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# MADRAS RECORD OFFICE

## Government of Madras

Public works DEPARTMENT

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| G.O. No. | 1784-85 | Press |
| ~~B.P. No.~~ 41-43 | | ~~Mis.~~ |
| Dated | 3-7-1874 | ~~195~~ . |

***Not to be folded or roughly handled***

PUBLIC WORKS DEPARTMENT,
OOTACAMUND, *3rd July* 1874.

No. 43. No. 1,735.

FROM

COLONEL G. W. WALKER, R.E.,
*Secretary to the Government of Madras,*
*Public Works Department,*

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
*Public Works Department.*

RAILWAY, No. 6.

SIR,—With reference to the letter from the Government of India, under date the 24th February 1873, No. 302, G. R., I am directed to forward herewith a letter from the Consulting Engineer for Railways, with its accompaniments, regarding the introduction of a system which would afford a satisfactory means of communication between passengers and Railway servants in moving trains.

2. It will be observed that Mr. Winter, the Madras Railway Company's Telegraph Engineer, has just perfected a scheme, which will be brought into operation on the Madras Railway, for an improved electrical mode of communication, the details of which are fully given in the papers which accompany. The superiority of Mr. Winter's invention over any system now in use is admitted by the Railway officials who have had an opportunity of witnessing the working of the apparatus, and appears to the Government to be sufficiently established. And in submitting for sanction an estimate of Rupees 32,441 for providing 3,098 vehicles with such apparatus, if approved, the Consulting Engineer points out the necessity of rendering the adoption of the improved means of intercommunication compulsory upon all Indian broad-gauge Railways, as contemplated by the Government of India in their letter under reply.

3. The intention at present is to confine the means of communication only between guards and drivers; and although the Agent is of opinion that there is no need for affording passengers the same advantage, His Excellency the Governor in Council agrees with the Consulting Engineer in the opinion that the full benefit of Mr. Winter's invention will not be secured if its operation is to be restricted as proposed. Should this view be concurred in, the necessity for passing a short Act, rendering it penal on passengers to avail themselves of the means of communication thus provided without sufficient cause, will be manifest; and it will be a matter for consideration whether, in the first instance, the provision of the apparatus should not be confined to first and second class carriages.

4. In conclusion, I am to invite attention to the remarks in paragraph 7 of the Consulting Engineer's letter regarding the results which have attended the cord system of communication.

I have the honour to be,
Sir,
Your most obedient Servant,
(Signed) G. W. WALKER, Colonel, R.E.,
*Secretary to Government.*

No. 422.

**MADRAS RAILWAY.**

AGENT AND MANAGER'S OFFICE.

Madras, 15th May 1874.

From

R. A. Clerk Esqre

*Agent and Manager.* M. R. Co.

To

Lt Col. J. H. M. Shaw Newark, R.E.

*Consulting Engineer for Railways.*

Sir,

With reference to the discussion that took place at the meeting of the Stores Committee held in my office on the 10th of March last, I have the honour to send you herewith a copy of the acting Chief Engineer's letter No 242 of the 10th instt and also a copy of the Specification of Mr Hunter's improvement in Electrical communication in trains, with the Drawings and Estimates therein referred to.

2 I also enclose you for submission (in duplicate) to Government for approval an Estimate, in the usual form, amounting to Rs 32,441, and I request that sanction may be communicated to me for the expenditure of that sum, which is the estimated cost of fitting 3098 vehicles with the means of intercommunication in trains between:—

1st Passengers and Guards

2d Front and rear Guards

3d Front Guard and Driver

3. We do not propose however at present to afford to Passengers the means of communicating with the Guards, and if the Government considers it essential that means should eventually do so, I have the honour to point out that it will be necessary that a short Act should be passed making it penal for any passenger to make use of the means of communication "without reasonable and sufficient cause".

4. With reference to this I have the honour to enclose for the information of Government a copy of the 22d. Section of the English "Regulation of Railways Act of 1868".

