Public Works (1899) Department.

RAILWAY BRANCH.

G.O., No. 1050. Ry

DATED 20th Septr 1899

15/11/99

Proof 40/2

To Chief Engr

[Despatch Abstract.]

Renewal of five "7" class Locomotives with tenders on the S.E.Ry.

Sanctioning the estimate amounting to Rs 1,45,330 for the ——.

[P. W. 26. 200—30-3-99.]

Indexed.

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

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RAILWAY.

Government {1899} of Madras.

PUBLIC WORKS.

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G.O., No. 1050 Ry., 20th September 1899.

No 3544 S/18/11/99
CR in sec. Jour.

SEPTEMBER.

Renewal of five "F" Class Locomotives with tenders on the South Indian Railway

Sanctioning the estimate, amounting to Rs. 1,45,330, for the —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following papers:—

From—The Agent, South Indian Railway.
To—The Consulting Engineer for Railways, Madras.
Dated—Trichinopoly, 7th March 1896, No. 215.

In compliance with the instructions of my Board I have the honour to forward, for the general approval of Government, the appended programme of locomotive renewals on this railway. In connection with this programme it will be observed that it is not proposed to renew 24 tenders, and I shall be obliged if you will favour me with instructions as to how the original cost of these tenders should be treated.

Official year.	Engines to be renewed.	Expenditure.	Remarks.
		Rs.	
1896-97	Five without tenders		
1897-98	Seven	1,00,000	
1898-99	Do.	(a) 1,89,000	(a) Includes two engines Nos. 40 and 47 hired to the Nilgiri Railway and Tuticorin Reclamation works, respectively. The former has, up to 30th November 1895, inclusive, realized Rs. 4,590.
1899-1900	Seven without tenders ..	1,89,000	
1900-1901	Six	(b) 1,50,000	(b) Includes three engines proposed to be hired to Madras Harbour works extensions under negotiation.
1901-1902	Six	1,62,000	
1902-1903	Six without tenders ..	1,62,000	
1903-1904	Six	1,20,000	
1904-1905	Five	1,62,000	
1905-1906	Four	1,35,000	
1906-1907	....	1,08,000	
1907-1908	....	..	
1908-1909	Twelve { Six with tenders .. / Six without tenders.	1,62,000 / 1,20,000	With a life of 32 or 33 years.
Total ..	Seventy-one	..	

From—The Consulting Engineer for Railways.
To—The Agent, South Indian Railway.
Dated—Madras, ~~10th April~~ 23rd March 1896, No. 958.

With reference to your letter No. 215, dated 7th March 1896, forwarding, for approval, a programme of locomotive renewals on the South Indian Railway, I have the honour to request that you will kindly furnish me with a list of the engines on your line showing for each engine the type, age and mileage run, the engines which you propose to renew and the type of engine which you propose to substitute.

From—The Agent, South Indian Railway.
To—The Officiating Consulting Engineer for Railways, Madras.
Dated—Trichinopoly, 10th April 1896, No. 306.

In compliance with the request contained in your letter No. 958, dated 23rd March 1896, I have the honour to submit the information therein called for.

2. As regards the proposed reduction in the number of tenders I would explain that a permanent decrease is suggested. This is possible owing to the repairs to tenders being generally of a lighter nature and requiring less time to execute than those of locomotives.

3. The Locomotive Superintendent is desirous of indenting for the modified "F" class engine as recommended by the Locomotive and Carriage Superintendent's Committee, when replacing the engines included in his programme of renewals. I shall be glad to receive the sanction of Government to this course being adopted.

Enclosure.

South Indian Railway, Locomotive Department.

List of Engines showing the type, age and mileage run.

Engine number.	Type of engine.	Age of engine to end of December 1895.	Mileage run.	Action proposed to be taken.	Type of engine to be substituted.
		YEARS.			
1	F. Class, six wheels coupled, State Railway type.	3	72,967	Not included in the present programme of renewals.	F. Class modified type as suggested by Locomotive and Carriage Superintendent's Committee.
2		3	75,121		
3		3	97,761		
4		3	90,338		
5		3	97,236		
6	Six wheels coupled, South Indian Railway type.	21	324,128	To be renewed.	
7		21	307,999		
8		21	345,265		
9		21	345,430		
10		21	326,632		
11		21	417,686		
12		21	312,458		
13		21	361,996		
14		21	362,208		
15		21	360,762		
16		21	285,035		
17		21	277,510		
18	Four wheels coupled, South Indian Ry. type.	20	318,880	Not included in the present programme of renewals.	F. Class modified type as suggested by Locomotive and Carriage Superintendent's Committee.
19		13	421,001		
20		13	371,017		
21		20	344,846	To be renewed.	
22		20	272,171		
23	Six wheels coupled, South Indian Railway type.	20	290,842		
24		20	282,262	To be renewed in 1896-97.	
25		21	309,686		
26		21	319,173	To be renewed.	
27		21	338,931		
28		21	385,649		
29	Tank, six wheels coupled, South Indian Railway type.	20	413,327	Not included in the present programme of renewals.	
30		20	280,828		
31		20	303,818		
32		20	273,136		
33	Six wheels coupled, South Indian Railway type.	20	316,900	To be renewed.	F. Class modified type as suggested by Locomotive and Carriage Superintendent's Committee.
34		20	321,204		
35		20	221,837		
36		20	363,930		
37		20	331,309		
38		20	319,566		
39		20	306,882		
40		20	314,820	To be renewed in 1896-97.	
41		20	376,164		
42		20	355,448	To be renewed.	
43		20	298,379		
44		20	337,904		
45		20	304,421		
46		20	314,764		
47		20	315,630		

List of Engines showing the type, age and mileage run—*cont.*

Engine number.	Type of engine.	Age of engine to end of December 1895.	Mileage run.	Action proposed to be taken.	Type of engine to be substituted.
		YEARS.			
48	Six wheels coupled, South Indian Railway type.	20	398,311	To be renewed.	F. Class modified type as suggested by Locomotive and Carriage Superintendent's Committee.
49		20	276,451		
50		20	299,418		
51		20	389,048		
52		20	341,873		
53		20	341,718		
54		20	365,447	To be renewed in 1896–97.	
55		20	359,137		
56		20	357,615	To be renewed.	
57		20	308,728		
58		20	337,518		
59		20	252,556		
60		20	308,562		
61		20	305,350		
62		20	389,356		
63		20	315,100		
64		20	339,292		
65		20	298,820		
66		20	374,178	To be renewed in 1896–97.	
67		20	356,442	To be renewed.	
68		20	325,695		
69		20	331,326		
70		20	374,004	To be renewed in 1896–97.	
71		20	332,279	To be renewed.	
72		20	304,012		
73		20	347,658		
74		20	292,384		
75		20	332,687		
76		20	312,415		
77		19	278,674		
78		19	311,039		
79		19	376,674		
80		19	338,277		
81		19	290,008		
82		19	315,788		
83	Four wheels coupled, South Indian Railway type.	17	402,779		
84		17	362,576		
85		17	348,276		
86		17	353,430		
87		17	336,494		
88		17	314,365		
89		17	341,160		
90		17	348,524		
91		17	365,790		
92		17	348,252		
93		17	343,558		
94		17	308,181		
95		17	249,882		
96		17	362,088		
97		17	342,862		
98		17	311,766		
99		17	326,970		
100		17	354,043		
101		17	344,380		
102		17	355,852		
103		17	362,373	Not included in the present programme of renewals.	
104	Six wheels coupled, South Indian Railway type.	16	344,791		
105		16	252,197		
106		16	365,344		
107		15	292,103		
108		15	270,614		
109		15	304,379		
110		15	329,831		
111		15	329,172		
112		15	299,059		
113		15	248,417		
114		15	309,015		
115		15	278,757		
116		15	263,722		
117		15	266,104		
118		15	256,628		
119		15	291,419		
120		15	223,037		
121	Tank, four wheels coupled, South Indian Railway type.	10	86,087		
122		10	83,044		
123		10	84,561		
124		10	71,613		

List of Engines showing the type, age and mileage run.

Engine number.	Type of engine.	Age of engine to end of December 1895.	Mileage run.	Action proposed to be taken.	Type of engine to be substituted.
		YEARS.			
125	F. Class, six wheels coupled, State Railway type.	8	120,655	Not included in the present programme of renewals.	
126		8	142,619		
127		8	131,919		
128		8	127,914		
129		8	112,832		
130		8	140,519		
131		8	149,146		
132		8	132,808		
133		8	138,682		
134		8	127,172		
135		5	80,379		
136		5	55,399		
137		5	87,321		
138		5	142,547		
139		5	142,596		
140		5	124,411		
141		5	119,923		
142		5	109,885		
143		5	84,247		
144		5	122,707		
145		5	139,393		
146		5	120,075		
147		5	112,199		
148		5	87,838		
149		5	107,381		
150		5	94,201		
151		5	78,166		
152		5	117,928		
153		5	98,660		
154		5	94,556		
155		5	111,551		
156		5	107,140		
157		5	92,034		
158		5	114,133		
159		5	103,522		
160		5	126,780		
161		5	117,494		
162		5	114,283		
163		5	116,692		
164		5	99,176		
165		5	120,331		
166		5	114,862		
167		5	124,113		
168		5	80,096		
169		5	117,828		
170	Four wheels coupled, South Indian Ry. type	5	124,138		
171		5	129,214		
172		5	139,897		
173		5	114,531		
174		5	116,563		
175		5	133,669		
176		5	137,838		
177		5	112,739		
178	Four wheels coupled, South Indian Railway type.	5	143,667		
179		5	130,458		
180		5	128,876		
181		5	152,323		
182		5	131,883		
183		5	108,813		
184		5	113,469		
185		2	56,123		
186		2	72,093		
187		2	56,718		
188		2	67,277		
189		2	62,377		
190		2	68,224		
191		2	69,340		
192		2	51,723		
193		2	71,505		
194	"O" Class, four wheels coupled.	2	44,570		
195		2	57,221		
196		2	63,910		
197		2	52,997		
198		2	56,077		
199		2	59,739		
200		2	37,751		
201		2	46,993		
202		2	34,133		
203		2	63,477		
204		2	42,755		

From—The Agent, South Indian Railway.
To—The Consulting Engineer for Railways, Madras.
Dated—Trichinopoly, 21st April 1896, No. 344.

In compliance with the request contained in your telegram No. D.-115 of the 16th instant, I send herewith a copy of the Locomotive Superintendent's letter, No. 2990/1410 of 13th December 1895, with enclosures thereto, regarding the renewal of locomotives.

Enclosure No. 1.

From—The Locomotive and Carriage Superintendent.
To—The Agent, South Indian Railway.
Dated—Negapatam, 13th December 1895, No. A. 2990/1410.

I beg to acknowledge receipt of an extract from letter No. 158, dated 25th October last, from the Managing Director with a connecting letter from Sir George Bruce on the above important subject. So far as I am able to foresee I give below a programme on a yearly basis of the renewals required to replace the 71 engines referred to in my letter No. A. 2990/727 of 4th July 1895.

It will be my endeavour to extend this basis of renewals as far as possible.

For Enclosure entitled "Programme of yearly renewals of 71 engines together with anticipated yearly expenditure on account of same." (*See Agents' letter No. 215 March 7th 1896, on page 1.*)

It must not be forgotten that in renewing these engines the Company will gain in procuring a much improved type of good engines in the "F" class as the cylinders are 1" larger than those to be renewed and heavier loads can, in consequence, be taken.

With reference to more extensive repairs being carried out by me in the shops here, I beg to point out that, were I to entirely construct the engines from the very beginning, I could not do more than what is now done to all engines which come in for heavy repairs, and although only six boilers have been obtained from England to take the place of others undergoing repairs. Our boilers are practically rebuilt as good as new when they come into the shops. I can say the same of boiler mountings and other fittings.

I enclose a copy of Boilershop Foreman Barden's report on this subject, together with a statement of repairs done to boilers of six-wheel coupled engines Nos. 6 to 82 since they were received from England.

I shall be glad to know whether the Board approve of my proposal to reduce the number of tenders, as by doing so a saving will be effected; also whether I may prepare and forward an indent for the five engines required next official year.

Enclosure No. 2.

From—The Foreman, South Indian Railway Boilershop, Negapatam.
To—The Locomotive and Carriage Superintendent.
Dated—30th November 1895, No. 23/2.

I beg leave to submit a statement as requested by you showing the repairs done to the boilers for 71 six-wheel-coupled engines Nos. 6 to 18, 21 to 28 and 33 to 82, from which you will see that 104 heavy repairs have been done, 124 moderately heavy, and 193 light. By referring to the totals on the last sheet you will see the number of each kind of plate, &c, that have been put in since they were received from England.

The statement may not be quite accurate (as I have no record of repairs done previous to 1880 or those done at outstations), but I think it will show sufficiently what has been done and what we are capable of doing here. I am certain that the boilers referred to have been kept in a proper state of efficiency, and when heavy repairs have been necessary, they have been done, and the boilers made nearly equal to new ones, at about half the cost new ones could have been supplied. It certainly will not be advisable to get any new boilers for the engines in question for reasons which you already are aware of.

I therefore hope the statement and the work that has been done will meet with your approval.

Enclosure No. 3.

South Indian Railway Company (Limited)—Boilersmith Shop.

Statement showing the repairs done to boilers of six-wheel coupled engines, Nos. 6 to 82, since they were received from England.

Engine numbers.	Commenced working.	Description of repairs. Copper plates. Tube plate, new.	Back plates, new.	Roof and side, new.	Fire-box, complete.	Iron plates. Tube plate, new.	Front plate, new.	Back plate, new.	New sides to fire-box casing.	New plates to bottom of barrel.	Metal tubes. New tubes.	Stays. Copper. New.	Iron. New.	Remarks. Had new fire boxes, new tubes, new plates for fire-box casing, new plate to bottom of barrel and made equal to new boiler.	Fire-box not taken out but have had other extensive repairs.	Had tubes taken out and all necessary repairs done.
											Sets.	Sets.	Sets.	Heavy repairs.	Moderate repairs.	Light repairs.
	1874.	2	1	1	1	1	1	1	2	3	1	2	2	1	2	4
	,,	3	1	1	1	2	1	2	2	3	1	2	1	1	3	3
8	,,	2	1	1	1	1	1	1	2	..	1	1½		1	1	3
9	,,	2	2	2	2	2	2	1	2	3	1	2	2	2	1	3
10	,,	2	1	1	1	2	2	1	2	..	1	2	1	2	1	3
11	,,	1	1	1	1	1	1	1	1	..	1	1	1	1	1	3
12	,,	3	1	1	1	2	1	1	2	4	1	2	1	1	2	3
13	,,	2	2	1	1	2	2	2	2	2	1	2	2	2	1	2
14	,,	3	1	1	1	1	1	1	2	3	1	2	1	1	2	3
15	,,	2	1	1	1	1	1	1	2	3	2	2	1	1	3	2
16	,,	2	1	1	1	2	2	1	2	3	2	1½	1	1	2	2
17	,,	3	1	1	1	2	3	1	2	3	2	2	2	2	2	2
18	,,	3	2	1	1	2	1	1	2	3	1½	2½	2	2	2	2
21	,,	2	1	1	1	2	2	2	4	3	1½	2	2	2	1	2
22	,,	3	1	1	1	2	1	1	2	3	1	2	1	1	2	2
23	,,	3	1	1	1	2	2	2	2	3	1	2	1	1	3	2
24	,,	3	1	1	1	2	2	3	2	2	1½	2½	2	2	1	2
25	,,	3	1	1	2	2	3	3	4	4	2	2½	2	2	2	2
26	,,	4	1	1	2	2	2	1	2	3	2	2½	2	2	3	2
27	,,	3	2	1	1	2	2	2	2	2	1	2	1	1	3	2
28	,,	4	1	1	1	1	1	1	2	3	1	2	1	1	3	2
33	1875.	4	1	1	2	1	1	1	2	..	2	2	1	1	3	2
34	,,	2	1	1	1	1	1	1	2	..	1	1½	1	1	1	3
35	,,	2	1	1	2	1	1	2	5	1	1½	2	1	1	2	4
36	,,	3	3	2	3	3	3	2	6	2	2½	2	2	2	1	3
37	,,	3	1	1	2	3	1	2	3	1	1½	1	1	1	2	3
38	,,	4	1	1	2	1	1	2	..	1	1½	2	2	2	1	3
39	,,	2	2	2	2	2	2	2	..	2	2	2	2	2	2	2
40	,,	3	1	1	2	2	2	2	3	1½	2	2	2	2	2	2
41	,,	2	1	1	1	1	1	1	2	3	2	1½	1	1	2	3
42	,,	4	2	2	2	3	2	2	4	3	2½	2	2	2	1	3
43	,,	3	1	1	1	2	1	2	3	2	2	1	1	1	2	3
44	,,	2	1	1	1	1	1	2	5	1	1½	1	1	1	2	3
45	,,	2	1	1	1	1	1	2	..	2	1	1	1	1	1	4
46	,,	3	2	2	2	2	3	2	4	4	2	2½	2	2	1	4
47	,,	4	2	2	2	3	4	2	4	4	2	2½	2	2	1	4
48	,,	2	1	1	1	1	1	1	2	3	1	1½	1	1	2	3
49	,,	3	2	2	2	3	2	2	4	3	2	2½	2	2	3	2
50	,,	3	2	1	1	2	2	1	4	6	3	2½	2	2	1	3
51	,,	2	2	2	2	2	2	2	2	6	3	2½	2	2	2	2
52	,,	3	1	..	1	1	2	1	2	4	2	1½	1	1	2	3
53	,,	3	1	1	1	2	3	1	2	3	3	1½	1	1	2	3
54	,,	3	2	2	2	3	3	2	4	6	3	2½	2	2	1	3
55	,,	2	1	1	1	1	2	1	..	3	2	1½	1	1	2	3
56	,,	3	2	2	2	2	2	2	2	3	2	2½	2	2	2	2
57	,,	2	2	1	2	2	2	2	2	3	2	2½	2	2	2	3
58	,,	2	2	2	2	2	2	2	2	3	2	2½	2	1	1	2
59	,,	3	1	1	1	2	2	1	1	3	1	1½	2	2	3	2
60	,,	3	2	2	2	2	2	2	4	4	3	2½	2	2	2	2
61	,,	3	1	1	1	1	1	2	3	3	2	1½	1	1	2	4
62	,,	2	2	2	2	2	2	2	2	3	1	2½	2	2	1	3
63	,,	2	2	..	..	1	2	1	..	2	1	1	1	1	2	4
64	,,	2	1	1	1	2	1	2	..	..	1	1½	1	1	2	4
65	,,	3	2	1	2	2	2	2	3	2	2	2½	2	2	2	2
66	,,	2	1	1	1	2	2	2	4	3	2	2	2	2	1	3
67	,,	1	1	..	..	1	1	..	2	..	1	1½	1	1	2	3
68	,,	3	2	1	1	2	2	2	3	1	2	1	1	2	1	4
69	,,	2	1	1	1	2	2	2	4	4	2	2½	2	2	1	3
70	1876.	2	1	1	2	2	2	1	..	..	1	1½	1	1	2	3
71	,,	3	1	1	1	2	2	2	2	3	2	2½	2	2	2	2
72	,,	2	1	1	1	1	1	2	3	1	1	1½	1	1	1	3
73	,,	3	1	1	1	2	1	2	..	1	1	1½	1	1	2	3
74	,,	2	1	1	1	2	1	1	2	3	1	1½	1	1	2	3
75	,,	2	2	1	1	2	2	2	4	3	1	2½	2	2	1	4
76	,,	3	1	1	1	2	2	1	2	3	1	1½	1	1	3	3
77	,,	3	2	1	1	1	2	1	4	4	2	2½	2	2	2	2
78	,,	..	1	1	1	2	2	1	2	1	1	1½	1	1	1	4
79	,,	1	1	1	1	1	1	1	2	..	1	1½	1	1	3	2
80	,,	2	1	1	1	1	1	1	..	3	1	1½	1	1	1	3
81	,,	2	1	1	1	2	1	1	2	3	2	1½	1	1	2	3
82	,,	3	2	1	1	2	2	2	4	3	2	2½	2	2	1	2
Total 71		182	97	82	84	124	126	101	157	191	112	138	102	104	124	193

From—The Consulting Engineer for Railways, Madras.
To—The Agent, South Indian Railway.
Dated—28th April 1896, No. 1341.

I have the honour to acknowledge with thanks the receipt of a copy of your Locomotive Superintendent's letter, No. 2990/1410, dated 13th December 1895. In view of the importance of the question I am anxious to be acquainted with the correspondence which has passed on the subject, and I should feel obliged if you would send me copies of the following :—

Locomotive Superintendent's report of 21st March 1895 on the condition of engine No. 25.

Sir George Bruce's opinion of 24th May 1895.

Locomotive Superintendent's report thereon.

Sir George Bruce's letter of 8th October 1895.

From—The Agent, South Indian Railway.
To—The Officiating Consulting Engineer for Railways, Madras.
Dated—Trichinopoly, 7th May 1896, No. 387.

