

Public Works (1899.) Department.

RAILWAY BRANCH.

G.O., No. 566 Rev

DATED 11th Aug 1899.

Printed

260
4

[Despatch Abstract.]

Narrow gauge Railway from Salem station
to the foot of the steep ascent leading up to Zareen

Passing orders on certain suggestions of the
Cai. Ingr. for Revs, in connection with the
proposal for the construction of a short line
of ——— on the Shevaroy Hill

Government {1899} of Madras.
PUBLIC WORKS.

} 1899.

Spare copies

G.O., No. 566 Ry., 11th May 1899.

MAY.

Narrow gauge Railway from Salem Station to the foot of the steep ascent leading up to Yercaud

Passing orders on certain suggestions of the Consulting Engineer for Railways, in connection with the proposal for the construction of a short line of — on the Shevaroy Hills.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following papers:—

G.O., No. 1389 Ry., dated the 10th November 1898.

" " 210 W., dated the 23rd January 1899.

Read also the following:—

Note by the Consulting Engineer for Railways, Madras, dated 7th April 1899.

On March 31st I went over the line of country proposed by the Agent, Madras Railway Company, for a short line of narrow gauge railway from Salem station of the Madras Railway through Salem town and civil station to the foot of the steep ascent leading up to Yercaud on the Shevaroy Hills. I was much struck with the suitability of the hill slopes, from the foot of the ghât to Yercaud on the top, for one or other of the wire airways which have now been brought to such perfection in other countries than India. It suggests itself that the Madras Railway Company would be well advised to consider the advisability of making such an airway as a part of their branch railway scheme, in order to be able to book goods through between Yercaud and their Salem station. I see in G.O., No 210 W., dated 23rd January 1899, that in 1896 a proposal was made to utilise the Periyâr wire ropeway for the ascent to Yercaud, but it was found unsuitable. That however is no reason why a properly designed wire ropeway should be found unsuitable. It is not a sort of thing that can very well be taken down at one place and put up at another; for every detail of it has to be designed to suit the special profile of the country—that is, not only details of the supports, but also of the rope itself the strength and cost of which varies, within limits, with the spans.

2. I find from the Public Works G.O. above referred to that the proposals before Government for giving the Shevaroy Hills access to the plains and to the Madras Railway practically resolve themselves into two, viz., the Malapuram ghât road favoured by Mr. deWinton, estimated to cost $1\frac{1}{2}$ lakhs, and the Salem ghât road, Bayley's, estimated at 3 lakhs. A section of the planters favours the former; but the majority, I understand, favour the latter, not only because their estates lie nearer to it but also because the bulk of their interests is in Salem town, whence also the manure which is so requisite for coffee cultivation can be comparatively cheaply obtained.

3. If my proposals are ultimately adopted it will be possible for Government to confine its expenditure to the Malapuram ghât road, leaving the Salem ghât to the Madras Railway Company's wire airway.

4. The two main sub-divisions of wire airways are the double rope and the single rope systems. In the latter system, which would be quite unsuitable for anything on such a scale as that now proposed, the buckets are hung on a continually moving rope. This system is suitable only for short spans and for short lines, such as those in use in mines and quarries. The double rope system consists of a standing rope on which the cars or buckets run, and a running rope to haul them. There will of course be a pair of ropes for the forward and another for the return journey. The spans may vary from half a mile down to 100 yards, and needless to say the standing rope must be specially designed of sufficient strength for each span, while it would be

uneconomical to use in the small spans the size of rope suitable for the larger spans. Similarly the running rope has to be designed with due regard to the steepness of the slope, for on a steep slope it bears a part of the load.

5. It is unnecessary however that I should enter into a dissertation on the subject of the design of modern wire airways. What is essentially necessary is that, after reading up the subject and so getting a grip of its leading principles, the Engineer should select the best possible location and that the profile of the selected location should be sent to airway experts with a view to their preparing a detail design and submitting an estimate and tender.

