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Govt. of 1875: Madras.

PUBLIC WORKS.

C. A. Lawson Esq

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File 1

G. O. 1875, No. 105

Dec 27 27.

Poji Railway - Copying
orders on letter from Mr
C. A. Lawson forwarding
a printed copy of the
and intimating that he has
been authorized by Mr
Ruggenbach of Alton to say
that he will give all the
information required by the
Madras Govt relative to the
Poji Railway system.

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*Proceedings of the Madras Government, Public Works Department,
1st April 1875.*

No. 26. Read the following letter from C. A. LAWSON, Esq, Madras, to Colonel G. W. WALKER, R.E., Secretary to Government, Public Works Department, dated 25th February 1875:—

I HAVE the honor, with reference to the Proceedings of the Madras Government, Public Works Department, 19th instant, No. 490, which has been placed on the Editor's table, to hand you a printed copy of a letter of mine, descriptive of the Rigi Railway, which was published in the *Madras Mail* of the 19th October last.

2 At the same time I beg to be permitted to state in connection with the Order of Government contained in those Proceedings that Monsieur Riggerback, of Olten, the inventor of the Rigi Railway and rolling-stock, has authorized me to say that he will be most happy to give any representative of the Madras Government all the information in his power relative to mountain railways on his system.

No. 27. ORDER THEREON, 1st April 1875, No. 869.

RAILWAY, No. 3.

HIS EXCELLENCY the Governor in Council is obliged to Mr. Lawson for this communication. The Chief Engineer will be informed of Mr. Riggerback's offer to give every information as to his system. But both the cost of construction and of working on that system are understood to be much in excess of the cost of construction and working on the Fell system. And as the length of line available for surmounting the total height admits of a gradient of one in twelve or thirteen being used, it seems unnecessary to resort to the costly expedients necessitated by a gradient of one in four. The total distance between Mettappolliem and Coonoor would not be materially, if at all, shortened by resort to the heavier and more expensive grade.

(True Extract)

(Signed) G. W. WALKER, Colonel, R.E.,

Secretary to Government.

C. A. Lawson, Esq.
To the Chief Engineer, Department Public Works.

Exd. A. Grubert.
Spare Copies

A MOUNTAIN RAILWAY.

LUCERNE, SEPT. 1874.

HAVING this morning ascended and this afternoon descended the Rigi mountain by a railway that in a distance of four and a half miles rises to a height of 4500 feet above the lowest terminus, I cannot help asking myself how it happens that although Metapollum, at the base of the Nulgherry Hills, has not been brought into connection with the railway system of Madras and all India, no serious proposal has yet been made for carrying the branch line on from Metapollum, up the Coonoor Ghaat by means of a railway on the Rigi model, and so on to Coonoor, Wellington, and Ootacamund. The physical difficulties to be surmounted on the Ghaat are considerably less than those that have been triumphantly overcome not only in Switzerland but also in Austria and America, and the civil and military advantages derivable from placing the plateau on the hills in railway communication with the plains should not be unknown to a Government that makes these plateaux its head quarters for two thirds of the year. Happily the Rigi Railway affords an admirable example, mechanically and financially, of the description of mountain railway that seems to me to be needed to develop the resources and extend the benefits of the Nulgheries, and I may well then attempt to describe it, leaving however to any of your readers who are engineers the task of doing more justice to the theme than I, as an unprofessional, can hope to do. Had that railway been constructed in the United Kingdom the daily, and still more the illustrated weekly newspapers of the metropolis would have familiarised the public with its characteristic features. Switzerland, as yet, is not blessed with a Pica that has, or can profess to have a "world wide circulation," so any locally published descriptions of the undertaking have been read locally and nowhere else. The Swiss moreover are an optimistically modest people, not given to the trumpeting of their achievements and little instructed in the science of national or self glorification, so the Rigi railway was projected, commenced, and completed without any fuss or much ceremony, and its existence is known to but few persons besides tourists who have made use of it, and engineers who have been placed by enterprising members of the profession in possession of technical reports thereon. Dr W. Pole, F.R.S., in the course of last year, read an excellent paper before the Institute of Civil Engineers in London descriptive of the line: and I have also obtained the pamphlet in German to which he is indebted for a good deal of the information that his monograph conveys. With these compact but guides, and with an interesting private communication from the Engineer of the line before me, and my own personal experiences to day I can give you at least a crude sketch of a novelty in Engineering that leaves the Madras Government no other than financial objections to urge against the construction of a similar line to Ootacamund. Colonel Ouchterlony, years before the Rigi railway was thought of, made to Sir William Denison's Government some valuable suggestions for a Nulgherry railway, and gave in his exhaustive report full particulars of current and prospective passenger and goods traffic. His report should be unearthed, or unearthed, and his calculation of traffic modified by the later experience that the Government can now obtain. The costly new road up the Ghaat to Coonoor is partly available for conversion at a small expense into the line of a railway on the Rigi model, and I am loath to believe that a dividend of say 25 per cent only could not be reasonably expected on the capital invested. At any rate, if an altitude of 4500 feet has been attained by a railway in a distance of 4½ miles in Switzerland on a mountain impervious to horse conveyances, up altitudes of about 5,000 feet can surely be attained in a distance of about 14 miles between Metapollum and Coonoor that has long been practicable to such vehicles.