5. In my opinion however it will not be necessary to afford to Passengers on the Aberdare Railway, the means of stopping a train, and if the shortness of the runs between our stations is borne in mind, together with the fact that no case has ever yet occurred on this railway in which such a provision would have been of the slightest use, I trust that the Government will not insist upon the provision being made.

6. As regards the question of funds to meet the proposed outlay it is suggested that the expenditure on account of Stores

MADRAS RAILWAY.

*From*

The Agent and Manager.

*To*

The Consulting Engineer

for Railways.

*Dated* 187

*Recd.*

No.

MADRAS RAILWAY.

From

The Agent and Manager.

To

The Consulting Engineer

for Railways.

Dated 16th May 1874

Rec'd 16. " " "

No. 4532

Submitting for the decision of Govt Directors Report upon the Specification of the Engine Governor = ing Apparatus for the Locomotive Engines & Drivers & Guards Vans of Mail Trains.

P.W. 3054/74.

P.W. 2330 July 1874

Madras Railway Company
Chief Engineer's Office
Madras 10th April 1874.

No 242.

The Agent & Manager,

Dear Sir,

In accordance with the resolution passed at the Committee held at your Office on 10th March, and your letter No. 2766 of 11th idem, I have the pleasure to forward herewith for the information of Government the Specification (in original) of Mr. Hutter's "improvements in electric Communication in Trains," together with his Estimates for two methods of fitting the electrical apparatus described in the Specification to the existing rolling stock of the Madras Railway.

2. The drawings referred to in the Specification are also forwarded herewith.

3. The first estimate refers to the system inspected by yourself and others of the Company's Officers, with the Consulting Engineer, on the 18th February last and provides a means of communication between

1st Passengers and Guards

2d Front and rear Guards

3d Front Guard and Driver.

4. The second Estimate refers to a system for simply supplying Guards and Passengers with a means of communica

Specification of improvements in electrical inter-communication in Trains.

This invention has for its object improvements in the means by which electrical inter-communication may be established in trains.

The essential part of the invention consists in certain improvements & alterations to the existing couplings whereby the ordinary coupling up of a train will serve to complete the electrical communication throughout.

For this purpose I utilize the side or safety chains as means of communication, the whole circuit being completed between carriage and carriage by their means. This is effected in the following way.

1st I coat that part of the hook of each chain which is liable to bear against the hook of the next carriage with a metal or alloy hard and not easily oxidized; gun metal is preferred for this purpose.

2d Two wires, insulated from each other, run from one end of the carriage to the other. These two wires are prolonged at each end of the carriage, and at each end they run through loops fastened to the buffers and are connected to the hook at the end of the chain. The circuit thus formed runs along the connecting wires and through the hooks on one side of the carriages and back along the connecting wires and through the hooks on the other side of the carriages. This method

with the Brakes.

5. In addition to the ordinary metallic connections between the hooks shown may be provided for the purpose of Passengers communicating with the Guard, but the use of these connections for general purposes of this kind is not advisable as the Guard's Engineer, that is not desirable to provide for direct communication between Passengers and the Guard.

6. The particular method of connecting the wires adopted for the purpose of making the electrical connection between the hooks of the chains forms no part of my invention. I have proposed as suitable for the purpose that both wires should be connected to the hook of one chain, which is easily adaptable to the existing chains and is not costly, the Patent connecting to No. 32,441.

P.N. 3034/74
2

Yours faithfully
Geo. H. Haines
Agent for Patentee

True Copy
H. H. Lake
Agent for Patentee

Geo. H. Haines
Patent Agent
Nottingham.

P.N. 3034/74.
Dec. 3rd July 1874

of connecting the carriage is shown in Fig 1.

A second method is to join the wires connected with the hooks of the two side chains at each end of the carriage together, making one insulated circuit from end to end of the train and trusting to the wheels and rails, aided by the centre chains for the return circuit. This method has advantages in simplicity and greater certainty of the integrity of the insulated half of the circuit, but the great disadvantage is the danger of a bad connection between the carriage and the axles of the wheels & in fact there is danger of a bad earth which more than compensates for the greater certainty of the continuity of the insulated circuit by means the less this method might be preferred for the sake of its simplicity. Fig 2 shows this method of connecting the carriages, the return circuit is not shown and must be understood.