6. The Trenton Iron Company, Trenton, New Jersey, U.S.A., make these airways a speciality, and their handbook is a model of what such a handbook should be, giving photographs of several of such works, and drawings of the cars, hoists, and details. Their "Bleichert" system is the one which I would select for the Yercaud ghât which I roughly judge would require a vertical ascent of 2,000 feet in a horizontal distance of 10,000 to 15,000, with spans of from 2,000 feet downwards. I think that without extra expense the straight line which is so very desirable in a wire airway should be obtainable.

7. The Trenton Vale people in their handbook give numerous instances of the work actually being done by various instalments of their airways; 100 tons per hour, 15,000 tons per month, 750 tons per day, 150 tons per day, and so on, in various circumstances. Operating expenses naturally vary very greatly according as the work is done wholly or partly by gravity or by hoisting machinery; rates of 2 to 6 cents per ton mile are mentioned, but naturally these are no gauge of what will be the expense of operating an airway to Yercaud. People now seem content to pay about 30 annas, say 60 cents, per ton per mile, which leaves a margin for hoping that an airway will pay. The present cost of carrying a ton up to Yercaud from the foot of the ghâts being apparently 125 to 200 annas (say $2\frac{1}{2}$ to 4 dollars). I may not be right in these figures; Shevaroy coffee planters and Yercaud house proprietors can correct me. One great difference between 3 lakhs spent on a road and the money spent on an airway, is that while the former never directly pays maintenance expenses, much less interest on its cost, the latter may be expected, with good design and management, to pay both. The wire airway will be of no use for passengers; but as Mr. deWinton says, in paragraph 10 of his Note dated 3rd December 1898, in the G.O. already referred to, passengers would probably prefer, even if there were a road, to travel as at present, in chairs, by the 7 miles of steep ascent—a transit now done with great ease and facility.

8. I was very much struck with the cost and difficulty of transport under present conditions. Pack-bullocks, ponies and coolies, men and women, cannot carry much of a load on grades of 1 in 6. The coolies who seemed to me to do most of the transport carry loads of, I judge, about 50 lbs. and for this they get, I believe, from 3 to 5 annas, say 3 to 5 pence or 6 to 10 cents, for the 7 mile ascent from bottom to top of ghât. Housebuilding comes expensive when that price is paid for a half dozen of bricks or for a few handful of lime, and yet I believe Yercaud houses have all been built with materials so obtained. Grain too, for the labourers on 5300 acres of coffee, all, I believe, or nearly all, comes up in this way. It seems to me therefore that if properly designed and worked, whatever the 2 or 3 miles of wire airway may be found to cost within reason, it ought to pay well.

9. I recommend that the Madras Railway Company do depute an Engineer to obtain the best obtainable profile, and that they then send that profile home to their Consulting Engineer with a view to his obtaining suitable designs and estimates. My own recommendation is that enquiries be made amongst American firms of specialists, amongst others the Trenton Vale Iron Company, because so far as I can ascertain no British firms have made so much of a speciality of this particular class of work, and there is no good in entering on an enterprise of the sort without obtaining the advantage of all the experience that is obtainable in regard to every petty detail involved in it.

7th April 1899.

FRANCIS J. E. SPRING,
Consulting Engineer for Railways.

ORDER—No. 566 Ry., dated 11th May 1899.

The Consulting Engineer's suggestions will be considered in the Public Works Department. They should also be forwarded to the Agent, Madras Railway Company, for consideration. Before accepting them Government will be glad to receive any expression of opinion which the Shevaroy Planters' Association or which residents in Yercaud may have to offer in regard to Mr. Spring's suggestions; and also any statistics of weight of goods carried, and of the cost of carriage, whether up or down the ghât, which residents of the Shevaroy Hills may be in a position to put forward.

(True Extract.)

FRANCIS J. E. SPRING,
Joint Secretary.

To the Public Works Department, General Branch.
" Agent and Manager, Madras Railway.
" Honorary Secretary, Shevaroy Planters' Association.
" Residents in Yercaud through the Collector of Salem.
Editors' Table.

Read J.O. No. 1389. Ry. dated the 10th Nov. 98

" " " 210 W. " " 23rd Jan. 99.

Read also the following Note by the En. Eng. for Ry. Yercaud, dated 6th Sept 99.

