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MADRAS RECORD OFFICE.

Government of Madras.

Public works DEPARTMENT.

G.O. No. 229	Press ~~Mis.~~
446-47	
Dated 24. 1	1872.

Not to be folded or roughly handled

*Proceedings of the Madras Government. Public Works Department,
21th January 1872.*

No. 443. Read the following Proceedings of the Government of India, Public Works Department, (Railway,) dated Fort William, 8th December 1871, No. 2,477-R. :—

COPY of the following forwarded for information to the Governments of Madras and Bombay in the Public Works Department, (Railway,) and to the Consulting Engineers to the Government of India for Guaranteed Railways, Calcutta and Lucknow, in continuation of Public Works Department Nos. 1,846—8 and 1,850-R. of the 28th September 1871.

By order,
(Signed) ALFRED H. VAUX,
Under-Secretary.

From the Deputy Consulting Engineer for Railways, Punjab, to the Secretary to the Government of India, Public Works Department, dated 5th November 1871, No. 3,781-G.

Is forwarding a copy of a letter No. 3,717, dated 24th October 1871, received from the Agent of the Sindh, Punjab, and Delhi Railway, on the subject of the cooling of railway carriages, I have the honour to observe that from personal trial of all the different arrangements for cooling railway carriages that have been experimented upon on this railway, I am inclined to agree with the Agent in considering that no arrangement has as yet been devised which is practically capable of being introduced with benefit to the travelling public. The application of a wet surface to cause evaporation, although reducing the temperature, renders the atmosphere of a carriage so moist, and checks the draught to such a degree that the majority of passengers prefer to travel in the ordinary carriages.

From the Agent, Sindh, Punjab, and Delhi Railway Company, to the Consulting Engineer to the Government of Punjab, Railway Department, dated 21th October 1871, No. 3,717.

I REGRET that I have not been able to report by the 1st September, as desired, on the experiments made for cooling carriages on this railway.

I beg, however, now to annex copy of report by the Chief Engineer and Locomotive Superintendent of the several experiments made, which neither officer thinks successful.

No. 2,423, dated 20th September, from Locomotive Superintendent.
No. 443, dated 2nd October, from Chief Engineer, and enclosures.

The last season has been most unfavourable for the experiment. The air has been moist, and the results obtained have been a certain reduction of temperature, with an increased and uncomfortable humidity.

We have not certainly been able on this line to hit upon any expedient that would be safe and effective, for using wood-fuel as we do, there is danger attending the use of side or front tatties.

My own opinion is that no plan yet discovered can be applied to the ordinary compartments of carriages.

That if some effective plan could be hit upon it should be applied to one reserved carriage, into which passengers having taken their seats in the ordinary compartments should be allowed to sit during the heat of the day without any extra charge; that if the proposal made at the Calcutta Conference to make the through-passenger stock common property be ever carried, such arrangement would be greatly facilitated, and in connection with it we might have travelling refreshment arrangements.

But I believe we are as far as ever from having hit upon an arrangement which will give general satisfaction, and certainly not warrant an extra charge.

*Proceedings of the Madras Government, Public Works Department,
24th January 1872.*

Another difficulty would be in the change of climate on a long run: for instance, a tattie, which would cool the air in the Upper Provinces, would not answer in Bengal. In Bengal, perhaps, punkahs might be found to answer if the saloon carriage could be built with a roof high enough, and these would be of use up-country while halting at station, or when the tatties did not act, they should be hand-pulled by servants kept for the purpose. On board the P. and O. Ships they are found in the Red Sea to be a great comfort.

Both the cowl of Mr. Newton and the patent of Mr. Saunders were found to create a strong draught of air, but there is great difficulty indeed, almost impossibility, of the windows fitting so closely as to prevent the air coming in more easily than through the tattie.

Memorandum from the Locomotive Superintendent, to the Chief Engineer, Sindh, Punjab, and Delhi Railway Company, dated 20th September 1871, No. 2, 123.

Cooling of Carriages.

With regard to Chief Engineer's No. 3, the undersigned begs to state, in reference to Agent's No. 2, 428, to address of Chief Engineer, that reports have been addressed to Agent from time to time on the above subject. The undersigned now forwards a final report for this season. The Chief Engineer is aware that one of the first experiments in cooling carriages was tried by cutting half the boarding out of the end of a saloon carriage, fitting a tattie in this space watered from a tank on top by a perforated pipe. This perhaps was the most effective method that has yet been tried but it had its disadvantage.

A low-sided truck had always to be placed in front of this carriage, so that nothing should impede the current of air.

The waste and evaporation of water also was very great, and to keep the tatties thoroughly saturated it was found necessary to place a bistee on the truck.

The tatties caught the sparks from the engine, and if it happened to get at all dry there was the constant danger of fire.

The temperature at times in this carriage was noted too cold, falling as low as 65°.

The next experiment was by attaching small rectangular tatties to the whole of the windows (except the door-sashes) on both sides of a saloon carriage, and watering them by a flexible tube inside from an overhead tank. The first day of this experiment was an extremely hot one in May, with a heavy sand-storm blowing, and the effect produced was favourable as long as the tatties could be kept wet, but it took a man's entire time to do this when the tatties become the least dry, the dust immediately penetrated close to a damp tattie, the thermometer registered 68°. There was always the fear of fire if the tatties become dry, and this, in connection with the damage the water would probably do to the window slides, caused this to be abandoned.