Fig 3 shows the method I prefer of carrying the connecting cord along the chain and joining it to the hook at the end. The cable shown in the figure is formed as follows. A piece of rope is first well soaked in tar, the strands are then slightly opened by untwisting, and copper wires, having first been well tarred are laid in the grooves of the rope between the strands, they are then laid helically along the rope, which is then tightly wound by well tarred tape; and on this may a strong durable and flexible cable is formed which is run through eyes fastened to the links of the chain. The cable is bound tightly by an eye both to the shank of the hook, and finally the wires are twisted together into a rope and soldered or otherwise fastened into a hole in the shank. The object of fastening the cable to the shank of the hook is to prevent any sudden strain on the joint between the wire and the hook which is of course the weakest part.

Coating the inside facing of the hook with gun metal, though very desirable especially on long trains, is not absolutely necessary. Its advantage over trusting to the mere contact of the iron hooks one against the other are,

1st That though metallic contact might be established between the iron hooks, yet under any circumstances there would be much greater resistance to the passage of the current between surfaces of iron than between surfaces of a less oxidizable metal.

2d Gun metal, being brighter when clean, more easily shows any dirt or oxide with which it might have got contaminated, and it indicates clearly that part of the hook which it is desirable to keep free from tar paint or dirt.

The buffer planks of the Engines are generally of iron boiler plate, and further it very generally happens that the Engines have no side or safety chains. There is of course no reason whatever why safety chains should not be fixed to Engines, and for the purpose

of uniformity in the method of electrical coupling set forth in the specification it would be well to have all Engines fitted with side chains. The best manner of the side chain should be inserted from the side frame work of the Engine, and this can be done easily and economically by boring the holes with wood and putting a wooden washer behind in the manner shown in Fig 4.

An electrical communication being established from either of the ways shown respectively in Figs 1 and 2, and by the means specified, any existing form of communication between the Engine and the Guard may be used for the purpose of signals, or for working the whatever system of signals be used however, the following modification will be found a convenient method of effecting the purpose.

Place the Engine cell containing the carbon and zinc plates in a vessel containing sand moistened with sal-ammoniac solution. Further to diminish the extra resistance that would otherwise be caused by the glass vessel the Engine cell by a cylinder of glass plate instead of only using a glass the sand may be covered with a layer of felt or other substance with holes pierced in it for supplying the solution and for the escape of gas or other fluid. The bottom of

pitch will prevent any spilling of the contents. A sectional view of the cell is given in Fig 5. This cell has a very high electromotive force, small internal resistance, and is exceedingly clean portable and durable, and will therefore be very valuable for many purposes other than that for which I have specially designed it.

Should it be considered advisable only to give the passengers power to attract the attention of the Guard, and to leave it to his discretion whether or not to stop the train, I recommend the following simple arrangements.

The general arrangement is shown in Fig 6. One Van must always be placed between the passenger Carriages and the Engine, and one Van always in the rear of the train. The principle of working is by means of opposing batteries so far as the front and rear Vans and the carriages between them are concerned, but the front Van is able to speak to the Engine by the ordinary method of sending a current through to his bell, thus no battery is required on the Engine; and further, the same battery which in the front Van is used for the opposing system is used also for communicating with the Driver. Whenever a passenger makes contact between the two wires running along each side of the train by means specially provided for the purpose both the Guards bells are rung. The batteries in the Guards

Vans which under ordinary circumstances oppose each other, and hence are inactive, immediately become active, and bring their respective bells in contact being made between the two wires in any part of the train.

Fig 7 shows the connections in each brake Van. It will be seen that besides the bell there are two keys and a switch. One key is used for communicating with the other Guard, and one key is used for communicating with the Driver. The switch handle has three positions and their instructions regarding it are very simple, namely if the Van in either front or rear the handle must be turned towards the middle of the train, but if the Van is in between two other Vans the handle must be placed upright. Things being thus arranged the train may be run in either direction, the Engine being put on either ends of the train, and carriages may be added or taken off without any alteration being made in the arrangements.

