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MADRAS RECORD OFFICE

Government of Madras

Public Works DEPARTMENT

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*Proceedings of the Madras Government, Public Works Department,
19th February 1875.*

No. 490.

Under date 19th February 1875, No. 484.

RAILWAY, No. 64.

HIS EXCELLENCY the Governor in Council has resolved to avail himself of the opportunity afforded by the Chief Engineer's intention of proceeding to England on privilege leave, to place in the hands of Engineers and others likely to take up the subject practically all local information necessary to enable them to work out the details of a railway to connect Mettapolliem and Coonoor.

2. With this view Colonel Walker will take with him, first, the traffic statistics now being collected by the Under Secretary in the Department Public Works; second, the survey and levels already taken by the officers of the Madras Railway Company for a line of railway between Mettapolliem and the foot of the Coonoor Ghaut; third, the combined surveys of the old and new Coonoor Ghauts made by Majors Edgecome and Law, with sections of all nullahs on the lines; also maps of the Neilgherry Hills, and the adjacent portion of the Coimbatore District, on as large a scale as may be available; fourth, complete data of the cost of work on the line to be traversed, obtained from the Railway Engineers and District Engineers of Coimbatore and the Neilgherries.

3. Colonel Walker will, in England, place himself in direct communication with Mr. Fell, the Engineer of the railway over Mount Cenis, and with Mr. Fairlie, the constructor of engines specially adapted for overcoming steep gradients; also with Mr. Handyside, the proposer of a method of surmounting steep gradients by a combination of the locomotive with the stationary engine. He will place the information he has collected at their disposal, and will invite them to submit from these data detailed estimates of the cost of opening and working such a railway as they would respectively recommend; and he will submit their proposals to the Secretary of State for India, with the request of His Excellency the Governor in Council that measures may be adopted for carrying out, whichever of them may be preferred, by State agency.

4. Colonel Walker will be allowed an extension of his privilege leave by two months for the performance of this duty.

(True Extract.)

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

Secretary to Government.

To Colonel G. W. Walker, R.E., Chief Engineer, D. P. W.

To the District Engineer, Neilgherries.

„ „ „ Coimbatore.

„ „ „ Consulting Engineer for Railways.

„ „ „ Controller of Public Works Accounts.

Exd. S. T. Austin.

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for resorting to any heavier gradient. Fell's system of railway with third rail as worked out over Mont Cenis with gradients of 1 in 12 to 13 and with very sharp curves is that which, in my opinion, should be resorted to if a continuous incline be advocated.

6. But Mr. Clark who is engaged on the preparation of a scheme of drainage for the Town of Madras, and with whom I have conversed on the subject of mountain railways, has made known to me a most novel proposition of a New Zealand Engineer, Mr. Handyside, published only last year, the adoption of which may enable the old Coonoor ghaut to be utilized for a line of rail that may be constructed and worked more cheaply than any other. Mr. Handyside's idea is that his locomotive should run up any suitable length of incline by itself, clamp itself (by contrivances which he specifies) to the rails, and then proceed to haul up its train as if it were a stationary engine. He limits his maximum gradient to 1 in 8; and if that limit is not to be exceeded the upper 3 miles of the ghaut must be retraced, which it admits of, the first mile being very easy while the second and third are averaged at 1 in 6. Mr. Handyside's idea may be gathered from the pamphlet which Mr. Clark has kindly lent for the use of Government. It is not unlikely that in it will be found a solution of the questions of minimum possible cost of construction and maintenance, of obviating break of gauge, etc., etc.

7. My practical suggestion is that Colonel Farewell, Inspecting Engineer for Communications, who is now at home, and intimately acquainted with the ground, should be instructed to place himself in communication, personally, both with Mr. Fell and Mr. Handyside; furnish each of these gentlemen with a copy of the survey of both ghauts made by Captains Edgcome and Law, and give them all other local information that they may require. From which I have no doubt each of them will be able to submit reliable estimates of the cost of working out and maintaining a railway on each of their systems, adequate for the traffic which the statistics collected by Major Scott may prove to exist or to be probable.

(Signed) G. W. WALKER, Colonel, R.E.,
Chief Engineer, P.W.D.

Memorandum by the Chief
Engineer of the Public Works Department.
Dated 26 January '75

I have the honor to submit my views as to the nature of the Railway which should be constructed between Mettappollum and the Keilgherry Hills, and the line it should take, based on my intimate knowledge of the ground that must be traversed.

