purchased. High costs were a continual problem for the railway, and in an effort to reduce these a diesel locomotive was purchased in 1973 with further examples following in 1975 and 1987. A new modern oil fired steam locomotive, one of three built by SLM, was purchased in 1992.

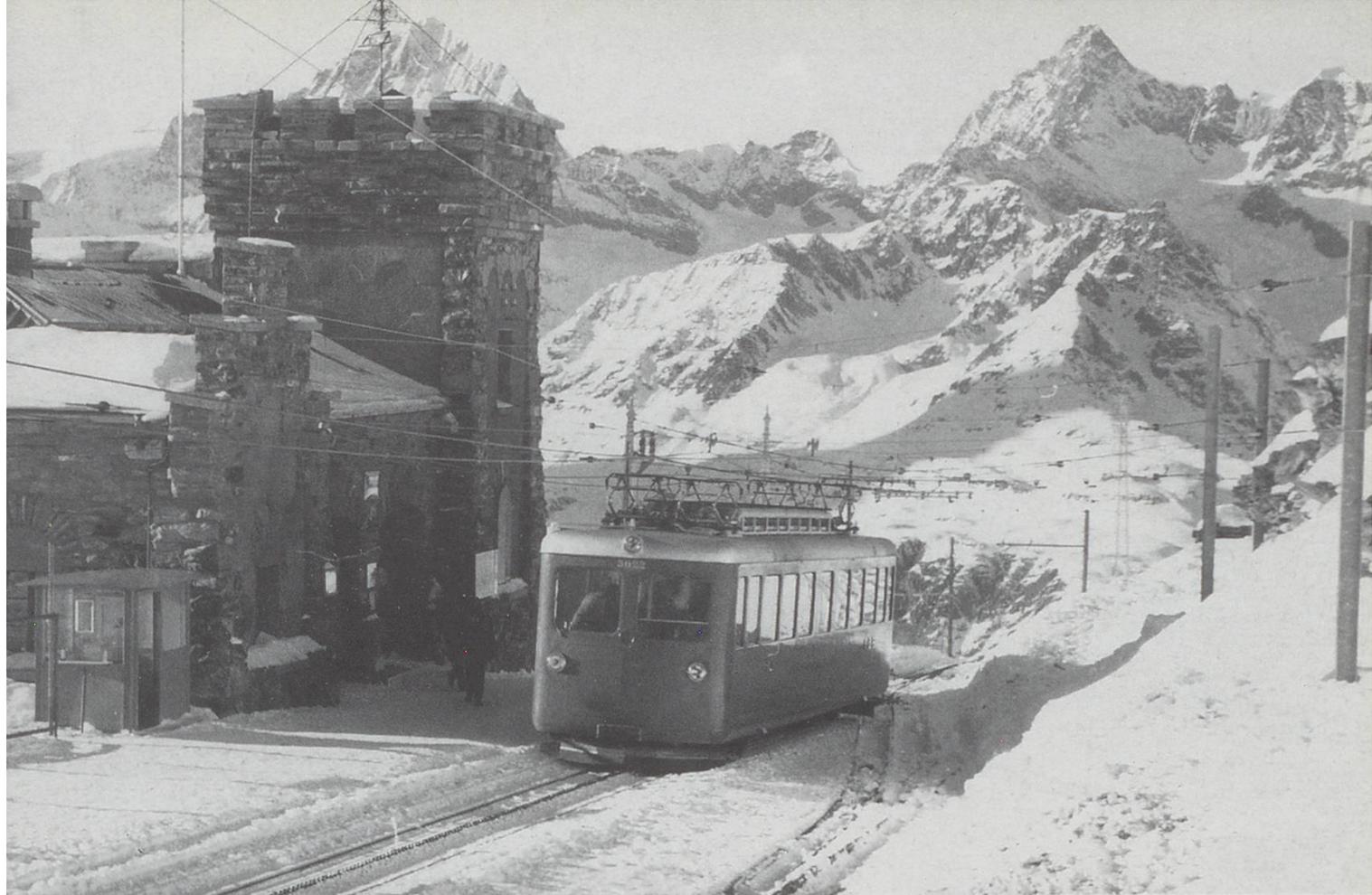
The service on the BRB operates from June to October and is covered by both steam and diesel locomotives each of which pushes one or two open single class coaches.