It has been supposed hitherto that the plan of connecting the carriages first described and shown in Fig 1 is used, and in this case it is necessary that the Vans should never be reversed on the turn-table. If all the Vans of a train are reversed it does not matter, but if there is any chance of a reversed and non-reversed Van being joined to the same train it is advisable to have a second or battery switch, so that the same poles of the batteries may be towards the same side. The instructions regarding this second switch may be made equally as simple as those respecting the other. Or in lieu thereof, they may be that the handle must always point towards the Engine. In the second mode of connecting carriages the reversal of Vans does not matter, and hence the simplicity of this method as compared with the first. One most likely there is little or no fear of the brake Vans being reversed, provided definite instructions be given on the subject, but when there is danger of such reversal, and when the complications involved in an additional switch is thought undesirable, it will be best to join the centre draw bars together by a wire running underneath the carriage, and to trust chiefly to them for the return circuit. Of course the couplers between the centre couplings and draw bars may be improved by means of pins metal or other facings in the same way as are the hooks of the side chains. The inventor has found that, at all events in India, the flow of making earth through the bearings to the axles, and thence by means of the wheels and rails is unreliable.

The connections in the Guards Van according to this plan are shown in Fig 8, and the same remarks as to the position of the switch handle are applicable in this case as in the plan shown in Fig 7.

In the arrangements that have been

described it has been taken for granted that the

1st The passengers should only be able

to communicate with the Guards

2d That the rear and front Guards should

be able to communicate with each other

3d That the front Guard should be able

to communicate with the Driver

If only the first and third of these

is considered necessary, a great simplification

may be made by abandoning altogether the

opposing battery system and placing the

switch handle of the leading Van always

away from the Engine, and the handle of all

the other Vans upright. The bell being fixed

to the Guard in the rear Van or any of the passengers

are able to call the attention of the Guard

in the leading Van, and the Guard in the

leading Van will be able to communicate

with the Driver, but the front Guard will

not be able to speak to the rear Guard. In

this case only one battery will be employed,

viz that in the front Van, and it is obvious

that there need be neither any battery switch,

or even any order as to the non removal of the

Guards Vans.

But in many cases it is considered

only necessary that all, including passengers

and Guards, should have alike the power

to call the Driver's attention, as in the Coal

System.

In this case the whole arrangement

becomes simple in the extreme, one battery

will be required on the Engine, but no other

is needed at all; there will be no necessity

for having any rule about leaving a free

Van between the Carriages and the Engine,

no switches or bells will be made in the Vans

no instructions need be given as to the con-

nection of any of the rolling stock, and

the expense will be reduced to a minimum.

The modus operandi will be understood

from Fig 9.

One pole of the battery on the Engine

is joined to one of the chains, the other pole is

joined to one terminal of the bell, the other

terminal of the bell being joined to the other

chain. As long as the chains are insulated

from each other the circuit is discontinued

and the bell will not ring, but directly the

two wires connected with the chains are

brought together in any part of the train,

the Engine bell will ring.

As regards the bells generally I

find it preferable to use light hammers,

since they are not liable to be thrown

against the bell by the shaking of the train

and as repeated strokes, what is lost

in the weight of the hammer is gained in the

velocity of the stroke, so that there is no

great difference in the amount of sound.

It is very important that the bell should be

placed about the level of the Drivers

or Guards ears, and that the rim of the bell

should be horizontal. There is no difficulty

in making the same magnet liberate a

visible signal, and this is especially ne-

cessary on the Engine when the train is

running at high speeds. A good plan is to

have a circular frame, half of which is filled with red glass or tale, and the other half may be either filled with coloured glass or be open. Only half the lens is exposed, and under ordinary circumstances the coloured or open half fills the upward space. On a signal being given the lens turns on its axis one half round, and exposes the red glass or tale, so that a light behind them must be seen under the signal conspicuous

Break away couplings should not recommended coupling be used automatically by causing the chain when hanging vertically to allow a small lever connected with the uncoupled wire attached to it to be caught with a stud connected with the uncoupled wire on the other side. The lever will under ordinary circumstances be pulled away from contact by the chain which is hanging suspended by being attached to the chain of the next carriage. The studs should be moveable so that they may be moved out of the way in the case of the rear chain of the rear carriage. This would be unnecessary in the arrangement shewn in reference to fig 6.

