stated as long ago as 1869 that "firewood is a most satisfactory description of fuel for burning in locomotives, not only in a economical point of view as regards the price, but also in causing less injury to the fireboxes and tubes which are now more or less affected by the gases from coke, coal, or patent fuel"

3. The Acting Locomotive Superintendent of the Madras Railway writes that it appears from the records of the last 14 years that the copper fireboxes of those engines which have been burning wood have worn for a longer time than in the case of engines using coal.

The copper boxes appear to be much more affected by the gases from the coal than by those from wood. When wood is used, firebars are not so liable to be burnt by the accumulation of clinkers as when coal is used. Tubes, on an average, last about the same time with either description of fuel.

4. The statement accompanying the Acting Locomotive Superintendent's letter, exhibiting workings of Engines burning respectively wood and coal, fully bears out the conclusion at which he has arrived.

5. The Locomotive Superintendent of the South Indian Railway writes "In my opinion our engine tubes and boxes run better with wood fuel than with coal" and, in illustration, instances

instances an engine which is having run close on 20,000 miles on examination was pronounced fit for 60,000 miles further.

6. It is to be remarked with reference to the relative duty of wood and coal, on the Scinde Punjaub and Delhi as compared with the Madras lines that a ton of wood on the former is estimated to measure from 90 to 100 Cubic feet whereas in Madras it is held to measure 67 Cubic feet. A ton of Coal woned on the former line, it seems, be equivalent to from 155.7 to 220 Cubic feet of wood while on the Madras lines it would be equivalent to 201 Cubic feet - a difference not so striking as that arrived

ab

ab by a comparison of weights alone.

3F

I have the honour to be,
Sir,
Your most Obedt Servant,
W. Hawkes K.C.E. Capt.
Supt Locos Engs for Rys.

South Indian S P 10

No. 844 ~~GREAT SOUTHERN OF INDIA~~ RAILWAY.

AGENT'S OFFICE,

Trichinopoly ~~NEGAPATAM~~, 11 September 1875

From

Acting
THE AGENT, South Indian
~~Great Southern of India~~ Railway,

To The Consulting Engineer for Railways
Madras

SIR,

"Your letter № 390 of the 16th June last was referred to the Locomotive Superintendent, who being busily engaged with the new Rolling Stock has sent me only now the following reply

"I have now the pleasure to send you the result of my examination of one of our wood burning Engines. 6 wheel coupled Goods engine № 17 was the one selected. This Engine is 7 years old

"A new set of tubes was put in her with which she ran 22 months

"They were then drawn on account of repairs to her tube plates and replaced with new ends brazed on (of old tubes) she was coal burning up to this time - she then began wood burning and has run close upon 20,000 Miles with wood I find the fire box in good condition, with a uniform thickness of 1/2" (original thickness 7/16") on top and sides of box. The fire tubes drawn are also in good condition giving a weight of 19 lbs against 23 1/2 lbs the weight of a new one.

"These tubes are good for another 60000 Miles unless drawn for some special reason. I should say about 15 per cent of our wood is Babool - the rest junglewoods whose

Engine's Report
20: Light - - 125 - - -
30: " - - 212 - - -
4): Coke - - 133 - - -
2nd hour " - 35-36
4th hour - 15-20-

P.W. 1875 Despatch
RAILWAY DEPARTMENT.
No 7132

From
The Consulting Engineer
for Railways,

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

Dated 4th November 1875
Recd. 5th do

No. 599

Submitting letter from the Agent S I Ry and P & O Co's Report upon the selected engine

Wants wood and coal as fuel for Govt. machines

№ 309

G.O. No 3245. 13/11/75

Cir 10-11-75

"names I do not know - In my opinion our Engines tubes and
"boxes run better with wood fuel than with coal."

I have the honour to be,
Sir
Your Most Obedt Servt

Acting Agent

No. 1066

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE,

Madras, 13th October 1875

From

Robt. W. Elwin Esq.

Agent and Manager. of the M.R.R.

To

Lieut Colonel J. Pitt. Thomas Stewart

Consulting Engineer for Railways.

Sir,

With reference to your letter № 1156 of the 7th of December 1874 and to subsequent correspondence, I have now the honour to enclose you a copy of the Acting Locomotive Superintendent's Report upon the results which have attended the use of wood fuel, as compared with Coal, on the Madras Railway. I much regret the delay that has been allowed to occur in the completion of this Report.

№ 1445 - 12 October 1875

The enclosure to your letter mentioned above is returned herewith.

I have the honour to be
Your most obedient Servt.

Received March

No. 2132/75.

GREAT SOUTHERN OF INDIA RAILWAY.

AGENT'S OFFICE,

NEGAPATAM, 18

From

THE AGENT,

Great Southern of India Railway,

To

The Agent
S. I. R.

The Consulting Engineer
for Railways.