In compliance with the request contained in your letter, No. 1341 of the 28th ultimo, regarding the renewal of locomotives, I have the honour to forward, herewith, copies of the undermentioned correspondence :—

(1) Letter No. A. 2990/327 of 21st March 1895, from the Locomotive Superintendent to the Agent.

(2) Letter dated 24th May 1895, from Sir George Bruce to the Managing Director.

(3) Letter No. A. 2990/727 of 4th July 1895, from the Locomotive Superintendent to the Agent with two statements attached.

(4) Letter dated 8th October 1895, from Sir George Bruce to the Managing Director.

Enclosure No. 1.

From—The Locomotive and Carriage Superintendent, Negapatam.
To—The Agent, South Indian Railway.
Dated—21st March 1895, No. A. 2990/327.

I beg to submit for your consideration and that of the Board the condition of some of our old six-wheel coupled goods engines which, through length of time, are becoming in very bad condition and will require replacing by new engines at an early date.

The engines which are failing are those constructed in 1874 and 1875, Nos. 6 to 18, 21 to 28, 33 to 68 and 69 to 82, altogether 71 engines, and many of these have become very much worn, particularly in underframes and cylinders. I have at present No. 25 in the shops for repairs which was built with 21 others of the same class in 1874 by Messrs. Neilson & Co., and its condition, I find, is so bad that I do not think it worth going to the expense of repairing and that it should be put to one site and such parts as are unserviceable sold as scrap.

I am of opinion that by degrees all these engines should be replaced by the latest standard "F" class six-wheel coupled metre gauge engines and that during next year five new engines should be obtained in lieu of five of the worst conditioned of the abovementioned ones.

I enclose herewith copy of report on the condition of the engine and tender of No. 25, which shows the amount of work required to put it in order. With regard to the wheels, if sanction is given to my indenting for five new engines, the indent for further wheels can be withheld.

I am of opinion that if we get out, say, five new engines each year, it will be sufficient to replace such as are at present in very bad condition and will continue to maintain those which are becoming bad.

Enclosure No. 2.

From—The Locomotive and Carriage Superintendent.
To—The Agent, South Indian Railway.
Dated—21st March 1895.

Report on the condition of engine and tender No. 25.

Makers	Messrs. Neilson & Co.
No.	1864.
Date	1874.
Class	Six-wheel coupled.

Was thoroughly repaired last in 1889.

Engine.

Frames.—Both badly eaten away round the cylinders, the left one being only $\frac{1}{4}$" thick and the right $\frac{3}{8}$", the proper thickness being $\frac{7}{8}$".

Cylinders.—Both are bad and have been bored $\frac{1}{4}$" larger and will not stand boring again. Will require to be renewed.

Platform plates.—Very much worn and patched in a number of places. Should now be renewed.

Cast iron foot plate.—Broken and requires an expensive patch.

Horn cheeks.—All too thin and require to be renewed.

Horn cheek stays.—Require to be renewed.

Axle boxes.—Bad and very much below the standard size. Require to be renewed.

Eccentric sheaves.—Too small. Require to be renewed.

Pistons.—Worn out. New ones required.

Slide bars.—Worn out. New ones required.

Side rods.—Require all new ends.

Valve spindles.—Worn out. New ones required.

Motion.—Requires a thorough repair and the number of the parts renewed.

Brake-gear.—Worn out. New required.

Buffer beam and plates.—Worn out. New required.

Canopy.—Bad. Requires to be thoroughly repaired.

Tender.

Frames.—Both eaten away about $\frac{1}{4}$" on sides of the drag box.

Cross and longitudinal frame stays.—Badly eaten away and require to be renewed.

Drag box.—All the plates badly eaten away and full of holes. Requires to be renewed.

Tank.—Bottom bad, requires to be renewed.

Intermediate buffers and guides.—Require to be renewed.

Brake-gear.—Worn out, new required.

Buffer beam and plates.—Worn out, new required.

Canopy.—Worn out, new required.

Boiler.

Is in very fair condition having been thoroughly repaired in 1889; but there are several boilers of the same class which were repaired previous to that date and now require a very heavy repair again. If it is decided to condemn the engine, we could look out for an exceptionally bad boiler of the same class and condemn it in place of that belonging to No. 25.

Wheels.

There are a few sets of wheels which are very bad, so much so that Foreman Horrocks has asked for three new sets in the English indent which is now being prepared.

South Indian Railway.

Estimate of the cost of repairing Locomotive Engine No. 25.

Particulars.	Amount. Rs.	Particulars.	Amount. Rs.
Cylinders, new, at £50	900	Bolts and nuts	27
Wheels, new, at £95	1,710	Framing, to patch	100
Springs, new, at £10	180	Repairing motion	142
Axle boxes, new, at £15	270	Do. brake-gear	60
Coupling rods, new, at £16	288	Do. and renewing pipes	63
Connecting rods, new, at £8	144	Do. cast-iron foot plate	14
Eccentric sheaves, new, at £4	72	Platform plates and supports	40
Injectors, new, at £10	180	Wood lagging	30
Piston rods, new	120	Buffer beam	15
Slide valves	50	Do. plates	26
Do. bars	45	Canopy	80
Cross head blocks	14	Lubricators at £7	126
Gudgeon pins	5	Pressure gauge, new	24
Valve spindles	30	Blast pipe	25
Horn cheeks	45	Buffer at £11	198
Horn stays	15	Ash pan	39
Eccentric straps	50	Chimney	24
Boiler mountings	200	Painting	150
Lagging plates	37	Erecting	600
Tools	15		
Fire irons	15		
Lamps	24		
Spring links	6	Total Rs.	6,148

Tender.

Particulars.	Amount. Rs.
Buffer at £11	198
Wheel tyres, £12	216
Springs, £8	144
Canopy	20
Buffer beam	15
Do. plate	13
Axle brasses	20
Repairing tank	208
Do. drag box	65
Cross and longitudinal stays	70
Pipes and valves	15
Rubber hose	12
Brake-gear	50
Intermediate buffers and springs	10
	1,056

Boiler.

New duplicate at £335	6,030

Summary.

Engine	6,148
Tender	1,056
Boiler	6,030
Total Rs.	13,234

Number of engine.	Date received from England.	Mileage run during interval up to 31st December 1894.	Amount at which it stands in Audit office books.	Cost of carrying out repairs to No. 25 engine.	Dates when engines last received heavy repairs.	Cost of "F" class engines recently supplied.	Detailed particulars showing approximate value of materials of one condemned engine if scrapped.
6	May 1874 ..	304,506					
7	Do. ..	304,817					
8	August 1874 ..	314,118					
9	Do. ..	325,541					
10	September 1874 ..	308,799					
11	Do. ..	399,497					
12	October 1874 ..	294,138					
13	Do. ..	346,510					
14	November 1874 ..	330,636					
15	Do. ..	337,401					
16	December 1874 ..	267,688					
17	Do. ..	269,245					
18	February 1875 ..	315,431					
21	Do. ..	325,019					
22	Do. ..	255,312					
23	Do. ..	276,235					
24	Do. ..	264,264					
25	**October 1874 ..**	**309,686**			July 1882. March 1885. October 1889.		Rs. A. P. 320 0 0 40 0 0 40 1 0 17 3 0 157 5 0 264 0 0 72 3 0 14 0 0 924 12 0
26	Do. ..	310,779					
27	Do. ..	319,611					
28	Do. ..	366,926					
33	April 1875 ..	291,057					
34	Do. ..	302,420					
35	Do. ..	203,012					
36	Do. ..	346,536					
37	May 1875 ..	317,686					
38	Do. ..	298,794					
39	Do. ..	289,428					
40	Do. ..	314,820			October 1880. November 1884. March 1891.		
41	**May 1875 ..**	**354,076**					
42	Do. ..	338,216					
43	Do. ..	275,452					
44	Do. ..	324,334					
45	Do. ..	297,563					
46	Do. ..	298,778					
47	June 1875 ..	293,254					
48	Do. ..	372,103					
49	Do. ..	257,753					
50	Do. ..	284,142					
51	July 1875 ..	365,576					
52	Do. ..	318,236					
53	Do. ..	324,548					
54	Do. ..	341,966					
55	**July 1875 ..**	**349,186**			February 1881. June 1885. November 1891		
56	Do. ..	332,580					
57	Do. ..	289,276					
58	Do. ..	309,666					
59	August 1875 ..	344,900					
60	Do. ..	292,625					
61	Do. ..	287,867					
62	Do. ..	274,691					
63	Do. ..	307,999					
64	Do. ..	329,185					
65	Do. ..	280,083					
66	**August 1875 ..**	**357,854**			April 1880. September 1883. December 1890.		
67	Do. ..	335,598					
68	Do. ..	303,177					
69	September 1875 ..	309,997					
70	**September 1875 ..**	**370,355**			September 1879. June 1884. April 1893.		
71	Do. ..	317,716					
72	Do. ..	271,712					
73	October 1875 ..	327,084					
74	Do. ..	284,988					
75	Do. ..	318,508					
76	Do. ..	285,547					
77	March 1876 ..	260,774					
78	Do. ..	285,221					
79	April 1876 ..	355,538					
80	Do. ..	317,412					
81	Do. ..	269,185					
82	Do. ..	299,558					

Average cost per engine, inclusive of freight, shipping charges, &c., Rs. 20,942-15-11, delivered at Negapatam.

Approximate cost of repairs to engine No. 25 is Rs. 13,234, the same remarks apply to the other four engines.

Average cost of "F" class engines lately sent out, inclusive of freight, shipping charges, &c., Rs. 24,874.

Boiler.

Wrought iron, tons 16 at Rs. 20 per ton.	..
Cast iron 2 at ,, 20 ,,	..
Old brass, lbs. 350 at 1 a. 10 p. per lb.	..
Old copper, ,, 160 at 1 a. 10 p. ,,	..
Old copper fire-box, lbs. 1,373 at 1 a. 10 p. per lb.	..
Old brass tubes ,, 2,804 at 1 a. 10 p. ,,	..
Old iron ,, 4,620 at 3 pice ,,	..
Old ash pan ,, 1,336 at 2 ,, ,,	..
Old chimney	
Old smoke box	

Enclosure No. 3.

From—Sir George B. Bruce.
To—Henry W. Notman, Esq., 55, Gracechurch Street.
Dated—3, Victoria Street, 24th May 1895.

Renewal of Locomotives.

I duly received your letters of the 22nd April and the 2nd May with accompanying documents, having reference to the renewal of the locomotives on this line.

Mr. Crighton in his report states that: "The condition of some of our old 6-wagon covered goods engines which, through length of time, are becoming in very bad condition, will require replacing by new engines at an early date."

The engines to which he refers are those constructed in 1874–75, and comprise in all 71 locomotives. One of these engines No. 25, which he had in the shops for repairs, Mr. Crighton describes as in "so bad a condition that I do not think it worth going to the expense of repairing, and that it should be put to one side and such parts as are unserviceable sold as scrap" and Mr. Crighton further expresses the opinion that by degrees all these engines should be replaced by new ones.

I have great faith in Mr. Crighton's judgment and opinion upon any question connected with his department; but I am surprised that these engines within a period of 20 years should be in so bad a condition as that which seems to be conveyed by his report. As far as the records of this office enable me to judge very few of these locomotives have either had new boilers or new cylinders, though it is not unusual for an engine to last out two boilers and four pairs of cylinders.

Before coming to a conclusion to replace these 71 engines by new ones, I should recommend the Board to ascertain from Mr. Crighton what the large repairs, such as new boilers and cylinders, have been on each of the engines under review; and if he could at the same time state what the mileage run by each locomotive has been, the Board would be in a better position to decide on a course of action in this matter.

I have ascertained that on the East Indian Railway the rule is to limit the repairs on any one locomotive to Rs. 7,000, but I think that this rule must have been adopted when the rupee was worth about two shillings, for at the present rate of exchange Rs. 7,000 would not replace even a new boiler of the narrow gauge. I find that in this country no such hard and fast rule exists, but that the question is decided in each individual case according to the judgment of the Locomotive Superintendent.

New locomotives may very probably be required to meet the increase of traffic, but it would be well to ascertain from Mr. Crighton whether the present stock of engines which cannot have run a heavy mileage could not be maintained for some years yet, if new boilers, cylinders and axles and, perhaps, other duplicates were sent out to replace those worn or wearing out.

With regard to the frames of the locomotives which Mr. Crighton describes as badly eaten away round the cylinders it seems a pity to throw away the whole frame, because of this failure at one end and this I would suggest might be rectified by welding on a new plate where the original one is eaten away by the surrounding moisture and the oscillating action of the outside cylinders. On hearing from Mr. Crighton on the various points raised above, I shall be better able to form a judgment upon the whole question.

I may observe that the total number of locomotives which has been authorised is 216, whereas the total stock at present is only 204, leaving 12 still to be supplied. I am not aware why these 12 engines have not been indented for.

Enclosure No. 4.

From—The Locomotive and Carriage Superintendent.
To—The Acting Agent, South Indian Railway.
Dated—Negapatam, 4th July 1895, No. A-2990/727.

Renewal of Locomotives.

[Your letter No. 5234/819 of 26th June in which you forward an extract on the above subject from the Managing Director's letter, No. 153, of 7th June, together with copy of Sir George Bruce's letter, dated the 24th May 1895.]

I beg to report further, for the information of the Board, that my letter, No. 2990/327, of the 21st March, was not intended to convey any alarm as to the present condition of the whole of the 71 engines referred to, but that their replacement was inevitable during the next eight or ten years; and I therefore asked that the Board's sanction might be obtained to permit me to make

arrangements for their replacement by degrees, and I thought it was better to bring this important subject to notice at once than let matters run on until many more of the engines would have to be replaced. I therefore considered it advisable to stop five of the worst engines and have them replaced during next year (1896–97) by the more recent type of F class 6 wheel coupled engines. By so doing the necessity for my indenting for any more duplicate parts (excepting cylinders) would cease, as much parts of the condemned engines as were suitable and fit would be utilised for the remaining ones.

A life of 20 years for a metre gauge engine in India, where the conditions are so different to those of an English line, is, in my opinion, not a bad record and the mileage run by each of the engines I now condemn will bear, I think, favourable comparison to other engines 20 years old.

Mileage of five Engines as under.

No. 25	engine,	309,686	up to	31st	December	1894.
„ 41	„	354,076	„	31st	„	„
„ 55	„	349,186	„	31st	„	„
„ 66	„	357,854	„	31st	„	„
„ 70	„	370,355	„	31st	„	„

But it must be borne in mind that the remaining 66 engines are still useful and increasing their mileage record and that some of them will continue to live and work until, I hope, 30 years or more is reached.

I find I cannot give reliable information as to the heavy repairs each of the 71 engines has received in the way of new boilers and cylinders as, I regret to say, many of my office records have during past years become destroyed by white-ants, rats and damp and have been sold as waste paper; but I give as much information as I am able to gather in regard to heavy repairs carried out during the life of the five engines under notice.

It is not, however, in my opinion a question of new boilers or cylinders it is the frames, tenders and other parts of the engines, which are becoming so old and worn. Every time an engine comes into the shops for heavy repairs, the boiler is almost renewed and the cylinders bored out, but the time comes when it does not pay to add new work to old. Six new boilers were received from England in 1889 for this type of engine and these are used from time to time to take the place of old boilers which require rebuilding and I think I may safely say that all these engines have had as good as new boilers more than twice during their life.

With regard to Sir George Bruce's suggestion to weld on a new end to the frames at that portion where badly eaten away round the cylinders, I beg to point out that such a course would be very risky, as the native smiths are not accustomed to such heavy work and even in English shops the welding of an engine frame plate is a speciality. The frames under notice, in addition to having become so bad round about the cylinders, are also much eaten away near the cast-iron foot plate and were this to be removed for welding on new frame ends it would be a most difficult matter to get the engine square and parallel again and it would cost a great deal more than it is worth expending on the engine.

I have the pleasure to submit a statement giving the dates the 71 engines were received from England during 1874 and 1875, together with the mileage each engine has run during the interval up to December 1894, also the average cost of each engine as they stand in the Audit office books, amounting to Rs. 20,942 (with regard to which there does not appear to be any depreciation written off). I also give an estimate in detail of the amount it will cost to repair each of the five engines and the value of each engine if broken up and sold as scrap.

In conclusion I can only recommend that the time has arrived when these engines are not worth spending more money upon and it will be to the advantage of the Company to have them replaced by the most recent type of F class which will take heavier loads for traffic.

If the Board approve and sanction my proposals to replace these engines, I beg to suggest, in order to lighten the expenditure which, I presume, must fall as a charge against revenue, that for the 71 engines to be supplied there need be only 51 tenders sent out and as I have already 50 F class tenders here which are interchangeable, the first five new engines I now ask for need not be supplied with tenders; by this arrangement a considerable saving would be effected. My reason for making this suggestion is that when engines and tenders come in for repairs, the work required for the tender is of much lighter description and of shorter duration than that required for the engine and I can therefore change the tenders on to other engines and send them out more frequently.

With regard to the last paragraph of Sir George Bruce's letter, he is quite correct we have only 204 engines out of 216 sanctioned, leaving 12 engines still to be supplied. These 12 engines were included in this year's budget estimates, but were struck out owing to financial pressure. I hope to include them in next year's budget and trust they may be supplied during the year. They are required to complete the lot of "O" class engines recently supplied for working the vacuum brake trains between Madras and Tuticorin. At present I have only 20 of these engines which are just sufficient to work the service between Madras and Madura and Trichinopoly and Erode, and from Madura to Tuticorin. I am unable to carry on the working with "O" class engines and vacuum brake until the 12 engines are supplied.

South Indian Railway.

Estimate of the cost of repairing Locomotive Engine No. 25.

Particulars.	Amount. Rs.	Particulars.	Amount. Rs.
Cylinders, new, at £50	900	Bolts and nuts	27
Wheels, new, at £95	1,710	Framing, to patch	100
Springs, new, at £10	180	Repairing motion	112
Axle boxes, new, at £15	270	Do. brake-gear	60
Coupling rods, new, at £16	288	Do. and renewing pipes	63
Connecting rods, new, at £8	144	Do. cast-iron foot plate	14
Eccentric sheaves, new, at £4	72	Platform plates and supports	40
Injectors, new, at £10	180	Wood lagging	30
Piston rods, new	120	Buffer beam	15
Slide valves	50	Do. plates	26
Do. bars	45	Canopy	80
Cross head blocks	14	Lubricators at £7	126
Gudgeon pins	5	Pressure gauge, new	24
Valve spindles	30	Blast pipe	25
Horn cheeks	45	Buffer at £11	198
Horn stays	15	Ash pan	39
Eccentric straps	50	Chimney	24
Boiler mountings	200	Painting	150
Lagging plates	37	Erecting	600
Tools	15		
Fire irons	15	Total Rs.	6,148
Lamps	24		
Spring links	6		

Tender.

Particulars.	Amount. Rs.
Buffer at £11	198
Wheel tyres, £12	216
Springs, £8	144
Canopy	20
Buffer beam	15
Do. plate	13
Axle brasses	20
Repairing tank	208
Do. drag box	65
Cross and longitudinal stays	70
Pipes and valves	15
Rubber hose	12
Brake-gear	50
Intermediate buffers and springs	10
	1,056

Boiler.

New duplicate at £335	6,030

Summary.

Engine	6,148
Tender	1,056
Boiler	6,030
Total Rs.	13,234

Number of engine.	Date received from England.	Mileage run during interval up to 31st December 1894.	Amount at which it stands in Audit office books.	Cost of carrying out repairs to No. 25 engine.	Dates when engines last received heavy repairs.	Cost of "F" class engines recently supplied.	Detailed particulars showing approximate value of materials of one condemned engine if scrapped.
6	May 1874 ..	304,506					
7	Do. ..	304,817					
8	August 1874 ..	314,118					
9	Do. ..	325,541					
10	September 1874 ..	308,799					
11	Do. ..	399,497					
12	October 1874 ..	294,138					
13	Do. ..	346,510					
14	November 1874 ..	330,636					
15	Do. ..	337,401					
16	December 1874 ..	267,688					
17	Do. ..	269,245					
18	February 1875 ..	315,431					
21	Do. ..	325,019					
22	Do. ..	255,312					
23	Do. ..	276,235					
24	Do. ..	264,264					
25	**October 1874** ..	**309,686**			July 1882. March 1885. October 1889.		Rs. A. P. 320 0 0 / 40 0 0 / 40 1 0 / 17 3 0 / 157 5 0 / 264 0 0 / 72 3 0 / 14 0 0 / 924 12 0
26	Do. ..	310,779					
27	Do. ..	319,611					
28	Do. ..	366,926					
33	April 1875 ..	291,057					
34	Do. ..	302,420					
35	Do. ..	293,012					
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37	May 1875 ..	317,686					
38	Do. ..	298,794					
39	Do. ..	289,428					
40	Do. ..	314,820					
41	**May 1875** ..	**354,076**			October 1880. November 1884. March 1891.		
42	Do. ..	338,216					
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48	Do. ..	372,103					
49	Do. ..	257,753					
50	Do. ..	284,142					
51	July 1875 ..	365,576					
52	Do. ..	318,236					
53	Do. ..	324,548					
54	Do. ..	341,966					
55	**July 1875** ..	**349,186**			February 1881. June 1885. November 1891		
56	Do. ..	332,580					
57	Do. ..	289,276					
58	Do. ..	309,666					
59	August 1875 ..	344,900					
60	Do. ..	292,625					
61	Do. ..	287,867					
62	Do. ..	274,691					
63	Do. ..	307,999					
64	Do. ..	329,185					
65	Do. ..	280,083					
66	**August 1875** ..	**357,854**			April 1880. September 1883. December 1890.		
67	Do. ..	335,598					
68	Do. ..	303,177					
69	September 1875 ..	309,997					
70	**September 1875** ..	**370,355**			September 1879. June 1884. April 1893.		
71	Do. ..	317,716					
72	Do. ..	271,712					
73	October 1875 ..	327,084					
74	Do. ..	284,988					
75	Do. ..	318,508					
76	Do. ..	285,547					
77	March 1876 ..	260,774					
78	Do. ..	285,221					
79	April 1876 ..	355,538					
80	Do. ..	317,412					
81	Do. ..	269,185					
82	Do. ..	299,558					

Average cost per engine, inclusive of freight, shipping charges, &c., Rs. 20,942-15-11, delivered at Negapatam.

