M.R.O. 1—77,000—8-6-37.

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(2) Date of repair_____

(3) Initials of the Referencer_____

MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

G.O. No. 2241, 2242, Press Mis.
297, 298, 299,

Dated 21—9— 1872.

Not to be folded or roughly handled

No. 297. Read the following letter from the Consulting Engineer for Railways, to the Secretary to Government, Public Works Department, dated Madras, 28th August 1872, No. 446:—

I HAVE the honour to enclose a letter* from the Agent of the Madras Railway, giving cover to a report from the Locomotive Superintendent upon the results of certain experiments which have lately been made with a view to determine the relative merits of "crown patent fuel," as compared with coal, and with coal and coke mixed.

* No. 609, 23rd August 1872, with 3 enclosures.

2. The result of the experiments seems to prove satisfactorily the high value of the "crown patent fuel," there being a saving effected by using it of 11·84 per cent. when compared with coal, and of 10·24 per cent. when compared with coal and coke mixed in equal quantities.

3. Mr. Barton Wright also states that although the cost of the "crown patent fuel" is higher in England than that of coal, the freight charged upon it is considerably less than for coal or coke, and the landing charges being also less, its cost at Madras is not greater than that of coal, and considerably less than that of coke.

4. Mr. Wright also states that while the deterioration of coal, when stored in India, is rapid and considerable, "crown fuel" can be kept in India for years without any perceptible deterioration taking place.

5. I beg to suggest that Mr. Wright's report be forwarded to the Government of India for the information of Indian Railway Companies generally.

From the Agent and Manager of the Madras Railway Company, to the Consulting Engineer for Railways, dated Madras, 23rd August 1872, No. 609.

IN continuation of my letter No. 227, dated the 16th of April last, I have the honour to enclose you, in accordance with your request, a copy of the report* which has been made by the Locomotive Superintendent for transmission to the Board as to the experiments which have been made with a view to determine the relative merits of crown preserved coal, coal, and coal and coke mixed.

* No. 289, dated 22nd August 1872.

From the Locomotive Superintendent, to the Agent and Manager, dated Perambore Works, 22nd August 1872, No. 289.

WITH reference to the correspondence marginally noted,* I beg to forward you the results of the experiments† which have been made with crown preserved coal, coal, and coke and coal.

* From Secretary, Madras Railway Company, No. 488, 1st March 1872, paragraph 9.
From Agent and Manager, No. 1,220, 5th April 1872, paragraph 4.
From Consulting Engineer, No. 250, 12th April 1872.

† As per accompanying Statements A. and B.

2. It will be seen that the crown preserved coal still maintains its position as superior to either coal, or coal mixed with coke.

3. The experiments made in April were with patent fuel ex *Queen of the North*, which cost, including landing charges, Rupees 20-9-3 per ton, and with coal ex *Himalaya*, which cost Rupees 20-10-1 per ton. The experiments made in June were with patent fuel ex *Queen of the North* and *Agamemnon*, costing Rupees 20-9-3 and Rupees 23-0-6 per ton, with coal ex *Himalaya* costing Rupees 20-10-1 per ton, and with coal and coke ex *Himalaya* and *Dacre* costing respectively Rupees 20-10-1 and Rupees 29-14-11 per ton.

4. These prices cannot, however, be safely taken as the average cost of these several descriptions of fuel. The average cost of recent shipments is as follows:—

	Rs.	A.	P.	
Crown preserved fuel	21	9	6	per ton.
Coal...	21	9	11	,,
Coke	25	1	11	,,

Although the cost of crown preserved coal is higher in England than that of coal, the freight charged upon it appears to be considerably less than that for coal or coke, and the landing charges being also less, its cost when it reaches us (judging by recent shipments) is not greater than that of coal, and considerably less than that of coke, whilst its value is shown by the result of experiments, and in ordinary use, to be greater than that of either.

5. In the experiments made in April the "crown fuel," calculating the difference in loads, performs its work with a consumption of 16·14 per cent. less than the coal. In the experiments made in June the performance of the "crown fuel" does not compare so favourably, but is nevertheless better than that of the coal by 7·55 per cent., and better than that of the coal and coke (mixed in equal quantities) by 10·24 per cent.