Even when it is not so stated, all the arrangements specified are, by obvious minor variations, applicable to the plan of connecting the carriages shewn in fig 2 — the centre chain underneath taking the

the place of four such oblique wires and six vertical connecting wires.

Geo. F. Hunter
Telegraph Engineer

Preconium
17th March 1874.

True Copy
H. F. Lewis
Agent to Abbenruger.

F.W. 3034/74
3

Reg. d 30 July
In S. V. 41/74

Section 22 of the Regulation of Railways Act of 1868.

III. Provisions for safety of Passengers.

"22. After the first day of April one thousand eight hundred and sixty nine every Company shall provide and maintain in good working order, in every train worked by it in which a guard is passengers, and travelling more than twenty miles without stopping, such efficient means of communication between the passengers and the servants of the Company in charge of the train as the Board of Trade may approve. If any Company make default in complying with this section it shall be liable to a penalty not exceeding ten pounds for each case of default. Any passenger who makes use of the said means of communication without reasonable and sufficient cause shall be liable for each offence to a penalty not exceeding five pounds."

Extract from a letter of the Board of Directors of the Madras Railway to their Agent No. 512 dated 20th June 1873.

× × × × × ×

9. On receipt of your letter No. 1048, in para 11 of which you state that you have been desired by the Government Consulting Engineer to apply to the Board for such information as they might be able to supply, with reference to the several approved systems of communication between passengers and railway servants in moving trains, a letter was addressed to the Consulting Engineer asking him to be good enough to obtain for transmission to Madras, descriptions of some of the new

systems

(W. 3034 1/2 / 5 / 74.

P.G.D. 3rd July 1874
In B. No. 41.

systems which have recently been introduced upon English railways, and I am now directed to forward herewith copy of Mr. Hawkshaw's letter of the 7th instant, in which he states that the card and bell system has been most generally adopted, and that it is probably the best plan now in operation. His opinion, however, is at variance with that expressed by Captain Tyler in his report to the Board of Trade, a copy of which shall be forwarded to you, with any further information the Board are able to obtain. I also transmit the pamphlet received with Mr. Hawkshaw's letter, which describes most of the known systems, especially the electrical modes of communication introduced by

Mr. Preece and Mr. Walker. Of these latter, especially, we believe that Mr. Winder, during his stay in England, has gained experience, of which advantage can be taken by you and the other officers of the Company before suggesting, as requested, for the consideration of His Excellency the Governor-General in Council, the system best suited in your opinion for adoption in India.

/True Extract/

/Illegible/

Lt. Col. RE

Consulting Engineer for Railways

E. Bell Esq.

P.W. 3034/74
11/11

P.W. 732 July/74
In B.P.W. 41.

Extract from a letter of the Board of Directors of the Madras Railway to their Agent No. 513 dated 18th July 1873.

× × × × × ×

We are informed that the Board of Trade are not fully satisfied with any of the methods at present invented, and that they intend waiting another six months to see if any improved plan is introduced. It may probably be thought desirable therefore to defer for a time the consideration of the question as to what system is best suited for general adoption in India.

/True Extract/

Alexander Lieut Col R.E.
Consulting Engineer for Railways

P.W. 8034/94.
15

14-7-94. July/94
Ln 18 No 41.

Madras Railway

C/275/280. Traffic Manager's Office

Madras 3rd May 1893.

To The Acting Agent and Manager
M. R. Co.

Dear Sir,

Communication between Passengers and Railway Servants.

Order of Government No 952 dated 29th March communicated in Consulting Engineer's letter No 343 dated 8th ultimo.