Approximate cost of repairs to engine No. 25 is Rs. 13,234, the same remarks apply to the other four engines.

Average cost of "F" class engines lately sent out, inclusive of freight, shipping charges, &c., Rs. 24,874.

Wrought iron, tons 16 at Rs. 20 per ton.
Cast iron ,, 2 at ,, 20 ,,
Old brass, lbs. 350 at 1 a. 10 p. per lb.
Old copper, ,, 150 at 1 a. 10 p. ,,

Boiler.

Old copper fire-box, lbs. 1,373 at 1 a. 10 p. per lb.
Old brass tubes ,, 2,304 at 1 a. 10 p. ,,
Old iron ,, 4,620 at 3 pies ,,
Old ash pan, Old chimney ,, 1,336 at 2 ,,
Old smoke box

Enclosure No. 5.

From—Sir, George B. Bruce.
To—H. W. Notman, Esq., 55, Gracechurch Street.
Dated—3 Victoria Street, 8th October 1895.

Renewal of Locomotives.

I have to acknowledge receipt of your letter of the 26th July, with copy of the report of the Locomotive Superintendent, dated 4th July 1895, No. A. 2990/727, in which he deals with the above subject in connection with my letter to you of the 24th May last. Along with that report Mr. Crighton has supplied a table in which he gives the total mileage run by each of the 71 locomotives sent out to India in the years 1874 and 1875, which in a previous report Mr. Crighton proposed should be replaced by new engines rather than be subjected to extensive repairs.

In dealing with the question of how best to treat these 71 locomotives, Mr. Crighton has selected five of them. Why, I do not exactly know; but it is probably because he finds these at the moment most in want of repairs. These five locomotives, as regards mileage run, seem to be fairly representative of the whole, though rather above the average. They appear to have run on an average 17,410 miles per annum, or about 348,200 miles each in the 20 years of their existence.

This is a very good record, but it cannot be considered the full measure of an engine's powers, prior to being laid aside for good and having a new engine substituted for it. This seems to be to some extent Mr. Crighton's own view, for he contemplates that some of the remaining 66 engines will continue to live and work till they are thirty years old. It is quite true that narrow gauge engines with small wheels cannot be expected to have so large a mileage life as locomotives under more favourable conditions; but I still think that it would be good policy to carry out such repairs and partial renewals as would continue the use of these engines (speaking generally) for some years to come, and if I read correctly Mr. Crighton's report, very few of these engines have had new boilers, although the original ones may have been extensively repaired, certainly only six new boilers have been sent out for this type of engine. The Locomotive Superintendent estimates the cost of the repairs and renewals on one locomotive and tender at Rs. 13,234 or £735 as against the alternative of providing a new engine, and though Mr. Crighton must be the best judge as to how to deal with the locomotives daily under his eye, I should think it would be wise to incur in the case of the majority of the locomotives under consideration, the extensive renewals above contemplated. The time must come when it would be better to supply new engines out of revenue rather than go on repairing very old ones, and before long the question of how many new engines should be substituted annually for old ones will have to be considered and decided on though at present, I think, the efficiency of the stock might be maintained by partial but thorough renewals.

With regard to the twelve locomotives sanctioned but not yet indented for, it seems very desirable that these should be sent out as early as possible as they are evidently needed.

The documents which accompanied your letter are herewith returned.

From—The Agent, South Indian Railway.
To—The Consulting Engineer for Railways, Madras.
Dated—Trichinopoly, 11th June 1896, No. 507.

Referring to your letter No. 1341 of the 28th of April 1896, and previous correspondence, regarding the renewal of locomotives, I have the honour to request that I my be favoured with an early answer to my letter No. 215 of the 7th of March last as to how the original cost of the 24 tenders of the engines proposed to be renewed should be treated.

From—The Consulting Engineer for Railways, Madras.
To—The Agent, South Indian Railway.
Dated—Ootacamund, 18th June 1896, No. 68/O.

With reference to your letter No. 507, dated 11th June 1896, I have the honour to forward herewith a copy of note, dated 3rd June 1896, from the Examiner of Railway Accounts on the subject and to state that I concur in the views therein expressed.

Enclosure.

Office-note from—The Examiner, Railway Accounts.
To—The Consulting Engineer for Railways.
Dated—3rd June 1896.

Paragraph 15.—The authorized stock of engines on the South Indian Railway is 216, against which 204 have already been obtained and the budget for 1896–97 contains provision for twelve new locomotives, which will raise the stock to the sanctioned strength.

The engines lent to the Nilgiri Railway and to the Tuticorin branch, and those proposed to be hired to the Harbour Works are not finally transferred and therefore continue to count against the sanctioned strength. If five engines are now obtained in replacement, and it is subsequently found that the five old engines can be repaired, there will be an excess of five over the sanctioned scale. As this excess will be but temporary, and as it will have been provided by revenue, I do not consider that there is any objection to it or that any special sanction of the Government of India will be required. All that will be necessary is an explanatory note to Form XII of the half-yearly accounts showing how the excess of five engines came about. On the five repaired engines being finally condemned they would simply be removed from the list, and of course not replaced.

Paragraphs 19 *to* 22.—I understand the state of the case to be that some of the old tenders are sufficiently good to be used for some time longer with the new engines, and that after that, it is proposed not to replace them, thus causing a permanent reduction in the stock of tenders.

As regards the first phase of the case, that is so long as the old tenders are fit for use, it is quite evident that no adjustment of their cost to revenue account is required; revenue simply pays for the cost of the engines without tenders obtained in replacement.

As regards the next phase, that is when a permanent reduction of the stock begins to take place, it is necessary in the first instance for the Consulting Engineer for Railways to decide whether any, and if so what, reduction may be allowed; as otherwise revenue would ordinarily be compelled to keep up the full stock originally provided by capital, and to replace all the tenders as they successively became worn out and condemned.

If it is decided that the full stock of tenders is excessive and may be reduced permanently, then in this case also no adjustment of the cost of the tenders to debit of revenue account is required. The cost of the un-replaced tenders will remain at debit of capital account, but this account will be credited with their scrap value or sale-proceeds as they are condemned and disposed of.

A record of the tenders condemned and not replaced will be maintained in column 12 of form XII of the half-yearly account so as to prevent the possibility of capital being charged with the cost of replacement at any future period.

If at any future time it be decided to again increase the stock of tenders to the old limit, revenue will bear the cost of the new tenders less the amount credited to capital for the scrap value or sale-proceeds, and the latter account will contribute that sum towards the replacement.

From—The Consulting Engineer for Railways, Madras.
To—The Agent, South Indian Railway.
Dated—Ootacamund, 1st July 1896, No. 82/O.

In reply to your No. 215 of 7th March 1896, and subsequent correspondence I regret that I am unable to accord a formal approval to the specific programme for engine renewals which is laid down in your letter and is identical with that given in your No. 460 of 18th December 1895 to your Board.

2. I have been guided to this conclusion by the following considerations:—

(*a*) This programme only covers the renewals of a portion of the locomotive stock of the South Indian Railway, and not even that of all of the engines of over fifteen years of age.

(*b*) The expenditure is very unequally divided varying from Rs. 2,82,000 per annum to nothing (in 1906 to 1908), and this without apparent reason.

(*c*) The principles on which alone such a programme can be based seem still to be at issue between your Locomotive Superintendent and the Consulting Engineer to the Board.

(*d*) No good purpose would seem at present to be served by formally approving a specific programme for so many years ahead, and in the absence of more precise knowledge.

3. It appears to me that before a regular programme likely to be worked to can be formulated, further actual experience is necessary. Such a programme should include all engines on the Railway; and to be *theoretically* perfect, the annual cost of renewals *plus* that of heavy repairs should tend to become constant as the railway gets older; but of course other considerations (such as the dates on which new classes of engines were introduced or the practical efficiency or excellence of particular engines) would tend to obscure this asymptotic simplicity. Possibly after a few more years experience has been gained you may be in a better position to formulate a programme.

4. In this connection I desire to express my concurrence with the opinion expressed by Sir George Bruce to the effect that very extensive repairs are to be preferred to early renewals. This is particularly the case in the present state of exchange. At the same time it must be remembered that it will not do to continue to repair all the engines equally up to the very last, for this would imply not only gradually increasing heavy repairs but also an excessive and concentrated expenditure in renewing a very large number of locomotives simultaneously, all being of pretty much the same age and thoroughly worn out.

5. I therefore concur in Mr. Crighton's recommendation that it is desirable to distribute the importation of new engines over a considerable period, and I am therefore prepared as a tentative measure to approve of an indent being sent forward for five new engines (without tenders) in order to take the place of those said to be nearly worn out and not to be worth repair. The cost of these engines will of course be chargeable to Revenue.

6. But I should not recommend that the old engines to be thus replaced should necessarily be scrapped forthwith. It is probable that with comparatively small repairs good work could be got out of them for many years yet, as shunting engines or even as stationary engines for driving machinery; and, if so, it would be desirable so to utilise them rather than scrap them.

7. Such a course might imply the increase of the sanctioned stock of locomotives by a number of inferior engines of reduced value; but on the other hand you very rightly propose to decrease the stock of tenders, as the life of a tender is greater than that of an engine. I should be prepared when the time comes to recommend to the Government of India a revised scale of locomotive stock based upon these considerations.

8. The question about allocation asked in the concluding sentence of your letter No. 215 of 7th March 1896 has been dealt with in my No. 68/O., dated 18th June 1896.

From—The Agent, South Indian Railway.
To—The Consulting Engineer for Railways, Madras.
Dated—Trichinopoly, 7th September 1899, No. 909.

Referring to the fifth paragraph of your letter No. 82/O., dated 1st July 1896, on the subject of the renewals of locomotive engines I have the honour to forward (in duplicate) for sanction an estimate No. 2159, amounting to Rs. 1,45,330, chargeable to revenue, for a second set of five locomotives (with tenders) to be obtained in replacement of a similar number of engines which are practically worn out.

The engines proposed to be obtained will be of the same type as the "F" class engines now on the line, but with axles and cranks of the recently introduced stronger design.

The proposed expenditure has received the approval of Board of Directors—*vide* accompanying extract from the Managing Director's letter No. 236 of 28th July 1899.

Enclosure.

Extract from letter from —The Managing Director.
To—The Agent South Indian Railway.
Dated—London, 28th July 1899, No. 236.

Renewal of Locomotives.

Sanction is accorded, as requested in your No. 642 of 14th June, to the estimate of Rupees 1,45,330 for the renewal of five locomotives with tenders, and the Board approve of the proposal that the class "F" locomotive should be provided. It is noted on the face of the estimate that sanction will lapse on 31st March 1900, but it is improbable that in the ordinary course any of the engines could be delivered by that date.

Order—No. 1050 Ry., dated 20th September 1899.

The estimate, amounting to Rs. 1,45,330, chargeable to Revenue for the renewal of five "F" class locomotives with tenders is sanctioned.

2. This sanction has been registered as No. 18 Ry. of 1899-1900.

(True Extract.)

Francis J. E. Spring,
Secretary.

To the Agent, South Indian Railway.
" Examiner of Railway Accounts.
" Consulting Engineer for Railways.

Exd. P. Seetharam.

No. 215.

SERIAL No. 6

South Indian Railway Co., Ld.
AGENT'S OFFICE,
TRICHINOPOLY, 7th March 1896.

From

THE AGENT,
SOUTH INDIAN RAILWAY,

To

THE CONSULTING ENGINEER
FOR RAILWAYS,
MADRAS.

Sir,

In compliance with the instructions of my Board I have the honor to forward for the general approval of Government the appended programme of locomotive renewals on this railway. In connection with this programme it will be observed that it is not proposed to renew 24 tenders and I shall be obliged if you will favor me with instructions as to how the original cost of these tenders should be treated.

Official year	Engines to be renewed.	Expenditure	Remarks.
		Rs.	
1896-97	Five without tenders.	100,000	
97-98	Seven	189,000	Includes 2 engines Nos. 40 and 47 hired to the Nilgiri Railway and Tuticorin Reclamation works.

		Do.	works, respectively, the former has up to 30th November, 1895, inclusive realized Rs. 4590.
1898-99	Seven	189,000	
99-1900	Seven without tenders.	150,000	Includes 3 engines proposed to be hired to Madras Harbour works extensions, under negotiation.
1900-01	Six	162,000	
1-02	Six	162,000	
2-03	Six without tenders	120,000	
3-04	Six	162,000	
4-05	Five	135000	
5-06	Four	108,000	
6-07	———	———	
7-08	———	———	
8-09	Twelve: 6 with tenders	162,000	
	Twelve: 6 without tenders	120,000	
		17,59,000	
Total	Seventy-one		

I have the honor to be,
Sir
Your most obedient Servant
A.B.G. Hellyer
Captain R. E.
Agent.

M&S

Dr. No. 1019
Recd. 9/3/96

98

From
THE AGENT,
SOUTH INDIAN RAILWAY,
Trichinopoly.

To
THE CONSULTING ENGINEER FOR
RAILWAYS,
Madras.

Dated
Received 189

No.

ENCLOSURE.

Letter to A on No 958
23/3/96

FORM No. 7

MADRAS, 23rd March 1896.

208

To

30

Agent, S. I. R.

SERIAL
No. 8

No. 958 Reply No. 306, dated 10.4.96

SIR,

Reminders.

Subject.

With reference
to your letter No. 210
of 7th March 1896, fo
warding, for approv
a programme of lo
motive renewals on
the S. I. Railway, I
have the honor to re
that you will kind
furnish me with a
list of the engines on
Showing for each engine the
your line, with their
age mileage run, t
Engines which you propose
renewed and the type of engin
which you propose to substitute

South Indian Railway

Locomotive Department

List of Engines showing the Type, Age and mileage run.

Engine No.	Type of Engine	Age of Engine to end of December 1895	Mileage run	Engines to be renewed	Type of Engine to be substituted	Remarks
1	F Class Six wheels coupled Single Railway type	3 years	72,967			Not included in the present programme of renewals
2		3 "	75,121			
3		3 "	97,761			
4		3 "	90,338			
5		3 "	97,236			
6		21 "	324,128	To be renewed		
7		21 "	307,999	do		
8		21 "	345,265	do		
9	Six wheels coupled S.W.R. type	21 "	345,430	do		
10		21 "	326,632	do		
11		21 "	417,686	do		
12		21 "	312,458	do		
13		21 "	361,996	do		
14		21 "	362,208	do		
15		21 "	360,762	do		
16		21 "	285,035	do		
17		21 "	277,510	do		
18		20 "	318,880	do		
19	Four wheels coupled S.W.R. type	13 "	421,001			Not included in the present programme of renewals
20		13 "	371,017			
21	Six wheels coupled S.W.R. type	20 "	344,846	To be renewed		
22		20 "	272,171	do		
23		20 "	290,842	do		
24		20 "	282,262	do		
25		21 "	309,686	To be renewed in 1896-97	F Class modified type as suggested by Locomotive and Carriage Superintendent's Committee.	
26		21 "	319,173	To be renewed		

6 Bb

Engine No.	Type of Engine	Age of Engine to end of December 1895	Mileage run	Engines to be renewed	Type of Engine to be substituted	Remarks
27	Six wheels coupled S.I.R. type	21 years	338,931	To be renewed	1st Class modified type as suggested by Officers of Carr. Supdts Committee	
28		21 "	385,649	do		
29		20 "	413,327			Not included in the present programme of renewals
30	Tank six wheels coupled S.I.R. type	20 "	280,828			
31		20 "	303,818			
32		20 "	273,136			
33		20 "	316,900	To be renewed		
34		20 "	321,204.	do		
35		20 "	221,837	do		
36		20 "	363,930	do		
37		20 "	331,309	do		
38		20 "	319,566	do		
39		20 "	306,882	do		
40		20 "	314,820	do		
41		20 "	376,164	To be renewed in 1896-97		
42		20 "	355,448	To be renewed		
43		20 "	298,379	do		
44		20 "	337,904	do		
45		20 "	304,421	do		
46		20 "	314,764	do		
47		20 "	315,630	do		
48		20 "	398,311	do		
49		20 "	276,451	do		
50		20 "	299,418	do		
51		20 "	389,048	do		
52		20 "	341,873	do		
53		20 "	341,718	do		
54		20 "	365,447	do		
55		20 "	359,137	To be renewed in 1896-97		

Six wheels coupled S. I. R. type

1st Class modified type as suggested by Locomotive and Carriage Superintendents Committee

Engine No.	Type of Engine	Age of Engines to end of December 1895	Mileage run	Engines to be renewed	Type of Engine to be substituted	Remarks
56	Six wheels coupled S.I.R. type	20 years	357,615	To be renewed	1st Class modified type as suggested by "Locomotive and Carriage Superintendents" Committee	
57		20 "	308,728	do		
58		20 "	337,518	do		
59		20 "	352,556	do		
60		20 "	308,562	do		
61		20 "	305,350	do		
62		20 "	389,356	do		
63		20 "	315,100	do		
64		20 "	339,292	do		
65		20 "	298,820	do		
66		20 "	374,178	To be renewed in 1896-97		
67		20 "	356,442	To be renewed		
68		20 "	325,695	do		
69		20 "	331,326	do		
70		20 "	374,004	To be renewed in 1896-97		
71		20 "	332,279	To be renewed		
72		20 "	304,012	do		
73		20 "	347,658	do		
74		20 "	292,384	do		
75		20 "	332,687	do		
76		20 "	312,415	do		
77		19 "	278,674	do		
78		19 "	311,039	do		
79		19 "	376,674	do		
80		19 "	338,277	do		
81		19 "	290,008	do		
82		19 "	315,788	do		
83	Four wheels coupled S.I.R. type	17 "	402,779			Not included in the present programme of renewals
84		17 "	362,576			

8 Bx.

Engine No.	Type of Engine	Age of Engines to end of December 1895	Mileage run	Engines to be renewed	Type of Engines to be substituted	Remarks
85	Four wheels coupled S.I.R. type	17 years	348,276			
86		17 "	353,430			
87		17 "	336,494			
88		17 "	314,365			
89		17 "	341,160			
90		17 "	348,524			
91		17 "	365,790			
92		17 "	348,252			
93		17 "	343,558			
94		17 "	308,181			
95		17 "	249,882			
96		17 "	362,088			
97		17 "	342,862			Not included in the present programme of renewals
98		17 "	311,766			
99		17 "	326,970			
100		17 "	354,043			
101		17 "	344,380			
102		17 "	355,852			
103		17 "	362,373			
104		16 "	344,791			
105		16 "	252,197			
106		16 "	365,344			
107		15 "	292,103			
108		15 "	270,614			
109		15 "	304,379			
110		15 "	329,831			
111	Six wheels coupled S.I.R. type	15 "	329,172			
112		15 "	299,059			
113		15 "	248,417			

9 Bor.

Engine No.	Type of Engine	Age of Engines to end of December 1895	Mileage run	Engines to be renewed	Type of Engines to be substituted	Remarks
114	Six wheels coupled S.J.R. type	15 years	309,015			
115		15 "	278,757			
116		15 "	263,722			
117		15 "	266,104			
118		15 "	256,628			
119		15 "	291,419			
120		15 "	223,037			
121	Tank four wheels coupled S.J.R. type	10 "	86,087			
122		10 "	83,044			
123		10 "	84,561			
124		10 "	71,613			
125	F class six wheels coupled State Railway type	8 "	120,655			Not included in the present programme of renewals
126		8 "	142,619			
127		8 "	131,919			
128		8 "	127,914			
129		8 "	112,832			
130		8 "	140,519			
131		8 "	149,146			
132		8 "	132,808			
133		8 "	138,682			
134		8 "	127,172			
135		5 "	80,379			
136		5 "	55,399			
137		5 "	87,321			
138		5 "	142,547			
139		5 "	142,596			
140		5 "	124,411			
141		5 "	119,923			
142		5 "	109,885			

10 Br.

Engine No.	Type of Engine	Age of Engines to end of December 1895	Mileage run	Engines to be renewed	Type of Engine to be substituted	Remarks
143	F Class Six wheels coupled Slate Railway type	5 years	84,247			
144		5 "	122,707			
145		5 "	139,393			
146		5 "	120,075			
147		5 "	112,199			
148		5 "	87,838			
149		5 "	107,381			
150		5 "	94,201			
151		5 "	78,166			
152		5 "	117,228			
153		5 "	98,660			
154		5 "	94,556			
155		5 "	111,551			
156		5 "	107,140			Not included in the present programme of renewals
157		5 "	92,034			
158		5 "	114,133			
159		5 "	103,522			
160		5 "	126,780			
161		5 "	117,494			
162		5 "	114,283			
163		5 "	116,692			
164		5 "	99,176			
165		5 "	120,331			
166		5 "	114,862			
167		5 "	124,113			
168		5 "	80,096			
169		5 "	117,828			
170	Four wheels coupled S.R. type	5 "	124,138			
171		5 "	129,214			

11 Bw.

Engine No.	Type of Engine	Age of Engines to end of December 1895	Mileage run	Engines to be renewed	Type of Engine to be substituted	Remarks
172	Four wheels coupled S. & R. type	5 years	139,897			
173		5 "	114,531			
174		5 "	116,563			
175		5 "	133,664			
176		5 "	137,838			
177		5 "	112,739			
178		5 "	143,667			
179		5 "	130,458			
180		5 "	128,876			
181		5 "	152,323			
182		5 "	131,883			
183		5 "	108,813			
184		5 "	113,469			
185	"O" Class four wheels coupled	2 "	56,123			Not included in the present programme of renewals
186		2 "	72,093			
187		2 "	56,718			
188		2 "	67,277			
189		2 "	62,377			
190		2 "	68,224			
191		2 "	69,340			
192		2 "	51,723			
193		2 "	71,505			
194		2 "	44,570			
195		2 "	57,221			
196		2 "	63,910			
197		2 "	52,997			
198		2 "	56,077			
199		2 "	59,739			
200		2 "	35,751			

12 Pr.

Engine No.	Type of Engine	Age of Engines to end of December 1895	Mileage run	Engines to be renewed	Type of Engine to be substituted	Remarks
201	"O" Class four wheels coupled	2 years	46,993			Not included in the present programme of renewals
202		2 "	34,133			
203		2 "	63,477			
204		2 "	42,755			

Loco. and Carr. Supdts Office
Negapatam 1st April 1896

(Signed) C. E. Crighton
Loco. and Carr. Supdt.