6. It will be observed that in the April experiments No. 74 Engine burnt crown fuel, and No. 58 Engine coal.

7. To make the test more reliable, as there is generally some variation in consumption of fuel due to the difference of working both of men and Engines, I arranged in the June experiments that No. 58 Engine should burn crown fuel, and No. 74 Engine coal. The results of this change goes to prove that whilst No. 74 Engine can perform 16·14 per cent. more work burning crown fuel than No. 58 burning coal; when the order of things is reversed, No. 58 only performs 7·55 per cent. more work than No. 74. These are sister engines, and were running the same class of trains throughout, under precisely similar circumstances.

8. We may therefore consider the mean performance of the two engines worked, as described, with relation to each other as demonstrating, as accurately as possible, the relative value of the two classes of fuel.

	Saving per cent. of Crown fuel.
Thus in April No. 74 burnt less fuel than No. 58 by ...	16·14 per cent.
And in June No. 58 burnt less fuel than No. 74 by ...	7·55 ,,
Mean saving per cent. of crown fuel as compared with coal	$\frac{23\,69}{2}$ = 11·84

9. These experiments were made with fuel just received from England, so that the coal, which was of first-rate quality, was tried under the most favourable circumstances, as the deterioration of this description of fuel is rapid and considerable, whilst crown fuel may be kept for years without any perceptible deterioration taking place.

10. The recent shipments of crown fuel have been of excellent quality; and if this quality can be maintained, I believe that it will continue to be found a more suitable and economical fuel for locomotive purposes in this country than the best steam coal that can be procured.

A.

MADRAS RAILWAY.

Statement showing the consumption, during the month of June 1872, of Patent fuel by Engine No. 58, of Coal by Engine No. 74, and of Coke and Coal mixed by Engine No. 75.

No. of Engine.	Total Miles run.	Coke used. Cwts.	Coal used. Cwts.	Patent fuel used. Cwts.	Consumption per Mile in lbs.	Average number of Vehicles per trip.	Vessels by which the fuel was consigned.
58	1,820	.....	.....	360	22·15	13·46	*Queen of the North* and *Agamemnon.*
74	3,740	.....	795	.....	23·80	13·55	*Himalaya.*
75	3,643	415	395	.....	24 90	13·34	*Dacre* and *Himalaya.*

Proceedings of the Madras Government, Public Works Department, 21st September 1872.

B.

MADRAS RAILWAY.

Statement showing the Consumption per Mile by Engines Nos. 74 and 58 of Coal and Patent fuel (landed from the Ships "Queen of the North" and "Himalaya") in March and April 1872.

No. of Engine.	Total Miles.	Coal used. Cwts.	Patent fuel used. Cwts.	Consumption per Mile in lbs.	Average number of Vehicles per trip.	Vessels by which the fuel was consigned.
74	3,818	...	688	20·18	13·01	*Queen of the North.*
58	3,640	795	...	24·46	12·80	*Himalaya.*

(Signed) W. B. WRIGHT,
Locomotive Superintendent.

(True Copy.)

(Signed) R. B. ELWIN,
Agent and Manager.

No. 298. ORDER THEREON, 21st September 1872, No. 2,241.

RAILWAY, No. 52.

Ordered that this letter be forwarded to the Government of India.

(True Extract.)

(Signed) G. W. WALKER, Colonel, R.E.,
Secretary to Government.

No. 299. (DOCKET No. 2,242, dated 21st September 1872.)

FORWARDED to the Government of India for information.

(True Extract.)

Colonel, R.E.,
Secretary to Government.

Exd. T. O'Conor.

RAILWAY DEPARTMENT. CONSULTING ENGINEER'S OFFICE.

No. 446

From

Lieut.-Colo. J. F. M. Shaw Stewart, R.E.,
Consulting Engineer for Railways,

To

Colonel J. W. Walker, R.E.,
Secretary to Government,
Public Works Department,
Fort Saint George.

SIR,

I have the honour to

× No. 609 - 23rd August 1872 with 3 enclosures.

enclose a letter from the Agent of the Madras Railway, giving cover to a report from the Locomotive Superintendent upon the results of certain experiments which have lately been made with a view to determine the relative merits of 'Crewin patent fuel' as compared with coal, and with coal and coke mixed.

