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## SWISS RAILWAY ELECTRIFICATION PROGRESS.

The recently issued report on the working of the Swiss Federal Railways during 1930 gives some interesting facts relating to the progress which has been made with electrification on those railways and the results achieved.

The high cost of coal in Switzerland, and its scarcity just after the war, enabled the Swiss lines, which had at that time been electrified, to show to great advantage over those operated by steam locomotives. A strong public demand arose for the extension of electric working, and as early as 1918 a 30-year programme was commenced, being greatly accelerated, however, by the revised programme of 1923. For this a grant of up to 50 per cent. of the cost of conversion was obtainable from the Government, and the work was pushed on so that by the end of 1928, 58.1 per cent. of the Federal mileage had been electrified.

Electrical energy is obtained from seven hydro-electric power stations, and is also purchased from private stations in small quantity. For meeting the increased demand which will result from further electrification, a large hydro-electric station is being built at Etzel, and will contain three single-phase generators of 20,000 H.P. capacity for railway purposes, besides three-phase generators for industrial purposes. An artificial lake for storage will be formed, and will provide a head of 1,585 ft. From this station the railways will draw 72,000,000 kWh. per annum.

The total electrical energy consumed in 1930 was 471,570,000 kWh., an increase of 11,673,000 on the figure for 1929. Of the total locomotive mileage, 68 per cent. was electric, and 84 per cent. of the ton mileage was electrically hauled. During the year, improvements were carried out to augment the amount of water stored above the power stations, and additional transmission lines were erected. Some of the earlier transmission lines took the form of cables, but all new work is built as overhead line. There are 131 miles of overhead line working at 132,000 volts, 414 miles carrying 60,000 or 66,000 volts, and 37 miles of cable under a pressure of 60,000 volts. Current is transformed in 23 substations, with 72 transformers having a total capacity of 290,000 kVA. The traction current is 15,000-volt single-phase at 16 $\frac{2}{3}$  cycles.

During the year electric traction was inaugurated on the Domodossola-Iselle line, which is worked under the Simplon convention by the Swiss Federal Railways, although in Italy and owned by the Italian State Railways. Further electrification has been approved and is in hand.

For the contact wire a double catenary form of suspension was adopted at first, but all recent work has been on the single catenary system, distinguished by its lightness.

Due largely to the experimental nature of the work, a great many different types of locomotive are in use on the electric lines, there being 15 varieties at the end of 1928. These are being reduced gradually, although the particularly arduous Gotthard route with its severe curves and gradients calls for special treatment. There are now three main classes of locomotive in use: a heavy express type for the Gotthard line, a lighter express type for general use, and a heavy engine for goods work.

For the heavy goods traffic of the St. Gotthard route a 14-axle locomotive, built as two units, is being introduced. With a tractive effort of 58,650 lb. at 41.3 m.p.h. the output is 6,560 H.P., while a starting effort of 141,000 lb. is available. The maximum speed allowed for is 62 m.p.h. The length over buffers is 106 ft. 7 $\frac{1}{2}$  in., and the total weight 230 tons. There are 16 motors, and the Oerlikon type of regenerative braking is fitted.

The Federal Railways own 364 electric locomotives, 36 electric shunting locomotives, and 55 motor coaches, also 17 battery vehicles, including one tractor. One-man operation of the locomotives has been so successful that many have been converted and 135 are now so operated.

Three types of motor coach have been used, all of which are one-man controlled, with electro-pneumatic contractors and the dead man's handle or some equivalent device. Certain trains used for suburban services have been fitted with automatic door gear.

All electric motor vehicles are subject to inspection every 20 days. The electric locomotives are overhauled every third year, and the motor cars every second year, a locomotive overhaul taking about two months. It has been found that the cost of maintenance of the electric motor vehicle is less than that of steam locomotives. An analysis made in 1929 showed that electrification had enabled the traffic to be worked at less cost than it would have entailed with steam locomotives.

Railway Gazette.

Tell your English Friends  
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### FORTHCOMING EVENTS.

Tuesday, Sept. 1st, at 8.30 p.m.—City Swiss Club: Monthly Meeting, preceded at 7 p.m. by the usual dinner. (see advert.)