G.A.

True copy
J. H. Le Fleming
for Agent
10/4/96

ENG. No. [illegible] TO E R & C No. 1515 OF 1896
LETTER No. 306 DATED 10-4-96
FROM A

No. 306

South Indian Railway Co., Ld.
AGENT'S OFFICE.

SERIAL No. 9

TRICHINOPOLY, 10th April 1896.

From

THE AGENT,
SOUTH INDIAN RAILWAY,

To

THE CONSULTING ENGINEER
FOR RAILWAYS,
MADRAS.

Sir,

In compliance with the request contained in your letter No. 958 dated 28th March 1896 I have the honor to submit the information therein called for.

2. As regards the proposed reduction in the number of tenders I would explain that a permanent decrease is suggested. This is possible owing to the repairs to tenders being generally of a lighter nature and requiring less time to execute than those of locomotives.

3. The Locomotive Superintendent is desirous of indenting for the modified "J" Class Engine as recommended by the Loco: & Carr: Superintendent ~~&~~ Committee, when replacing the engines included in his programme of renewals. I shall be glad to receive the sanction of Government to this course being adopted.

I have the honor to be,
Sir,
Your most Obedient Servant
A.D.G. Shelley
Captain R.E.
Agent

Enclosure herewith.

A.D.S

C. No. 1515
Rec'd 13/4/96

Form No. 20.

13 5 P

TELEGRAM ~~Urgent~~ ~~Ordinary~~ Deferred

SERIAL No. 10

From E. R. To A

D 115. Please send copy Loco Supt. report Loco renewals accompanying your letter to Board No 460 18th Inst

Despatched 16/4/96.

1896-97	5 without Tenders	₹ 100,000	These are the 5 engines I have already referred to
97-98	3 even	₹ 189,000	Includes 2 engines Nos 404 & 47 hired to the Nilgiri Ry: and Tuticorin Reclamation Works respectively; the former has upto 30th Novr 1895 inclusive realized ₹ 4,590-
98-99	3 even	₹ 189,000	
99-1900	3 even with out Tenders	₹ 150,000	Includes 3 engines proposed to be hired to Madras Harbours Works extensions under negotiation.
1900-01	Six	₹ 162,000	
01-02	Six	₹ 162,000	
02-03	6 without Tenders	₹ 120,000	
03-04	Six	₹ 162,000	
04-05	Nine	₹ 135,000	

From
The Agent,
South Indian Railway,
Trichinopoly.

To
The Consulting Engineer for
Railways,
Madras.

Dated
Received } 189

No.

Enclosure.

C. No. 1515
Rec'd 13/4

From

The Agent,

South Indian Railway,

Trichinopoly.

To

The Consulting Engineer for

Railways,

Madras.

Dated

Received } 189

No.

Enclosure.

Copy

South Indian Railway

Locomotive & Carriage Superintendent's Office

Negapatam 13th December 1895.

A 2990/1410

15 S.P

Dear Sir,

Renewal of Locomotives

Your letter No 1617/2/1635 of 22nd November 1895.

I beg to acknowledge receipt of an extract from letter No 158 dated 25th October last from the Managing Director, with a connecting letter from Sir George Bruce on the above important Subject.

So far as I am able to foresee I give below a programme on a yearly basis, of the renewals required to replace the 71 Engines referred to in my letter No A 2990/727 of 4th July 1895.

It will be my endeavour to extend this basis of renewals as far as possible.

Programme of yearly Renewals of 71 engines together with anticipated yearly expenditure on account of same.

Official Year	Engines to be renewed	Expenditure	Remarks.
1896-97	5 without Tenders	Rs 100,000	These are the 5 engines I have already referred to
97-98	Seven	Rs 189,000	Includes 2 Engines Nos 40 & 47 hired to the Nilgiri Ry: and Tuticorin Reclamation Work respectively, the former has upto 30th Nov: 1895 inclusive realized Rs. 4590-
98-99	Seven	Rs 189,000	
99-1900	Seven with out Tenders	Rs 150,000	Includes 3 engines proposed to be hired to Madras Harbour Works extensions under negotiation.
1900-01	Six	Rs 162,000	
01-02	Six	Rs 162,000	
02-03	5 without Tenders	Rs 120,000	
03-04	Six	Rs 162,000	
04-05	Five	Rs 135,000	

1905_06	~~Four~~	~~£~~ 108,000
06_07	—	—
07_08	—	—
08_09	12 { 6 with Tender / 6 without Tender	~~£~~ 162,000 / ~~£~~ 120,000

16 S.P

Total Seventy one.

Life of last 12 engines equal to 32 + 33 years.

It must not be forgotten that in renewing these engines the Company will gain in procuring a much improved type of Goods engines in the "J" class as the cylinders are 1" larger than those to be renewed and heavier loads can in consequence be taken.

With reference to more extensive repairs being carried out by me in the Shops here, I beg to point out that were I to entirely construct the engines from the very beginning I could not do more than what is now done to all engines which come in for heavy repairs and although only Six Boilers have been obtained from England to take the place of others undergoing repairs. Our Boilers are practically rebuilt as good as new, when they come into the Shops. I can say the same of Boiler Mountings and other fittings.

I enclose a copy of Boiler Shop Foreman Barden's report on this Subject together with a Statement of repairs done to Boilers of 6 W. C engines Nos 6 to 82 Since they were received from England.

I shall be glad to know whether the Board approve of my proposal to reduce the number of Tenders as by doing so a saving will be effected; also whether

17 S.P.

whether I may prepare and forward an indent for the five engines required next official year.

Yours faithfully.
(Sd) C. E. Crighton
Loco: & Carr: Supt.

Encls: 7 sheets

Captain A. D. G. Shelley R.E.
Agent

Agnt's Office
Trichinopoly
20th April 1896

True Copy
Chooppoorasamy Pillai
Chief Clerk

MCDS

ENC. No. 1 TO E. R's. C. No. 1704 OF 1896
LETTER No. 344 D 21-4-96
FROM A

Copy

No. 23/2 14 S.P

South Indian Railway
Boiler Shop.
Negapatam. November 30th 1895.

The Locomotive & Carriage Superintendent.

Sir,

I beg leave to submit a Statement as requested by you; Showing the repairs done to the Boilers for 71 Six W.C. Engines Nos 6 to 18, 21 to 28, and 33 to 82; from which you will see that 104 heavy repairs have been done, 124 moderately heavy, and 193 light. By referring to the totals on the last sheet you will see the number of each kind of plate, etc. that have been put in since they were received from England.

The Statement may not be quite accurate (as I have no record of repairs done previous to 1880, or those done at outstations) but I think it will show sufficiently what has been done, and what we are capable of doing here. I am certain that the Boilers referred to have been kept in a proper State of efficiency; and when heavy repairs have been necessary, they have been done, and the Boilers made nearly equal to new ones, at about half the Cost new ones could have been supplied.

It certainly will not be advisable to get any new Boilers for the Engines in question, for reasons which you already are aware of.

I therefore hope the Statement, and the work that has been done will meet with your approval.

I beg to remain
Yours obediently
(Sd) W.H. Barden
Foreman, Boiler Shop.

Agent's Office
Trichinopoly
21st April 1896
M.S.

(True Copy of a Copy)
Chooppoocaumy Yenger
Chief Clerk

19 Br.

South Indian Railway Company Limited.

Boiler Smith Shop.

Statement Shewing the Repairs done to Boilers of C. W. C. engines (No. 6 to 82) Since they were received from England.

Engine No.	Year when commenced Working	Description of Repairs: Copper Plates: Tube plate new	Copper Plates: Back plates new	Copper Plates: Roof and side new	Copper Plates: Fire box complete	Iron Plates: Tube plate new	Iron Plates: Front plate new	Iron Plates: Back plate new	Iron Plates: New sides to fire box Casing	Iron Plates: New plates to bottom of Barrel.	Metal Tubes: New Tubes (Sets)	Stays: Copper: New (Sets)	Stays: Iron: New (Sets)	Remarks: Had new fire boxes, New Tubes, new plates for fire box casing, new plates to bottom of Barrel and made equal to new Boiler		Remarks: Fire box not taken out; but have had other extensive Repairs		Remarks: Had Tubes taken out and all necessary repairs done.	
6	1874	2	1	1	1	1	1	1	2	3	1	2	2	Heavy repairs	1.	Moderate repairs	2	Light repairs	4
7	"	3	1	1	1	2	1	2	2	3	1	2	1	" "	1	" "	3	" "	3
8	"	2	1	1	1	1	1	1	2		1	1½	1	" "	1	" "	1	" "	3
9	"	2	2	2	2	2	2	2	2	3	1	2	2.	" "	2.	" "	1	" "	3
10	"	2	1	1	1	2	2	1	2.		1	2	1	" "	2.	" "	1	" "	3
11	"	1	1	1	1	1	1	1			1	1	1	" "	1	" "	1	" "	3
12	"	3	1	1	1	2	1	1	2	4	1	2	1	" "	1	" "	2	" "	3
13	"	2	2	1	1	2	2	2	2	2	1	2	2.	" "	2	" "	1	" "	2
14	"	3	1	1	1	1	1	1	2	3	1	2	1	" "	1	" "	2	" "	3
15	"	2	1	1	1	1	1	1	2	3	2	2.	1	" "	1	" "	2	" "	2
16	"	2	1	1	1	2	2	1	2	3	2	1½	1	" "	1	" "	3	" "	2
17	"	3	1	1	1	2	3	1	2	3	2	2	2	" "	2	" "	2	" "	2
18	"	3	2	1	1	2	1	1	2.	3	1½	2½	2	" "	2	" "	2	" "	2
21	"	2	1	1	1	2	2	2	4	3	1½	2	2	" "	2	" "	1	" "	2
22	"	3	1	1	1	2	1	1	2	3	1	2	1	" "	1	" "	2	" "	2
23	"	3	1	1	1	2	2	2	2	3	1	2	1	" "	1	" "	3	" "	2
24	"	3	1	1	1	2	3	2	2	2	1½	2½	2	" "	2	" "	1	" "	2
25	"	3	2	2	2	3	3	3	4	4	2	2½	2	" "	2	" "	2	" "	2
26	"	4	1	1	1	2	2	1	2	3	2	2½	2	" "	2	" "	3	" "	2
27	"	3	2	1	1	2	2	2	2	2	1	2	1	" "	1	" "	3	" "	2
28	"	4	1	1	1	1	1	1	2.	3	1	2	1	" "	1	" "	3	" "	2.

20 Por.

Description of Repairs.

Engine Nos	Year when Commenced Working	Copper Plates: Tube plate new	Back plate new	Roof and side new	Fire box Complete	Iron Plates: Tube plate new	Front plate new	Back plate new	New sides to fire box Casing.	New plate to bottom of Barrel.	Metal Tubes: New Tubes	Stays: Copper New	Stays: Iron New	Remarks.	Remarks.	taken ther ro	Had Tubes taken out and all necessary repairs done.	
33	1875	4	1	1	1	2	1	1	2		2	2	1	Heavy repairs 1	Moderate repairs	3	Light repairs.	2
34	"	2	1	1	1	1	1	1	2		1	1½	1	" " 1	" "	1	" "	3
35	"	2	1	1	1	2	1	1	2	5	1	1½	1	" " 1	" "	2	" "	4
36	"	3	3	2	2	3	3	3	2	6	2	2½	2	" " 2	" "	1	" "	3
37	"	3	1	1	1	2	3	1	2	3	1	1½	1	" " 1	" "	2	" "	3
38	"	4	1	1	1	2	1	1	2		1	1½	1	" " 1	" "	2	" "	3
39	"	2	2	2	2	2	2	2	2		2	2	2	" " 2	" "	1	" "	3
40	"	3	1	1	1	2	2	2	2	3	1½	2	2	" " 2	" "	2	" "	2
41	"	2	1	1	1	1	1	1	2	3	2	1½	1	" " 1	" "	2	" "	3
42	"	4	2	2	2	3	2	2	2	4	3	2½	2	" " 2	" "	1	" "	3
43	"	3	1	1	1	1	2	1	2	3	2	2	1	" " 1	" "	2	" "	2
44	"	2	1	1	1	1	1	1	2	5	1	1½	1	" " 1	" "	2	" "	3
45	"	2	1	1	1	1	1	1	2		2	1	1	" " 1	" "	1	" "	4
46	"	3	2	2	2	2	3	2	4	4	2	2½	2	" " 2	" "	1	" "	4
47	"	4	2	2	2	3	4	2	4	4	2	2½	2	" " 2	" "	1	" "	4
48	"	2	1	1	1	1	1	1	2	3	1	1½	1	" " 1	" "	2	" "	3
49	"	3	2	2	2	3	2	2	4	3	2	2½	2	" " 2	" "	3	" "	2
50	"	3	2	1	1	2	2	1	4	6	3	2½	2	" " 2	" "	1	" "	3
51	"	2	2	2	2	2	2	2	2	6	3	2½	2	" " 2	" "	2	" "	2
52	"	3	1		1	1	2	1	2	4	2	1½	1	" " 1	" "	2	" "	3
53	"	3	1	1	1	2	3	1	2	3	3	1½	1	" " 1	" "	2	" "	3
54	"	2	2	2	2	3	3	2	4	6	3	2½	2	" " 2	" "	1	" "	3
55	"	2	1	1	1	1	2	1	-	3	2	1½	1	" " 1	" "	2	" "	3
56	"	3	2	2	2	2	2	2	2	3	2	2½	2	" " 2	" "	2	" "	2
57	"	2	2	1	2	2	2	2	2	3	2	2½	2	" " 2	" "	1	" "	3
58	"	2	2	2	2	2	2	2	2	3	2	2½	2	" " 2	" "	2	" "	2

Had New fire boxes, new Tubes, New plates for fire box Casing, New plates to bottom of Barrel and made equal to new Boiler.

Fire boxes not out, but have had extensive Repairs —

Had Tubes taken out and all necessary repairs done.

wheels

21 Brd

Description of Repairs.

Engine No.	Year when commenced working	Copper Plates: Tube plate new	Back plate new	Roof and side new	Fire box Complete	Iron Plates: Tube plate new	Front plate new	Back plate new	New sides for fire box Casing	New plates to bottom of Barrel.	Metal Tubes: New Tubes	Stays: Copper New	Stays: Iron New	Remarks.				
59	1875	3	1	1	1	1	2	1	1	3	Sets 1	Sets 1½	Sets 1	Had new fire boxes, new tubes, new plates for fire box Casing, new plates to bottom of Barrel and made equal to new Boiler.	Heavy Repairs	1	Fire boxes not taken out but had other extensive repairs	Moderate repairs 3	Had tubes taken out and all necessary repairs done.	Light repairs 2
60	"	3	2	2	2	2	2	2	4	4	3	2½	2	" "	"	2	" "	2	" "	2
61	"	3	1	1	1	1	1	1	2	3	2	1½	1	" "	"	1	" "	2	" "	4
62	"	2	2	2	2	2	2	2	2	3	1	2½	2	" "	"	2	" "	1	" "	3
63	"	2	2			1	2	1			2	1	1	" "	"	1	" "	1	" "	4
64	"	2	1	1	1	1	1	1	2			1½	1	" "	"	1	" "	2	" "	4
65	"	3	2	1	1	2	2	2	2	3	2	2½	2	" "	"	2	" "	2	" "	2
66	"	2	1	1	1	2	2	2	4	3	2	2	2	" "	"	2	" "	1	" "	3
67	"	1	1			1	1		2		1	1½	1	" "	"	1	" "	2	" "	3
68	"	3	2	1	1	2	2	2	2	3	1	2	1	" "	"	2	" "	1	" "	4
69	"	2	1	1	1	2	2	2	4	4	2	2½	2	" "	"	2	" "	1	" "	3
70	1876	2	1	1	1	2	2	1			1	1½	1	" "	"	1	" "	2	" "	3
71	"	3	1	1	1	2	2	2	2	3	2	2½	2	" "	"	2	" "	2	" "	2
72	"	2	1	1	1	1	1	1	2	3	1	1½	1	" "	"	1	" "	2	" "	3
73	"	3	1	1	1	1	2	1	2		1	1½	1	" "	"	1	" "	2	" "	3
74	"	2	1	1	1	2	1	1	2	3	1	1½	1	" "	"	1	" "	2	" "	3
75	"	2	2	1	1	2	2	2	4	3	1	2½	2	" "	"	2	" "	1	" "	4
76	"	3	1	1	1	2	2	1	2	3	1	1½	1	" "	"	1	" "	3	" "	3
77	"	3	2	1	1	1	2	1	4	4	2	2½	2	" "	"	2	" "	2	" "	2
78	"	3	1	1	1	2	2	1	2	1	1	1½	1	" "	"	1	" "	1	" "	4
79	"	1	1	1	1	1	1	1	2		1	1½	1	" "	"	1	" "	3	" "	2
80	"	2	1	1	1	2	1	1		3	1	1½	1	" "	"	1	" "	1	" "	3
81	"	2	1	1	1	2	1	1	2	3	2	1½	1	" "	"	1	" "	2	" "	3
82	"	2	1	1	1	2	2	2	4	4	2	2½	2	" "	"	2	" "	1	" "	2
Total No. of Engines 71		Total No. of tube plates 182	Total No. of back plates 97	Total No. of Plates for Roofs & sides 82	Total No. of fire boxes put in 84	Total No. of Iron Tube plates 124	Total No. of Iron Front plates 126	Total No. of Iron Back plates 101	Total No. of plates for sides of Casing 157	Total No. of plates to bottom of Barrel 197	Total No. of sets of Tubes new 112	Total No. of sets of new Copper Stays 188	Total No. of sets of new Iron Stays 102	Total	Heavy repairs 104		Total Moderate repairs	124	Total Light repairs 193.	

RIAL
//
896

URGENT.

No. 344

South Indian Railway Co., Ld.

AGENT'S OFFICE,

SERIAL No. 11

TRICHINOPOLY, 21st April 1896.

From

THE AGENT,

SOUTH INDIAN RAILWAY,

140

To

THE CONSULTING ENGINEER

FOR RAILWAYS,

MADRAS.

Sir,

In Compliance with the request contained in your telegram No. D. 115 of the 16th instant, I send herewith a copy of the Locomotive Superintendent's letter No. 2990/1410 of 13th December 1895, with enclosures thereto, — regarding the renewal of Locomotives.

I have the honor to be
Sir,
Your most Obedient Svt.

W. L. Mesurier
for Agent.

3 Enclosures herewith.

Send 6004 W.L. 24/4

G. No. 1704
Recd. 22/4/96

Form No. 7

Madras, 28 april 1896.

SERIAL
No. 14

To

Agent, S. I. R.

