

(1) Number of pages _____

(2) Date of repair _____

(3) Initials of the Referencer _____

MADRAS RECORD OFFICE

Government of Madras

Public Works DEPARTMENT

G.O. No.	430-31	Press	<i>Original</i>
B.P. No.		Mis.	
Dated	29-5-	195	6874

Not to be folded or roughly handled

No. 574. Read the following letter from Lieutenant-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, dated Madras, 23rd April 1874, No. 246:—

In acknowledging the receipt of the Proceedings of Government, dated the 21st March 1874, No. 786, I have the honour to state that I have delayed the submission of the report therein called for, from the expectation that Mr. Stoney's cooling apparatus would have been before this date satisfactorily and conclusively tried.

2. A trial of it was made during the last week in March, by Mr. Going, the Chief Engineer of the Madras Railway Company, and Lieutenant Coaker, Deputy Consulting Engineer. Upon that occasion it was successful in reducing the temperature by a few degrees, but some slight constructive defects in the apparatus prevented it from working up to the results obtained by Mr. Stoney in a private trial.

3. The apparatus was again tested on the 13th and 14th instant, when I accompanied the Agent and the Chief Engineer to the North-West Line for the purpose of the experiment. Upon this occasion another description of cooling apparatus, designed by Mr. Boodle, the Acting Locomotive Superintendent of the Madras Railway, was tried, as well as Mr. Stoney's.

* No. 347, 22nd April 1874, with enclosure and plan. Agent of the Madras Railway Company, containing a description of Mr. Boodle's

apparatus, and giving in general terms the result obtained. The maximum reduction in the temperature obtained during the experiment was in the carriage fitted with Mr. Boodle's apparatus, where the thermometer fell ten degrees, viz., from 104° to 94°. This result was obtained under exceptional circumstances, as the carriages were attached to a special engine, which was running at greater speed than the ordinary trains, and which did not halt at every station. At the stations where the engine stopped for water, the temperature in the cooled carriage rose rapidly during the halt; until, on starting again, the thermometer stood little if at all below one in an ordinary carriage.

5. Mr. Stoney's apparatus again failed to work up its private trials. It is with much regret I have to report this, as I am aware of the very great amount of time and patience which that gentleman has devoted towards perfecting his invention. So far as I am able to judge, the principle of the apparatus is thoroughly good and sound, and its comparative failure is again due to slight defects in the constructive details. These defects are, I believe, entirely attributable to the heavy nature of Mr. Stoney's engineering duties. For some months past he has been in charge, not only of the new Cheyaur Bridge, but also of the open line between Arconum and Cuddapah. I entertain no doubt that he will be able to make his apparatus more perfect, but I agree with the Agent in thinking it unlikely that he will effect a greater reduction in the temperature than was attained by Mr. Boodle's apparatus at the recent trial.

6. In the enclosed letter Mr. Elwin states that he does not consider that the results obtained will justify an outlay of Rupees 150 per vehicle, that being the estimated cost of applying Mr. Boodle's apparatus. He draws attention to the different character of the heat experienced in this Presidency from what is met

with in the north of India. He also points to the facilities afforded on the Madras Railway to passengers of all classes for making their journeys by night; and he expresses his conviction that the addition of the proposed apparatus would prove a source of inconvenience to the majority of travellers by rail.

7. After full consideration of the subject, I am bound to state my opinion that little or no advantage would accrue to the travelling public in this Presidency from the use of any description of cooling apparatus, and that the expense of attaching them to the railway carriages would be in great measure thrown away. Experience has shown that every apparatus which has been tried fails to produce any beneficial effect in places where the atmosphere is saturated with moisture. The area on the Madras Railway where the apparatus could be favourably used is thus restricted to the North-West Line, and to the portion of the South-West Line between Arcunum and Pothanoor; and I agree with the Agent that the facilities afforded to the public for travelling by night on these parts of the railway are such as to render the provision of the cooling apparatus unnecessary. And in dealing with the question it should be borne in mind that the heat experienced in this part of the Peninsula differs greatly, both in nature and degree, from that which has to be encountered in the north of India.