SIR,

Dated 11th
Rec'd 13 } Submitted 1875

Civil.

No 844

Re. use of wood
as fuel

GC-13 November/75 No. 309

MADRAS RAILWAY

From

The Agent and Manager

To,

The Consulting Engineer

for Railways

Dated 13 October 1875

Rec'd 14 Oct 1875.

Cypher Telegram.

Kambum 75

Bi-weekly Cypher Report of the Coal consumption of Engines working on the Cuddapah Section of this line.

The use of wood fuel is to be discontinued on and after the 31st instant.

GG-13 Kambum 75

mBB 11:30 P

31/32 Mail

Madras Railway
Loco Superintendent's Office
Perambur Works 12th Octr 1875

(P 455)

The Agent and Manager,

Dear Sir,

With reference to the correspondence noted in the margin, relative to the detrimental effects experienced on the Scinde, Punjab and Delhi Railway, by the use of wood-fuel in Engines working between Kurrachee and Hatree, I beg to state that, although wood has been very extensively used, and is still being used, for locomotive purposes on most portions of this line, the experience of such working has not led me to form a judgment in any way prejudicial to this description of fuel

From Loco Engineer P 1156 dated 7th Decr 1874
From ——— do ——— " 521 " — 10th May 1875
From ——— do ——— " 560 " — 19th " "
From ——— do ——— " 680 " — 16th June "
From ——— do ——— " 825 " — 26th July "
From ——— do ——— " 909 " — 19th Augt "
From ——— do ——— " 1069 " — 1st Octr "

2. With regard to the Consulting Engineer's enquiry as to the high relative value of wood, the equivalent of 1 ton of coal ranging from 1·73 to 2·45 tons of wood on the Scinde Line, as compared with 3 tons of wood on this Line, I regret that I am unable to offer an explanation of the differences in these equivalents The difficulty of arriving at any conclusion in this respect without an acquaintance with the various local circumstances

tending to increase or diminish the value of wood as a locomotive fuel as other lines are. I think; however The quality of the wood supplied is of great importance, and would, of course, much affect the results in working; but I cannot understand how the results on the Scinde Line, as regards the comparison in quantity used between wood and Coal, have been so very favourable to the former.

3 From the report made to the Commissioner in Scinde by Major Kelleher the "Babul" (Acacia Arabica) would appear to be the description of wood chiefly used, and the measurement allowed as the equivalent of a Ton; as quoted in Table A as being from 90 to 100 Cubic feet. I assume from this that the wood supplied to the Scinde Line must be of a far lighter description than the average wood obtained in this Presidency, the average equivalent allowed on this Line being 30 Cubic feet measurement to 1000 lbs weight, or by 2 Cubic feet to the Ton should, however, my assumption be incorrect, the difference in the measurements allowed would, of course, very seriously affect any results in consumption, as compared either with other fuels, or with consumption on other Lines The woods used on this line are of so many different descriptions that whether different to any whether among others the "Babul" is supplied, but, from the absence of any such effects as those described by Major Kelleher, it may, I think, be inferred that, if "Babul" has formed any part of the supplies, the proportion has been a very small one I feel sure that the authorities in Scinde have satisfied themselves of the accuracy of the average measurements in wood accepted by them as the equivalent of a Ton, but, at the same time, I have every reason to believe that the equivalent fixed on this Line, for fine wood used here, is as correct an average as it is possible to obtain

4 Adverting to the enquiry made by the Consulting Engineer in the correspondence under acknowledgment, as to the destructive action of the acid in the wood upon the Boiler tubes &c, I beg to inform you that I find, from the records of working during the last 14 years, that the Copper Fire-boxes of those Engines which have been burning wood have worn for a longer time than in the case of Engines using Coal. The Copper-boxes appear to be much more affected by the gases from the Coal than by those from wood; and when wood is used the Fire-boxes are not so liable to be burnt by the accumulation of Cinder as when Coal is used

Tubes, on an average, last about the same time with either description of fuel

Accompanying this report is a list containing the record of the working of four wood burning, and of four Coal burning Engines from the results shown, it will be seen that the life both of tube and firebox exceeds very considerably the average as given in Table C and D attached to Major Rallestonier's report

Yours faithfully
Sd/ E. C. Boadle
Actg. Loco. Superintendent

True Copy

Agent and Manager.

CB 13 Krumb 75 in Bk No 309

Rec'd 7/5/75

Madras Railway
Locomotive Department

Statement exhibiting working of Engines, burning respectively wood and coal

Wood burning Engines

Engine No. 38.

Has been running with wood for about 13 years. During the last 14 years and seven months this Engine has run a mileage of 303280. A new firebox and set of tubes are now being put in for the first time.

Engine No. 41

Has been running with wood for about 13 years During the last 14 years and 9 months the mileage run has been 289,308. This Engine is still working, but will shortly be brought into the shops for the first renewal during the period mentioned of firebox and tubes.