No. 1341 Reply No. 387, dated 7.5.96

Sir,

I have the h. to
in acknowledging with thanks
the receipt of a copy of the
your Loco Supt's letter No. 29
1456
d 13/12/95 - to invite the
importance of the question
are anxious to be acquainted
with the correspondence which
has passed on the subject.
I should feel obliged if you
would send me copies
the following
Loco Supt's report of 21.3.95 on
condition of Engine No. 25
Sir F. Brown's opinion of 24.5.
Loco Supt's report thereon
Sir F. Brown's letter of 8.10.95

27/4

Reminders.

Subject.

indenting for 5 new engines, The Indent for further
wheels

From

The Agent,
South Indian Railway,
Trichinopoly.

To

The Consulting Engineer for
Railways,
Madras.

Dated
Received } 189

No.

Enclosure.

D.O. F. S.D. Ry. — Note. No. 1484 Y dt 28.5.95.

Copy

South Indian Railway
Loco. and Carr. Supdt's Office
Negapatam 21st March 1895

A 2990/327 Print

2485

Dear Sir

I beg to submit for your consideration and that of the Board the condition of some of our old 6 wheel coupled goods engines which through length of time are becoming in very bad condition and will require replacing by new engines at an early date.

The engines which are failing are those constructed in 1874 and 75, Nos 6 to 18, 21 to 28, 33 to 68 and 69 to 82 altogether 71 engines and many of these have become very much worn particulary in underframes and cylinders. I have at present No 25 in the Shops for repairs which was built with 21 others of the same class in 1874 by Messrs Neilson and Co and its condition I find is so bad that I do not think it worth going to the expense of repairing, and that it should be put to one side and such parts as are unserviceable sold as scrap.

I am of opinion that by degrees all these engines should be replaced by the latest standard "F" class 6 wheel coupled metre gauge engines and that during next year 5 new engines should be obtained in lieu of 5 of the worst conditioned of the abovemen-tioned ones.

I enclose herewith copy of report on the condition of the engine and tender of No 25 which shows the amount of work required to put it in order. With regard to the wheels, if sanction is given to my indenting for 5 new engines, the Indent for further

wheels

25 S.P.

wheels can be withheld.

I am of opinion that if we get out, say, 5 new engines each year it will be sufficient to replace such as are at present in very bad condition and will continue to maintain those which are becoming bad.

Yours faithfully
(Signed) C. E. Crighton
Loco. and Carr. Supdt.

W. S. Betts Esqre
Agent

Agent's Office
Trichinopoly
6th May 1896

True Copy
W. L. Meanrier
for Agent

South Indian Railway

Report on the condition of Engine and tender. No. 25.

26 S.P

Makers - Messrs Neilson and Co.
No. 1864
Date 1874
Class 6 wheel coupled.
Was thoroughly repaired last in 1889.

Frames. Both badly eaten away round the cylinders, the left one being only $\frac{1}{4}$" thick and the right $\frac{3}{8}$", the proper thickness being $\frac{7}{8}$".

Cylinders. Both are bad and have been bored $\frac{1}{4}$" larger and will not stand boring again. Will require to be renewed.

Platform plates } Very much worn and patched in a number of places. Should now be renewed.

Cast iron foot plate } Broken and requires an expensive patch.

Horn cheeks. All too thin and require to be renewed.

Horn cheek stays. Require to be renewed.

Axle boxes. Bad and very much below the standard size. Require to be renewed.

Eccentric sheaves } Too small. Require to be renewed.

Pistons. Worn out. New ones required.

Slide bars. Worn out. New ones required.

Side rods. Require all new ends.

Valve spindles. Worn out. New ones required.

Motion. Requires a thorough repair and the number of the parts renewed.

27 S.P

Brake gear - Worn out. New required.
Buffer beam and plates } Worn out. New required.
Canopy. Bad. Requires to be thoroughly repaired.

Tender

Frames - Both eaten away about ¼" on sides of the drag box.
Cross and Longitudinal frame stays } Badly eaten away and require to be renewed.
Drag box. All the plates badly eaten away and full of holes. Requires to be renewed.
Tank - Bottom bad, requires to be renewed.
Intermediate Buffers and Guides. } Require to be renewed.
Brake gear. Worn out, new required.
Buffer beam and plates } Worn out, new required.
Canopy - Worn out, new required.

Boiler

Is in very fair condition having been thoroughly repaired in 1889; but there are several boilers of the same class which were repaired previous to that date and now require a very heavy repair again. If it is decided to condemn the engine, we could look out for an exceptionally bad boiler of the same class and condemn it in place of that belonging to No. 25.

Wheels

Wheels

There are a few sets of wheels which are very bad, so much so that Foreman Horrocks has asked for 3 new sets in the English Indent which is now being prepared.

(Signed) C.E. Crighton
Loco and Carr. Supdt
21st March 1895

Agents Office
Tuticorin
6th May 1896

True Copy
W. L. Meanier
for Agent

Enc. No. 1 TO E. R. C. No. 1960 OF 1896
LETTER No. 387 & 7. 5. 96
FROM A.

Copy

Paint

3 Victoria Street
29.5.P 24th May 1895

My dear Sir

Renewal of Locomotives

I duly received your letters of the 22nd April and the 2nd May with accompanying documents, having reference to the renewal of the locomotives on this line.

Mr. Crighton in his report states that "The condition of some of our old 6 w.c. goods "engines which through length of time are becoming "in very bad condition, will require replacing by "new engines at an early date."

The engines to which he refers are those constructed in 1874-5, and comprise in all 71 locomotives. One of these engines No 25, which he had in the shops for repairs, Mr. Crighton describes as in "so bad a condition that I do not think it worth "going to the expense of repairing, and that it should "be put to one side and such parts as are unserviceable "sold as scrap" and Mr. Crighton further expresses the opinion that by degrees all these engines should be replaced by new ones.

I have great faith in Mr. Crighton's judgment and opinion upon any question connected with his department; but I am surprised that these engines within a period of 20 years should be in so bad a condition as that which seems to be conveyed by his report as far as the records of this office enable me to judge very few of these locomotives have either had new boilers or new cylinders, though it is not unusual for an engine to last out two boilers and four

pairs

30 S P

pairs of cylinders.

Before coming to a conclusion to replace these 71 engines by new ones, I should recommend the Board to ascertain from Mr. Crighton what the large repairs, such as new Boilers and Cylinders, have been on each of the engines under review, and if he could at the same time state what the mileage run by each locomotive has been, the Board would be in a better position to decide on a course of action in this matter.

I have ascertained that on the East Indian Railway the rule is to limit the repairs on any one locomotive to Rs7,000 but I think that this rule must have been adopted when the rupee was worth about two shillings, for at the present rate of exchange Rs7,000 would not replace even a new boiler of the narrow gauge. I find that in this country no such hard and fast rule exists, but that the question is decided in each individual case according to the judgment of the Locomotive Superintendent.

New locomotives may very probably be required to meet the increase of traffic, but it would be well to ascertain from Mr. Crighton whether the present stock of engines which cannot have run a heavy mileage could not be maintained for some years yet if new boilers, cylinders and axles and perhaps other duplicates were sent out to replace those worn or wearing out.

With regard to the frames of the locomotives which Mr. Crighton describes as badly eaten away round the cylinders it seems a pity to throw away the whole frame because of this failure at one end and this I would suggest might be rectified by welding on a new plate where the original one is eaten away by the surrounding moisture and the oscillating action

of

3 J.P

-of the outside cylinders. On hearing from Mr. Brighton on the various points raised above, I shall be better able to form a judgment upon the whole -question.

I may observe that the total number of locomotives which has been authorised is 216 whereas the total stock at present is only 204 leaving 12 still to be supplied. I am not aware why these 12 engines have not been indented for.

Yours faithfully
(Signed) George B. Bruce

Henry W. Notman Esqr.
55, Gracechurch Street.

Agent's Office
Trichinopoly
6th May 1896

True copy of a copy
W. L. Meenner
for Agent

MCS

ENC. NO. 2 TO E. R's. C. No. 1960 OF 1896
LETTER NO. 387 D/ 7.5.96
FROM A

3

2nd S.P Copy

South Indian Railway
Loco. and Carr. Supdt's Office
Negapatam 4th July 1895

A 2990/727 Print

Dear Sir

Renewal of Locomotives

Your letter No. 5234/819 of 26th June in which your forward an extract on the above subject from the Managing Director's letter No. 153 of 7th June, together with copy of Sir George Bruce's letter dated the 24th May 1895

I beg to report further for the information of the Board that my letter No. 2990/327 of the 21st March was not intended to convey any alarm as to the present condition of the whole of the 71 engines referred to, but that their replacement was inevitable during the next eight or ten years and I therefore asked that the Board's sanction might be obtained to permit me to make arrangements for their replacement by degrees, and I thought it was better to bring this important subject to notice at once than let matters run on until many more of the engines would have to be replaced. I therefore considered it advisable to stop five of the worst engines and have them replaced during next year 1896-97 by the more recent type of F class six wheel coupled engines. By so doing the necessity for my indenting for any more duplicate parts (excepting cylinders) would cease, as such parts of the condemned engines as were suitable and fit would be utilised for the remaining ones.

A life of 20 years for a metre gauge engine is

in India where the conditions are so different to those of an English line is, in my opinion, not a bad record and the mileage run by each of the Engines I now condemn will bear, I think, favourable comparison to other engines 20 years old.

Mileage of 5 Engines as under.

No. 25 Engine – 309686 up to 31st December 1894
" 41 — do — 354076 ——— do ———
" 55 — do — 349186 ——— do ———
" 66 — do — 357854 ——— do ———
" 70 — do — 370355 ——— do ———

but it must be borne in mind that the remaining 66 engines are still useful and increasing their mileage record and that some of them will continue to live and work until I hope 30 years or more is reached.

I find I cannot give reliable information as to the heavy repairs each of the 71 engines has received in the way of new Boilers and Cylinders as I regret to say many of my office records have during past years become destroyed by white ants, Rats and Damp and have been sold as waste paper, but I give as much information as I am able to gather in regard to heavy repairs carried out during the life of the 5 engines under notice.

It is not however in my opinion a question of new boilers or cylinders, it is the frames, tenders and other parts of the engines which are becoming so old and worn. Every time an engine comes into the Shops for heavy repairs, the boiler is almost renewed and the cylinders bored out, but the time comes when it does not pay to add new work to old. Six new boilers were received from England in 1887 for this type of engine and those are used from time

time to time to take the place of old boilers which require rebuilding and I think I may safely say that all these engines have had as good as new boilers more than twice during their life.

With regard to Sir George Bruce's suggestion to weld on a new end to the frames at that portion where badly eaten away round the Cylinders, I beg to point out that such a course would be very risky as the native Smiths are not accustomed to such heavy work and even in English Shops the welding of an engine frame plate is a speciality. The frames under notice in addition to having become so bad round about the cylinders are also much eaten away near the cast iron foot plate and were this to be removed for welding on new frame ends it would be a most difficult matter to get the engine square and parallel again and it would cost a great deal more than it is worth expending on the engine.

I have the pleasure to submit a statement giving the dates the 71 engines were received from England during 1874 and 1875, together with the mileage each engine has run during the interval up to December 1894, also the average cost of each engine as they stand in the Audit office books amounting to £20,942 (with regard to which there does not appear to be any depreciation written off), I also give an estimate in detail of the amount it will cost to repair each of the five engines and the value of each engine if broken up and sold as scrap.

In conclusion I can only recommend that the time has arrived when these engines are

-are not worth spending more money upon, and it will be to the advantage of the Company to have them replaced by the most recent type of F class which will take heavier loads for traffic.

If the Board approve and sanction my proposals to replace these engines, I beg to suggest in order to lighten the expenditure which I presume must fall as a charge against Revenue, that for the 71 engines to be supplied there need be only 51 Tenders sent out, and as I have already 50 F class Tenders here which are interchangeable, the first five new engines I now ask for need not be supplied with Tenders, by this arrangement a considerable saving would be effected. My reason for making this suggestion is that when engines and Tenders come in for repairs, the work required for the Tender is of much lighter description and of shorter duration than that required for the engine and I can therefore change the Tenders on to other engines and send them out more frequently.

With regard to the last para of Sir George Bruce's letter, he is quite correct we have only 204 engines out of 216 sanctioned leaving 12 engines still to be supplied. These 12 engines were included in this year's Budget Estimates, but were struck out owing to financial pressure. I hope to include them in next year's Budget and trust they may be supplied during the year. They are required to complete the lot of "O" class engines recently supplied for working the Vacuum Brake trains between Madras and Tuticorin. At present I have only 20 of these engines which are just

30 s.8

just sufficient to work the service between Madras and Madura and Trichinopoly and Erode, and from Madura to Tuticorin I am unable to carry on the working with "O" class engines and Vacuum Brake until the 12 engines are supplied.

Yours faithfully
(Signed) C. E. Crighton
Loco. and Carr. Supdt.

D. Logan Esqre
Ag. Agent

Agent's Office
Trichinopoly
6th May 1876

Rgt

True Copy
W. L. Pressnier
for Agent

ENG. No. 3 TO E. R'S. C. No. 1960 OF 1896.
LETTER No. 387 C. T. 5-96.
FROM A.

37 S.R

South Indian Railway

Estimate of the cost of repairing Locomotive Engine No. 25

Particulars	Amount Rs	As	P
Cylinders new at £50	900	"	"
Wheels new at £95	1,710	"	"
Springs new at £10	180	"	"
Axle boxes new at £15	270	"	"
Coupling rods new at £16	288	"	"
Connecting rods new at £8	144	"	"
Eccentric sheaves new at £4	72	"	"
Injectors new at £10	180	"	"
Piston rods new	120	"	"
Slide valves	50	"	"
do bars	45	"	"
Cross head blocks	14	"	"
Gudgeon pins	5	"	"
Valve spindles	30	"	"
Horn cheeks	45	"	"
do stays	15	"	"
Eccentric straps	50	"	"
Boiler mountings	200	"	"
Lagging plates	37	"	"
Tools	15	"	"
Fire irons	15	"	"
Lamps	24	"	"
Spring links	6	"	"
Bolts and nuts	27	"	"
Framing to patch without taking it to pieces	100	"	"
Repairing motion	142	"	"
do brake gear	60	"	"
do and renewing pipes	63	"	"
Carried over	4,807	"	"

Particulars	Amount Rs	As	P
Brought forward	4,807	"	"
Repairing Cast iron foot plate	14	"	"
Platform plates and supports	40	"	"
Wood lagging	30	"	"
Buffer beam	15	"	"
" plates	26	"	"
Canopy	30	"	"
Lubricators at £7	126	"	"
Pressure gauge new	24	"	"
Blast pipe	25	"	"
Buffer at £11	198	"	"
Ash pan	39	"	"
Chimney	24	"	"
Painting	150	"	"
Erecting	600	"	"
Rupees	6,148	"	"

Tender

Buffer at £11	198	"	"
Wheel tyres £12	216	"	"
Springs £8	144	"	"
Canopy	20	"	"
Buffer beam	15	"	"
do do plate	13	"	"
Axle brasses	24	"	"
Repairing tank	208	"	"
do drag box	65	"	"
Cross and longitudinal stays	70	"	"
Pipes and valves	15	"	"
carried over	984	"	"

Particulars	Amount Rs	As	P
Brought forward	984	u	u
Rubber hose	12	u	u
Brake gear	50	u	u
Intermediate buffers and springs	10	u	u
Rupees	1,056	u	u

Boiler

New - duplicate at £335	6,030	u	u

Summary

Engine	6,148	u	u
Tender	1,056	u	u
Boiler	6,030	u	u
Rupees	13,234	u	u

Loco. and Carr. Supdt's Office
Negapatam 4th July 1895

(Sd) C. E. Crighton
Loco. and Carr. Supdt.

Agent's Office
Trichinopoly
6th May 1896

True Copy
W. L. Measures
for Agent

40 Pr.

Number of Engine	Date received from England	Mileage run during interval up to 31st Dec! 1874	Amount at which it stands in Audit office Books	Cost of carrying out repairs to No 25 Engine	Dates when engines last received heavy repairs	Cost of "F" class Engines recently supplied	Detailed particulars showing approximate value of materials of one condemned engine if scrapped
6	May – 1874	304,506					
7	do	304,817					
8	August 1874	314,118					
9	do	325,541					
10	September 1874	308,799					
11	do	399,497					
12	October 1874	294,138					
13	do	346,510					
14	November 1874	330,636					
15	do	337,401					
16	December 1874	267,688					
17	do	269,245					
18	February 1875	315,431					
21	do	325,019					
22	do	255,312					
23	do	276,235					
24	do	264,264					
25	October 1874	309,686			July 1882		
26	October 1874	310,779			March 1886		
27	do	319,611			October 1889		
28	do	366,926					
33	April 1875	291,057					
34	do	302,420					
35	do	203,012					
36	do	346,536					
37	May 1875	317,686					
38	do	298,794					
39	do	289,428					
40	do	314,820			October 1880		

Average cost per engine including of freight, shipping charges &c
£ 20,942-15-11 – delivered at Negapatam.

Approximate cost of repairs to Engine No 25 is £4,234
the same remarks apply to the other 4 engines

Average cost of "F" class engines solely sent out including of freight, shipping charges &c £ 24,874.

Wrought Iron 16 at £20 per ton
Cast Iron " 2 at £20 per ton
Old Brass 350 at 1a. 10p. per lb
Old Copper 150 at 1a 10p. per lb

Boiler

Old copper fire box 1373 at 1a 10p. per lb
Brass tubes 2304 at 1a 10p per lb
" Iron 4620 at 3 pice per lb
Old Wash pan
" Chimney } 1336 at 2 pice per lb
" funnels }

4

16

9

8

41 Poor

Number of engine	Date received from England	Mileage run during interval up to 31st Dec. 1894	Amount at which it stands in Audit Office Books	Cost of carrying out repairs to No. 25 Engine	Dates when engines last received heavy repairs	Cost of "F" class engines recently supplied	Detailed particulars showing approximate value of materials of one condemned engine if scrapped
41	May 1875	354,076			November 1884		
42	May 1875	338,216			March 1891		
43	do	275,452					
44	do	324,334					
45	do	297,563					
46	do	298,778					
47	June 1875	293,254					
48	do	372,103					
49	do	257,753					
50	do	284,142					
51	July 1875	365,576					
52	do	318,236					
53	do	324,548					
54	do	341,966			February 1881		
55	July 1875	349,186			June 1885		
56	July 1875	332,580			November 1891		
57	do	289,276					
58	do	309,666					
59	August 1875	344,900					
60	do	292,625					
61	do	287,867					
62	do	274,691					
63	do	307,999					
64	do	329,185					
65	do	280,083			April 1880		
66	August 1875	357,854			Sept. 1883		
67	August 1875	335,598			Dec. 1890		
68	do	303,177					
69	September 1875	309,997			Sept. 1879		

Number of engine	Date received from England	Mileage run during interval up to 31st Dec. 1894	Amount at which it stands in Audit Office Books	Cost of carrying out repairs to No 25 engine	Dates when engines last received heavy repairs	Cost of 7" class engines recently supplied	Detailed particulars showing approximate value of materials of one condemned engine if scrapped	
70	September 1875	370,355			June 1884			
71	September 1875	317,716			April 1893.			
72	do	271,712						
73	October 1875	327,084						
74	do	284,988						
75	do	318,508						
76	do	285,547						
77	March 1876	260,774						
78	do	285,221						
79	April 1876	355,538						
80	do	317,412						
81	do	269,185						
82	do	299,558						

Loco. and Carr. Supdt's Office
Negapatam 5th July 1895

(Signed) C.E. Crighton
Loco- and Carr. Supdt.

Agent's Office
Trichinopoly
6th May 1896

True Copy

W.L. Meaumiers
for Agent

Copy

South Indian Railway.
Engineer's Office,
3 Victoria Street
8th October 1895.

Port 42 S.P

My dear Sir

Renewal of Locomotives

I have to acknowledge receipt of your letter of the 26th July, with copy of the report of the Locomotive Superintendent dated 4th July 1895, No. A 2990/727, in which he deals with the above subject in connection with my letter to you of the 24th May last. Along with that report Mr. Crighton has supplied a table in which he gives the total mileage run by each of the 71 locomotives sent out to India in the years 1874 and 1875, which in a previous report Mr. Crighton proposed should be replaced by new engines rather than be subjected to extensive repairs.

In dealing with the question of how best to treat these 71 locomotives, Mr. Crighton has selected five of them. Why, I do not exactly know; but it is probably because he finds these at the moment most in want of repairs. These five locomotives, as regards mileage run, seem to be fairly representative of the whole, though rather above the average. They appear to have run on an average 17,410 miles per annum, or about 348,200 miles each in the 20 years of their existence.