2. The result of the experiments seems to prove satisfactorily the high

high value of the "Crown" patent fuel": there being a saving effected by using it of 11.84 per cent when compared with coal, and of 10.24 per cent when compared with Coal and Coke, mixed in equal quantities.

3. Mr. Barton Wright also states that although the cost of the "Crown" patent fuel" is higher in England than that of coal, the freight charged upon it is considerably less than for coal or coke; and the landing charges being also less, its cost at Madras is not greater than that of coal, and considerably less than that of coke.

4. Mr. Wright also states that, while the deterioration of coal, when stored in India, is rapid and considerable, "Crown Fuel" can be kept in India for years without any perceptible deterioration taking place.

5. I beg to suggest that Mr. Wright's report be forwarded to the Government of India, for the information of Indian Railway Companies generally.

I have the honour to be

Sir

Your most obedient servant

Madras
28. August 1872

W. Stuart Lieut. R.E.
Cons. Engineer for Railways

B

Madras Railway

Statement shewing the Consumption per Mile by Engines Nos. 74 and 58 of Coal and Patent Fuel (landed from the ships "Queen of the North" and "Himalaya") in March and April 1872

No. of Engine	Total Miles	Coal used Cwts.	Patent Fuel used Cwts	Consumption per Mile in lbs	Average number of Vehicles per Trip	Vessels by which the fuel was consigned
74	3818	"	688	20.18	13.01	"Queen of the North"
58	3640	795	"	24.46	12.80	"Himalaya"

(True Copy)
Agent and Manager

(Signed) Wm Barton Wright
Locomotive Superintendent

P. W. 1872 Sept
Pro. of Govt for September
No. 4184

RAILWAY DEPARTMENT.

1872.

From

The Consulting Engineer
for Railways,

To

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

Dated 28
Recd. 29 } Augt 1872.

Encl. 4
No. 2241-2242-21 & 44
No. 446

Forwarding Mr. Barton Wright's representations and documents of "Crown patent fuel" & requesting to forward it to List of Indents for the information of other Railway Companies

No. 297

Contd to Govt 29 Augt 72

P. W. 4184/72.

№ 289.

Madras Railway
Locomotive Superintendent's Office
Perambore Works
22nd August 1872

To,

The Agent and Manager.

Dear Sir,

With reference to the correspondence marginally noted, I beg to forward you the results of the experiments which have been made with brown-preserved coal, coal, and coke and Coal.

Secretary M.R.C.	№488	1st March 1872	para 9	noted.
Agent & Manager	1220	5 April	4	to forward
Consulting Engineer	250	12 "	"	you the re-

2. It will be seen that the brown preserved Coal still maintains its position as superior to either coal, or coal mixed with coke.

3 The experiments made in April were with Patent Fuel by "Queen of the North", which cost, including landing charges, Rupees 20-9-3 per ton, and with Coal by "Himalaya" which cost Rupees 20-10-1 per ton. The experiments made in June were with Patent Fuel by "Queen of the North" and "Agamemnon", costing Rupees 20-9-3 and Rupees 23-0-6 per ton with coal by "Himalaya" costing Rupees 20-10-1 per ton, and with coal and coke by "Himalaya" and "Dacre" costing respectively Rupees 20-10-1, and Rupees 29-14-11 per ton.

4. These prices cannot however be safely taken as the average cost of these several

descriptions of Fuel. The average cost of recent shipments is as follows:

	Rs. as. p.	
Brown preserved Fuel	21- 9- 6	per Ton
Coal	21- 9- 11	
Coke	25- 1- 11	

Although the cost of brown preserved coal is higher in England than that of coal, the freight charged upon it appears to be considerably less than that for coal or coke, and the landing charges being also less its cost when it reaches us (judging by recent shipments) is not greater than that of coal and considerably less than that of coke, whilst its value is shown by the results of experiments and in ordinary use, to be greater than that of either.

5. In the experiments made in April the "brown Fuel", calculating the differences in loads, performs its work with a consumption of 16·14 per cent less than the coal. In the experiments made in June the performance of the "brown Fuel" does not compare so favourably, but is nevertheless, better than that of the coal by 7·55 per cent, and better than that of the coal and coke (mixed in equal quantities) by 10·24 per cent.