On March 31st I went over the line of country proposed by the Agent Yercaud Ry. Co. for a short line of narrow gauge railway from Salem station of the Madras Ry. through Salem town to the foot of the steep ascent leading up to Yercaud on the Shevaroy Hills. I was much struck with the suitability of the hill slopes from the foot of the ghât to Yercaud on the top for one or other of the wire railways which have now been brought to such perfection in other countries than India. It suggests itself that the Madras Ry. Co. would be well advised to consider the advisability of making such an arrangement a part of their broad railway scheme, in order to be able to handle goods through between Yercaud and their Salem station. I see in J.O. No. 210. W. dated 23rd Jan. 99 that in 1896 a proposal was made to utilize the Periyar wire ropeway for the ascent to Yercaud, but it was found unsuitable. That however is no reason why a properly designed wire ropeway should be found unsuitable. It is not a sort of thing that can very well be taken down at one place and put up at another; for every detail of it has to be designed to suit the special profile of the country, that is not only details of the supports, but also of the rope itself the strength and sort of which varies, within limits, with the spans.

2. - I find from the Public Works S.O. above referred to that the proposals before Government for giving the Shering hills ^{plain} ^{to the} ^{the} Hudson Bay practically resolve themselves into two, viz the Malaguan shot road favoured by Mr de Winter, estimated at cost $1\frac{1}{2}$ lakhs. & the Salem shot road, Bonylay's, estimated at 3 lakhs. A section of the plantation favours the former; but the majority, I understand, from the latter, not only because their estates lie nearer to it, but also because the bulk of their interest is in Salem too, where also the manure which is so requisite for coffee cultivation can be conveniently cheaply obtained.

3. - If my proposals are ultimately adopted it will be possible for Govt. to confine its expenditure to the Malaguan shot road, leaving the Salem shot & the Hudson R. to be raised by the natives.

4. - The two main subdivisions of wire railways are the double rope & the single rope system. In the latter system which would be quite unsuitable for anything on such a scale as that now proposed, the buckets are hung on a continually moving rope. This system is suitable only for short spans, ^{and for} short lines, such as those in use in mines and quarries. The double rope system consists of a standing rope on which the cars or buckets run, & a running rope to haul them. There will of course be a pair of ropes for the forward & another for the return journey. The spans may vary from half a mile down to 100 yards, and needless to say the standing rope must be specially designed ~~for~~ of different strength for each span, while it would be

in the small spans the size of
unconvenient to use ~~the~~ ^{the} rope suitable for the larger spans. Similarly
the running rope has to be designed with due regard to the
steepness of the slope, for a steep slope it becomes a part of
the load.

5. - It is unnecessary however that I should enter into a dissertation
on the subject of the design of modern wire airways. What is
essentially necessary is that after reading up the subject and so
getting a grasp of its leading principles, the engineer should select
the best possible ^{location} ~~position~~ and that the profile of the selected
location should be sent to mining agents with a view to their
preparing a detail design and submitting an estimate and tender.

6. - The Weston Iron Company, Weston, New Jersey, U.S.A. make
these airways a specialty and their handbook is a model of what
such a handbook should be. Giving photographs of numbers of
such works and ~~sketches~~ drawings of the cans, hoist, and details.
Their "Bleichert" system is the one which I would select for
the Ypres case flat which I roughly judge would require a vertical
ascent of 2000 feet in a horizontal distance of 10000 to 15000.
With spans of from 2000 ft downwards. I think that without
later systems a straight line, so very desirable in a wire airway,
should be obtainable.

7. The Weston Vale people in their handbook give numerous instances of the work actually being done by various ~~men~~ ^{parties} of their workings. 100 tons per hour, 15000 tons per month, 750 tons per day, 150 tons per day, and so on in various circumstances. Operating expenses naturally vary very greatly according as the work is done ^{wholly or partly} by gravity or by hoisting machinery, ^{rate of} 2 to 6 cents per ton mile are mentioned; but naturally there are no groups of what will be the expense of gravity in hoisting to Yucca. At present people seem content to pay about 30 annas, say 60 cents, per ton per mile. which leaves a margin for hoping that an ailing will pay, ~~the~~ The present cost of carrying a ton up to Yucca from the foot of the shaft being apparently 120 to 200 annas. (say 2 1/2 to 4 dollars) I may not be right in these figures; Shewing coffee plantations ^{Yucca} and ^{houses} proportion can correct me. The great difference between 3 lbs. spent on a pound and the money spent on an ailing, is that while the former runs directly ^{nothing} ^{maintains} ^{expense} ^{and} ^{has} ^{interest} ⁱⁿ ^{it} ^{cost}, the latter may be expected, with good charge and management, to pay better.

