Govt. of India Madras.

PUBLIC WORKS.

Dated

Rcvd. Encl.

G.O. 29 apl 1890 No. 585-6 R

Coal

=

Statements showing Result of trials made with different Kinds of Coal on the S. I. Railway ordered to be forwarded to the Govt of India.

Coal

=

Forwards Statements showing result of trials made with different Kinds of ~~ordered to be forwarded~~ on the S. I. Ry.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following papers :—

From the Consulting Engineer for Railways, dated Madras, 21st April 1890, No. 279.

From the Agent, South Indian Railway, to the Consulting Engineer for Railways, dated Trichinopoly, 1st October 1889, No. 1250.

Referring to your letter, No. 656, of 24th September 1888, I have the pleasure to send you, herewith, two printed statements showing the result of some comparative trials of Singareni and other descriptions of coal.

ENCLOSURE.

SOUTH INDIAN RAILWAY—LOCOMOTIVE DEPARTMENT.

Cambrian Patent Fuel per S.S. "Manitoba" from Gosmam and Smith.

Six trials made with mail trains from Madras to Cuddalore, 128 miles.

A	B	C	D	E	F	Coal consumed.				K	L	M	N	O	P	
Month and date.	No. of engine.	No. of vehicles.	No. of miles.	Gross weight of train.	Weight of load.	G For journey.	H For lighting.	I Total.	J Per mile, column I.	Weight of ashes.	Ash per 100 miles of coal consumed, column I.	Average pressure of steam per square inch.	Water consumed in gallons.	Water consumed in pounds.	Pounds of water evaporated per lb. of coal, column G.	State of weather.
1889.				TONS. CWT. QRS. LB.	TONS. CWT. QRS. LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.		LB.	LB.	
January, 21 ..	106	20	128	97 18 0 0	27 10 0 0	2,016	112	2,128	16·62	262	12·31	115	1,750	17,500	8·68	Fair weather.
Do. 23 ..	91	20	128	103 17 0 0	29 9 0 0	2,240	112	2,352	18·38	242	10·28	105	1,765	17,650	7·88	Do.
Do. 26 ..	106	20	128	105 10 0 0	30 17 0 0	1,904	112	2,016	15·75	263	13·05	115	1,760	17,600	9·24	Do.
Do. 28 ..	91	20	128	103 2 2 0	29 3 0 0	1,960	112	2,072	16·19	255	12 31	110	1,760	17,600	8·98	Fair up to Villupuram. Head wind from Villupuram to Cuddalore.
Do. 31 ..	106	20	128	103 19 3 0	31 19 0 0	1,904	112	2,016	15·75	266	13·19	110	1,780	17,800	9·35	Fair weather.
February, 2 ..	91	20	128	104 2 3 0	29 19 0 0	2,128	112	2,240	17·50	235	10·49	110	1,830	18,300	8·59	Do.
Total ..	6	120	..	618 10 0 0	178 17 0 0	12,152	672	12,824	100·19	1,523	71·63	665	10,645	106,450	52·72	
Average ..	..	20	128	103 1 2 18·66	29 16 0 18·66	2,025·33	112·00	2,137·33	16·70	253·83	11·94	110·83	1,774·16	17,741·66	8·79	

Llay Hall Brymbo Main Steam Coal per S.S. "Eastern Prince" from Howard Houlder & Co.

Three trials made with mail trains from Madras to Cuddalore, 128 miles.

January, 22 ..	106	21	128	105 18 2 0	28 17 0 0	2,464	56	2,520	19·69	343	13·61	110	1,880	18,800	7·63	Strong wind blowing from north-east.
Do. 24 ..	91	20	128	105 8 0 0	27 11 0 0	2,800	112	2,912	22·75	337	11·57	105	2,065	20,650	7·37	Strong side head winds.
Do. 27 ..	106	19	128	100 11 2 0	27 11 0 0	2,464	56	2,520	19·69	409	16·23	110	1,920	19,200	7·79	Do. side winds.
Total ..	3	60	..	311 18 0 0	83 19 0 0	7,728	224	7,952	62·13	1,089	41·41	325	5,865	58,650	22·79	
Average ..	..	20	128	103 19 1 9·33	27 19 2 18·66	2,576·00	74·66	2,650·66	20·71	363·00	13 80	108·33	1,955·00	19,550·00	7·59	

Singareni Coal received from Messrs. Parry & Co. of Madras.

Four trials made with trains from Madras to Cuddalore, 128 miles.