6. It will be observed that in the April experiments N°74 Engine burnt brown Fuel, and N°58 Engine coal.

7. To make the test more reliable as there is generally some variation in consumption of Fuel due to the difference of working both of men and Engines, I arranged in the June experiments that N°58 Engine should burn brown Fuel, and N°74 Engine coal. The results of this change goes to prove that whilst N°74 Engine can perform 16·14 per cent more work burning brown Fuel than N°58 burning coal, when the order of things is reversed, N°58 only performs 7·55 per cent more work than N°74. These are sister Engines, and were running the same class of Trains throughout under precisely similar circumstances.

8. We may therefore consider the mean performance of the two Engines worked, as described, with relation to each other as demonstrating, as accurately as possible the relative value of the two classes of Fuel.

	Saving per cent of brown Fuel
Thus, in April N°74 burnt less Fuel than N°58 by	16·14 per cent
and in June N°58 burnt less Fuel than N°74 by	7·55 per cent
mean saving per cent of brown Fuel as compared with coal	$\frac{23.69}{2} = 11.84$

9. These experiments were made with Fuel just received from England, so that the coal, which was of first-rate quality, was tried under the most favourable circumstances, as the deterioration of this description of Fuel

is rapid and considerable, whilst brown Fuel may be kept for years without any perceptible deterioration taking place.

10. The recent shipments of brown Fuel have been of excellent quality, and if this quality can be maintained, I believe that it will continue to be found a more suitable and economical Fuel for Locomotive purposes in this country than the best steam Coal that can be procured.

Yours faithfully
(signed) Wm Barton Wright
Locs: Superintendent

(True Copy)

Agent and Manager

Locos

No. 609

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE.

Madras, 23rd August 1872

From

Robert B. Elwin Esquire
Agent and Manager of the M. R. Co.

To

Lieutt: Colonel J. A. M. Shaw Stewart R.E.
Consulting Engineer for Railways.

SIR,

In continuation of my letter No 227 dated the 16th of April last I have the honour to enclose you in accordance with your request a Copy of the Report, which has been made by the Locomotive Superintendent for transmission to the Board, as to the experiments which have been made with a view to determine the relative merits of brown preserved Coal, Coal, and Coal and Coke mixed.

* No 289 dated 22 August 1872

I have the honour to be,
Sir
Your most obedt. Servant,

Agent and Manager

A

Madras Railway.

Statement shewing the Consumption, during the Month of June 1872, of Patent Fuel by Engine N°58 of Coal by Engine N°74, and of Coke and Coal mixed by Engine N°75—

N°. of Engine	Total Miles Run	Coke used Cwts	Coal used Cwts	Patent Fuel used Cwts	Consumption per Mile in lbs	Average number of Vehicles per Trip	Vessels by which the fuel was consigned.
58	1820	"	"	360	22.15	13.46	"Queen of the North" and "Agamemnon
74	3740	"	795	"	23.80	13.55	"Himalaya"
75	3643	415	395	"	24.90	13.34	"Dacre" and "Himalaya"

(True copy)

(Signed) Wm. Barton Wright
Locomotive Superintendent

Agent and Manager

Wm

22733

MADRAS RAILWAY.

From

The Agent and Manager.

To

The Consulting Engineer

for Railways.

Dated 23 } August 1872.
Recd. 24 }

No. 6099/2414

Forwarding copy of the Report made by the Loco: Superintendent regarding the relative merits of Brown Fuel & Coal

P. W. 4184/72

Public Works Department

No. 2241.

Proceedings of the Madras Government

Read the following

From The Consulting Engineer for Railways. 3 H.C. No. 1446 of 28th ult. & aug 1872

Ordered that this letter be forwarded to the Government of India.

36

To The Consulting Engineer

Desp. 27/9/72

2242.

Docket No. of

Forwarded to the Government of India for information.

35

Desp. 27/9/72 with 35 spare copies.

No 4184

Govt. of {1872} Madras.

PUBLIC WORKS.

To The Consulting Engineer for Railways

Dated

Recd. Encl. 4

G. O. 21st Sept. No 2241-2244

Nos. 297-298-299

Crown patent Fuel. Letter

Returning (with Engr) Submitting a Report by the Locomotive Superintendent of the Madras Railway on the results of the experiments made with the Crown patent fuel, ordered to be forwarded to the Govts of India.

Entd. in Robt 29 Augt 1872