be made amongst American firms of specialists, amongst them the
Winton Valve Co., because so far as I can ascertain no
British firm has made a specialist of this particular class of
work, and there is no good in entering on an enterprise of the
sort without obtaining the advantage of all the experience
that is obtainable in regard to every petty detail involved
in it.

7-4-99

F. W. S.
L. S.

Winton Valve Co.

The Committee's suggestion will be sent to the P. W. Dept.
They should also be forwarded to the Agent R. B. Co. for consideration.
J. W. will be glad to receive any suggestion of opinion which the
Shrewsbury Planters' Association ^{or which exists in your?} may have to offer in regard to the
Spring suggestion, and also any statement of weight of goods carried, and
of the cost of carrying it, whether up or down the glen, which residents of
the Shrewsbury Hills may be in a position to get forward.

Winton
7-4-99

F. W. S.
J. W. S.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following papers:—

G.O., No. 1389 Ry., dated the 10th November 1898.
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Read also the following:—

Note by the Consulting Engineer for Railways, Madras, dated 7th April 1899.

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2. I find from the Public Works Government Order above referred to that the proposals before Government for giving the Shevaroy Hills access to the plains and to the Madras Railway practically resolve themselves into two, viz., the Malapuram ghât road favoured by Mr. deWinton, estimated to cost 1½ lakhs, and the Salem ghât road, Bayley's, estimated at 3 lakhs. A section of the planters favours the former; but the majority, I understand, favour the latter, not only because their estates lie nearer to it, but also because the bulk of their interest is in Salem town, whence also the manure which is so requisite for coffee cultivation can be comparatively cheaply obtained.

3. If my proposals are ultimately adopted it will be possible for Government to confine its expenditure to the Malapuram ghât road, leaving the Salem ghât to the Madras Railway Company's wire airway.

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uneconomical to use in the small spans the size of rope suitable for the larger spans. Similarly the running rope has to be designed with due regard to the steepness of the slope, for a steep slope it bears a part of the load.

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7. The Trenton Vale people in their handbook give numerous instances of the work actually being done by various instalments of their airways, 100 tons per hour, 15,000 tons per month, 750 tons per day, 150 tons per day, and so on in various circumstances. Operating expenses naturally vary very greatly according as the work is done wholly or partly by gravity or by hoisting machinery, rates of 2 to 6 cents per ton mile are mentioned, but naturally these are no gauge of what will be the expense of operating an airway to Yercaud. At present people seem content to pay about 30 annas, say 60 cents, per ton per mile, which leaves a margin for hoping that an airway will pay. The present cost of carrying a ton up to Yercaud from the foot of the ghâts being apparently 125 to 200 annas (say $2\frac{1}{2}$ to 4 dollars) I may not be right in these figures; Shevaroy coffee planters and Yercaud house proprietors can correct me. One great difference between 3 lakhs spent on a road and the money spent on an airway, is that while the former never directly pays maintenance expenses, much less interest on its cost, the latter may be expected, with good design and management, to pay both. The wire airway will be of no use for passengers; but as Mr. deWinton says in paragraph 10 of his Note, dated 3rd December 1898, in the Government Order already referred to, passengers would probably prefer, even if there were a road, to travel as at present, in chains, by the 7 miles of steep ascent, a transit now down with great ease and facility.

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9. I recommend that the Madras Railway Company do depute an Engineer to obtain the best obtainable profits, and that they then send that profit home to their Consulting Engineer with a view to his obtaining suitable designs and estimates. My own recommendation is that enquiries be made amongst American firms of specialists, amongst others the Trenton Vale Iron Company, because so far as I can ascertain no British firms have made specialists of this particular class of work, and there is no good in entering on an enterprise of the sort without obtaining the advantage of all the experience that is obtainable in regard to every petty detail involved in it.