The Locomotive Superintendent informs me that the apparatus sent out by the Board is what is termed the "cord system of communication" as between the Engine Driver and Guard, and would not therefore answer the conditions required in the Order of Government, viz, "a satisfactory

means

"means of communication between
"Passengers and Railway Servants
"in moving trains".

The difficulty of applying the card system of communication to this Line is, that, with one exception only, all our Trains are mixed (Passengers and Goods), necessitating frequent shunts throughout the journey, and the work of releasing and connecting the card communication, where a shunt has to be made, would entail considerable delay, if indeed it could be satisfactorily carried out at all.

It would be necessary, I presume, before even this system could be introduced, to fit all vehicles with the necessary brackets to hold the card, but unless all other Railway Companies, with whom we have working arrangements, adopt the same plan, it would be useless for this Company to introduce it single handed, as the means of communication in a Train would be at once destroyed by attaching a vehicle belonging to a Foreign Company which has not adopted the same system of communication, and in our case it would be difficult to select a Train to which one or more Foreign vehicles are not attached, from the fact that, as already stated, all Trains are mixed.

The question is no doubt an important one, but it seems to me only capable of satisfac-

- tory

" - tory solution by the combined
" action of the Directors of the
" several Companies.

Yours Truly
(sd) H.B.E. Church
Traffic Manager
/ True Copy /
(sd) William Barton Wright
Acting Agent and Manager
/ True Copy /

Recd 2 Consulting Engineer for Railways

Dimt Calls Rly / W. 3034/74.
16/74.
Govt. Dirs Jul 9/74
Ln Mtc 4/

Extract of letter from the Secretary to the Agent
dated London 9th May 1873 No 86

Communication between passengers & the Company's servants

The clause of the Regulation of Railways
Act 1868 (Part III S. 22) which relates to this subject
is as follows " After the 1st day of April 1869, every
"Company shall provide, and maintain in good
"working order, in every train worked by it,
"which carries passengers and travels more
"than 20 miles without stopping, such efficient
"means of communication between the passengers
"and the servants of the Company in charge
"of the train as the Board of Trade may approve"

As the trains on this line stop
at every station, and the distance between
stations in no case exceeds 15 miles (of which
there is only one instance) the Directors
trust that the Government of India will
not render compulsory on this Company
the adoption of a regulation from which
they would be exempt in this Country.

/ True extract /
Wm Callaghan
Chief Clerk

P. W. 3084/74
7.

P. Sec. Rly.

Dg. d 3rd July/74
En 18 N.° 41

No.

GREAT SOUTHERN OF INDIA RAILWAY.
AGENT'S OFFICE.

NEGAPATAM, 186

*From*

THE AGENT.

*Great Southern of India Railway,*

*To*

SIR,

Railway Department. CONSULTING ENGINEER'S OFFICE.

No. 305

From

LIEUT.-COLONEL J. H. M. SHAW STEWART, R.E.,

*Consulting Engineer for Railways,*

To

COLONEL G. W. WALKER, R.E.,

*Secretary to Government,*
*Public Works Department.*
*Fort Saint George.*

SIR,

Endorsement No.

Upon receipt of the Order of Government dated the 27th March 1873, No. 962, the attention of the Railway Authorities in this Presidency was drawn to the letter from the Government of India dated the 24th February 1873, No. 302 G.R., and they were asked to obtain from their Boards of Direction all available information

on the subject, and to suggest if possible a system which would afford a satisfactory means of communication between passengers and the guards and drivers of trains in motion.

2. In reply the Agent of the Great Southern of India Railway Company forwarded an extract from a letter received ×No. 86 dated from his Board, which D.S. 9th May 1873. have the honour to enclose.

The Directors observe that the English Railway Act of 1868 requires the means of communication to be provided only in passenger trains which travel more than 20 miles without stopping. They point out that

that the trains on their line stop at every station, and that the distance between stations in no case exceeds 15 miles; and they therefore trust that the Government of India will not compel them to adopt a system from which they would be exempt in England.

