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:	- (1931)
Heft:	514

Rubrik: Eglise suisse = Schweizerkirche

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SWISS RAILWAY ELECTRIFICATION PROGRESS.

The recently issued report on the working of the Swins 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 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.

of the Federal mileage had been electrified. Electrical energy is obtained from seven hydro-electric power stations, and is also pur-chased from private stations in small quantity. For meeting the increased demand which will re-sult from further electrification, a large hydro-electric station is being built at Etzel, and will contain three single-phase generators of 20,000 LB consective for relivary nurposes besides three. H.P. capacity for railway purposes, besides threephase generators for industrial purposes, ocsides 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 augthe year, improvements were carried out to alg-ment 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 cur-

rent 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.

tinguished by its lightness. Due largely to the experimental nature of the work, a great many different types of locomo-tive 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. Gott-

For the heavy goods traffic of the St. Gott-hard 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. while a starting enort of 141,000 10. is available. The maximum speed allowed for is 62 m.p.h. The length over buffers is 106 ft. 7 j 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 loco-motives, 36 electric shunting locomotives, and 55 motor coaches, also 17 battery vehicles, including one tractor. One-man operation of the locomo-tives 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 auto-matic door geor matic door gear.

matte door gear. All electric motor vehicles are subject to in-spection 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 locomo-tives. tives

Railway Gazette.



Since 1224 this animal figures on the Bernese 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 it Hyspä ?? which attrac-ted a good many visitors and who all before start-ing home had a look at the bearpit watched the clumsy and funny gait, their droll ways of stand-ing upon their hindlegs, dancing impatiently up and down, trying to catch the bundle of carrots which spectators let down on strings and dan-gling them in front of their noses gling them in front of their noses.

gling them in front of their noses. In the bear's nursery very amusing perform-ances 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. out

The little bears are very fond of climbing on the firthe bears are very fond of chimbing on the firthese 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 Dachselt.

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

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'adresse 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.S. (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.
- e 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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It's Patriotic and it Pays ! Printed for the Proprietors, by THE FREDERICK PRINTING Co., LTD., at 23, Leonard Street, London, E.C.2.