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MADRAS RECORD OFFICE

Government of Madras

Public Works

DEPARTMENT

G.O. No.	373, D.	Press	Original
B.P. No.		Mis.	
Dated	9. 2.	195	1875

Not to be folded or roughly handled

No 237I. Read the following letter from W. J. ADDIS, Esq, C E, to Colonel G W WALKER, R E, Secretary to Government, Public Works Department, dated Madras, 29th January 1875 —

In acknowledging the receipt of Proceedings of the Madras Government, under date the 10th of September 1874, on the subject of my Tramway from Mettapolliem to Ootacamund *via* the Coonoor Ghaut, I beg most respectfully to forward, herewith, copies of reports in connection with my system at present worked in Lisbon for your favorable consideration and further submission to Government with a request that my application for a concession be reconsidered

2 Should Government be favorably disposed towards the undertaking, I am prepared, now that I am at Madras, to inspect the ghaut in question, and submit revised estimates for the proposed scheme.

THE LISBON STEAM TRAMWAY

Extract from "The Illustrated London News"

A LOCOMOTIVE steam engine and carriages of novel construction are used on the line between Lisbon and Cintra, which was opened on the 2nd ultimo by an English Company, to whom has been granted the right of using this invention in Portugal. It may be understood from a brief description in aid of our illustration. The line consists of three rails, the centre being made of iron on the same plan as the usual permanent-way of railway lines, only about one-half the width. The two outer rails, or, more correctly speaking, "supports" for the driving wheels of the locomotive consist of planks about 9 inches wide. All are intended to be laid down level with the surface of the ordinary roadway. The centre rail guides the locomotive and carriages, and by this means sharp curves are easily turned, and the friction is reduced to a minimum. There are two broad driving wheels, placed centrally on each side, and four guiding wheels. The latter are placed under it, and form the centre of gravity—viz, two in front and two in the rear. In each case they are affixed close after each other. The ordinary working weight of the engine is 13 tons 5 cwt, and of this the driving and support wheels are calculated to sustain a maximum weight of about nine tons, or four tons and a half on each wheel, the balance being distributed over the guiding wheels. But in running over a level road or easy gradients by means of a hydraulic ram worked by steam and connected with a central mechanism, the weight on the support wheels can be reduced by one-half and transferred to the centre or guiding wheels, which enables a greater speed to be attained. The distance between the rails from centre to centre is 4 feet 2 inches, and a continuous chain-brake may be applied to the carriages and goods-van which form the train. The carriages are supported and run upon four wheels, viz, two broad outer wheels placed centrally on each side of the carriage, and two middling wheels affixed under its centre at each end, the latter being in this case made to bear nearly the whole weight of the carriage. This new system of traction may be described as a compound of the railway and tramway systems, and might perhaps be economically used as a conveyance from railways in rural and other districts to outlying places, where the cost of railways would not admit of their construction from a dividend-paying point of view. The original invention is patented by M Larmanjat, but has been practically applied in this case by Mr F H Trevithick, Engineer, who designed the engines and stock. The carriages when fully at work consist of four classes—one first class carrying sixteen persons, a composition first and second class carrying eighteen, a third class carrying twenty, and another class twenty-four. The brake power is ample, and no difficulty is experienced in stopping the train on any part of the incline. The steepest gradient on the company's system in Portugal is 1 in 22. The engine is constructed to draw 25 tons, but the weight of an average train with five vehicles attached will be about 18 tons 4 cwt. The speed in ordinary working is fifteen miles per hour.

TRIAL OF STEAM TRAMWAYS AT BUCKHURST HILL.

Extract from "The Graphic."