3. From the Directors of the Madras Railway Company the subject has received full consideration, as will appear from the enclosed extracts from letters ×No. 512 dated 20th June 1873. addressed to their Agent; and ×No. 513 dated 18th July 1873. in accordance with the Boards instructions Mr. Winter, the

the Company's Telegraph Engi-
neer, has been for some months
employed in devising an im-
proved electrical mode of c.
communication. A letter from
the Agent herewith enclosed,
will show that this able c.
electrician has now perfected
his scheme, and that it is pro-
posed to bring it into oper-
ation upon the Madras Railway.

In Mr Winter's
specification the details are
so fully given as to render it
unnecessary to say more than
that the desired means of c.
communication are obtained
by utilising the side or safety
chains with which every carriage
and

× No 422 dated 15 May 1874 with enclosures.

and wagon is supplied. The
principal recommendations of
the invention are, first, that
it can be applied in an in-
expensive manner to existing
rolling stock; and, second,
that vehicles can be taken
from a train, or added to
it, without interfering with
the efficiency of the apparatus,
the electrical communication
being established at once by the
mere act of hooking the couple-
ing chains. I have had
an opportunity of seeing the
apparatus at work in a c.
train, and I have no hesitation
in saying that it worked in
a

a most satisfactory and efficient manner; being in my opinion decidedly superior to any proposed mode of communication which has yet come before the public.

5. Along with the description of the apparatus an estimate is forwarded by the Agents, amounting to Rupees 32,41,41 and providing for furnishing 3098 vehicles with means of intercommunication according to Mr. Winter's system. In recommending this estimate for sanction I need scarcely observe that the adoption of

of a system, however perfect, by one Company will be comparatively useless, unless its adoption is made compulsory upon all the Indian broad-gauge Railway Companies, without exception. In the Government of India's letter of the 2nd February 1873 this is alluded to, and it is stated that His Excellency the Governor General in Council will be prepared to call for the general adoption on all Indian railways of any thoroughly satisfactory system that can be devised.

6. It will be observed, from paragraph 3 of the Agent's letter

letter, that he proposes at present to furnish the means of communication only between guards and drivers, not between passengers and guards. Mr. Elwon states that in his opinion it is not necessary to afford passengers on the Madras Railway the means of stopping a train, in consideration of the shortness of the runs between stations, and of the fact that no case has yet occurred in which such a provision would have been of any use. I am obliged to differ from the Agent upon this point. To enable the

guard

guards of a train to communicate instantaneously and effectually with the driver will without doubt be an improvement upon the present system; but the full benefit of Mr. Wordell's invention will not be reaped unless passengers are able to communicate with the guard. The mail trains on the Madras Railway run, in many cases, more than 20 miles without stopping; and under those circumstances, passengers should, if possible, have the power of communicating with the guard in

cases

cases of emergency. If this view commends itself to Government it will be necessary, as pointed out by Mr. Elwin, that a short Act should be passed making it penal for any passenger to make use of the means of communication without reasonable and sufficient cause". If it be deemed undesirable that the power of stopping a train should be abruptly placed in the inexperienced hands of every native passenger indiscriminately, I would suggest that first and second class carriages might

might alone, at first, be furnished with the apparatus.

With regard to the "cord" system of communication, it will be within the recollection of Government that on the 3rd September 1869, I reported that the Agent of the Madras Railway Company had applied to his Board for fifty sets of the apparatus. These were received in due course, but it was found that the "cord" system could not be used upon the Madras Railway as an efficient means of communication. The reasons for this are explained by the Traffic

Pro: of Govt.
2nd Oct. 1869.
No. 3187

Traffic Manager on the enclosed letter, addressed to the Agent. The apparatus has been tried upon several occasions with special passenger trains, and under those exceptional circumstances it answered well; but for general purposes it is almost useless. Even under the most favourable circumstances, however, there are strong objections to the use of the "cord" system, and I understand that it is now generally condemned in England. Many instances have occurred in which it has completely failed to work properly; and upon a recent occasion the alarm

× No 275/280 dated 3rd May 1874.

alarm gong was accidentally sounded in an express train, and it is supposed that the stretching of the cord on a rising gradient of 1 in 200, and in passing round a curve on the outside of which the communication cord was, may have been the means of sounding the gong.