Length: 7.6 km
 Gauge: 800mm
 Rack system: Abt
 Maximum gradient: 250‰
 Depot: Brienz
 Works: Brienz
 Nearest mainline station: Interlaken Ost
 Kursbuch table: 475

Locomotives green livery (steam), red livery (diesel)

Class	Numbers	Built
H2/3	1-5*	1891-1892
H2/3	6,7	1933, 1936
Hm2/2	8	1973
Hm2/2	9, 10	1975
Hm2/2	11	1987
H2/3	12	1992

* 1 ex MG 7 in 1962, originally GN 4
 5 ex WAB 1 in 1911



GGB Gornergratbahn

Summit station at Gornergrat

Photo: Alan Pike OBE

The GGB from Zermatt to Gornergrat was opened throughout in August 1898 with a summer service. A winter service was initially operated from 1928/29 to Riffelalp and throughout to Gornergrat following the construction of the Riffelbord avalanche gallery in 1939-41. The development of traffic necessitated the construction of double track from Rotenboden to Gifhüttli which was opened in two sections in 1964 and 1964 and from Riffelalp to Riffelboden opened in 1978. There is a connection with the Brig-Visp-Zermatt-Bahn at Zermatt. From 1899 the 468 metre Riffelalp Tramway (RiT) operated from Riffelalp station to the Hotel Riffelalp, but this was closed when the hotel was burned down in 1960.

Until 1946 "Rowan-trains" were operated using the locomotives 3001-3. Traffic demands necessitated the purchase of railcars which are now used exclusively with the original locomotives relegated to freight and snow clearance duties.

Length: 9.34km
 Gauge: 1000mm
 Rack system: Abt
 Voltage: Three phase 725v 50Hz
 Maximum gradient: 200‰
 Depot: Zermatt
 Works: Zermatt
 Nearest mainline station: Visp
 Kursbuch table: 142

Powered Stock (brown livery)

Class	Numbers	Built
He2/2	1-3	1898
Bhe2/4	3011-3022	1947-61
Bhe4/8	3041-3044	1965-67
Bhe4/8	3051-3054	1993
Bhe4/4	3061, 3062	1981
Xrote	3931	1944
Xrote	3932	1970



Above: Bhe4/8 No. 212 at Kleine Scheidegg, 29/12/94
Photo: Anne Williams

JB Jungfraubahn

As a result of the opening of the Wengernalpbahn, the Zurich firm of Adolf Guyer-Zeller laid plans for an electrically operated railway from Kleine Scheidegg to the summit of the Jungfrau with the line in tunnel from Eigergletscher to the upper terminus. Despite difficulties in obtaining a concession, the Jungfraubahn company was founded in 1896 and construction work commenced with the line opening in stages from 1898. By 1912, some nine years late, the line reached Jungfraujoch, the construction work having taken seven years from Eismeer. The plans to continue to the Jungfrau summit were abandoned. When constructed there were adhesion stretches on the Eismeer to Jungfraujoch section but these were converted to rack in 1951 thereby permitting continuous rack operation. The three phase current for the line is generated by the company's own hydro-electric power stations.