THE question of working tramways by means of locomotive engines and light rolling stock is at present in course of receiving a practical solution in the kingdom of Portugal, where two lines of considerable length are now being made by the Lisbon Steam Tramways Company (Limited). One line runs from Lisbon to Cintra, a distance of seventeen miles, whilst the route of the other is from Lisbon to Torres Vedras, about sixty miles. The first line is nearly completed, whilst the works of the second have progressed for about two-thirds of its length. The tramway consists of a central 42 lb rail of the Vignoles section, flanked on either side at a distance of about 20 inches with timber longitudinal sleepers, the three being secured to transverse sleepers, also of timber. Upon this triple line run engines and carriages, having one pair of broad wheels placed central to their length, and running on the timber sleepers, and at either end a bogie frame carrying for the engine two, and for the carriages one, double flanged wheel placed central to the width of the carriage, and working on the iron rail. In the locomotive the pair of broad wheels are the drivers, the small central wheels acting mainly as guides. In the carriages, however, the exact reverse of this arrangement is observed, the bearing being taken by the bogie wheels, whilst the outer broad wheels act simply as guides. They are allowed a very wide margin of vertical play by means of American springs made with an India rubber core surrounded by a spiral steel spring. The bogie wheels are also carried by six springs of the same character. The carriages, in fact, are therefore, it will be seen, steadied and prevented from overturning laterally by the outer wheels. The gauge of the line is determined by the outer wheels, which are 4 feet 2 inches from centre to centre of tyres.

The engines are fitted with an ingenious hydraulic arrangement by means of which the body of the engine is preserved in a horizontal position when it is either ascending or descending an incline, so that the tubes are not uncovered by the water, the level of which is indicated outside. The power of each of the engines already made has been tested up to 300 tons, which has been drawn by them on the level. The carriages are of three classes, the passengers enter from the sides and are seated back to back.

With an engine, a second and a third class carriage, and a goods wagon of the type we have described, an interesting trial was made on the 28th of December in the presence of a number of Engineers and other scientific gentlemen. In order to test the system a strip of land has been obtained in Epping Forest, at Buckhurst Hill, where a piece of tramway road, 1,710 feet long, has been laid. The line is on an incline for nearly its whole length, the steepest gradient being 1 in 18½, and the average 1 in 27½. Up and down this line, and round these curves, a number of runs were made, both with full and empty carriages, at good speeds, and with perfect success. Considering the saturated state of the land on which the line is laid, the train ran with remarkable steadiness, giving a good earnest of what it will do on a sound piece of road. The time occupied in the run was exactly 60 seconds, or at the rate of about 20 miles an hour, starting and stopping included. The system has been developed to its present degree of perfectness by Mr F H Trevithick, the Engineer to the Lisbon Tramways Company. The engine was built by Messrs. Sharp, Stewart and Co., and was an excellent specimen of workmanship.

THE LOAN BILL.

Extract from "The South Australian Register."

Consideration of report

MR LINDSAY moved, on behalf of Mr Krichauff, that the Bill be recommitted with a view to altering the item, Railway from Port Broughton to Barriega Range, £16,000. The object of the Honorable member was to show that this large amount was unnecessary, as the work could be done for much less. For some years the problem of the world had been how to remove given weight of

goods from one place to another at the lowest cost. Mr Haddan, in Asia Minor, had projected a new system of his own which had considerable merits, and he had undertaken to construct a line of 98 miles for £100,000, which was little more than £1,000 per mile. In India Mr W J Addis had taken out a patent for a new kind of railway, the construction of which was very cheap, 10,000 Rupees per mile, while the cost of transit was very low, 1½d per ton per mile. Considerable success had attended the new scheme in Portugal and France, and it was well spoken of by other Engineers who were not generally prone to criticise too favorably. This line from Port Broughton was one of the outside lines in which one of these new cheap systems might be very advantageously tried. Though rival projectors were not as a rule disposed to praise each other's schemes, Mr Haddan had spoken in high terms of that of Mr Addis, and said that the plan adopted by Mr Addis had been very successful in France and Portugal. He (Mr Lindsay) of course had his own schemes, but as Honorable members did not think them worthy of consideration he had not thought of proposing them, but at the same time desired to point out those of others which would be beneficial. While the tramway that was now proposed would not pay working expenses he considered that this would pay well, and have the three characteristics to be desired in all Government schemes. It would be cheap in construction, cheap in working, and would be directly reproductive, that was to say that it would pay all its working expenses including depreciation in rolling-stock and interest on capital. Branch lines only for light traffic had been constructed in India, and he thought that the particular tramway under consideration would be successful if introduced here.