Wednesday, Sept. 2nd, at 7.30 p.m.—Société de Secours Mutuals: Monthly Meeting at 74, Charlotte Street, W.1.

Wednesday, Sept. 9th, at 8.30 p.m.—Swiss Mercantile Society Ltd.: Monthly Meeting, at Swiss House, 34/35, Fitzroy Square, W.1.

### BERNE'S BEARPIT.

Tourists travelling in Switzerland and passing through Berne will be told that their first walk in this city ought to be to the bearpit a very popular sight.

The bears play an important part in Berne's history. When this town was built in 1191 by Berchtold von Zahringue, he wanted a name for it. According to a legend men were sent into the woods and the first animal met, should give its name to the town. It was a bear and henceforth it became Berne's motto.

Since 1224 this animal figures on the Bernese banner and escutcheons. Even art and industry have adopted the bear as motive and everything that can be formed painted or printed from the monument down to the cakes is provided with it.

This summer the bears got especially spoilt thanks to the exhibition "Hyspa" which attracted a good many visitors and who all before starting home had a look at the bearpit watched the clumsy and funny gait, their dull ways of standing upon their hindlegs, dancing impatiently up and down, trying to catch the bundle of carrots which spectators let down on strings and dangling them in front of their noses.

In the bear's nursery very amusing performances take place. A great feature is the little one's daily bath administered by the mother bear. Each pit is provided with a pond and the young ones are generally terrified to make use of it. But the mother takes hold of her baby, shakes her properly and to the great amusement of the watchers throws it into the water. Another favourite game of baby bear is to kick a ball about. Once it happened that it went into the pond. They tried hard to get it out, but could not manage, on the contrary they risked to fall in themselves. They ran to their mother pulled at her legs till at last she understood what they wanted her to do. She waded into the pond and got the ball out.

The little bears are very fond of climbing on the firtrees which are planted in their pit. Very often they venture too far up and can't get down. The bearkeeper has to come to their rescue with a ladder and fetch them down not always an easy job for him.

Berne.

Elisabeth Dachsel.

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### CITY SWISS CLUB.

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### L'ASSEMBLEE MENSUELLE

aura lieu le 1er Septembre au Restaurant PAGANI, 42, Great Portland Street, W.1. et sera précédée d'un souper à 7 heures (prix 5/-).

### ORDRE DU JOUR:

Procès-verbal.		Démissions.
Admissions.		Divers.

Pour faciliter les arrangements, le Comité recommande aux participants de s'annoncer au plus tôt à M. P. F. Boehringer, 23, Leonard St. E.C.2 (Téléphone: Clerkenwell 9595).

### Divine Services.

#### EGLISE SUISSE (1762),

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Dimanche le 30 Août 11h.—M. M. Pradervand.  
Les cultes du soir reprendront Dimanche 6 Septembre à 6h 30.

Pour tous renseignements concernant actes pastoraux, etc., prière de s'adresser à M. R. Hoffmann-de Visme, 102, Hornsey Lane, N.6. (Téléphone: Archway 1798).—Heure de réception à l'église: Mercredi de 10.30—12 h.

### SCHWEIZERKIRCHE

(Deutschschweizerische Gemeinde)

St. Anne's Church, 9, Gresham Street, E.C.2.  
(near General Post Office.)

Sonntag, den 30. August 1931.

11 Uhr vorm. Gottesdienst.

Die Abendgottesdienste beginnen wieder am

6. September um 7 Uhr.

Dienstag, den 1. September, nachm. 3 Uhr:

Nähverein im "Foyer Suisse."

### TRAUUNG.

Am 22. August wurden getraut:  
Armin Karl Zehnder, von Zürich (Stadt) und  
Elvezia Elisa geb. di Paoli von Nervi (Ligure),  
Italien.

Alle Anfragen wegen Amtshandlungen und  
Religions—bzw. Confirmanden Unterricht  
sind an den Gemeindepfarrer zu richten: C.  
Th. Hahn, 43, Priory Road, Bedford Park,  
W.4 (Tel. Chiswick 4156).

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