If Ootacamund be assumed as the upper terminus, two lines are available; one keeping the Valley of the Kartaisy Nullah, heading its Fall, and running up the Kaisy Valley, direct to Ooty. This line would have the advantage of tapping the entire tract of the Hill Plantations of Coffee and Tea along the Valley of the present Ghaut Road, the Poolihal ridge, the Colesombay district and Devacholay. The other line leaves the first by the valley of the Coonoor River, and would follow the course of

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January 1875.*

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2. If Ootacamund be assumed as the upper terminus, two lines are available; one keeping the valley of the Kartairy Nullah, heading its fall, and running up the Kaity Valley, direct to Ooty. This line would have the advantage of tapping the entire tract of the Hill Plantations of Coffee and Tea along the valley of the present Ghaut Roads, the Hoolikal ridge, the Colacombay District and Devasholay. The other line leaves the first by the valley of the Coonoor river, and would follow the course of the present road to Ooty, *via* Coonoor and Wellington. The two lines would however be identical to about the highest crossing of the old and new Coonoor ghauts; and on all considerations the latter has the preference. And as the existing communication by road above Coonoor is excellent, fully availed of, and adequate for all probable traffic, I see no advantage in taking the rail beyond Coonoor; at least for the present.

3. With Mettapolliem and Coonoor therefore as the termini, about 14 miles apart by the direct road, and differing in level about 4,800 feet, it seems to me that the practical question, as regards construction of a railway of the kind indicated by G. O., No. 2,564-A, of 10th September 1874, is whether to cross the Bhowany from Mettapolliem so as to commence an ascent at the foot of the Hills immediately opposite, or to keep in the valley and start the ascent somewhere near Kullar, or where both the present ghauts commence their rise. In the former case, the lateral valley of the Kullar river will give so much more available ground for working over as to admit of an incline of at least 16 miles in length, and a gradient of 1 in $17\frac{1}{2}$, being attained without zigzags. In the latter the available length of 9 miles will raise the gradient to 1 in 10 if a uniform incline be adopted. But another mile of length, and decrement of slope to 1 in 12, might easily be gained.

4. From my knowledge of the ground my belief is that the adoption of the former gradient and line would lead to the encountering of the line of precipices which runs from below Lamb's Rock (overhanging Burliar) on a line with the toll bar on the existing ghaut roads so unfavorably as to counteract the gain of an easier gradient by its enormous prime cost. Looking therefore to economy of construction as essential to the scheme, I consider that it will be advisable to resort to a short line with minimum gradient of 1 in 12. And I arrive at this conclusion purely with reference to the ground to be worked over, which will be found to be most practicable along the general line of the old ghaut.

5. A gradient of 1 in 4 has been successfully dealt with on the Rigi Railway, but it involves very great peculiarities of construction which appear to entail inordinate outlay on the line and its plant. And if a gradient of 1 in 12 can be obtained through the easiest lay of ground as I assert, there seems no good reason

of the present road to Ooty, via Coonoor and Wellington. The two lines would however be vertical to about the highest crossing of the old and new Coonoor Ghats; and on all considerations the latter has the preference. And as the existing communication by road above Coonoor is excellent, fully availed of, and adequate for all probable traffic, I see no advantage in taking the rail beyond Coonoor; at least for the present.

With Mettupalilim and Coonoor therefore as the termini, about 14 miles apart by the direct road, and differing in level about 4,800 feet it seems to me that the practical question, as regards construction of a railway of the kind indicated by L.C. No. 2564 of 10th September 1874, is whether to cross the Bhawany from Mettupalilim so as to commence an ascent at the foot of the Hills immediately opposite; or to keep in the Valley and start the ascent somewhere near Lullar, or where both the present Ghats commence their rise. In the former case

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From my knowledge of the ground my belief is, that the adoption of the former gradient and line would lead to the encountering of the line of precipices which runs from below Lamb's Rock (overhanging Barliar) on a line with the Soll bar on the existing Ghaut Road, so unfavorably, as to counteract the gain of an easier gradient by its enormous prime cost. Looking therefore to economy of construction as essential to the scheme

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A gradient of 1 in 4 has been successfully dealt with on the Rigi Railway, but it involves very great peculiarities of construction which appear to entail inordinate outlay on the line and its plant. And if a gradient of 1 in 12 can be obtained through the easiest lay of ground, as I assert, there seems no good reason for resorting to any heavier gradient. Fell's system of Railway with 3rd rail gradients of 1 in 12 to 13 and with very sharp curves, is that which in my opinion should be resorted to, if a continuous incline be advocated.

Beard

But Mr Clark, who is engaged on the preparation of a scheme of drainage for the Town of Madras, and with whom I have conversed on the subject of Mountain Railways, has made known to me a most novel proposition of a New Zealand Engineer, Mr Handyside, and published only last year; the adoption of which may enable the old Coonoor Chant to be utilized for a line of rail, that may be constructed and worked more cheaply than any other. Mr Handyside's idea is that his Locomotive should run up any suitable length of incline by itself, clamp itself (by contrivances which he specifies) to the rails, and then proceed to haul up its train as if it were a stationary engine. He limits his maximum gradient to 1 in 8; and if that limit is not to be exceeded the upper 3 miles of the Chant must be retraced; which it

it admits of, the 1st mile being very easy while the 2nd and 3rd are averaged at 1 in 6. Mr. Handyside's idea may be gathered from the Pamphlet which Mr. Clark has kindly lent for the use of the Govt. - It is not unlikely that in it will be found a solution of the questions of minimum possible cost of construction and maintenance, of obviating break of gauge &c. &c.