MR TOWNSEND, owing to the noise, had not heard the Honorable member as well as he would have liked, but he understood him to say that as the bill for this railway had passed, and as they had agreed to carry out the works they should be pushed on as agreed upon without delay, and in that he fully agreed. He would support the Government for the report to be adopted.

MR KRICHAUFF said if he had not looked over some papers which he had before him upon this subject he would not have sought to alter the scheme that was proposed, but thought if other Honorable members read those papers they would agree with him that the tramway, which could be made for 10,000 Rupees per mile in India, or £1,000, should be constructed in this case, and a saving be effected of £26,000. In France, Portugal, and India light lines of this kind had been found successful, and he did not see why they should not be so here also. The weight all rested upon a centre line, and the only use of the outer ones was to balance the carriages. Thus there would be hardly any wear and tear, and he did not see that any work would be required in country where there were not great obstructions, except to lay down the rails. He seconded the motion.

The question that the words proposed to be struck out form part of the question was declared carried.

MR KRICHAUFF called for a division.

AYES, 14—The Treasurer, the Attorney-General, the Chief Secretary, Messrs Barrow, Cavenagh, Duncan, Hughes, Lake, Pearce, Pickering, Rogers, Smith, Townsend and the Commissioner of Public Works (teller).

NOES, 11—Messrs Angas, Bray, Carr, Cottrell, Krichauff, Mortlock, Myles, Ramsay, Ward, West-Erskine and Lindsay (teller).

Majority of 3 for the Ayes.

The report was adopted, and the third reading fixed for Tuesday next.

No 237 J. ORDER THEREON, 9th February 1875, No. 373-D.

RAILWAY, No. 36 B.

His Excellency the Governor in Council is not prepared to employ Mr. Addis on the preparation of any scheme

for a Railway or Tramway between Mettapolliem and Coonoor, though any further proposals made by that gentleman that are based upon ascertained facts, and will stand professional scrutiny, will receive due attention at his hands.

2. Of the three papers forwarded by Mr Addis, it is observed that they are all three extracts from unprofessional newspapers. That in only one of them is his name mentioned in connection with a Railway or Tramway Patent, the proposal to adopt which for a short line in South Australia was rejected. The other two papers relate to two lines stated to be under construction in Portugal by the Lisbon Steam Tramway Company, but in them the entire credit of the invention, and of its practical application, is given to Monsieur Larmanjat and to Mr F. H. Trevithick respectively, no mention whatever of Mr. Addis being made in connection with them.

3. These are however the lines regarding which information was asked for from home, but respecting which Colonel Strachey recommended application to be made to Mr. Addis, who claimed to be their projector. Copies of the papers obtained from him will therefore be forwarded to the Secretary of State for India in order that full professional details of the lines may be obtained from the Company working them, and from other professional sources.

(True Extract.)

Colonel, R E,
Secretary to Government.

THE LISBON STEAM-TRAMWAY.

Extract from "THE ILLUSTRATED LONDON NEWS."