Engine No. 45

Has been running 13 years and 7 months, during the whole of which time wood has been used Mileage run 249,482. Is now being fitted with a new firebox and set of tubes, the first supplied during the period mentioned.

Engine No. 51

Has been running 13 years and 2 months during the whole of which time wood has

has been used Mileage run 261,703. This Engine is still working, but will shortly be brought into the shops for the first renewal, during the period mentioned, of firebox and tubes.

Coal burning Engines

Engine No. 57

Has been running 13 years and 4 months, during the whole of which time coal has been used. The firebox was renewed after 6 years and 4 months working Mileage 105,327. This Engine is still working and it is anticipated that in 2 years, total renewal of firebox, boiler and tubes will be necessary.

Engine No. 58.

Has been running 13 years and 4 months, during the whole of which time coal has been used The firebox was renewed after 8 years and 2 months working. Mileage 221,572. After working a further period of 3 years, mileage 102,170, a set of new tubes was supplied. This Engine will also require renewal of boiler and firebox in about 2 years.

Engine No. 62.

Has been running for 12 years and 8 months, during the whole of which time coal has been used The firebox was renewed after 7 years and 3 months working Mileage 181,009. The Engine is still at work, but will shortly be brought into the shops for new tubes.

Engine No. 65.

Has been running 12 years and 10 months during the whole of which time coal has been used. The firebox was renewed after 5 years and 4 months working Mileage 197,767 This Engine is still at work but will shortly be brought into the shops for renewal of firebox, boiler and tubes

Wdf E C Boodle
Ag Locomotive Superintendent
12th October 1875

/True Copy/

Wm Gilchrist
Agent and Manager

Mur 2532/75

Off-13 November 75
with B.No 309

No. 626 SP 0

~~GREAT~~ SOUTHERN OF INDIA RAILWAY.

AGENT'S OFFICE,

NEGAPATAM, 25th May 1875.

From

THE AGENT,

~~*Great*~~ *Southern of India Railway,*

11 F

To

The Consulting Engineer for Railways,

SIR,

Your letter No. 319 of 18th Inst.

I have the honor to inform you that I communicated with your Locomotive Superintendent on the subject contained in your letter, and have received the following reply from that Office.

"I note the result of the use of "Babul" as a Firewood on the S. P. D. Ry. We have not used this wood exclusively in our Engines; and I cannot say that my attention has been called to any danger to an Inspector from Wood burning. These boxes are carefully examined once a month & their condition registered

"I shall feel obliged if you will explain me a more definite explanation of the supposed results of Babul Wood. Although my chemical knowledge of the action of acids upon cellular vegetable tissues is limited I cannot understand in what way the box becomes affected. I should thought any fluid distilled from the wood would have been consumed as soon as the wood was reduced to a coal. To dissolve out of the box through the fibres. What portion of the box is injured? & how does it show itself & at what piece of time does the injury become apparent?"

I have the honor to be
Sir
Your most obt. Servt.
Vide Chief Engr's
Let Book
William Bell
Agent.

Q/ 13 November/75
mB No 309

No 3245 .. Public Works Department.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the 13th Nov 75

Read the following:—

From the Consulting Engineer for Railways } No. 5099 of 4 Nov. 1875.

Ordered that the papers be forwarded for the information of the Govt. of India.

Govt. of India.
No 3246 of 13 Nov.

No 3246

To The Secretary to the Govt. of India Public Works Dept.

Sir,

According to the Correspondence quoted in the margin I am directed to forward

* From Govt of India No 1226 R. of 15th May 1875
To Govt of India - 3126 of 4th Nov. 1875.

Cons. Engineer for Rly. Dept. Diary No. 76 dated 20-11-75.

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forward herewith
Reports showing
the relative merits
of wood and Coal
as fuel for loco's
Employed on the
Madras and South
Indian Railways.

I shall be seen
that the experience
of the Sind, Punjab
and Delhi Railway
as to the ill effects
of wood on the
fire boxes of Engines
is not borne out by
the Railways of this
Presidency - On the
other hand the re-
sults attained here

seem

132 73

seem to show the
superiority of wood
over Coal so far
as Chemical action
on the metal of
which fire boxes
are formed is con-
cerned

Yours

Rec'd 30-11-75.

30 sc of Memo 29

This was kept back for a few days pending reference to Mr. Logan's letter 844 sent to Mr Doyle by 2nd Mail

Govt. of 1875 Madras.

PUBLIC WORKS.

Govt. Order for
Rys.
Govt of India

Dated

Read

Put Lod

G. O 13 Nov 1875, No 3245
3246

Nos. 309 — 311
312

Food and Coal as final on the Madras Railways — Reports from the Agents, Madras R. Ls Rlys on the relative merits of tendered & the forwarded to Govt of India.