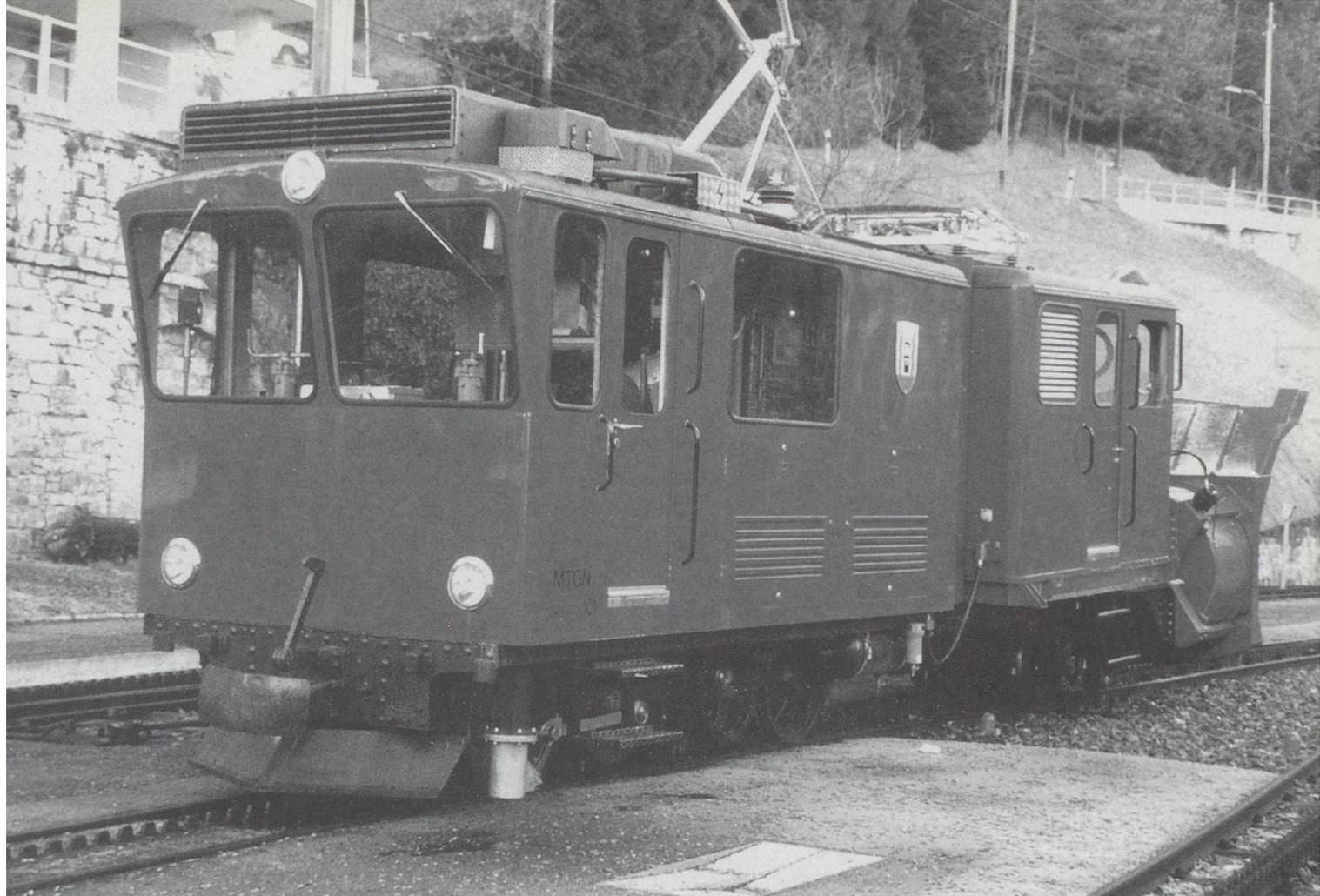
The initial service was operated by electric locomotives operating "Rowan-trains" one of which is preserved at the VHS at Luzern. Further electric locomotives were placed in service in 1912, 1914 and 1929. One of the original locomotives and all those of 1912 and 1914

remain in service being used on special trains and snowplough duties. Since 1955 an all year service has been operated by railcars. The modern railcars are fitted to push driving trailer water carriers which are filled at Kleine Scheidegg and supply the installations at Jungfraujoch.