The third experiment was by fixing roller-towels to each of the windows on their side of a saloon carriage. These revolved in narrow tanks of water fixed on the sides of carriage. This arrangement of tatties was very much easier kept damp, but the flapping to and fro of the canvas caused the water to be thrown about the inside of the carriage.

This experiment was not found to answer, as the air was driven at too acute an angle to penetrate the tatties.

The fourth experiment was with Saunder's patent, and this was tried in a saloon carriage, and exactly on the same principle as tried by that gentleman. Accompanying this is a copy of the readings of the thermometer, by which it will be perceived that the lowest temperature recorded is 68°, and this immediately above the tatties. The tracing of this arrangement is not sent, as it is believed the Government already has one.

The fifth experiment was made with a cowl, vide Fig. 1 of accompanying tracing No. 431, made in these shops. It was at first fitted on one-half of the saloon carriage to which Saunder's patent was affixed, but as it was thought that one might interfere with the working of the other, it was removed to an end compartment of a composite carriage, the compartment measuring 8 feet x 6 feet. The readings of the thermometer are sent herewith.

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24th January 1872.*

The sixth experiment was with a cowl, vide Fig. 2 of tracing No. 484, on the Oudh and Rohilkhand Railway principle, fixed to the same carriage as the last. In both of these experiments all access to air was carefully closed, except through the tatties, and to this the air was led by means of a box and swivel door.

The tattie was kept constantly wet; but the result of this experiment can scarcely be called satisfactory.

The rush of air was only felt a few inches above the tattie, and a few inches between the cowl, but further away then this smoke being almost undisturbed.

The undersigned is unaware whether in Mr. Saunder's trial of his patent there was any perceptible current of air.

It appears that it is solely the want of this that causes travelling in these closed up experimental carriages to be so uncomfortable. There is no doubt that, by the application of the tattie, the temperature is much reduced, but even at 82° or 84° is a still atmosphere the heat is unendurable.

It must be recollected that, while standing at stations, all these arrangements for cooling carriages, while running are perfectly useless, unless there happens to be a very hot and strong side wind blowing.

The undersigned concludes that, as far as this railway is concerned in the number of first class travellers during the hot weather, and the results of experiments carried out, that it is useless going to the expense of altering several of the carriages for the temporary convenience of the very few who would care to pay extra for their use.

The undersigned is of opinion that passengers may travel with safety and in tolerable comfort by applying a wet towel to the head, and securing the door open 9 inches in the direction in which the train is moving, so as to throw as great a current of air as possible through the compartment. No doubt the Company would be glad to provide sorroys filled with water (in those carriages that are not provided with washing accommodation) wherewith the traveller could damp his towel.

From the Chief Engineer, to the Agent, Sindh, Punjab, and Delhi Railway Company, dated 2nd October 1871, No. 413.

Your No. 2, 428 of 15th June 1871, and subsequent correspondence.

With reference to the above-mentioned Memorandum on the subject of cooling railway carriages, and requesting details of the experiments made during the past season upon the railway, I beg to forward copies of the Locomotive Superintendent's No. 2, 423 of 20th ultimo, and enclosures, detailing the various plans which have been tried.

2. The result of the experiments cannot be deemed satisfactory, and not one of the proposals would, in my opinion, justify the outlay necessary in adopting the carriages for its use, and providing the apparatus.

3. Such carriages could only be supplied to the public on increased fares, which a very small percentage of the very small number of first class passengers, who travel in the hot weather, would consent to pay.

4. I have travelled in a carriage fitted with Saunder's apparatus, and although the temperature while the carriage was moving was somewhat reduced, the heat was very much more oppressive, and it was the greatest relief to throw open the windows, and admit the ordinary breeze, while standing at stations the temperature increased to that outside, and the amount of moisture in the air and its peculiar heaviness made it considerably worse than being in an ordinary carriage. This, however, is the case with all the plans hitherto tried.

5. I am of opinion that, as far as my information goes, no plan has been yet devised which would attain the desired result of additional comfort to those travelling in the hot season, and that the plans tried on this railway do not sufficiently approach this desired result, so as to justify any outlay in altering and adopting the stock, or any demand for extra fares from passengers for an advantage which it is exceedingly doubtful they would receive.

*Proceedings of the Madras Government, Public Works Department,
21th January 1872.*

No. 447. ORDER THEREON, 21th January 1872, No. 229.

RAILWAY, No. 63.

COMMUNICATED to the Consulting
Engineer for Railways, in continuation
of G. O. No. 2,804, dated 6th Novem-
ber 1871.

(True Extract.)

Colonel, R.E.,
Secretary to Government.

To

Dated December 8, 1871.

Received

PUBLIC WORKS.

To The Ag Consulting Eng^r
for Railways.

Dated

Recd.

Ende

G. O. 24¹⁸⁷² Law 2 No. 229.

Nos. 446-447

Railway Carriage - Docket.
From the Lark of India for
monetary correspondence re-
specting the cooling of Ry.
Carriages on the Pundh, Pan-
jab & Delhi Railway.
Cm. & The
Rep.

*Correspondence regarding the cooling of
Railway carriages on the Sindh, Punjab and
Delhi Line.*

F. W. D. Press. 72.12.71-70.

Ch: 229.

Comms to the Cong Engineers for Railways
in combination of G. O. de 2004. d. 5. Mar 1872

By / Made 25/1/72