8. With regard to the proportion of the travelling public who would be likely to appreciate the provision of a cooling apparatus, those who have made the trial in other Presidencies, and with whom I have had an opportunity of discussing the subject, have been almost unanimous in condemning it. Upon the occasion of the recent experiment on the North-West Line, there were six persons present, of whom I believe I was myself the only one whose comfort was increased when in the cooled carriage. And during the halts at stations, when the apparatus ceased to work, the stillness of the atmosphere in the closed carriage became almost unbearable. In this respect, as above mentioned, we were at an advantage over ordinary travellers, as our train stopped at very few stations, and when in motion was running at a speed which materially helped the action of the apparatus.

From R. B. ELWIN, Esq., Agent and Manager, Madras Railway Company, to Lieutenant-Colonel J. H. M. SHAW-STEWART, R.E., Consulting Engineer for Railways, dated Madras, 22nd April 1874, No. 347.

With reference to your letter of the 25th ultimo, No. 233, with which you forwarded to me a copy of the Proceedings of Government, No. 786, dated the 21st idem, I have the honour to forward, for submission to Government, a descriptive report, accompanied by a drawing, of the carriage cooling apparatus invented by Mr. E. C. Boodle, this Company's Acting Locomotive Superintendent.

2. On the 13th and 14th instant, I had the opportunity of testing in your and Mr. Going's Company the value of Mr. Boodle's apparatus, and though it succeeded in reducing the temperature from 102° to 92° on the 13th and from 104° to 94° on the 14th, a reduction of ten degrees in each case, I am not of opinion that the advantages so obtained are sufficiently great to justify the heat which we have to contend with in this Presidency can hardly be compared with that in Bengal and the North-West Provinces, where I am informed that it is unsafe to travel by day trains during the hot season of the year.

3. I would also venture to remind the Government that at least 90 per cent. of our first-class passengers travel by the night trains, and that the opportunity is afforded to second and third-class passengers also to travel by the night trains, so that it appears to me that there is no real necessity for the introduction of cooling arrangements on the Madras Railway.

4. I have discussed the subject with numbers of people, and am led to the conclusion that, under the present arrangement of our train service, tattied carriages would not be appreciated. You are aware that during our experimental trip on the 13th and 14th instant neither Mr. Going nor I could remain in the carriage with any comfort, much preferring the dry heat of an ordinary carriage to the moist and depressing atmosphere in the one fitted with Mr. Boodle's apparatus.

5. Mr. Stoney's apparatus was also tried on the occasion referred to above, and I am sure you will concur with me in regretting that the results obtained were not more successful. Mr. Stoney still hopes to make his apparatus more perfect, but I do not think that it is likely that he will be able to effect a greater reduction in the temperature than has been attained by Mr. Boodle's apparatus.

6. As regards the suggestion made by His Excellency the Governor-General on the subject of the loads of third-class carriages, I do not think that there has ever been any occasion to complain of over-crowding third-class passengers on the Madras Railway, but I have written to the Traffic Manager on the subject, and requested him to issue special instructions to station-masters that during the very hot weather special care is to be taken in this respect.

Description of an Apparatus proposed for cooling carriages.

The several parts which form the apparatus are:—

- 1st.—A bell-mouth fixed at the end of the carriage underneath the framing for the purpose of catching a current of air.
- 2nd.—A small tank containing water (placed at the end of, and a little below, the bell-mouth), in which revolves a roller, connected with a second roller above, by an endless band of Cash's patent towelling, which is kept constantly wetted by passing through the tank of water as the rollers revolve.
- 3rd.—The roller in the tank of water, and the second roller are each fixed on a shaft, the shaft of the upper roller being connected with the shaft of the lower roller, and this latter shaft being keyed on to a V. grooved wheel. Both the shafts are caused to revolve by this wheel, which is driven by an excentric fitted upon the carriage axle, and a lever working a small tongue fitting into the groove of the wheel above mentioned.

Two exhausting cowls are placed on the roof of the carriage to effect the necessary ventilation.

The action of the apparatus is exceedingly simple; a current of air being caught by the bell-mouth, and passed from below into the interior of the carriage after having been cooled by passing through the wet towelling revolving on the two rollers.

4. The apparatus is put in or out of gear by a small handle at the side of the carriage.

(Signed) E. C. BOODLE,
Acting Locomotive Superintendent.

No. 575.

ORDER THEREON, 29th May 1874, No. 1,430.