This is a very good record, but it cannot be considered the full measure of an engine's powers, prior to being laid aside for good and having a new engine substituted for it. This seems to be to some extent Mr. Crighton's own view, for he contemplates tha

that some of the remaining 66 engines will continue to live and work till they are 30 years old. It is quite true that narrow gauge engines with small wheels cannot be expected to have so large a mileage life as locomotives under more favourable conditions; but I still think that it would be good policy to carry out such repairs and partial renewals as would continue the use of these engines (speaking generally) for some years to come, and if I read correctly Mr. Crighton's report, very few of these engines have had new boilers, although the original ones may have been extensively repaired, certainly only 6 new Boilers have been sent out for this type of engine. The Locomotive Superintendent estimates the cost of the repairs and renewals on one locomotive and tender at Rs13,234 or £735 as against the alternative of providing a new engine, and though Mr. Crighton must be the best judge as to how to deal with the locomotives daily under his eye, I should think it would be wise to incur in the case of the majority of the locomotives under consideration, the extensive renewals above contemplated. The time must come when it would be better to supply new engines out of revenue rather than go on repairing very old ones, and before long the question of how many new engines should be substituted annually for old ones will have to be considered and decided on though at present, I think, the efficiency of the stock might be maintained by partial but thorough renewals.

With regard to the 12 locomotives sanctioned but not yet indented for, it seems very desirable that these should be sent out as early as possible as they are evidently needed.

The

The documents which accompanied your letter are herewith returned.

Yours faithfully
(Sd) George B. Bruce

H. W. Notman Esqre
55, Gracechurch Street

Agents Office
Trichinopoly
6th May 1896

True Copy of a Copy
W. L. Meaumer
for Agent

ENC. No. 4 TO E. R's. C. No. 1960 OF 1896.
LETTER No. 387 D 7.5.96
FROM A.

No. 387

South Indian Railway Co., Ld.
AGENT'S OFFICE.

SERIAL No. 15

TRICHINOPOLY, 7th May 1896.

From

THE AGENT,
SOUTH INDIAN RAILWAY,

To 0889.

THE CONSULTING ENGINEER
FOR RAILWAYS,
MADRAS.

Sir,

In compliance with the request contained in your letter No. 1341 of the 28th ultimo, regarding the renewal of Locomotives, I have the honor to forward herewith copies of the undermentioned correspondence:-

(1) letter No. A/$\frac{2990}{327}$ of 21st March 1895 from the Locomotive Superintendent to the Agent.

(2) do dated 24th May 1895 from Sir George Bruce to the Managing Director.

(3) do No. A/$\frac{2990}{727}$ of 4th July 1895 from the Locomotive Superintendent to the Agent with two statements attached.

(4)

G. No. 1960
Dated 24/12/96

(4) Letter dated 8th October 1895 from Sir George Bruce to the Managing Director.

I have the honor to be
Sir
Your most obedient servant
R.G. Shelley
Captain, R.E.
Agent

Enclosures by ~~Lockhart~~

M&S

From
The Agent,
South Indian Railway,
Trichinopoly.

To
The Consulting Engineer for
Railways,
Madras.

Dated
Received } 189

No.

Enclosure.

07589

SERIAL
No. 17

475-P

Reply to E.R. Office Note N° 1627 of 28.5.96.

Para 15

The authorized stock of engines on the S.I.R is 216, against which 204 have already been obtained and the Budget for 1896/97 contains provision for 12 new locomotives, which will raise the stock to the sanctioned strength.

The engines lent to the N.Wy and to the Buckingham R. Works & those proposed to be hired to the Harbour Works are not finally transferred & therefore continue to count against the sanctioned strength. If 5 engines are now obtained on replacement and it is subsequently found that the 5 old engines can be repaired, there will be an excess of 5 over the sanctioned scale. As this excess will be but temporary, and as it will have been provided by Revenue, I do not consider that there is any objection to it or that any special sanction of India will be required. All that will be necessary is an explanatory note to Form XII of the Half yearly Return showing how the excess of 5 engines came about. On the 5 repaired engines being finally condemned they would simply be removed from the List, and of course not replaced.

Paras 19 to 22

I understand the state of the case to be that some of the old tenders are apparently good to be used for some time longer with the new engines, and that after that, it is proposed not to replace them, thus causing a permanent reduction in the stock of tenders.

As regards the first phase of the case, that is so long as the old tenders are fit for use, it is quite evident that no adjustment of their cost to Revenue Acct is required, Revenue simply pays for the cost of the Engines without tenders obtained on replacement.

4/6

As regards the next phase, that is when a permanent reduction of the stock begins to take place. It is necessary in the first instance for E R to decide whether any and if so what reduction may be allowed, as Revenue would ordinarily be compelled to keep up the full stock originally provided by Capital & to replace all the tenders as they successively became worn out & condemned.

If it is decided that the full stock of tenders is necessary and may be reduced permanently, then in this case also no adjustment of the cost of the tenders to debit of Revenue Fund is required. The cost of the unreplaced tenders will remain at debit of Capital Acct, but this debit will be credited with the scrap value or sale proceeds as they are condemned & disposed of.

A record of the tenders condemned and not replaced will be maintained in Column 12 of Form XII of the Half Yearly Rets so as to prevent the possibility of Capital being charged with the cost of replacement at any future period. See S.O Manual page 112 para 3.a.VII (1)

If at any future time it be decided to again increase the stock of tenders to the old limit, Revenue will bear the cost of the new tenders less the amount credited to Capital for the scrap value or sale proceeds, and the latter Acct will contribute that sum towards the replacement. See S.O Manual page 6 para 3(c)

E Wallace
C.R. 3/6.

to ER
Circ 5/6

25140

SERIAL
No. 19

No. 509

South Indian Railway Co., Ld.

AGENT'S OFFICE,

TRICHINOPOLY, 11th June 1896.

From

THE AGENT,
SOUTH INDIAN RAILWAY,

To Offg.

THE CONSULTING ENGINEER
FOR RAILWAYS,
MADRAS.

Sir,

Referring to your letter No. 1341 of the 28th of April 1896, and previous correspondence, regarding the renewal of Locomotives, I have the honor to request that I may be favoured with an early answer to my letter No. 215 of the 7th of March last as to how the original cost of the 24 tenders of the Engines proposed to be renewed should be treated.

I have the honor to be
Sir
Your most obedient Servant
W. de Mesnies
Superintendent,
for Agent

Ans I
send cttr of W.Rs. letter
(omitting 4th para) and say
CM. agrees with his
views 11/6/96

Ent 11/6

G. No. 2498
Recd. 12/6/96

Form No. 7.

Dated MADRAS, 18th June 1896.

To

Agent, S. I. R.

SERIAL No. 20

46P

Print with CR's note

No. 68/0 Reply No. , dated

Sir,

With reference to your letter No. 507/7 11th June 1896, I have the honor to forward herewith a copy of note, from the Examiner of Railways according on the subject & to state that I concur in the views & theories expressed

H.F. 17/6

Reminders.

Despatched on 18/6/96.

Subject.

Copyist

Please make a copy of CR's Note of 3.6.96 on the 1st page + the attached Enclosure on 2nd page.

17/6

From

The Agent,

South Indian Railway,

Trichinopoly.

To

The Consulting Engineer for Railways,

Madras.

Dated

Received } 189

No.

Enclosure.

01S217

No: 68/0 ap/8th June 1896.

Form No. 8.

Railway Department.

Office of the Consulting Engineer for Railways,

Madras, 1st July 189 6.

Print 48P

No. 82/0

SERIAL No. 21

From

The CONSULTING ENGINEER FOR RAILWAYS,

Madras,

To

The AGENT,

SOUTH INDIAN RAILWAY,

Sir,

S.N. 6

In reply to your No. 215 of 7th March 1896, and subsequent correspondence I regret that I am unable to - accord a formal approval to the specific programme for engine renewals which is laid down in your letter and is identical with that given in your No. 460 of 18th December 1895 to your Board.

Enclosures.

2. I have been guided to this conclusion by the - following considerations:-

(a) this programme only covers the renewals of a -- portion of the Locomotive Stock of the South -- Indian Railway, and not even that of all of the engines of over 15 years of age.

(b) The expenditure is very unequally divided varying from Rs. 3,83,000 per annum to nothing (in 1906 to 1908), and this without apparent reason.

(c) The principles on which alone such a programme can be based seem still to be at issue between your Locomotive Superintendent and the Consulting Engineer to the Board.

(d) No good purpose would seem at present to be served by formally approving a specific programme for so many years ahead, and in the absence of

more

more precise knowledge.

3. It appears to me that before a regular programme likely to be worked to can be formulated, further actual experience is necessary. Such a programme should include all engines on the -- Railway; and to be theoretically perfect, the annual cost of renewals plus that of heavy repairs should tend to become -- constant as the railway gets older, but of course other considerations (such as the dates on which new classes of engines were introduced or the practical efficiency or excellence of particular engines) would tend to ~~observe~~ obscure this asymptotic simplicity. Possibly after a few more years experience has been gained you may be in a better position to formulate a programme.

4. In this connection I desire to express my concurrence with the opinion expressed by Sir George Bruce to the effect that very extensive repairs are to be ~~xxxxxxxx~~ preferred to early renewals. This is ~~xxxxxxxxx~~ particularly the case in the present state of exchange. At the same time it must be remembered that it will not do to continue to repair all the engines equally up to the very last, for this would imply not only gradually increasing heavy repairs but also an excessive and concentrated expenditure in renewing a very large number of locomotives simultaneously, all being of pretty ~~round~~ much the same age and thoroughly worn out.

5. I therefore concur in Mr. Crighton's recommendation that it is desirable to distribute the importation of new engines over a considerable period, and I am therefore prepared as a tentative measure to approve of ~~one~~ an Indent being sent forward for five new engines (without tenders) in order to take the place of those said to be ~~nearly~~ nearly worn out and not to be worth repair. The cost of these engines will of course be chargeable to Revenue.

6. But I should not recommend that the old engines to be thus replaced should necessarily be scraped forthwith. It is probable that with comparatively small repairs good work could be got out of them for many years yet, as shunting engines or even as stationary engines for driving machinery, and if so it would be desirable so to utilise them rather than scrap them.

7. Such a course might imply the increase of the sanctioned stock of Locomotives by a number of inferior engines of reduced value, but on the other hand you very ~~highly~~ rightly propose to decrease the stock of tenders as the ~~loss~~ life of a tender is - greater than that of an engine. I should be prepared when the time comes to recommend to the Government of India a revised scale of Locomotive stock based upon these considerations.

8. The question about allocation asked in the concluding sentence of your letter No. 215 of 7th March 1896 has been -- dealt with in my No. 52W dated 18th June 1896.

I have the honour to be,

Sir,

Your Most Obedient Servant,

Offg: Consulting Engineer for Railways.

1768

Despatched on 1/7/96

No: 82 a/1-7-96.

South Indian Railway.

Extract from the Managing Director's Letter No. 236, dated London, the 28th July 1899, to the Agent.

Print

5/5 P

RENEWAL OF LOCOMOTIVES.

Sanction is accorded, as requested in your No. 642 of 14th June, to the estimate of Rs. 1,45,330 for the renewal of five locomotives with tenders, and the Board approve of the proposal that the class "F" locomotive should be provided. It is noted on the face of the estimate that sanction will lapse on 31st March, 1900, but it is improbable that in the ordinary course any of the engines could be delivered by that date.

AGENT'S OFFICE,
TRICHINOPOLY,
7th Septr 1899

(True Extract.)

J. W. Le Mesurier
Ag
for Agent.

Accompaniment to the Agent's letter

No_____ of_____ 189 .

Enc. No. 3 TO E. R's. C. No. 4706 OF 1899
LETTER No. 909 D/ 7.9.99
From A

No. 909

South Indian Railway Co., Ld.,

AGENT'S OFFICE,

Trichinopoly, 7th September 1899.

From

The Agt. Agent,

SOUTH INDIAN RAILWAY,

CONSULTING ENGINEER FOR RAILWAYS RECEIVED - 8 SEP 1899 MADRAS

E. No. 4706 Encl 3

To

The Consulting Engineer for Railways,

MADRAS.

SIR,

Referring to the fifth paragraph of your letter No. 82/O dated 1st July 1896 on the subject of the renewals of Locomotive engines I have the honor to forward (in duplicate) for sanction an Estimate No. 2159, amounting to Rs: 1,40,330 Chargeable to Revenue for a second set of five Locomotives (with tenders) to be obtained in replacement of a similar number of Engines which are practically worn out.

The Engines proposed to be obtained will be of the same type as the "F" Class Engines now on the line but with Axles and Cranks of the recently introduced stronger design.

The proposed expenditure has received the approval of Board of Directors, vide accompanying Extract from the Managing Director's letter No. 236 of 28th July 1899.

I have the honor to be,
Sir,
Your Most Obedient Svt.
W. Le Mesurier
Agt. Agent.

3 Enclosures. by railway parcel

[500—1-12-98.]

Form No. 33.

OFFICE OF THE CONSULTING ENGINEER FOR RAILWAYS,

Madras, 11 September 1899

Regr. No. 544
11 SEP. 1899
Enclosures
RAILWAY ACCOUNTS, MADRAS

No. 2838

OFFICE NOTE.

Letter from the Agent, South Indian Railway, No. 909, dated 7th September 1899, forwarded to the Examiner of Railway Accounts for check as to allocation and budget provision.

11.9.99.

for E. R.

E.R. for sanction of Govt.

13.9.99

13.9.99

Sanction
7/15
17/7/99

EXAMINER'S REPLY.

The estimate is correct as to allocation and is within the powers of sanction of the Local Government.

13.9.99.

for C.R.

From
THE AGENT,
South Indian Railway,
Trichinopoly.

To
THE CONSULTING ENGINEER FOR
RAILWAYS,
Madras.

Dated
Received

No.

ENCLOSURE.

[500—1-12-98.]

FORM No. 1.

A 528

PUBLIC WORKS DEPARTMENT,

RAILWAY BRANCH.

Papers to be read in Proceedings:—

Letter	from	the	Agent,	South	Indian	Railway,	No. 215, dated 7th March 1896.	S6
"	to	"	"	"	"	"	No. 958, dated 23rd March 1896.	" 8
"	from	"	"	"	"	"	No. 306, dated 10th April 1896.	" 9
Quote Telegram	to	"	"	"	"	"	No. D/115, dated 16th April 1896.	" 10
Letter	from	"	"	"	"	"	No. 344, dated 21st April 1896.	" 11
"	to	"	"	"	"	"	No. 1341, dated 28th April 1896.	" 14
"	from	"	"	"	"	"	No. 387, dated 7th May 1896.	" 15
"	from	"	"	"	"	"	No. 507, dated 11th June 1896	" 19
"	to	"	"	"	"	"	No. 68/0, dated 18th June 1896.	" 20
"	to	"	"	"	"	"	No. 82/0, dated 1st July 1896.	" 21
"	from	"	"	"	"	"	No. 909, dated 7th September 1899.	

ORDER No. 1050. Ry. dated 20/9/99

The estimate, amounting to Rs. 1,45,330 chargeable to Revenue for the renewal of five "F" class Locomotives with tenders is sanctioned.

2. This sanction has been registered as No. 18. Ry. of 1899-1900.

Jpts

R.

18/9/99

To,

The Agent, South Indian Railway. Despatch Mes 20/9.

" Examiner of Railway Accounts.

" Consulting Engineer for Railways.

Despatched on 10/10/99

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following papers :—

From—The Agent, South Indian Railway.
To—The Consulting Engineer for Railways, Madras.
Dated—Trichinopoly, 7th March 1896, No. 215.

In compliance with the instructions of my Board I have the honour to forward, for the general approval of Government, the appended programme of locomotive renewals on this railway. In connection with this programme it will be observed that it is not proposed to renew 24 tenders, and I shall be obliged if you will favour me with instructions as to how the original cost of these tenders should be treated.

Official year.	Engines to be renewed.	Expenditure.	Remarks.
		Rs.	
1896-97	Five without tenders ..	1,00,000	
1897-98	Seven	(a) 1,89,000	(a) Includes two engines Nos. 40 and 47 hired to the Nilgiri Railway and Tuticorin Reclamation works, respectively. The former has, up to 30th November 1895, inclusive, realized Rs. 4,590.
1898-99	Do.	1,89,000	
1899-1900	Seven without tenders ..	(b) 1,50,000	(b) Includes three engines proposed to be hired to Madras Harbour works extensions under negotiation.
1900-1901	Six	1,62,000	
1901-1902	Six	1,62,000	
1902-1903	Six without tenders ..	1,20,000	
1903-1904	Six	1,62,000	
1904-1905	Five	1,35,000	
1905-1906	Four	1,08,000	
1906-1907	....	..	
1907-1908	....	..	
1908-1909	Twelve { Six with tenders .. / Six without tenders	1,62,000 / 1,20,000	
Total ..	Seventy-one	..	

From—The Consulting Engineer for Railways.
To—The Agent, South Indian Railway.
Dated—Madras, 10th April 1896, No. 958.

With reference to your letter No. 215, dated 7th March 1896, forwarding, for approval, a programme of locomotive renewals on the South Indian Railway, I have the honour to request that you will kindly furnish me with a list of the engines on your line showing for each engine the type, age and mileage run, the engines which you propose to renew and the type of engine which you propose to substitute.

From—The Agent, South Indian Railway.
To—The Officiating Consulting Engineer for Railways, Madras.
Dated—Trichinopoly, 10th April 1896, No. 306.

In compliance with the request contained in your letter No. 958, dated 23rd March 1896, I have the honour to submit the information therein called for.

2. As regards the proposed reduction in the number of tenders I would explain that a permanent decrease is suggested. This is possible owing to the repairs to tenders being generally of a lighter nature and requiring less time to execute than those of locomotives.

3. The Locomotive Superintendent is desirous of indenting for the modified "F" class engine as recommended by the Locomotive and Carriage Superintendent's Committee, when replacing the engines included in his programme of renewals. I shall be glad to receive the sanction of Government to this course being adopted.

Enclosure.

South Indian Railway, Locomotive Department.

List of Engines showing the type, age and mileage run,

Engine number.	Type of engine.	Age of engine to end of December 1895.	Mileage run.	Action proposed to be taken.	Type of engine to be substituted.
		YEARS.			
1	F. Class, six wheels coupled, State Railway type.	3	72,967	Not included in the present programme of renewals.	F. Class modified type as suggested by Locomotive and Carriage Superintendent's Committee.
2		3	75,121		
3		3	97,761		
4		3	90,338		
5		3	97,236		
6	Six wheels coupled, South Indian Railway type.	21	324,128	To be renewed.	
7		21	307,999		
8		21	345,265		
9		21	345,430		
10		21	326,632		
11		21	417,686		
12		21	312,458		
13		21	361,996		
14		21	362,208		
15		21	360,762		
16		21	285,035		
17		21	277,510		
18	Four wheels coupled, South Indian Ry. type.	20	318,880	Not included in the present programme of renewals.	
19		13	421,001		
20		13	371,017		
21	Six wheels coupled, South Indian Railway type.	20	344,846	To be renewed.	F. Class modified type as suggested by Locomotive and Carriage Superintendent's Committee.
22		20	272,171		
23		20	290,842		
24		20	282,262		
25		21	309,686	To be renewed in 1896-97.	
26		21	319,173	To be renewed.	
27		21	338,931		
28		21	385,649		
29	Tank, six wheels coupled, South Indian Railway type.	20	413,327	Not included in the present programme of renewals.	
30		20	280,828		
31		20	303,818		
32		20	273,136		
33	Six wheels coupled, South Indian Railway type.	20	316,900	To be renewed.	F. Class modified type as suggested by Locomotive and Carriage Superintendent's Committee.
34		20	321,204		
35		20	221,837		
36		20	363,930		
37		20	331,309		
38		20	319,566		
39		20	306,882		
40		20	314,820		
41		20	376,164	To be renewed in 1896-97.	
42		20	355,448	To be renewed.	
43		20	298,379		
44		20	337,904		
45		20	304,421		
46		20	314,764		
47		20	315,630		

List of Engines showing the type, age and mileage run—*cont.*

Engine number.	Type of engine.	Age of engine to end of December 1895.	Mileage run.	Action proposed to be taken.	Type of engine to be substituted.
		YEARS.			
48	Six wheels coupled, South Indian Railway type.	20	398,311	To be renewed.	F. Class modified type as suggested by Locomotive and Carriage Superintendent's Committee.
49		20	276,451		
50		20	299,418		
51		20	389,048		
52		20	341,873		
53		20	341,718		
54		20	365,447		
55		20	359,187	To be renewed in 1896-97.	
56		20	357,615	To be renewed.	
57		20	308,728		
58		20	337,518		
59		20	352,556		
60		20	308,562		
61		20	305,350		
62		20	389,356		
63		20	315,100		
64		20	339,292		
65		20	298,820		
66		20	374,178	To be renewed in 1896-97.	
67		20	356,442	To be renewed.	
68		20	325,695		
69		20	331,326		
70		20	374,004	To be renewed in 1896-97.	
71		20	332,279	To be renewed.	
72		20	304,012		
73		20	347,658		
74		20	292,384		
75		20	332,687		
76		20	312,415		
77		19	278,674		
78		19	311,039		
79		19	376,674		
80		19	338,277		
81		19	290,008		
82		19	315,788		
83	Four wheels coupled, South Indian Railway type.	17	402,779	Not included in the present programme of renewals.	
84		17	362,576		
85		17	348,276		
86		17	353,430		
87		17	336,494		
88		17	314,365		
89		17	341,160		
90		17	348,524		
91		17	365,790		
92		17	348,252		
93		17	343,558		
94		17	308,181		
95		17	249,882		
96		17	362,088		
97		17	342,862		
98		17	311,766		
99		17	326,970		
100		17	354,043		
101		17	344,380		
102		17	355,852		
103		17	362,373		
104		16	344,791		
105	Six wheels coupled, South Indian Railway type.	16	252,197		
106		16	365,344		
107		15	292,103		
108		15	270,614		
109		15	304,379		
110		15	329,831		
111		15	329,172		
112		15	299,059		
113		15	248,417		
114		15	309,015		
115		15	278,757		
116		15	263,722		
117		15	266,104		
118		15	256,628		
119		15	291,419		
120		15	223,037		
121	Tank, four wheels coupled, South Indian Railway type.	10	86,087		
122		10	83,044		
123		10	84,561		
124		10	71,613		

List of Engines showing the type, age and mileage run.