A locomotive steam-engine and carriages of novel construction are used on the line between Lisbon and Cintra, which was opened on the 2nd ult by an English company, to whom has been granted the right of using this invention in Portugal. It may be understood from a brief description, in aid of our illustration. The line consists of three rails, the centre being made of iron, on the same plan as the usual permanent way of railway lines, only about one half the width. The two outer rails, or, more correctly speaking, "supports" for the driving wheels of the locomotive, consist of planks about nine inches wide. All are intended to be laid down level with the surface of the ordinary roadway. The centre rail guides the locomotive and carriages, and by this means sharp curves are easily turned, and the friction is reduced to a minimum. There are two broad driving wheels, placed centrally on each side, and four guiding wheels. The latter are placed under it, and form the centre of gravity—viz, two in front and two in the rear. In each case they are affixed close after each other. The ordinary working weight of the engine is 13 tons, 5 cwt, and of this the driving and support wheels are calculated to sustain a maximum weight of about nine tons, or four tons and a half on each wheel, the balance being distributed over the guiding wheels. But in running over a level road or easy gradients, by means of a hydraulic ram, worked by steam and connected with the central mechanism, the weight on the support wheels can be reduced by one half, and transferred to the centre or guiding wheels, which enables a greater speed to be attained. The distance between the rails from centre to centre is 4 feet, 2 inches, and a continuous chain-brake may be applied to the carriages and goods-van which form the train. The carriages are supported and run upon four wheels—viz, two broad outer wheels placed centrally on each side of the carriage, and two middling wheels affixed under its centre at each end, the latter being in this case made to bear nearly the whole weight of the carriage. This new system of traction may be described as a compound of the railway and tramway systems, and might, perhaps, be economically used as a conveyance from railways in rural and other districts to outlying places, where the cost of railways would not admit of their construction from a dividend-paying point of view. The original invention is patented by M. Larmanjat, but has been practically applied in this case by Mr F. H. Trevithick, Engineer, who designed the engines and stock. The carriages, when fully at work, consist of four classes—one first class, carrying sixteen persons, a composition first and second class, carrying eighteen, a third class, carrying twenty, and another class, twenty-four. The brake power is ample, and no difficulty is experienced in stopping the train on any part of the incline. The steepest gradient on the company's system in Portugal is one in twenty-two. The engine is constructed to draw 25 tons, but the weight of an average train with five vehicles attached will be about eighteen tons, four cwt. The speed in ordinary working is fifteen miles per hour.

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Mirbes/ps

THE LOAN BILL.

Extract from "THE SOUTH AUSTRALIAN REGISTER"

Consideration of report

Mr LINDSAY moved, on behalf of Mr Krichauff, that the Bill be recommitted with a view to altering the item, Railway from Port Broughton to Barunga Range, £46,000. The object of the Hon member was to show that this large amount was unnecessary, as the work could be done for much less. For some years the problem of the world had been how to remove given weight of goods from one place to another at the lowest cost. Mr Haddan, in Asia Minor, had projected a new system of his own which had considerable merits, and he had undertaken to construct a line of 98 miles for £100,000, which was little more than £1,000 per mile. In India Mr W J Addis had taken out a patent for a new kind of railway, the construction of which was very cheap—10,000 rupees per mile—while the cost of transit was very low—1½ per ton per mile. Considerable success had attended the new scheme in Portugal and France, and it was well spoken of by other Engineers who were not generally prone to criticise too favourably. This line from Port Broughton was one of the outside lines in which one of these new cheap systems might be very advantageously tried. Though rival projectors were not as a rule disposed to praise each other's schemes, Mr Haddan had spoken in high terms of that of Mr Addis, and said that the plan adopted by Mr Addis had been very successful in France and Portugal. He (Mr Lindsay) of course had his own schemes, but as Hon members did not think them worthy of consideration he had not thought of proposing them, but at the same time desired to point out those of others which would be beneficial. While the tramway that was now proposed would not pay working expenses he considered that this would pay well, and have the three characteristics to be desired in all Government schemes. It would be cheap in construction, cheap in working, and would be directly reproductive—that was to say that it would pay all its working expenses including depreciation in rolling-stock and interest on capital. Branch lines only for light traffic had been constructed in India, and he thought that the particular tramway under consideration would be successful if introduced here.

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AYES, 14—The Treasurer, the Attorney-General, the Chief Secretary, Messrs Barrow, Cavenagh, Duncan, Hughes, Lake, Pearce, Pickering, Rogers, Smith, Townsend and the Commissioner of Public Works (teller).

NOES, 11—Messrs Angus, Bray, Carr, Cottiell, Krichauff, Mortlock, Myles, Ramsay, Ward, West-Erskine and Lindsay (teller).

Majority of 3 for the Ayes.

The report was adopted, and the third reading fixed for Tuesday next.

Printed by Higginbotham and Co. Mount Road—Madras.

Mr 683/75
2/75

29 January 1875-
Anti-Government-
Macias

To.