February, 5 ..	106	19	128	98 5 2 0	27 11 0 0	2,912	112	3,024	23·63	708	23·41	110	1,980	19,800	6·80	Fair weather.
Do. 10 ..	106	20	128	103 8 3 0	28 15 0 0	2,800	112	2,912	22·75	610	20·95	110	1,870	18,700	6·68	Do.
Do. 15 ..	106	20	128	99 4 1 0	26 5 0 0	2,912	112	3,024	23·63	600	19·84	110	1,900	19,000	6·52	Do.
Do. 21 ..	98	20	128	106 4 3 0	29 13 0 0	3,024	112	3,136	24·50	513	16·36	120	1,880	18,800	6·22	Do.
Total ..	4	79	..	407 3 1 0	112 4 0 0	11,648	448	12,096	94·51	2,431	80·56	450	7,630	76,300	26·22	
Average ..	..	19·75	128	101 15 3 7·00	28 1 0 0	2,912·00	112·00	3,024·00	23·63	607·75	20·14	112·50	1,907·50	19,075·00	6·55	

Bersham Wraxham North Wales Steam Coal per S.S. "Macgregor" from Gosmam and Smith.

Three trials made with mail trains from Madras to Cuddalore, 128 miles.

February, 7 ..	91	20	128	106 14 3 0	27 3 0 0	2,352	112	2,464	19·25	254	10·31	110	1,830	18,300	7·78	Fair weather.
Do. 12 ..	91	20	128	104 6 1 0	28 19 0 0	2,240	112	2,352	18·38	253	10·76	110	1,850	18,500	8·26	Do.
Do. 17 ..	91	20	128	103 9 3 0	29 19 0 0	2,240	112	2,352	18·38	259	11·01	110	1,780	17,800	7·94	Do.
Total ..	3	60	..	314 10 3 0	86 1 0 0	6,832	336	7,168	56·01	766	32·08	330	5,460	54,600	23·98	
Average ..	..	20·00	128	104 16 3 18·66	28 13 2 18·66	2,277 33	112·00	2,389·33	18·67	255·33	10·69	110·00	1,820·00	18,200·00	7·99	

West Hartley Main large Steam Coal per S.S. "Tiverton" from Howard Houlder & Co.

Four trials made with mail trains from Madras to Cuddalore, 128 miles.

March, 27 ..	106	20	128	105 3 0 0	28 7 0 0	2,352	112	2,464	19·25	336	13·64	110	1,930	19,300	8·26	Strong side winds.
Do. 28 ..	106	22	128	115 3 0 0	28 8 0 0	2,128	56	2,184	17·06	295	13·50	110	1,920	19,200	9·02	Fair weather.
Do. 28 ..	98	20	128	105 3 0 0	28 7 0 0	2,404	112	2,516	19·66	251	9·98	110	1,800	18,000	7·49	Strong head & side winds.
Do. 29 ..	98	20	128	104 18 0 0	28 3 0 0	2,432	112	2,544	19·87	201	7·90	110	1,810	18,100	7·44	Fair weather.
Total ..	4	82	..	430 7 0 0	113 5 0 0	9,316	392	9,708	75·84	1,083	45·02	440	7,460	74,600	32·15	
Average ..	..	21·00	128	107 11 3 0	28 6 1 0	2,329·00	98·00	2,427·00	18·96	270·75	11·25	110·00	1,865·00	18,650·00	8·04	

Hastings Hartley Steam Coal per S.S. "Starthblane."

Six trials made with mail trains between Madras and Cuddalore, 128 miles.

April, 16 ..	106	20	128	103 2 1 0	31 3 0 0	2,352	112	2,464	19·25	220	8·92	110	1,820	18,200	7·73	Strong head & side winds.
Do. 17 ..	106	20	128	102 14 2 0	31 3 0 0	2,128	56	2,184	17·06	223	10·21	110	1,770	17,700	8·31	Do.
Do. 17 ..	98	19	128	99 16 3 0	31 11 0 0	2,464	112	2,576	20·12	275	10·67	110	1,750	17,500	7·10	Fair weather.
Do. 18 ..	98	20	128	105 11 0 0	32 7 0 0	2,464	..	2,464	19·25	204	8·28	110	1,700	17,000	6·90	Do.
Do. 18 ..	92	19	128	95 19 0 0	28 11 0 0	2,240	112	2,352	18·37	134	5·69	110	1,720	17,200	7·67	Do.
Do. 19 ..	92	18	128	95 4 2 0	29 3 0 0	2,352	..	2,352	18·37	192	8·16	110	1,810	18,100	7·69	Do.
Total ..	6	116	..	602 8 0 0	183 18 0 0	14,000	392	14,392	112·42	1,248	51·93	660	10,570	105,700	45·40	
Average ..	..	19·33	128	100 8 0 0	30 13 0 0	2,333·33	65·33	2,398·66	18·74	208·00	8·65	110·00	1,761·66	17,616·66	7·56	

South Bulli Coal per S.S. "Cloncurry."