Length: 9.33km
Gauge: 1000mm
Rack system: Strub
Voltage: 1125v 50Hz DC three phase
Maximum gradient: 250‰
Depots: Kleine Scheidegg
Nearest mainline station: Interlaken Ost
Kursbuch tables: 311, 312

Powered stock (brown, brown & cream or red & yellow livery)

Class	Numbers	Built
He2/2	6	1904
He2/2	8-10	1912
He2/2	11	1914
Xrote	51	1937
BDhe2/4	201-210	1955-64
BDhe4/8	211-214	1992



MGN Chemin de fer Montreux-Glion-Naye

HGe2/2 101 with Xrot e3 at Caux station
having just cleared the line to the summit.
Note: Ghe 101 on loco?

Photo: Les Heath

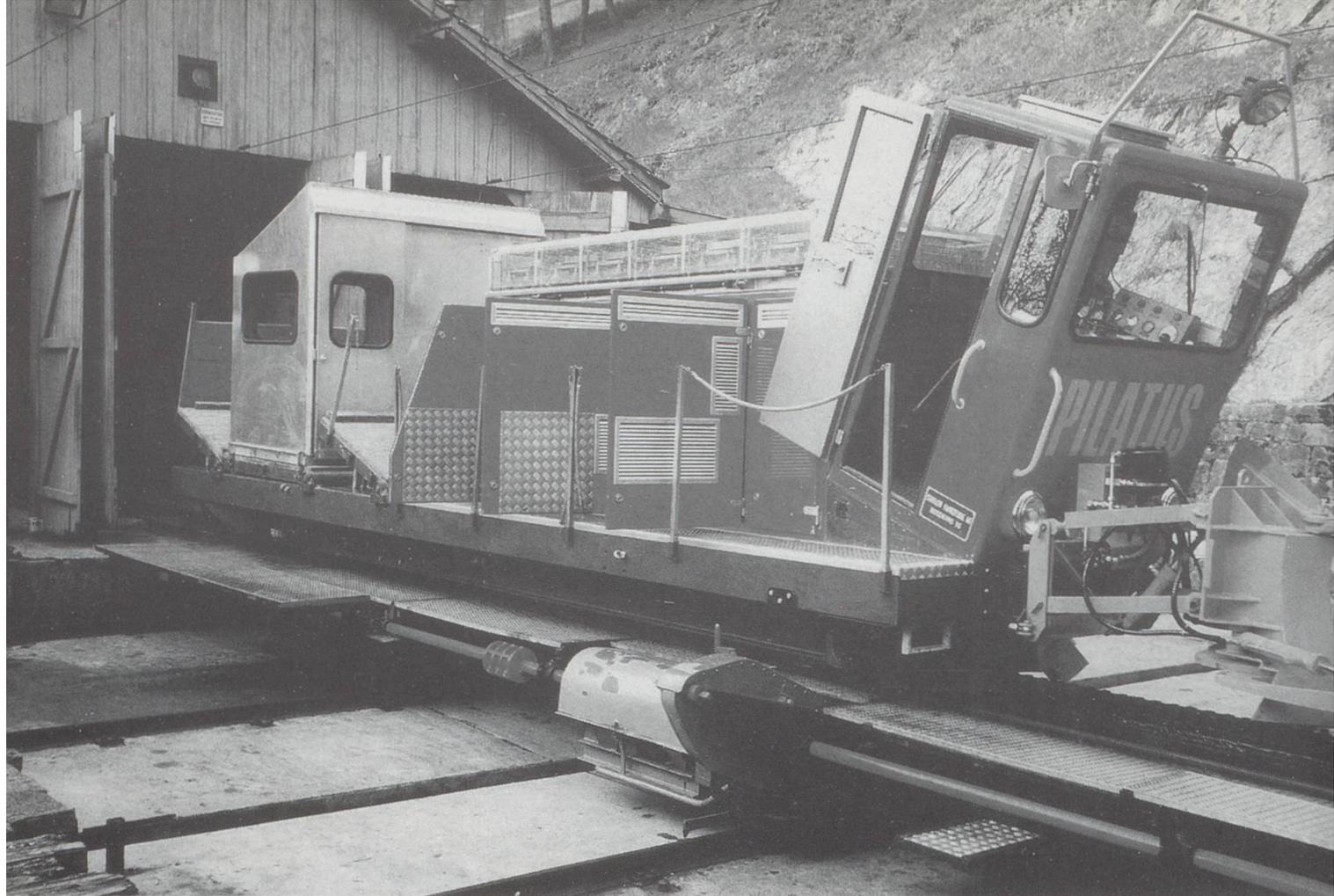
The MGN was formed in 1987 by the merging of the Chemins de Fer Montreux-Glion (MGI) and Glion Naye (GN). The lower section from Montreux to Glion was built as an electric railway and opened in 1909. This line was preceded by a funicular from Territet to Glion which had been opened in 1883. In 1891 a concession was granted to build a rack railway from Glion to Rochers-de-Naye which opened progressively over two months in 1892 and steam operated. The GN was steam operated until electrification in 1938. Through working with electric railcars was then possible from Montreux via MGI.