RAILWAY, No. 69.

ORDERED that the Government of India be addressed on the subject of these papers:—

(Here enter No. 1,431, dated 29th May 1874.)
(True Extract.)

Colonel, R.E.,

Secretary to Government.

To the Consulting Engineer for Railways.
Exd. E. C. Shunker.

Spare Copies

No. 576.

No. 1,431.

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. 70.

SIR,—In acknowledging the receipt of the Proceedings of the Government of India, dated 6th March 1874, No. 497-

510 G.R., in which the attention of this Government is again drawn to the necessity of measures being adopted to ensure the working of an efficient cooling apparatus in Railway carriages during the next hot season, I am directed, in continuation of the correspondence terminating with my letter of the 18th October last, No. 2,555, to submit herewith a letter from the Consulting Engineer for Railways, with its accompaniments, which will apprise the Government of India of the steps taken in this Presidency for giving effect to their wishes in the matter.

2. It will be seen that two descriptions of cooling apparatus designed by Messrs. Stoney and Boodle have had a fair trial ; but that the results have been such as to preclude the Railway Authorities from recommending that the outlay required for providing each vehicle with the required apparatus should be incurred. And having in view the reasons advanced in paragraphs 6 to 8 of the Consulting Engineer's letter, in which His Excellency the Governor in Council is disposed to concur, the necessity for providing railway carriages in this Presidency with any description of cooling apparatus is not so apparent as it doubtless is in the north of India.

I have the honour to be,

Sir,

Your most obedient servant,

Colonel, R.E.,

Secretary to Government.

Exd. E. C. Shunker.

Spare Copies

No. 347.

MADRAS RAILWAY.

AGENT AND MANAGERS' OFFICE.

Madras, 25th April 1874.

From

R. D. Clavin Esq.
Agent and Manager. M. R. Co.

To

Col. J. H. Shaw Stewart, R.E.
Consulting Engineer for Railways.

Sir,

With reference to your letter of the 25th ultimo No 283 with which you forwarded to me a copy of the Proceedings of Government No 786 dated the 21st idem, I have the honour to forward for submission to Government a descriptive Report, accompanied by a Drawing, of the carriage cooling apparatus invented by Mr. C. B. Boodle this Company's Acting Locomotive Superintendent.

2. On the 13th and 14th instant, I had the opportunity of testing in your and Mr. Goring's company the value of Mr. Boodle's apparatus, and though it succeeded in reducing the temperature from 102° to 92° on the 13th and from 104° to 94° on the 14th - a reduction of ten degrees in each case, I am not of opinion that the advantages so obtained are sufficiently great to justify an outlay

of Rs. 150 per vehicle. But apart from this consideration it appears to me that the heat which we have to contend with in this Presidency can hardly be compared with that in Bengal and the North West Provinces, where I am informed that it is unsafe to travel by day trains during the hot season of the year.

3. I would also venture to remind the Government that at least 90 per cent of our First Class Passengers travel by the night trains, and that the opportunity is afforded to second and third class Passengers also to travel by the night trains, so that it appears to me that there is no real necessity for the introduction of cooling arrangements on the Madras Railway.

4. I have discussed the subject with numbers of people and am led to the conclusion that under the present arrangement of our train service the carriages would not be appreciated. You are aware that during our experimental trip on the 13th and 14th instant neither Mr. Goring nor I could remain in the carriage with any comfort, much preferring the dry heat of an ordinary carriage to the moist

and depressing atmosphere in the one fitted with Mr. Boodle's apparatus.

5 Mr. Stoney's apparatus was also tried on the occasion referred to above, and I am sure you will concur with me in regretting that the results obtained were not more successful Mr. Stoney still hopes to make his apparatus more perfect, but I do not think that it is likely that he will be able to effect a greater reduction in the temperature than has been attained by Mr. Boodle's apparatus.

b. As regards the suggestion made by His Excellency the Governor General on the subject of the loads of third class carriages I do not think that there has ever been any occasion to complain of over-crowding third class passengers on the Madras Railway, but I have written to the Traffic Manager on the subject and requested him to issue special instructions to station masters that during the very hot weather special care is to be taken in this respect.

I have the honour to be
Sir
Your most obedient Servt.
W. J. L. L. L.

MADRAS RAILWAY.