Four trials made with mail trains between Madras and Cuddalore, 128 miles.

May, 7 ..	98	20	128	103 10 2 0	31 3 0 0	2,352	112	2,464	19·25	391	15·86	110	1,950	19,500	14·42	Fair weather.
Do. 8 ..	99	19	128	99 7 0 0	31 11 0 0	2,240	..	2,240	17·50	286	12·76	110	1,750	17,500	7·81	Do.
Do. 8 ..	92	20	128	103 16 0 0	33 3 0 0	2,464	112	2,576	20·12	409	15·87	110	1,990	19,900	8·07	Do.
Do. 9 ..	92	20	128	104 5 2 0	33 3 0 0	2,240	..	2,240	17·50	364	16·25	110	1,970	19,700	8·79	Do.
Total ..	4	79	..	410 19 0 0	129 0 0 0	9,296	224	9,520	73·47	1,450	60·74	440	7,660	76,600	39·09	
Average ..	..	19·75	128	102 14 3 0	32 5 0 0	2,324·00	56·00	2,380·00	18·37	362·50	15·18	110·00	1,915·00	19,150·00	9·77	

Bengal Coal per S.S. "Umballa."

Five trials made with mail trains between Madras and Cuddalore, 128 miles.

A Month and date.	B No. of engine.	C No. of vehicles.	D No. of miles.	E Gross weight of train.	F Weight of load.	Coal consumed. G For journey.	H For lighting.	I Total.	J Per mile, column I.	K Weight of ashes.	L Ash per 100 miles of coal consumed, column I.	M Average pressure of steam per square inch.	N Water consumed in gallons.	O Water consumed in pounds.	P Pounds of water evaporated per lb. of coal, column G.	State of weather.
1889.				TONS. CWT. QRS. LB.	TONS. CWT. QRS. LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.				
June, 5 ..	106	20	128	103 8 0 0	30 7 0 0	2,800	112	2,912	22·75	753	25·85	60	2,200	22,000	7·85	Strong side winds.
„ 6 ..	98	20	128	106 9 3 0	36 1 0 0	3,136	112	3,248	25·37	857	26·38	110	2,000	20,000	6·38	Fair weather.
„ 7 ..	98	20	128	102 19 2 0	29 3 0 0	3,136	..	3,136	24·50	847	27·00	110	1,850	18,500	5·89	Do.
„ 7 ..	92	20	128	103 12 2 0	33 3 0 0	3,360	112	3,472	27·12	874	25 17	110	2,200	22,000	6·55	Do.
„ 8 ..	92	20	128	103 10 1 0	31 3 0 0	3,360	..	3,360	26·25	698	20·77	110	2,130	21,300	6·34	Do.
Total ..	5	100	..	520 0 0 0	159 17 0 0	15,792	336	16,128	125·99	4,029	125·17	500	10,380	1,03,800	33·01	
Average ..	..	20·00	128	104 0 0 0	31 19 1 16·80	3,158·40	67·20	3,225·60	25·19	805·80	25·03	100·00	2,076·00	20,760·00	6·60	

Firewood.

Five trials made with mail trains between Madras and Cuddalore, 128 miles.

April, 3 ..	92	20	128	105 5 0 0	33 3 0 0	3,992	112	4,104	32·06	112	2·73	110	1,510	15,100	3·78	Strong side winds.
Do. 6 ..	106	20	128	105 8 2 0	29 3 0 0	4,297	112	4,409	34·45	131	2·97	110	1,830	18,300	4·25	Strong head & side winds.
Do. 7 ..	98	20	128	105 10 2 0	33 3 0 0	4,403	112	4,515	35·27	220	4·87	110	1,750	17,500	3·97	Very heavy head and side winds.
Do. 8 ..	92	20	128	103 16 3 0	33 3 0 0	3,920	112	4,032	31·50	122	3·03	110	1,760	17,600	4·49	
Do. 11 ..	106	20	128	104 19 1 0	29 3 0 0	4,200	112	4,312	33·68	200	4·64	110	1,700	17,000	4·05	
Total ..	5	100	..	525 0 0 0	157 15 0 0	20,812	560	21,372	166·96	785	18·24	550	8,550	85,500	20·54	
Average ..	..	20·00	128	105 0 0 0	31 11 0 0	4,162·40	112·00	4,274·40	33·39	157·00	3·65	110·00	1,710·00	17,100·00	4·11	