Engine number.	Type of engine.	Age of engine to end of December 1895.	Mileage run.	Action proposed to be taken.	Type of engine to be substituted.
		YEARS.			
125	F. Class, six wheels coupled, State Railway type.	8	120,655	Not included in the present programme of renewals.	
126		8	142,619		
127		8	131,919		
128		8	127,914		
129		8	112,832		
130		8	140,519		
131		8	149,146		
132		8	132,808		
133		8	138,682		
134		8	127,172		
135		5	80,379		
136		5	55,399		
137		5	87,321		
138		5	142,547		
139		5	142,596		
140		5	124,411		
141		5	119,923		
142		5	109,885		
143		5	84,247		
144		5	122,707		
145		5	139,393		
146		5	120,075		
147		5	112,199		
148		5	87,838		
149		5	107,381		
150		5	94,201		
151		5	78,166		
152		5	117,228		
153		5	98,660		
154		5	94,556		
155		5	111,551		
156		5	107,140		
157		5	92,034		
158		5	114,133		
159		5	103,522		
160		5	126,780		
161		5	117,494		
162		5	114,283		
163		5	116,692		
164		5	99,176		
165		5	120,331		
166		5	114,862		
167		5	124,113		
168		5	80,096		
169		5	117,828		
170	Four wheels coupled, South Indian Ry. type	5	124,138		
171		5	129,214		
172		5	139,897		
173		5	114,531		
174		5	116,563		
175		5	133,669		
176		5	137,838		
177	Four wheels coupled, South Indian Railway type.	5	112,739		
178		5	143,667		
179		5	130,458		
180		5	128,876		
181		5	152,323		
182		5	131,883		
183		5	108,813		
184		5	113,469		
185	"O" Class, four wheels coupled.	2	56,123		
186		2	72,093		
187		2	56,718		
188		2	67,277		
189		2	62,377		
190		2	68,224		
191		2	69,340		
192		2	51,723		
193		2	71,505		
194		2	44,570		
195		2	57,221		
196		2	63,910		
197		2	52,997		
198		2	56,077		
199		2	59,739		
200		2	35,751		
201		2	46,993		
202		2	84,133		
203		2	63,477		
204		2	42,755		

From—The Agent, South Indian Railway.
To—The Officiating Consulting Engineer for Railways, Madras.
Dated—Trichinopoly, 21st April 1896, No. 344.

In compliance with the request contained in your telegram No. D.-115 of the 16th instant, I send herewith a copy of the Locomotive Superintendent's letter, No. 2990/1410 of 13th December 1895, with enclosures thereto, regarding the renewal of locomotives.

Enclosure No. 1.

From—The Locomotive and Carriage Superintendent.
To—The Agent, South Indian Railway.
Dated—Negapatam, 13th December 1895, No. A. 2990/1410.

I beg to acknowledge receipt of an extract from letter No. 158, dated 25th October last, from the Managing Director with a connecting letter from Sir George Bruce on the above important subject. So far as I am able to foresee I give below a programme on a yearly basis of the renewals required to replace the 71 engines referred to in my letter No. A. 2990/727 of 4th July 1895.

It will be my endeavour to extend this basis of renewals as far as possible.

"*Programme of yearly renewals of* 71 *engines together with anticipated yearly expenditure on account of same.*" (*See Agents' letter No.* 215 *March* 7*th* 1896, *on page* 1.)

~~Life of last twelve engines equal to 32 and 33 years.~~

It must not be forgotten that in renewing these engines the Company will gain in procuring a much improved type of good engines in the "F" class as the cylinders are 1" larger than those to be renewed and heavier loads can, in consequence, be taken.

With reference to more extensive repairs being carried out by me in the shops here, I beg to point out that, were I to entirely construct the engines from the very beginning, I could not do more than what is now done to all engines which come in for heavy repairs, and although only six boilers have been obtained from England to take the place of others undergoing repairs. Our boilers are practically rebuilt as good as new when they come into the shops. I can say the same of boiler mountings and other fittings.

I enclose a copy of Boilershop Foreman Barden's report on this subject, together with a statement of repairs done to boilers of six-wheel coupled engines Nos. 6 to 82 since they were received from England.

I shall be glad to know whether the Board approve of my proposal to reduce the number of tenders, as by doing so a saving will be effected; also whether I may prepare and forward an indent for the five engines required next official year.

Enclosure No. 2.

From—The Foreman, South Indian Railway Boilershop, Negapatam.
To—The Locomotive and Carriage Superintendent.
Dated—30th November 1895, No. 23/2.

I beg leave to submit a statement as requested by you showing the repairs done to the boilers for 71 six-wheel coupled engines Nos. 6 to 18, 21 to 28 and 33 to 82, from which you will see that 104 heavy repairs have been done, 124 moderately heavy, and 193 light. By referring to the totals on the last sheet you will see the number of each kind of plate, &c., that have been put in since they were received from England.

The statement may not be quite accurate (as I have no record of repairs done previous to 1880 or those done at outstations), but I think it will show sufficiently what has been done and what we are capable of doing here. I am certain that the boilers referred to have been kept in a proper state of efficiency, and when heavy repairs have been necessary, they have been done, and the boilers made nearly equal to new ones, at about half the cost new ones could have been supplied. It certainly will not be advisable to get any new boilers for the engines in question for reasons which you already are aware of.

I therefore hope the statement and the work that has been done will meet with your approval.

Enclosure No. 3.

South Indian Railway Company (Limited)—Boilersmith Shop.

Statement showing the repairs done to boilers of six-wheel coupled engines, Nos. 6 to 82, since they were received from England.

Engine numbers.	Year when commenced working.	Description of repairs. Copper plates. Tube plate, new.	Back plates, new.	Roof and side, new.	Fire-box, complete.	Iron plates. Tube plate, new.	Front plate, new.	Back plate, new.	New sides to fire-box casing.	New plates to bottom of barrel.	Metal tubes. New tubes.	Stays. Copper. New.	Iron. New.	Remarks. Had new fire boxes, new tubes, new plates for fire-box casing, new plate to bottom of barrel and made equal to new boiler.	Fire-box not taken out but have had other extensive repairs.	Had tubes taken out and all necessary repairs done.
											Sets.	Sets.	Sets.	Heavy repairs.	Moderate repairs.	Light repairs.
6	1874.	2	1	1	1	1	1	1	2	3	1	2	2	1	2	4
7	,,	3	1	1	1	2	1	2	2	3	1	2	1	1	3	3
8	,,	2	1	1	1	1	1	1	2	: :	1	1½	1	1	1	3
9	,,	2	2	2	2	2	2	2	2	: :	1	2	2	2	1	3
10	,,	2	1	1	1	2	1	1	2	: :	1	2	1	2	1	3
11	,,	1	1	1	1	1	1	1	2	: :	1	1	1	2	1	3
12	,,	3	1	1	1	2	1	1	2	4	1	2	1	1	2	3
13	,,	2	2	1	1	2	2	2	2	2	1	2	1	2	1	3
14	,,	3	1	1	1	1	2	1	2	3	2	2	1	1	2	2
15	,,	2	1	1	1	1	1	1	2	3	2	1½	1	1	3	2
16	,,	2	1	1	1	2	2	1	2	3	2	2	2	2	2	2
17	,,	3	1	1	1	2	3	1	2	3	1½	2½	2	2	2	2
18	,,	3	2	1	1	2	2	1	2	3	1½	2	2	2	1	2
21	,,	2	1	1	1	2	1	1	2	4	1	2	1	1	2	2
22	,,	3	1	1	1	2	2	1	2	2	1	2	1	1	3	2
23	,,	3	1	1	1	2	2	2	3	2	1½	2½	2	2	1	2
24	,,	3	1	1	2	2	2	3	3	4	2	2½	2	2	2	2
25	,,	3	2	2	1	3	3	3	1	2	3	2	2	2	3	2
26	,,	4	1	1	1	2	2	2	2	2	2	2½	1	1	3	2
27	,,	3	2	1	1	2	2	1	2	2	3	2	1	1	3	2
28	,,	4	1	1	1	1	1	1	2	2	: :	2	1	1	3	2
33	1875.	4	1	1	1	2	1	1	2	2	: :	1½	1	1	1	3
34	,,	2	1	1	1	1	2	1	3	2	5	1½	1	1	2	3
35	,,	2	1	1	1	2	3	2	2	2	6	2½	1	2	1	3
36	,,	3	3	1	2	1	2	3	1	2	3	1½	2	1	2	3
37	,,	3	1	1	1	2	2	3	1	2	: :	1½	1	1	2	3
38	,,	4	1	1	1	2	2	1	2	2	: :	2	2	2	1	3
39	,,	2	1	2	1	2	2	2	2	2	3	2	2	2	1	2
40	,,	3	1	1	1	2	2	2	1	2	3	1½	1	2	2	3
41	,,	2	1	1	2	1	3	1	2	2	4	2½	2	1	2	3
42	,,	4	2	2	1	3	1	2	1	2	3	2	1	2	2	3
43	,,	3	1	1	1	1	1	1	1	2	5	1½	1	1	2	3
44	,,	2	1	1	1	1	1	1	1	2	: :	1	1	1	1	4
45	,,	2	1	1	1	1	1	1	2	4	4	2½	2	2	1	4
46	,,	3	1	2	2	2	2	3	4	4	4	2½	2	2	1	4
47	,,	4	2	1	2	2	1	3	1	2	4	1½	1	2	2	3
48	,,	2	1	2	1	2	1	3	2	2	4	2½	2	2	2	3
49	,,	3	2	1	2	1	3	2	2	4	6	2½	2	2	1	3
50	,,	3	2	1	2	1	2	2	2	4	6	2½	2	2	2	3
51	,,	2	2	1	2	1	2	1	2	2	4	1½	1	1	2	3
52	,,	3	1	.	1	1	2	2	1	2	3	1½	1	2	1	3
53	,,	3	1	1	2	1	2	3	2	2	4	2½	2	1	2	3
54	,,	2	2	1	2	1	3	3	2	2	: :	1½	1	2	2	3
55	,,	2	1	2	1	2	1	2	2	2	2	2½	2	2	2	3
56	,,	3	2	2	1	2	2	2	2	2	2	2½	2	2	1	3
57	,,	2	2	2	1	2	2	2	2	2	2	2½	2	2	1	3
58	,,	2	2	1	2	2	2	2	2	2	3	1½	2	1	3	2
59	,,	3	1	2	1	2	1	2	2	1	3	2½	2	2	2	2
60	,,	3	2	1	2	2	2	2	1	2	3	1½	1	2	2	4
61	,,	3	1	2	1	2	1	2	1	2	3	2½	1	1	1	3
62	,,	2	2	2	2	2	2	2	2	2	2	1	1	1	2	4
63	,,	2	2	: :	1	1	1	2	1	2	: :	1½	1	2	2	4
64	,,	2	1	1	1	1	2	2	2	2	3	2½	2	2	1	2
65	,,	3	2	1	1	2	2	2	2	4	3	2	2	2	2	3
66	,,	2	1	1	1	1	2	2	2	2	: :	1½	1	1	2	3
67	,,	1	1	.	:	1	2	1	2	2	3	2	1	2	1	4
68	,,	3	2	1	1	1	2	2	2	4	4	2½	2	2	1	3
69	,,	2	1	1	1	1	2	2	2	2	3	1½	1	2	2	3
70	1876.	2	1	1	1	1	2	2	2	2	3	2½	2	2	1	2
71	,,	3	1	1	1	1	2	2	2	2	3	1½	1	1	2	3
72	,,	2	1	1	1	1	1	2	1	2	3	1½	1	2	2	3
73	,,	3	1	1	1	1	1	2	1	2	: :	1½	1	1	2	3
74	,,	2	1	1	1	1	2	1	1	2	3	2	1	2	1	4
75	,,	2	2	1	1	1	2	2	2	4	3	1½	1	1	3	3
76	,,	3	1	1	1	1	2	2	1	2	3	2½	2	2	2	3
77	,,	3	2	1	1	1	2	2	1	4	4	1½	1	2	1	4
78	,,	3	1	1	1	1	2	2	1	2	1	1½	1	1	3	2
79	,,	1	1	1	1	1	1	1	1	2	: :	1½	1	1	1	3
80	,,	2	1	1	1	1	1	1	1	:	3	1½	1	1	2	3
81	,,	2	1	1	1	1	2	1	1	2	3	1½	1	2	1	3
82	,,	3	2	1	1	1	2	2	2	4	3	2	2½	2	1	2
Total 71		182	97	82	84	124	126	101	157	191	112	138	102	104	124	198

From—The Consulting Engineer for Railways, Madras.
To—The Agent, South Indian Railway.
Dated—28th April 1896, No. 1341.

I have the honour to acknowledge with thanks the receipt of a copy of your Locomotive Superintendent's letter, No. 2990/1410, dated 13th December 1895. In view of the importance of the question I am anxious to be acquainted with the correspondence which has passed on the subject, and I should feel obliged if you would send me copies of the following :—

Locomotive Superintendent's report of 21st March 1895 on the condition of engine No. 25.
Sir George Bruce's opinion of 24th May 1895.
Locomotive Superintendent's report thereon.
Sir George Bruce's letter of 8th October 1895.

From—The Agent, South Indian Railway.
To—The Officiating Consulting Engineer for Railways, Madras.
Dated—Trichinopoly, 7th May 1896, No. 387.

In compliance with the request contained in your letter, No. 1341 of the 28th ultimo, regarding the renewal of locomotives, I have the honour to forward, herewith, copies of the undermentioned correspondence :—

(1) Letter No. A. 2990/327 of 21st March 1895, from the Locomotive Superintendent to the Agent.
(2) Letter dated 24th May 1895, from Sir George Bruce to the Managing Director.
(3) Letter No. A. 2990/727 of 4th July 1895, from the Locomotive Superintendent to the Agent with two statements attached.
(4) Letter dated 8th October 1895, from Sir George Bruce to the Managing Director.

Enclosure No. 1.

From—The Locomotive and Carriage Superintendent, Negapatam.
To—The Agent, South Indian Railway.
Dated—21st March 1895, No. A. 2990/327.

I beg to submit for your consideration and that of the Board the condition of some of our old six-wheel coupled goods engines which, through length of time, are becoming in very bad condition and will require replacing by new engines at an early date.

The engines which are failing are those constructed in 1874 and 1875, Nos. 6 to 18, 21 to 28, 33 to 68 and 69 to 82, altogether 71 engines, and many of these have become very much worn, particularly in underframes and cylinders. I have at present No. 25 in the shops for repairs which was built with 21 others of the same class in 1874 by Messrs. Neilson & Co., and its condition, I find, is so bad that I do not think it worth going to the expense of repairing and that it should be put to one site and such parts as are unserviceable sold as scrap.

I am of opinion that by degrees all these engines should be replaced by the latest standard "F" class six-wheel coupled metre gauge engines and that during next year five new engines should be obtained in lieu of five of the worst conditioned of the abovementioned ones.

I enclose herewith copy of report on the condition of the engine and tender of No. 25, which shows the amount of work required to put it in order. With regard to the wheels, if sanction is given to my indenting for five new engines, the indent for further wheels can be withheld.

I am of opinion that if we get out, say, five new engines each year, it will be sufficient to replace such as are at present in very bad condition and will continue to maintain those which are becoming bad.

Enclosure No. 2.

From—The Locomotive and Carriage Superintendent.
To—The Agent, South Indian Railway.
Dated—21st March 1895.

Report on the condition of engine and tender No. 25.

Makers	Messrs. Neilson & Co.
No.	1864.
Date	1874.
Class	Six-wheel coupled.

Was thoroughly repaired last in 1889.

Frames.—Both badly eaten away round the cylinders, the left one being only $\frac{1}{4}$" thick and the right $\frac{3}{8}$", the proper thickness being $\frac{7}{8}$".

Cylinders.—Both are bad and have been bored $\frac{1}{4}$" larger and will not stand boring again. Will require to be renewed.

Platform plates.—Very much worn and patched in a number of places. Should now be renewed.

Cast iron foot plate.—Broken and requires an expensive patch.

Horn cheeks.—All too thin and require to be renewed.

Horn cheek stays.—Require to be renewed.

Axle boxes.—Bad and very much below the standard size. Require to be renewed.

Eccentric sheaves.—Too small. Require to be renewed.

Pistons.—Worn out. New ones required.

Slide bars.—Worn out. New ones required.

Side rods.—Require all new ends.

Valve spindles.—Worn out. New ones required.

Motion.—Requires a thorough repair and the number of the parts renewed.

Brake-gear.—Worn out. New required.

Buffer beam and plates.—Worn out. New required.

Canopy.—Bad. Requires to be thoroughly repaired.

Tender.

Frames.—Both eaten away about $\frac{1}{4}$" on sides of the drag box.

Cross and longitudinal frame stays.—Badly eaten away and require to be renewed.

Drag box.—All the plates badly eaten away and full of holes. Requires to be renewed.

Tank.—Bottom bad, requires to be renewed.

Intermediate buffers and guides.—Require to be renewed.

Brake-gear.—Worn out, new required.

Buffer beam and plates.—Worn out, new required.

Canopy.—Worn out, new required.

Boiler.

Is in very fair condition having been thoroughly repaired in 1889; but there are several boilers of the same class which were repaired previous to that date and now require a very heavy repair again. If it is decided to condemn the engine, we could look out for an exceptionally bad boiler of the same class and condemn it in place of that belonging to No. 25.

Wheels.

There are a few sets of wheels which are very bad, so much so that Foreman Horrocks has asked for three new sets in the English indent which is now being prepared.

Enclosure No. 3.

From—George B. Bruce, Esq.
To—Henry W. Notman, Esq., 55, Gracechurch Street.
Dated—3, Victoria Street, 24th May 1895.

Renewal of Locomotives.

I duly received your letters of the 22nd April and the 2nd May with accompanying documents, having reference to the renewal of the locomotives on this line.

Mr. Crighton in his report states that: "The condition of some of our old 6-wagon covered goods engines which, through length of time, are becoming in very bad condition, will require replacing by new engines at an early date."

The engines to which he refers are those constructed in 1874–75, and comprise in all 71 locomotives. One of these engines No. 25, which he had in the shops for repairs, Mr. Crighton describes as in "so bad a condition that I do not think it worth going to the expense of repairing, and that it should be put to one side and such parts as are unserviceable sold as scrap" and Mr. Crighton further expresses the opinion that by degrees all these engines should be replaced by new ones.

I have great faith in Mr. Crighton's judgment and opinion upon any question connected with his department; but I am surprised that these engines within a period of 20 years should be in so bad a condition as that which seems to be conveyed by his report. As far as the records of this office enable me to judge very few of these locomotives have either had new boilers or new cylinders, though it is not unusual for an engine to last out two boilers and four pairs of cylinders.

Before coming to a conclusion to replace these 71 engines by new ones, I should recommend the Board to ascertain from Mr. Crighton what the large repairs, such as new boilers and cylinders, have been on each of the engines under review, and if he could at the same time state what the mileage run by each locomotive has been, the Board would be in a better position to decide on a course of action in this matter.

I have ascertained that on the East Indian Railway the rule is to limit the repairs on any one locomotive to Rs. 7,000, but I think that this rule must have been adopted when the rupee was worth about two shillings, for at the present rate of exchange Rs. 7,000 would not replace even a new boiler of the narrow gauge. I find that in this country no such hard and fast rule exists, but that the question is decided in each individual case according to the judgment of the Locomotive Superintendent.

New locomotives may very probably be required to meet the increase of traffic, but it would be well to ascertain from Mr. Crighton whether the present stock of engines which cannot have run a heavy mileage could not be maintained for some years yet, if new boilers, cylinders and axles and, perhaps, other duplicates were sent out to replace those worn or wearing out.

With regard to the frames of the locomotives which Mr. Crighton describes as badly eaten away round the cylinders it seems a pity to throw away the whole frame, because of this failure at one end and this I would suggest might be rectified by welding on a new plate where the original one is eaten away by the surrounding moisture and the oscillating action of the outside cylinders. On hearing from Mr. Crighton on the various points raised above, I shall be better able to form a judgment upon the whole question.

I may observe that the total number of locomotives which has been authorised is 216, whereas the total stock at present is only 204, leaving 12 still to be supplied. I am not aware why these 12 engines have not been indented for.