From

The Agent and Manager.

To

The Consulting Engineer

for Railways.

Dated

187

Recd.

No.

Description of an Apparatus pro- posed for Cooling Carriages.

The several parts which form the
apparatus are,

1. A bell-mouth fixed at the end of the
carriage underneath the framing, for the
purpose of catching a current of air.
2. A small tank containing water placed
at the end of, and a little below, the bell-
mouth, in which revolves a roller, connect-
ed with a second roller above, by an
endless band of Cash's Patent towelling,
which is kept constantly wetted by
passing through the tank of water as
the rollers revolve.
3. The roller in the tank of water, and
the second roller are each fixed on a
shaft, the shaft of the upper roller being
connected with the shaft of the lower
roller, and this latter shaft being kept
on to a v grooved wheel. Both the
shafts are caused to revolve by this
wheel, which is driven by an eccentric
fitted upon the carriage axle, and
a lever working a small tongue fitting
into the groove of the wheel above
mentioned.

Two exhausting Cows are placed
on the roof of the carriage to effect the
necessary ventilation.

The action of the apparatus is
exceedingly simple; a current of air being
caught by the bell-mouth, and passed

MADRAS RAILWAY.

From

The Agent and Manager.

To

The Consulting Engineer

for Railways.

Order 22^d April 1874
Recd. 23.

M. 347

Showing the
result of the
experiment of
the Bowdler's
Cooling apparatus
on 22^d April 1874
P.M. 2483/74

from below into the interior of the
carriage after having been cooled by
passing through the wet travelling
revolution on the two rollers.

The apparatus is put in motion
of gear by a small handle at the side
of the carriage.

(By C. B. Doehler)
Aty. & Mechanical Superintendent

/True Copy/

W. H. Walker
Agent and Manager

Ms. 2294
P. M. 2483/74
2

Railway Department

Cross: Engg. office

No. 246

From

Lieut. Col J. H. M. Shaw & Stewart R.E.

Cross: Engineer for Railways

To

Colonel G. W. Walker R.E.

Secretary to Government

Public Works Department

Port Saint George

Sir,

In acknowledging the
receipt of the Proceedings of
Government dated the 21st March
1874 No 786, I have the honour
to state that I have delayed
the submission of the report
therein called for, from the
expectation that Mr. Stoney's
cooling

cooling apparatus would have been before this date satisfactorily and conclusively tried.

2. A trial of it was made during the last week in March, by Mr. Gouiz, the Chief Engineer of the Madras Railway Company, and Lieutenant Coaker, Deputy Consulting Engineer.

Upon that occasion it was successful in reducing the temperature by a few degrees, but some slight constructive defects in the apparatus prevented it from working up to the results obtained by Mr. Stoney in a private trial.

trial.

3. The apparatus was again tested on the 13th and 14th instant, when I accompanied the Agent and the Chief Engineer to the North-West line for the purpose of the experiment.

Upon this occasion another description of cooling apparatus designed by Mr. Boodle, the Acting Locomotive Superintendent of the Madras Railway, was tried, as well as Mr. Stoney's.

4.

I enclose a letter from the Agent of the Madras Railway Company, containing a description

to 347
22^d April 1874
with enclosures
and plans.

description of Mr Boodie's apparatus, and giving in general terms the result obtained.

The maximum reduction in the temperature obtained during the experiment was in the carriage fitted with Mr Boodie's apparatus, where the thermometer fell ten degrees, namely from 104° to 94° . This result was obtained under exceptional circumstances, as the carriages were attached to a special engine, which was running at greater speed than the ordinary trains, and which did not halt at every station. At the stations where the engine stopped

stopped for water, the temperature in the cooled carriage rose rapidly during the halt; until, on starting again, the thermometer stood little if at all below one in an ordinary carriage.

5. Mr Stoney's apparatus again failed to work up its private trials. It is with much regret I have to report this, as I am aware of the very great amount of time and patience which that gentleman has devoted towards perfecting his invention. So far as I am able to judge, the principle of the apparatus is thoroughly good and sound, and its

its comparative failure is again
due to slight defects in the con-
-structure details. These defects
are I believe entirely attributable
to the heavy nature of Mr. Stoney's
Engineering duties. For some
some months past he has been
in charge not only of the new
Cheyair bridge but also of the
open line between Arcconum and
Cuddapah. I entertain no
doubt that he will be able to
make his apparatus more perfect,
but I agree with the Agent in
thinking it unlikely that he will
effect a greater reduction in
the

the temperature than was attained
by Mr. Boodle's apparatus at
the recent trial.