An hourly interval service operates throughout the year from Montreux to Caux and Rochers-de-Naye. A steam service is timetabled to run at weekends from May - October from Montreux to Rochers-de-Naye.

Length: 10.32km
Gauge: 800mm
Rack system: Abt
Voltage: 850v DC
Maximum gradient: 220‰
Depot: Glion
Works: Glion, Chernex (MOB)
Nearest mainline station: Montreux
Kursbuch table: 121

Powered stock (blue & cream)

Class	Numbers	Built
H2/3	1	1992
HGe2/2	2	1909
HGe2/2	101	1909(76)
Bhe2/4	201-205	1938
Bhe2/4	206, 207	1947, 1949
Bhe2/4	208	1966
Bhe4/8	301-303	1983
Bhe4/8	304	1991



Above: The convertible unit seen here with snowplough attached at the Alpnachstad depot in 1991.

Photo: Alan Pike OBE

PB Pilatusbahn

The plans to build a railway to Pilatus Kulm originally envisaged a rack railway using the Riggerbach system but these were shelved due to the length of line required. In the 1880's Eduard Locher developed a rack system with horizontal cogs and guiding rollers beneath the track. This permitted much greater gradients than those possible with the other rack systems and it was this system which was used when the Pilatusbahn was constructed between 1886 and 1888. It runs from Alpnachstad to Pilatus Kulm with a vertical climb of 1634 metres. Unique features on the line are the traverser at Alpnachstad, and the use of flangeless wheels because the central guide of the rack, positions the stock.

The PB was opened in June 1889 using steam railcars rather than propelling locomotives as on other rack lines. A total 11 of these railcars were in service up to electrification in 1937 when they were replaced by electric railcars which now operate the service from the middle of May to the end of November.

Length: 4.62km
 Gauge: 800mm
 Rack system: Locher
 Voltage: 1550v DC
 Maximum gradient: 480‰
 Depot: Alpnachstad
 Works: Alpnachstad
 Nearest mainline station: Luzern
 Kursbuch table: 473

Powered Stock (red livery)

Class	Number	Built
Bhe1/2	21-28	1937
Bhe1/2	29*	1962
Bhe1/2	30	1968
Ohe1/2	31*	1954
Xhm1/2	32	1981

*only one underframe exists for 29 & 31
 (the bodies are changed when required)



SPB Schynige Platte Bahn

Above: A busy time at Wilderswil station, passengers waiting to visit Schynige Platte.