FRANCIS J. E. SPRING,
Consulting Engineer for Railways.

7th April 1899.

ORDER—No. Ry., dated April 1899.

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(True Extract.)

Under Secretary.

To

The Public Works Dept. General Branch
 - Agent & Manager, Madras Railway
 - Hony. Secy: Shevaroy Planters Association
 - Residents in Yercaud thro' the Collector of Salem.

The Secy.

2nd party Rd 13.4.99.

8

RAILWAY.

Government {1899} of Madras.
PUBLIC WORKS.

- (1) H.E. The Governor
(2) Honble Mr. Arundel C.S.
(3) Honble Mr. Winterbottom

Recd.

Enclosures

1899.

Regd.

Spare copies

G.O., No. 566 Ry., ^{11th May} April 1899.

^{May}
APRIL.

Construction of a short line of narrow gauge Railway
from Salem station to the foot of the steep ascent
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on the Shevaroy Hills.

21/4/99
22/4/99

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7th April 1899.

FRANCIS J. E. SPRING,
Consulting Engineer for Railways.

4 No. Ry., APRIL 1899.

ORDER—No. Ry., dated April 1899.

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(True Extract.)

for Joint Secretary.
13.4.99

"I have no objection to this being done. But, the construction of a road is being considered, and it must be understood that Mr. Spring's suggestion are not meant to supersede or to cancel the consideration of the road scheme."

To the Public Works Department, General Branch.
" Agent and Manager, Madras Railway.
" Honorary Secretary, Shevaroy Planters' Association.
" Residents in Yercaud through the Collector of Salem.
Editors' Table.

If the Madras Ry. make a light line through Salem to the foot of the hills, the grant road—if made at all—must be made from that point. If a wire rope way were made from the same point the grant road would hardly be necessary, for goods would go up by it, while passengers would ride or be carried as at present. It will be for the Madras Ry. to consider whether such a wire rope way is within their ken as a Railway Co. If not possibly a private Co. wd. undertake it.

Exd. P. Seetharam.

i.e. if the wire rope way is not constructed?

If the wire be constructed on the Salem side a ghât road on the Malapuram side might still be desirable.

MT 21.4.99.

Form No. 10.

PUBLIC WORKS DEPARTMENT.

RAILWAY BRANCH.

C. No.

SUBJECT.

HIS EXCELLENCY THE GOVERNOR.

THE HON'BLE MR. ARUNDEL & C.S.I.

THE HON'BLE MR. H. M. WINTERBOTHAM, I.C.S.

FOR ORDERS.

Thence W. for C.I.

I submit if the Salem planters will accept this instead of a road to Yercaud from either Salem or the foot of the ghât. They probably would prefer the siding from the railway to the foot and then a ghât road in which their bandies could work. The question might perhaps be referred to the Association for an expression of opinion.

and
27/4/99

H.S. — H.M.S.

That the very thing which the G.O. propose to do, viz. the opinion of the Yercaud planters.

I ask permission to use the G.O. now.

FMS

28/4/99

I have some recollections that a wire rope way has already been proposed and rejected. I have no objection to it.

Referring to Mr. Winterbotham's remarks on the proposed G.O. below. What I had in mind was that if the Ry. Co. should see its way to adopting the suggestion, the local foot might defer indefinitely all idea of a road on the Salem side. The other road, on the Malapuram side, might or might not be gone on with as foot might decide.

Such a wire rope would be quite as much within the ken of a railway company as any other method of hoisting goods. say to the upper story of a warehouse, or of carts or boats between an out-warehouse and the Railway. Inasmuch as passengers would not be carried by it, it would not come within the ken of the Railway Act.

H.S. and Mr. Winterbotham may be interested in glancing through the Weston Co's handbook which I sent by. I understand that it is the intention of Govt. that the G.O. may issue. It goes now through P.W.D. for counter initials.

FMS

29/4/99

however, to the ventilation of Mr. Spring's
 suggestion, — as long as the G.O. is so weak
 as to make it quite clear that the Govt. has
 not accepted Mr. Spring's proposal, but that
 it is quite impractical in the position of
 whether a rope-drawing or a cable road
 should be adopted. The G.O. should be
 accordingly amended.