6. In the enclosed
letter Mr. Elwin states that
he does not consider that the
results obtained will justify an
outlay of Rupees 150 per vehicle,
that being the estimated cost
of applying Mr. Boodle's apparatus.
He draws attention to the different
character of the heat experienced
in this Presidency from what is
met with in the North of India.
He also points to the facilities
afforded on the Madras Railway
of

to passengers of all classes for making their journeys by night; and he expresses his conviction that the addition of the proposed apparatus would prove a source of inconvenience to the majority of travellers by rail.

7. After full consideration of the subject, I am bound to state my opinion that little or no advantage would accrue to the travelling public in this Presidency from the use of any description of cooling apparatus, and that the expense of attaching them to the railway carriages would be in great measure

measure thrown away. Experience has shown that every apparatus which has been tried fails to produce any beneficial effect in places where the atmosphere is saturated with moisture. The area on the Madras Railway where the apparatus could be favourably used is thus restricted to the North-West line, and to the portion of the South-West line between Arcot and Pothanoor; and I agree with the Agent that the facilities afforded to the public for travelling by night on these parts of the railway are such as to render the provision of the cooling

cooling apparatus unnecessary.
And in dealing with the question
it should be borne in mind that
the heat experienced in this part
of the Peninsula differs greatly,
both in nature and degree, from
that which has to be encountered
in the North of India.

8. With regard to
the proposition of the travelling
public who would be likely to
appreciate the provision of a cooling
apparatus, those who have made
the trial in other Presidencies, and
with whom I have had an op-
portunity of discussing the subject,
have been almost unanimous in
condemning

6
condemning it. Upon the
occasion of the recent experiment
on the North-West line, there
were six persons present, of whom
I believe I was myself the only
one whose comfort was increased
when in the cooled carriage. ~
And during the halts at stations,
when the apparatus ceased to work,
the stillness of the atmosphere
in the closed carriage became
almost unbearable. In this
respect, as above mentioned, we
were at an advantage over
ordinary travellers, as our train
stopped at very few stations,
and

[illegible]

of the Government of India
dated 6th March 1874. N^o 497-
510 G.B. in which the at-
tention of this Government
is again drawn to the neces-
sity of measures being adopted
to ensure the working of an
efficient cooling apparatus
in Railway carriages during
the next hot season, I am
directed in continuation of
the correspondence terminating
with my letter of the 18th October
last N^o 2555, to submit here-
with a letter from the Hon.
Sitting Engineer for Railways
with

with its accompaniments
which will apprise the
Government of India of the
steps taken in this Presi-
dency for giving effect to
their wishes in the matter.

2. It will be seen that
two descriptions of cooling
apparatus designed by
Mess^{rs} Stoney and Boodle
have had a fair trial;
but that the results have
been such as to preclude
the Railway authorities
from recommending that
the outlay required for
providing

providing each vehicle
with the required ap-
paratus should be in-
curred. And having
in view the reasons ad-
vanced in paras 6 to 8
of the Consulting Engineer's
letter, in which His Ex-
cellency the Governor in
Council is disposed to
concur, the necessity for
providing Railway
carriages in this Presi-
dency with any description
of cooling apparatus

12
is not so apparent as it
doubtless is in the North
of India.
G.M.W.

Revenue Office
sent statement
to Govt -

6-A Copies & 6 Copies of Previous
Proceedings with one tracing
deposited 6/8/74.

24851

Govt. of 1874 Madras.
PUBLIC WORKS.

To
The Comd^g Eng^r for Mys.
&
Suy. to the Govt of India

Dated

Recd.

Encl.

2

G. O. 27 May 1874. No. 1430
1431

Nos. 5746-576.

Railway Cooling Apparatus

Ordered that the
Govt. of India be ad-
dressed in the subject
the results of Messrs
Stoney & Boodle's
Cooling apparatus.

7
Forwarding papers
containing the results
of the experiments
of Messrs Stoney
& Boodle's Railway
Cooling Apparatus.