Col. G. W. Walker. N. S.
Secretary to Government-
Public Works Dept
Macias

Sir

In acknowledging the
receipt of Proceedings of the
Macias Government under
date the 10th of September 1874.
on the subject of my Tramway
from Matehualum to Estaca-
-mend in the Common Grant.
I beg most respectfully to for-
ward herewith a pair of Reports
on the uncertain railway system

at-

M. 693/75

at present asked in Lisbon
for perfunctory consideration
and further submission to
Government: with a request that
my application for a concession
be reconsidered.

II - Should Government
be friendly disposed towards
the undertaking, I am prepared
now that I am at Madrid to
inspect the Ghent-on question
and submit revised estimates
for the proposed scheme.

I have the honor to be

Sir,

Your most obedt. Servt.

W. Jackson Walker. Esq.

P. W. 1875 Sept.
Proff for February
No: 683

From

W. J. Addis Esq.
C. Engrs.

Dated 29 Jan'y 1875
Recd 1 February 1875

E. 3

Forwarding
copies of Reports regarding
his Railway system
at Lisbon & requesting
a reconsideration of
his proposal to con-
-struct a Tramway
from Metapollim
to Ottaviano.

GO no 3702 9-2-75

Ch 287-8

2. 1. 1875 at 1875

P. W. D.

Proceedings of the Madras Government,

Under date the

187

Read the following —

From

Dr. J. Addis Esq.
Civil Engineer

G.O. no 373 of 9th February 1875

(H.E. dated 29 Jan'y 1875)
His Excellency the
Governor in Council is
not prepared to employ
Mr. Addis on the pre-
-paration of any
scheme for a Railway
or Tramway between
Metapollim and Ottaviano,
though any further pro-
-posals made by that
gentleman that are
based upon ascertained
facts, and will stand

101

professional scrutiny
will receive due atten-
-tion at his hands.

2 - Of the three papers
forwarded by Mr. Addis,
it is observed that they
are all three extracts
from Unprofessional
Newspapers. That in
only one of them is his
name mentioned in
connection with a
Railway or Tramway
Patent; the proposal
to adopt which for a
short line in South
Australia was rejected.
The other two papers re-
-late to two lines stated
to be under construction
in Portugal by the
Lisbon

17-1
Lisbon Steam Tram-
-way Company; but
in them the entire cre-
-dit of the invention,
and of its practical
application is given
to Monsieur Sarmanjat
and to Mr. J. H. Trevithick
respectively; no men-
-tion whatever of Mr.
Addis being made in
connection with them.

3 - These are however
the lines regarding which
information was asked
for from home ⁱⁿ ~~without~~
~~without~~ Mr. Strachey
recommending appli-
-cations be made
about them to Mr.

Addis

Addis, who claimed to be
their projector. Copies of
the papers obtained from
him will therefore be
forwarded to the Secre-
tary of State for India
in order that full
professional details
of the lines may be
obtained from the Com-
pany working them,
and from other profes-
sional sources.

To The Com^{rs} Genl for Railways
To H. J. Addis Esq^r L. C.
Encl^d Paragraph 1/2

Dec^r 9-2-75

detailed information regarding
them.

By Sec^y No 2 27th July 1875

~~Forwarding paper~~
received from Mr. Addis
relating to the scheme for
Railway or Turnway between
Metta and them & Co. & Co.

2. 11-3-75 & 8th July 1875

2. 11 July 1875 & 1. 9. 75

Gobt. of 1873 Madras
PUBLIC WORKS.

No

The Engineer-in-Chief.
Public Works.

No

No

No 17

of Feb 1874

No. 2072-2073.

Mr W J Adhes C. E. is informed
that the Govt are not prepared
to employ him on the preparation
of any scheme for a Railway
Tramway between Kutapallu
& Sornam & that any further
proposals, hence by him that
are based upon a certain
trust in professional competency,
will receive due attention - &
certain papers obtained & re-
lating to the construction of
Railways in Portugal forwarded
- to the Home Govt in order to obtain