8.94
 5.5.99

A

The Puzos opening naturally was found quite
 suitable as I have specially noted in Plan 1. The
 well proves that a better light should be shown
 the rigging of a Puzos, or vice versa. Each
 separate installation must of course be separately
 designed. Drawings are not yet ready made!

I have altered the G.O. as directed 3/4/99.

5 A.

Fks

4/5/99

clean proof of narrow gauge.

250
 4

August

RAILWAY.

Government {1899} of Madras. PUBLIC WORKS.

Issue Sharp
 FWS 10/5

Send me up 3 copies
 M

Recd.

1899.

Enclosures

Regd.

Spare copies

G.O., No. 566 Ry., 11th May 1899.

MAY.

Construction of a short Line of Narrow gauge Railway from Salem
 Station to the foot of the steep ascent leading up to Yercaud

Passing orders on certain suggestions of the Consulting Engineer for Railways,
 in connection with the proposal for the — on the Shevaroy Hills.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following papers:—

G.O., No. 1389 Ry., dated the 10th November 1898.

" " 210 W., dated the 23rd January 1899.

Read also the following:—

Note by the Consulting Engineer for Railways, Madras, dated 7th April 1899.

On March 31st I went over the line of country proposed by the Agent, Madras Railway Company, for a short line of narrow gauge railway from Salem station of the Madras Railway through Salem town and civil station to the foot of the steep ascent leading up to Yercaud on the Shevaroy Hills. I was much struck with the suitability of the hill slopes, from the foot of the ghât to Yercaud on the top, for one or other of the wire airways which have now been brought to such perfection in other countries than India. It suggests itself that the Madras Railway Company would be well advised to consider the advisability of making such an airway as a part of their branch railway scheme, in order to be able to book goods through between Yercaud and their Salem station. I see in G.O., No. 210 W., dated 23rd January 1899, that in 1896 a proposal was made to utilise the Periyâr wire ropeway for the ascent to Yercaud, but it was found unsuitable. That however is no reason why a properly designed wire ropeway should be found unsuitable. It is not a sort of thing that can very well be taken down at one place and put up at another; for every detail of it has to be designed to suit the special profile of the country—that is, not only details of the supports, but also of the rope itself the strength and cost of which varies, within limits, with the spans.

2. I find from the Public Works G.O. above referred to that the proposals before Government for giving the Shevaroy Hills access to the plains and to the Madras Railway practically resolve themselves into two, viz., the Malapuram ghât road favoured by Mr. deWinton, estimated to cost 1½ lakhs, and the Salem ghât road, Bayley's, estimated at 3 lakhs. A section of the planters favours the former; but the majority, I understand, favour the latter, not only because their estates lie nearer to it but also because the bulk of their interests is in Salem town, whence also the manure which is so requisite for coffee cultivation can be comparatively cheaply obtained.

3. If my proposals are ultimately adopted it will be possible for Government to confine its expenditure to the Malapuram ghât road, leaving the Salem ghât to the Madras Railway Company's wire airway.

4. The two main sub-divisions of wire airways are the double rope and the single rope systems. In the latter system, which would be quite unsuitable for anything on such a scale as that now proposed, the buckets are hung on a continually moving rope. This system is suitable only for short spans and for short lines, such as those in use in mines and quarries. The double rope system consists of a standing rope on which the cars or buckets run, and a running rope to haul them. There will of course be a pair of ropes for the forward and another for the return journey. The spans may vary from half a mile down to 100 yards, and needless to say the standing rope must be specially designed of sufficient strength for each span, while it would be

uneconomical to use in the small spans the size of rope suitable for the larger spans. Similarly the running rope has to be designed with due regard to the steepness of the slope, for on a steep slope it bears a part of the load.

5. It is unnecessary however that I should enter into a dissertation on the subject of the design of modern wire airways. What is essentially necessary is that, after reading up the subject and so getting a grip of its leading principles, the Engineer should select the best possible location and that the profile of the selected location should be sent to airway experts with a view to their preparing a detail design and submitting an estimate and tender.