Enclosure No. 4.

From—The Locomotive and Carriage Superintendent.
To—The Acting Agent, South Indian Railway.
Dated—Negapatam, 4th July 1895, No. A-2990/727.

Renewal of Locomotives.

[Your letter No. 5234/819 of 26th June in which you forward an extract on the above subject from the Managing Director's letter, No. 153, of 7th June, together with copy of Sir George Bruce's letter, dated the 24th May 1895.]

I beg to report further, for the information of the Board, that my letter, No. 2990/327, of the 21st March, was not intended to convey any alarm as to the present condition of the whole of the 71 engines referred to, but that their replacement was inevitable during the next eight or ten years; and I therefore asked that the Board's sanction might be obtained to permit me to make

arrangements for their replacement by degrees, and I thought it was better to bring this important subject to notice at once than let matters run on until many more of the engines would have to be replaced. I therefore considered it advisable to stop five of the worst engines and have them replaced during next year (1896–97) by the more recent type of F class 6 wheel coupled engines. By so doing the necessity for my indenting for any more duplicate parts (excepting cylinders) would cease, as much parts of the condemned engines as were suitable and fit would be utilised for the remaining ones.

A life of 20 years for a metre gauge engine in India, where the conditions are so different to those of an English line, is, in my opinion, not a bad record and the mileage run by each of the engines I now condemn will bear, I think, favourable comparison to other engines 20 years old.

Mileage of five Engines as under.

No. 25	engine,	309,686	up to	31st December	1894.
,, 41	,,	354,076	,,	31st ,,	,,
,, 55	,,	349,186	,,	31st ,,	,,
,, 66	,,	357,854	,,	31st ,,	,,
,, 70	,,	370,355	,,	31st ,,	,,

But it must be borne in mind that the remaining 66 engines are still useful and increasing their mileage record and that some of them will continue to live and work until, I hope, 30 years or more is reached.

I find I cannot give reliable information as to the heavy repairs each of the 71 engines has received in the way of new boilers and cylinders as, I regret to say, many of my office records have during past years become destroyed by white-ants, rats and damp and have been sold as waste paper; but I give as much information as I am able to gather in regard to heavy repairs carried out during the life of the five engines under notice.

It is not, however, in my opinion a question of new boilers or cylinders it is the frames, tenders and other parts of the engines, which are becoming so old and worn. Every time an engine comes into the shops for heavy repairs, the boiler is almost renewed and the cylinders bored out, but the time comes when it does not pay to add new work to old. Six new boilers were received from England in 1889 for this type of engine and these are used from time to time to take the place of old boilers which require rebuilding and I think I may safely say that all these engines have had as good as new boilers more than twice during their life.

With regard to Sir George Bruce's suggestion to weld on a new end to the frames at that portion where badly eaten away round the cylinders, I beg to point out that such a course would be very risky, as the native smiths are not accustomed to such heavy work and even in English shops the welding of an engine frame plate is a speciality. The frames under notice, in addition to having become so bad round about the cylinders, are also much eaten away near the cast-iron foot plate and were this to be removed for welding on new frame ends it would be a most difficult matter to get the engine square and parallel again and it would cost a great deal more than it is worth expending on the engine.

I have the pleasure to submit a statement giving the dates the 71 engines were received from England during 1874 and 1875, together with the mileage each engine has run during the interval up to December 1894, also the average cost of each engine as they stand in the Audit office books, amounting to Rs. 20,942 (with regard to which there does not appear to be any depreciation written off). I also give an estimate in detail of the amount it will cost to repair each of the five engines and the value of each engine if broken up and sold as scrap.

In conclusion I can only recommend that the time has arrived when these engines are not worth spending more money upon, and it will be to the advantage of the Company to have them replaced by the most recent type of F class which will take heavier loads for traffic.

If the Board approve and sanction my proposals to replace these engines, I beg to suggest, in order to lighten the expenditure which, I presume, must fall as a charge against revenue, that for the 71 engines to be supplied there need be only 51 tenders sent out, and as I have already 50 F class tenders here which are interchangeable, the first five new engines I now ask for need not be supplied with tenders; by this arrangement a considerable saving would be effected. My reason for making this suggestion is that when engines and tenders come in for repairs, the work required for the tender is of much lighter description and of shorter duration than that required for the engine and I can therefore change the tenders on to other engines and send them out more frequently.

With regard to the last paragraph of Sir George Bruce's letter, he is quite correct we have only 204 engines out of 216 sanctioned, leaving 12 engines still to be supplied. These 12 engines were included in this year's budget estimates, but were struck out owing to financial pressure. I hope to include them in next year's budget and trust they may be supplied during the year. They are required to complete the lot of "O" class engines recently supplied for working the vacuum brake trains between Madras and Tuticorin. At present I have only 20 of these engines which are just sufficient to work the service between Madras and Madura and Trichinopoly and Erode, and from Madura to Tuticorin. I am unable to carry on the working with "O" class engines and vacuum brake until the 12 engines are supplied.

South Indian Railway.

Estimate of the cost of repairing Locomotive Engine No. 25.

Particulars.	Amount. Rs.	Particulars.	Amount. Rs.
Cylinders, new, at £50	900	Bolts and nuts	27
Wheels, new, at £95	1,710	Framing, to patch	100
Springs, new, at £10	180	Repairing motion	142
Axle boxes, new, at £15	270	Do. brake-gear	60
Coupling rods, new, at £16	288	Do. and renewing pipes	63
Connecting rods, new, at £8	144	Do. cast-iron foot plate	14
Eccentric sheaves, new, at £4	72	Platform plates and supports	40
Injectors, new, at £10	180	Wood lagging	30
Piston rods, new	120	Buffer beam	15
Slide valves	50	Do. plates	26
Do. bars	45	Canopy	30
Cross head blocks	14	Lubricators at £7	126
Gudgeon pins	5	Pressure gauge, new	24
Valve spindles	30	Blast pipe	25
Horn cheeks	45	Buffer at £11	198
Horn stays	15	Ash pan	39
Eccentric straps	50	Chimney	24
Boiler mountings	200	Painting	150
Lagging plates	37	Erecting	600
Tools	15		
Fire irons	15		Total Rs. 6,148
Lamps	24		
Spring links	6		

Tender.

Particulars.	Amount. Rs.
Buffer at £11	198
Wheel tyres, £12	216
Springs, £8	144
Canopy	20
Buffer beam	15
Do. plate	13
Axle brasses	20
Repairing tank	208
Do. drag box	65
Cross and longitudinal stays	70
Pipes and valves	15
Rubber hose	12
Brake-gear	50
Intermediate buffers and springs	10
	1,056

Boiler.

New duplicate at £335	6,030

Summary.

Engine	6,148
Tender	1,056
Boiler	6,030
Total Rs.	13,234

Number of engine.	Date received from England.	Mileage run during interval up to 31st December 1894.	Amount at which it stands in Audit office books.	Cost of carrying out repairs to No. 25 engine.	Dates when engines last received heavy repairs.	Cost of "F" class engines recently supplied.	Detailed particulars showing approximate value of materials of one condemned engine if scrapped.
6	May 1874 ..	304,506					
7	Do. ..	304,817					
8	August 1874 ..	314,118					
9	Do. ..	325,541					
10	September 1874 ..	308,799					
11	Do. ..	399,497					
12	October 1874 ..	294,138					
13	Do. ..	346,510					
14	November 1874 ..	330,636					
15	Do. ..	337,401					
16	December 1874 ..	267,688					
17	Do. ..	269,245					
18	February 1875 ..	315,431					
21	Do. ..	325,019					
22	Do. ..	255,312					
23	Do. ..	276,235					
24	Do. ..	264,254					
25	**October 1874** ..	**309,686**	Average cost per engine, inclusive of freight, shipping charges, &c., Rs. 20,942-15-11, delivered at Negapatam.	Approximate cost of repairs to engine No. 25 is Rs. 13,234, the same remarks apply to the other four engines.	July 1882. March 1885. October 1889.	Average cost of "F" class engines lately sent out, inclusive of freight, shipping charges, &., Rs. 24,874.	Wrought iron, tons 16 at Rs. 20 per ton. .. .. .. Rs. 320 0 0 Cast iron " 2 at " 20 " .. .. .. 40 0 0 Old brass, lbs. 350 at 1 a. 10 p. per lb. .. .. .. 40 1 0 Old copper, " 150 at 1 a. 10 p. " .. .. .. 17 3 0 *Boiler.* Old copper fire-box, lbs. 1,373 at 1 a. 10 p. per lb. .. .. .. 157 5 0 Old brass tubes " 2,304 at 1 a. 10 p. " .. .. .. 264 0 0 Old iron " 4,620 at 3 pies " .. .. .. 72 3 0 Old ash pan, Old chimney, Old smoke box " 1,336 at 2 " 14 0 0 924 12 0
26	Do. ..	310,779					
27	Do. ..	319,611					
28	Do. ..	366,926					
33	April 1875 ..	291,057					
34	Do. ..	302,420					
35	Do. ..	293,012					
36	Do. ..	346,536					
37	May 1875 ..	317,[illegible]86					
38	Do. ..	298,794					
39	Do. ..	289,428					
40	Do. ..	31[illegible],820					
41	**May 1875** ..	**354,076**			October 1880. November 1884. March 1891.		
42	Do. ..	338,216					
43	Do. ..	275,452					
44	Do. ..	324,334					
45	Do. ..	297,563					
46	Do. ..	298,778					
47	June 1875 ..	293,254					
48	Do. ..	372,103					
49	Do. ..	257,753					
50	Do. ..	284,142					
51	July 1875 ..	365,576					
52	Do. ..	318,236					
53	Do. ..	324,548					
54	Do. ..	341,966					
55	**July 1875** ..	**349,186**			February 1881. June 1885. November 1891.		
56	Do. ..	332,580					
57	Do. ..	289,276					
58	Do. ..	309,666					
59	August 1875 ..	344,900					
60	Do. ..	292,625					
61	Do. ..	287,867					
62	Do. ..	274,691					
63	Do. ..	307,999					
64	Do. ..	329,185					
65	Do. ..	280,083					
66	**August 1875** ..	**357,854**			April 1880. September 1883. December 1890.		
67	Do. ..	335,598					
68	Do. ..	303,177					
69	September 1875 ..	309,997					
70	**September 1875** ..	**370,355**			September 1879. June 1884. April 1893.		
71	Do. ..	317,716					
72	Do. ..	271,712					
73	October 1875 ..	327,084					
74	Do. ..	284,988					
75	Do. ..	318,508					
76	Do. ..	285,547					
77	March 1876 ..	260,774					
78	Do. ..	285,221					
79	April 1876 ..	355,538					
80	Do. ..	317,412					
81	Do. ..	269,185					
82	Do. ..	299,558					

Enclosure No. 5.

From—George B. Bruce, Esq.
To—H. W. Notman, Esq., 55, Gracechurch Street.
Dated—3 Victoria Street, 8th October 1895.

Renewal of Locomotives.

I have to acknowledge receipt of your letter of the 26th July, with copy of the report of the Locomotive Superintendent, dated 4th July 1895, No. A. 2990/727, in which he deals with the above subject in connection with my letter to you of the 24th May last. Along with that report Mr. Crighton has supplied a table in which he gives the total mileage run by each of the 71 locomotives sent out to India in the years 1874 and 1875, which in a previous report Mr. Crighton proposed should be replaced by new engines rather than be subjected to extensive repairs.

In dealing with the question of how best to treat these 71 locomotives, Mr. Crighton has selected five of them. Why, I do not exactly know; but it is probably because he finds these at the moment most in want of repairs. These five locomotives, as regards mileage run, seem to be fairly representative of the whole, though rather above the average. They appear to have run on an average 17,410 miles per annum, or about 348,200 miles each in the 20 years of their existence.

This is a very good record, but it cannot be considered the full measure of an engine's powers, prior to being laid aside for good and having a new engine substituted for it. This seems to be to some extent Mr. Crighton's own view, for he contemplates that some of the remaining 66 engines will continue to live and work till they are thirty years old. It is quite true that narrow gauge engines with small wh[illegible]s cannot be expected to have so large a mileage life as locomotives under more favourable conditions; but I still think that it would be good policy to carry out such repairs and partial renewals as would continue the use of these engines (speaking generally) for some years to come, and if I read correctly Mr. Crighton's report, very few of these engines have had new boilers, although the original ones may have been extensively repaired, certainly only six new boilers have been sent out for this type of engine. The Locomotive Superintendent estimates the cost of the repairs and renewals on one locomotive and tender at Rs. 13,234 or £735 as against the alternative of providing a new engine, and though Mr. Crighton must be the best judge as to how to deal with the locomotives daily under his eye, I should think it would be wise to incur in the case of the majority of the locomotives under consideration, the extensive renewals above contemplated. The time must come when it would be better to supply new engines out of revenue rather than go on repairing very old ones, and before long the question of how many new engines should be substituted annually for old ones will have to be considered and decided on though at present, I think, the efficiency of the stock might be maintained by partial but thorough renewals.

With regard to the twelve locomotives sanctioned but not yet indented for, it seems very desirable that these should be sent out as early as possible as they are evidently needed.

The documents which accompanied your letter are herewith returned.

From—The Agent, South Indian Railway.
To—The Consulting Engineer for Railways, Madras.
Dated—Trichinopoly, 11th June 1896, No. 507.

Referring to your letter No. 1341 of the 28th of April 1896, and previous correspondence, regarding the renewal of locomotives, I have the honour to request that I my be favoured with an early answer to my letter No. 215 of the 7th of March last as to how the original cost of the 24 tenders of the engines proposed to be renewed should be treated.

From—The Consulting Engineer for Railways; Madras.
To—The Agent, South Indian Railway.
Dated—Ootacamund, 18th June 1896, No. 68/O.

With reference to your letter No. 507, dated 11th June 1896, I have the honour to forward herewith a copy of note, dated 3rd June 1896, from the Examiner of Railway Accounts on the subject and to state that I concur in the views therein expressed.

Enclosure.

Office-note from—The Examiner, Railway Accounts.
To—The Consulting Engineer for Railways.
Dated—3rd June 1896.

Paragraph 15.—The authorized stock of engines on the South Indian Railway is 216, against which 204 have already been obtained and the budget for 1896-97 contains provision for twelve new locomotives, which will raise the stock to the sanctioned strength.

The engines lent to the Madras Railway and to the Tuticorin Railway works and those proposed to be hired to the Harbour Works are not finally transferred and therefore continue to count against the sanctioned strength of five engines are now obtained in replacement, and it is subsequently found that the five old engines can be repaired, there will be an excess of five over the sanctioned scale. As this excess will be but temporary, and as it will have been provided by revenue, I do not consider that there is any objection to it or that any special sanction of India will be required. All that will be necessary is an explanatory note to Form XII of the half-yearly accounts showing how the excess of five engines came about. On the five repaired engines being finally condemned they would simply be removed from the list, and of course not replaced.

Paragraphs 19 *to* 22.—I understand the state of the case to be that some of the old tenders are sufficiently good to be used for some time longer with the new engines, and that after that, it is proposed not to replace them, thus causing a permanent reduction in the stock of tenders.

As regards the first phase of the case, that is so long as the old tenders are fit for use, it is quite evident that no adjustment of their cost to revenue account is required; revenue simply pays for the cost of the engines without tenders obtained in replacement.

As regards the next phase, that is when a permanent reduction of the stock begins to take place, it is necessary in the first instance for Consulting Engineer for Railways to decide whether any, and if so, what reduction may be allowed, as otherwise revenue would ordinarily be compelled to keep up the full stock originally provided by capital and to replace all the tenders as they successively became worn out and condemned.

If it is decided that the full stock of tenders is excessive and may be reduced permanently, then in this case also no adjustment of the cost of the tenders to debit of revenue account is required. The cost of the un-replaced tenders will remain at debit of capital account, but this account will be credited with their scrap value or sale-proceeds as they are condemned and disposed of.

A record of the tenders condemned and not replaced will be maintained in column 12 of form XII of the half-yearly account so as to prevent the possibility of capital being charged with the cost of replacement at any future period.

If at any future time it be decided to again increase the stock of tenders to the old limit, revenue will bear the cost of the new tenders less the amount credited to capital for the scrap value or sale-proceeds, and the latter account will contribute that sum towards the replacement.

From—The Consulting Engineer for Railways, Madras.
To—The Agent, South Indian Railway.
Dated—Ootacamund, 1st July 1896, No. 82/O.

In reply to your No. 215 of 7th March 1896, and subsequent correspondence I regret that I am unable to accord a formal approval to the specific programme for engine renewals which is laid down in your letter and is identical with that given in your No. 460 of 18th December 1895 to your Board.

2. I have been guided to this conclusion by the following considerations:—

(*a*) This programme only covers the renewals of a portion of the locomotive stock of the South Indian Railway, and not even that of all of the engines of over fifteen years of age.

(*b*) The expenditure is very unequally divided varying from Rs. 2,82,000 per annum to nothing (in 1906 to 1908), and this without apparent reason.

(*c*) The principles on which alone such a programme can be based seem still to be at issue between your Locomotive Superintendent and the Consulting Engineer to the Board.

(*d*) No good purpose would seem at present to be served by formally approving a specific programme for so many years ahead, and in the absence of more precise knowledge.

3. It appears to me that before a regular programme likely to be worked to can be formulated, further actual experience is necessary. Such a programme should include all engines on the Railway; and to be *theoretically* perfect, the annual cost of renewals *plus* that of heavy repairs should tend to become constant as the railway gets older; but of course other considerations (such as the dates on which new classes of engines were introduced or the practical efficiency or excellence of particular engines) would tend to obscure this asymptotic simplicity. Possibly after a few more years experience has been gained you may be in a better position to formulate a programme.

4. In this connection I desire to express my concurrence with the opinion expressed by Sir George Bruce to the effect that very extensive repairs are to be preferred to early renewals. This is particularly the case in the present state of exchange. At the same time it must be remembered that it will not do to continue to repair all the engines equally up to the very last, for this would imply not only gradually increasing heavy repairs but also an excessive and concentrated expenditure in renewing a very large number of locomotives simultaneously, all being of pretty much the same age and thoroughly worn out.

5. I therefore concur in Mr. Crighton's recommendation that it is desirable to distribute the importation of new engines over a considerable period, and I am therefore prepared as a tentative measure to approve of an indent being sent forward for five new engines (without tenders) in order to take the place of those said to be nearly worn out and not to be worth repair. The cost of these engines will of course be chargeable to Revenue.

6. But I should not recommend that the old engines to be thus replaced should necessarily be scrapped forthwith. It is probable that with comparatively small repairs good work could be got out of them for many years yet, as shunting engines or even as stationary engines for driving machinery, and, if so, it would be desirable so to utilise them rather than scrap them.

7. Such a course might imply the increase of the sanctioned stock of locomotives by a number of inferior engines of reduced value, but on the other hand you very rightly propose to decrease the stock of tenders as the life of a tender is greater than that of an engine. I should be prepared when the time comes to recommend to the Government of India a revised scale of locomotive stock based upon these considerations.

8. The question about allocation asked in the concluding sentence of your letter No. 215 of 7th March 1896 has been dealt with in my No. 68/O., dated 18th June 1896.

From—The Agent, South Indian Railway.
To—The Consulting Engineer for Railways, Madras.
Dated—Trichinopoly, 7th September 1899, No. 909.

Referring to the fifth paragraph of your letter No. 82/O., dated 1st July 1896, on the subject of the renewals of locomotive engines I have the honour to forward (in duplicate) for sanction an estimate No. 2159, amounting to Rs. 1,45,330, chargeable to revenue for a second set of five locomotives (with tenders) to be obtained in replacement of a similar number of engines which are practically worn out.

The engines proposed to be obtained will be of the same type as the "F" class engines now on the line, but with axles and cranks of the recently introduced stronger design.

The proposed expenditure has received the approval of Board of Directors—*vide* accompanying extract from the Managing Director's letter No. 236 of 28th July 1899.

Enclosure.

Extract from letter from —The Managing Director.
To—The Agent South Indian Railway.
Dated—London, 28th July 1899, No. 236.

Renewal of Locomotives.

Sanction is accorded, as requested in your No. 642 of 14th June, to the estimate of Rupees 1,45,330 for the renewal of five locomotives with tenders, and the Board approve of the proposal that the class "F" locomotive should be provided. It is noted on the face of the estimate that sanction will lapse on 31st March 1900, but it is improbable that in the ordinary course any of the engines could be delivered by that date.

Order—No. 1050 Ry., dated 20th September 1899.

The estimate, amounting to Rs. 1,45,330, chargeable to Revenue for the renewal of five "F" class locomotives with tenders is sanctioned.

2. This sanction has been registered as No. 18 Ry. of 1899-1900.

(True Extract.)

Secretary.

To the Agent, South Indian Railway.
" Examiner of Railway Accounts.
" Consulting Engineer for Railways.

Exd. P. Seetharam.

RAILWAY.

Renewal of five "F" Class Locomotives with tenders on the South Indian Railway

Sanctioning the estimate, amounting to Rs. 1,45,330, for the —.