I have the honour to be,
Sir,
Your most Obedt. Servant,
Macdonald
Supt. R.R.

Madras
20th May
1874
Rec'd 3
Read

Sons Ecc for Railways

P. W. D. 1766

Proceedings of the Madras Government

Under date the May 1874

Read the following

From the Consg Engineer

for Railways.

Hereunder No 305 of 20th. May 1874

Ordered that

these papers be forwarded

to the Government of

India.

AC. No 71

To The Consg Engr for Railways.

To The Secretary to the Government of India.

Sir,

With reference to the letter from the Government of

Pub: Works Dept. Rly. Branch.
RAILWAY DEPARTMENT.
No. 3034.

From

The Consulting Engineer
for Railways,

To

The Secretary to Government,
P. W. Department,
Fort Saint George.

Dated 20th May 1874.
Recd. 21st do
Enclosure.
No. 305

Lieutenant Colonel Pilcher's letter from Major
Pilcher dated 12th May 1874.

Public Works Department
Railway Branch
No. 1766. 3-7-74.

of India under date the
24th February 1873, No 302
G. P. Jaun directed to
forward herewith one from
the Consulting Engineer
for Railways with its
accompaniments regard-
-ing the introduction of
a system which would
afford a satisfactory mean
of communication between
passengers and Railway
Servants in moving trains.

It will be observ-
-ed that Mr. Walker, the
Madras Railway Company's
Telegraph Engineer has
first perfected a scheme
which will be brought
into operation on the
Madras

Madras Railway for
an improved electrical
mode of communica-
-tion, the details of
which are fully given
in the papers which
accompany. The
superiority of Mr. Hunters
invention over any
system now in use
appears to commend
itself to the Government
and Railway officials
who have had an
opportunity of witness-
-ing the working of
the Apparatus.
And in submitting
for sanction an
Estimate

Estimate of Rupees 32,441
for providing 3098 Vehicles
with such apparatus,
if approved, the Consult-
-ing Engineer points
out the necessity of
rendering the adoption
of the improved means
of intercommunication
compulsory upon all
Indian broad guage
Railways, as contem-
-plated by the Govern-
-ment of India in
their letter under reply.

The intention
at present is to confine
the means of commu-
-nication only between
Guards and Drivers;
and

and altho' the Agent
is of opinion that there
is no need for affording
passengers the same
advantage, His
Excellency the Governor
in Council agrees
with the Consulting
Engineer in the opinion
that the full benefit of
Mr Winters invention
will not be secured
if its operation is to
be restricted as proposed. &c.
Should this view be
concurred in, the ne-
-cessity for passing a
short Act rendering
it penal on passengers

to

to avail themselves of the means of Communication thus provided without sufficient cause will be manifest, and it will be a matter for consideration whether, in the first instance, the provision of the apparatus should not be confined to first and second Class Carriages.

In conclusion I have to invite attention to the remarks in Para 4 of the Consulting Engineer's letter regarding the results which have attended the

the Coal system of Communication.

Encl.

To Govt of India
with 30 Copies of the Rep. No 1784 Statements & 7 Sketches.
11/7/74

" Consulting Engr Ditto & Pubs. with 11 S.C.
11/7/74

3034

Govt. of 1874 Madras.

PUBLIC WORKS.

The Consulting Engr. for Rlys

&

Secy. to Govt. of Madras

Received from the Chief Engineer for Railways on 5th January 1875.

Rec'd. Encl. 7 &
7 copies of Cases

Dated 2nd July 1874. No. 1782 & 1785

Nos. 41 - 43.

Awards in moving trains -

Submitting copy from the Consulting Engineer for Railways regarding the introduction of a system which would afford a satisfactory means of communication between passengers and Railway servants in moving trains -

Communication between Passengers and Railway Servants - Passing orders on a letter from the Consulting Engineer for Railways submitting correspondence from the Agents of the Madras and Great Southern of India Railways regarding the introduction of a system which would afford a satisfactory means of communication between passengers and Railway

Recd. 6 Jan. 22 May 1875 R. Hope