6. The Trenton Iron Company, Trenton, New Jersey, U.S.A., make these airways a speciality, and their handbook is a model of what such a handbook should be, giving photographs of several of such works, and drawings of the cars, hoists, and details. Their "Bleichert" system is the one which I would select for the Yercaud ghât which I roughly judge would require a vertical ascent of 2,000 feet in a horizontal distance of 10,000 to 15,000, with spans of from 2,000 feet downwards. I think that without extra expense the straight line which is so very desirable in a wire airway should be obtainable.

7. The Trenton Vale people in their handbook give numerous instances of the work actually being done by various instalments of their airways; 100 tons per hour, 15,000 tons per month, 750 tons per day, 150 tons per day, and so on, in various circumstances. Operating expenses naturally vary very greatly according as the work is done wholly or partly by gravity or by hoisting machinery; rates of 2 to 6 cents per ton mile are mentioned, but naturally these are no gauge of what will be the expense of operating an airway to Yercaud. People now seem content to pay about 30 annas, say 60 cents, per ton per mile, which leaves a margin for hoping that an airway will pay. The present cost of carrying a ton up to Yercaud from the foot of the ghâts being apparently 125 to 200 annas (say 2½ to 4 dollars). I may not be right in these figures; but Shevaroy coffee planters and Yercaud house proprietors can correct me. One great difference between 3 lakhs spent on a road and the money spent on an airway, is that while the former never directly pays maintenance expenses, much less interest on its cost, the latter may be expected, with good design and management, to pay both. The wire airway will be of no use for passengers; but as Mr. deWinton says, in paragraph 10 of his Note dated 3rd December 1898, in the G.O. already referred to, passengers would probably prefer, even if there were a road, to travel as at present, in chairs, by the 7 miles of steep ascent—a transit now done with great ease and facility.

8. I was very much struck with the cost and difficulty of transport under present conditions. Pack-bullocks, ponies and coolies, men and women, cannot carry much of a load on grades of 1 in 6. The coolies who seemed to me to do most of the transport carry loads of, I judge, about 50 lbs. and for this they get, I believe, from 3 to 5 annas, say 3 to 5 pence or 6 to 10 cents, for the 7 mile ascent from bottom to top of ghât. Housebuilding comes expensive when that price is paid for a half dozen of bricks or for a few handfuls of lime, and yet I believe Yercaud houses have all been built with materials so obtained. Grain too, for the labourers on 5300 acres of coffee, all, I believe, or nearly all, comes up in this way. It seems to me therefore that if properly designed and worked, whatever the 2 or 3 miles of wire airway may be found to cost within reason, it ought to pay well.

9. I recommend that the Madras Railway Company do depute an Engineer to obtain the best obtainable profile, and that they then send that profile home to their Consulting Engineer with a view to his obtaining suitable designs and estimates. My own recommendation is that enquiries be made amongst American firms of specialists, amongst others the Trenton Vale Iron Company, because so far as I can ascertain no British firms have made so much of a speciality of this particular class of work, and there is no good in entering on an enterprise of the sort without obtaining the advantage of all the experience that is obtainable in regard to every petty detail involved in it.

FRANCIS J. E. SPRING,
Consulting Engineer for Railways.

7th April 1899.

No. 566 Ry., 11th May 1899.

4
ORDER—No. 566 Ry., dated 11th May 1899.

The Consulting Engineer's suggestions will be considered in the Public Works Department. They should also be forwarded to the Agent, Madras Railway Company, for consideration. Before accepting them Government will be glad to receive any expression of opinion which the Shevaroy Planters' Association or which residents in Yercaud may have to offer in regard to Mr. Spring's suggestions; and also any statistics of weight of goods carried, and of the cost of carriage, whether up or down the ghât, which residents of the Shevaroy Hills may be in a position to put forward.

(True Extract.)

F.R.S.

Under-Secretary.

To the Public Works Department, General Branch.
" Agent and Manager, Madras Railway.
" Honorary Secretary, Shevaroy Planters' Association.
" Residents in Yercaud through the Collector of Salem.
Editors' Table. 29/5/99.

Despatched on 18/5/99.

Exd. P. Seetharam.