The Rigi is a mountain 6,905 feet above sea level and 4,722 feet above the lake of Lucerne which from its outlet and deepest form commands an area of 100 square miles of country. There was a Chapel to "Our Lady of the Snow" seated on the summit, for the use of herdsmen, nearly 200 years ago, and in the year 1700 an image of the Virgin in this building was credited by the simple minded *habitués* of the place with having effected some marvellous cures, the report of which having gradually spread over the neighbouring valleys, led to devout, and marvellous pilgrimages, making tedious pilgrimages to the bleak spot that had been so peculiarly honored in the chief object of their adoration. As their numbers increased, some speculative souls erected sheds for their shelter, which a few years ago gave place to a small inn that upwards in numbers especially after the peace of 1815 had opened the Continent to travellers also living pilgrimages had been indicated by Napoleon. A railway to the summit of the Rigi from the town of Lucerne, a small town of the Rigi, one of the most attractive spots to tourists, and pilgrimages to the Chapel of "Our Lady of the Snow" died out in proportion to the number of tourists increased. In 1835 a small Hotel was built within a few yards of the summit, and to this point upwards of 40,000 persons a year climbed in search of the picturesque, and were rewarded either by obtaining a most glorious view, or by finding themselves involved in an unmeasurable mist. The ascent was made by zig zag roads, either on horse back or on foot, the first charge in the former case being about 15 francs per person, not to speak of the exertions of guides. The road was steep, and the ascent, even on horse back, fatiguing, so that there could be little doubt that, were a railway constructed from the base to the summit of the mountain, and be proved beyond question to be safe, a large proportion of the 40,000 visitors might be expected to make use of it in the upward journey, and to willingly pay something in excess of the ordinary charge, for horse conveyance. It occurred then to Mr. Riggensbach, the Manager of some large railway workshops at Olten towards some old inventions and to construct a railway up the mountain. In 1863 he patented in France an improvement upon what is professionally known as the "rack and pinion" system, that had been originally patented by Mr. Blenkinshop in 1811 and employed by that Engineer in a small railway in Madras between near Leeds, which, according to Mr. Riggensbach, was the first instance of the regular employment of locomotive power for commercial purposes, and which continued to work for some years. Mr. Riggensbach's improvements attracted the attention of engineers, but it was not until 1865 that he commenced his plans for the Rigi railway. He then associated himself with two other Swiss Engineers, obtained a concession from the Lucerne Government, got up a Company which subscribed a capital of £50,000, and commenced operations in 1870, and had it not been for the intervention of the French Government which delayed the completion of the rails from France, the first part of the line which extends from the lake to about two thirds of the distance to the summit, would have been completed during that year. However, in May 1871, this portion was finished, and upon being thrown open to public traffic, proved such a great financial success that the capital of the Company was increased by £10,000, and the railway continued to the summit, a distance of 17,755 yards from the base of the mountain. The additional portion was thrown open to the public early in the summer of 1874, and the shareholders expect a dividend this year in excess of the 15 per cent that they have hitherto received.