My practical suggestion is that Colonel Farewell, Inspecting Engineer for Communications, who is now at home, and intimately acquainted with the ground, should be instructed to place himself in communication, personally, both with Mr. Fell and Mr. Handyside; furnish each of these Gentlemen with a copy of the Survey of both Chauts made by Captains Edgcome and Low, and give them all other local information that they may require - From which I have

no

11e 4
no doubt each of them will be able to submit reliable estimates of the cost of working out and maintaining a Railway on each of their systems, adequate for the traffic which the statistics collected by Major Scott may prove to exist or be probable.

C. W. Walker R.E.
Chief Engineer R.E.

For certifying addrs
Col. Walker suggested &
upheld the Sec of State
& place Col. Zane with a
Comm - the whole
the most eminent staff
in this department.

A letter with Dr.
Long Col. Walker leave
a couple of months &
enath him through
& study the matter.

27/1

I would do better
on the principle
of having 2 strings to
my bow! Lot 27!

I have been to the
court with Col. Walker
Walker himself stating
whether or no Col. Zane
if necessary, I should
a full understanding with
Mr. Tell & Mr. H. H. H.

3/2

H. P. The G. in C. has resolved
to avail himself of the op:
portunity afforded by the
Chief Engineer's intention
of proceeding to England
on Privilege Leave, to place
in the hands of Engineer
and others likely to take
up the subject practically
all local information re:
cessary to enable them to
work out the details of
Railway to connect Meta:
politan and London.

With this view Colonel
Walker will take with him
(1st). The Traffic Statistics
now being collected by the
Under Secretary in the Dept.
Pub. Works. (2nd). The Sur:
vey and levels already
taken by the Officers of the
Metropolitan Railway Company
for a line of Railway be:
tween Metapollin & the
port of the Lower Thames.

(3rd) The combined Surveys
of the Old & New Linnons
Shants made by Majors
Edgemoor and Law; with
Sections of all Nullahs
on the line - Also Maps
of the Neelgherry Hills, &
the adjacent portion of
the Coimbatore District,
on as large a scale as
may be available. (4th)
Complete data of the cost of
work on the line to be trans-
versed; obtained from the
Railway Engineer, and
District Engineer of Min-
ature of the Neelgherry.

Colonel Walker will in-
sured place himself in
direct communication with
Mr. Dell the Engineer of the
Railway Co., Madras,
and with Mr. Dumble the
constructor of engines spe-
cially adapted for over-
coming steep gradients;
also with Mr. Hardy side,
the proposer of a method

15 FEB
of overcoming steep gradi-
ents by a combination of the
locomotive with the station
engine - He will place
The information he has col-
lected at their disposal;
and will invite them to
submit, from these data,
detailed estimates of the
cost of opening & working
such a Railway as they
would recommend. And
he will submit their pro-
posals to the Secretary of
State for India, with the
request of N. D. the S. M. C.
that measures may be ad-
opted for carrying out
whichever of the may be
preferred, by State Agency -
Colonel Walker will be
allowed an extension of his
Privilege leave by 2 months
for the performance of this
duty -

L. W. W.
Colonel G. H. Walker P. B. Chief Eng.
The District Eng. Coimbatore
C. S. Eng. Coimbatore
C. S. Eng. Coimbatore
C. S. Eng. Coimbatore
6.2.75
1875-2-75

Gen. H. Robinson C. S. C.
March 20, 1861
H. C. the President

Print the enclosed
in the paper -
S. J. C. 1861

So far as I have given
Col Walker more latitude
than as the persons
he consulted - but he
has prepared the D. P. &
he don't best know
what will advance most
except the other thus
the Gov. have a new
8/2 M.

by State Agency whichever
of the proposal that may
be preferred -

Govt. of (1875) Madras.

PUBLIC WORKS.

To

General
Col. F. W. Walker

Dated

Recd.

Encl.

G. O., 19 Feb 875, No. 484

No. 490.

Colonel Sir Walker. R.S.

Chief Engineer P.W. Dept.

Allowed in consideration of
Privilege leave to place all
local information in the
hands of Engineers & others in
England to work out the
details of a Railway to
connect Mettapolitum &
Coonor. & to submit the pro-
posals to the Secy of State
with a view to measures being
adopted for carrying out