Photo: Les Heath

The line was opened in 1893 to meet the Berner Oberland-Bahnen (BOB) at Wilderswil and ran entirely on rack using steam locomotives to the viewpoint of the Schynige Platte. Independence was short lived, and the company passed to the ownership of the BOB in 1895, despite the fact that the railways operate on different gauges. In 1914 the SPB was electrified at the same time and at the same voltage as the BOB and new electric locomotives (Nos. 11-14) were put in service. No. 17 was acquired from the Wengernalpbahn (WAB No. 57) in 1950 and followed by Nos. 15, 16, 18-21 (WAB Nos. 55, 56, 58-61) in 1963-64. Because the SPB is technically identical to the WAB, locomotives are loaned to the WAB, particularly in the winter season when the SPB is closed.

The SPB climbs a total of 1,403 metres. The service operates from spring (end of May) to late autumn and consists of locomotives normally pushing two open or closed single class coaches. Steam specials operate from time to time.

Length: 7.26km
 Gauge: 800mm
 Rack system: Riggibach-Pauli
 Voltage: 1500v DC
 Maximum gradient: 250‰
 Depot: Wilderswil
 Works: Wilderswil
 Nearest mainline station: Interlaken Ost
 Kursbuch table: 314

Powered stock (brown or red or red and cream)

Class	Numbers	Built
H2/3	5	1894
He2/2	11-14	1914
He2/2	15-18	1910
He2/2	19-20	1911



VRB Vitznau-Rigi-Bahn

The Vitznau-Rigi-Bahn has the distinction of being the first mountain railway to be built in Europe, and was made possible by the development of a rack system by Niklaus Riggerbach. The line was opened in 1871 from Vitznau to the border of Canton Luzern at Rigi-Staehöhe but the company was unable to obtain a concession and built the necessary extension which was leased to the VRB and opened in 1873 nearly two years before the ARB opened its own line to Rigi-Kulm.

The line was originally operated by vertical boilered rack locomotives which were rebuilt with horizontal boilers from 1882. Further steam locomotives were placed in service prior to electrification in 1937. Today the service operates throughout the year with railcars and driving trailers. Two steam locomotives are retained for special duties.

Above: The only loco that is not rack fitted, the diminutive Ta2/2 1

Photo: Les Heath

Length: 6.85km
 Gauge: 1435mm
 Rack system: Riggerbach
 Voltage: 1500v DC
 Maximum gradient: 250‰
 Depot: Vitznau
 Works: Vitznau
 Nearest main line station: Brunnen (14km)
 Kursbuch table: 603

Powered stock (red or red and white)

Class	Numbers	Built
Ta2/2	1	1982
Xrotm	1	1974
Bhe2/4	1-3	1937
Bhe2/4	4, 5	1953, 1965
H2/3	16, 17	1923, 1925
He2/2	18	1938
Bhe4/4	21, 22	1986



Wengernalpbahn He2/2 31

Seen here at Lauterbrunnen on 23 December 1995, this loco now allows the use of control from the various driving trailers, box vans, tank and open wagons that have small drivers cabs fitted to them, (some have been around for a year or more), with the older locos this was not possible. Details of these new locos were in the March 94, Swiss Express. - Photo: Philip Elwin.



SBB - Range Rover Rescue Vehicle - Information Required

The Dunsfold Land Rover Trust has acquired at auction, a Swiss Railways Range Rover 6x4 Rescue vehicle.

Any information relating to this vehicle's service with the SBB would be most welcome, as would any photographs of it in service or in action.

All reasonable costs would be met. Please contact:-
Dick Carter on 01737 351457

or write:- Emery Down, 13 Bolters Lane, Bansted, Surrey, SM7 2AU.

The Dunsfold Land Rover Trust is a charitable trust set up to restore and maintain interesting, as well as rare and unusual Land Rover vehicles.

Further information may be obtained from them at Alford Road, Dunsfold, Surrey, GU8 4NP.