The gradient of almost one third of the whole line is 1 in 11; the greatest in that part varying between 1 in 10 and 1 in 12, except in some places, as at Gubio, where the road is made purposely flat. No zig zag was employed, the line is like the steepness of the hill side, but the line starts abruptly

Madras 25th February 1875

instances, costs the idea of paying 6 francs to escape to do economically and efficiently is the line managed that the working expenses are now only 35 per cent of the total receipts.

I am informed by Mr. Riggensbach that a locomotive similar to those used on this line costs about 50,000 francs, a carriage for 54 passengers 8,000 francs, and a goods wagon 1,500 francs. Mr. Riggensbach tells me that he has just constructed two mountain railways on the Rigi, one near Vienna, and the other near Pesth, and that should the Madras Government or railway authorities desire further information he will promptly give it. Further that he is prepared to supply from the other waggons, rails, and all accessories for a mountain line and workshop, and to send an engineer to superintend the construction for using them to "les gens des pays". I repeat, therefore, that should the Government have long remained unimproved, with a railway it will be due to financial and not by any means to physical considerations. What had been done, and the only safe and economical done, is

Switzerland and in this it offers the Madras Government to think of catching to be done in the next twenty years, not twenty years hence, but at once. At a rough calculation, taking the cost of the Rigi railway as a basis, 20 francs would more than suffice for a railway up the Coonoor Ghat. The Government by offering a guarantee of 4 per cent, could raise this amount in an hour or two in Lombard street, and the work might be done in a few months. Mr. Riggensbach and his skilled coadjutors. Their only objection demanding a reply in connection with this project is—Can the Government safely calculate on such a line earning sufficient to pay the interest on the guarantee? The Rigi railway, with hardly any revenue from goods traffic, will probably yield shareholders this year 20 per cent. dividend. Should not a railway to Coonoor pay 4 per cent, or failing that, should it not earn enough to cover the working expenses? In the latter case the Government would have to pay the interest, 43,000 a year, out of the general revenue.

I have the honor to send you a printed copy of a letter of mine, descriptive of the Rigi Railway, which was published in the Madras Mail of the 19th October last.

At the same time I beg to be permitted to state in connection with the Order of Government contained in those Proceedings, that Monsieur Riggensbach

Madras, 25th February 1875

From

Charles A. Lawson Esq

Madras

To

Colonel G. W. Walker, R. B.

Secretary to Government

Public Works Department

Fort Saint George

Sir,

I have the honor, with reference to the Proceedings of the Madras Government Public Works Department, 19th instant, No. 470, which has been placed on the Editor's Table to hand you a printed copy of a letter of mine, descriptive of the Rigi Railway, which was published in the "Madras Mail" of the 19th October last.

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GO No 869/1-4-75

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say that he will be most happy to
give any representative of the Madras
Government all the information in his
power, relative to mountain railways
in his system.

I have the honor to be
Sir
Your most obedient servant
C. A. Lawson

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Public Works Department

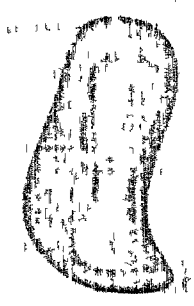
PROCEEDINGS of the MADRAS GOVERNMENT.

Under date the

Read the following:—

July 1875

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P. W. 1875 Sept.

No: 1262

From

C. S. Dawson Esq.
Madras

Dated 25 Feb 75
Recd. 25 — 1875.

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G.O. No 869-1. 4-75

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Public Works Department

PROCEEDINGS of the MADRAS GOVERNMENT.

Under date the

Read the following —

From
C. S. Dawson Esq.
Madras } (H.E. 8/25 Feb 1875) sbg

MD 1573

His Excellency the
Governor in Council
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The Chief Engineer will
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of the cost of construction and working out the Fell system. And as the length of line available for summitizing the total height admits of a gradient of 1 in 12 or 13 being used, it seems unnecessary to resort to the costly expedients necessitated by a gradient of 1 in 4. The total distance between Inghamstown and Foxboro would not be materially, if at all, shortened, by resort to the heavier and more expensive grade.

C. W. W.

6-17-3-75

(A. Lawson Esq. v
Chief Insp. N. P. W. v
D. Insp. Hildner v
Recd - 2-4-75