Average result of trials made of Patent Fuel, South Bulli, Bersham Wraxham, North Wales Steam, Hastings Hartley Steam, West Hartley Main large Steam, Llay Hall Brymbo Main Steam, Singareni, Bengal Coal and Firewood.

Between Madras and Cuddalore, 128 miles.

															Cost per mile. RS. A. P.
Patent fuel	20·00	128	103 1 2 18·66	29 16 0 18·66	2,025·33	112·00	2,137·33	16·70	253·33	11·94	110·83	1,774·16	17,741·66	8·79	0 2 1·79
South Bulli coal ..	19·75	128	102 14 3 0	32 5 0 0	2,324·00	56·00	2,380·00	18·37	362·50	15·18	110·00	1,915·00	19,150·00	9·77	..
Bersham Wraxham North Wales steam coal.	20·00	128	104 16 3 18·66	28 13 2 18·66	2,277·33	112·00	2,389·33	18·62	255·33	10·69	110·00	1,820·00	18,200·00	7·99	0 2 7·15
Hastings Hartley steam coal	19·33	128	100 8 0 0	30 13 0 0	2,333·33	65·33	2,398·66	18·74	208·00	8·65	110·00	1,761·66	17,616·66	7·56	0 2 5·11
West Hartley Main large steam coal ..	21·00	128	107 11 3 0	28 6 1 0	2,329·00	98·00	2,427·00	18·96	270·75	11·25	110·00	1,865·00	18,650·00	8·04	0 2 6·42
Llay Hall Brymbo Main steam coal	20·00	128	103 19 1 9·33	27 19 2 18·66	2,576·00	74·66	2,650·66	20·71	363·00	13·80	108·33	1,955·00	19,550·00	7·59	0 2 4·51
Singareni coal ..	19·75	128	101 15 3 7·00	28 1 0 0	2,912·00	112·00	3,024·00	23·63	607·75	20·14	112·50	1,907·50	19,075·00	6·55	0 3 2·47
Bengal coal	20·00	128	104 0 0 0	31 19 1 16·80	3,158·40	67·20	3,225·60	25·19	805·80	25·03	100·00	2,076·00	20,760·00	6·60	0 2 10·56
Firewood	20·00	128	105 0 0 0	31 11 0 0	4,162·40	112·00	4,274·40	33·39	157·00	3·65	110·00	1,710·00	17,100·00	4·11	0 1 2·31

NEGAPATAM,
19th July 1889.

(Signed) C. E. CRIGHTON,
Locomotive and Carriage Superintendent.

From the Agent, South Indian Railway, to the Consulting Engineer for Railways, dated Trichinopoly, 16th April 1890, No. 522.

In continuation of my letter, No. 1250, dated 1st October 1889, I beg to send you, herewith, two copies of a statement showing the result of trials made with Australian coal.

ENCLOSURE.

SOUTH INDIAN RAILWAY—LOCOMOTIVE DEPARTMENT.

The Scottish Australian Lambton Coal per S.S. "Cloncurry."

Six trials made with mail trains from Madras to Cuddalore, 128 miles.

A	B	C	D	E	F	Coal consumed. G	H	I	J	K	L	M	N	O	P	
Month and date.	No. of engine.	No. of vehicles.	No. of miles.	Gross weight of train.	Weight of load.	For journey.	For lighting.	Total.	Per mile, column I.	Weight of ashes.	As per 100 miles of coal consumed, column I.	Average pressure of steam per square inch.	Water consumed in gallons.	Water consumed in pounds.	Pounds of water evaporated per lb. of coal, column G.	State of weather.
1890.				TONS. CWT. QRS. LB.	TONS. CWT. QRS. LB.	LB.	LB.	LB.	LB.	LB.	LB.	LB.		LB.	LB.	
January, 7 ..	105	19	128	101 12 2 0	27 8 0 0	2,128	112	2,240	17·50	259	11·56	110	1,820	18,200	8·55	Moderate.
Do. 9 ..	98	20	128	104 18 2 0	34 1 0 0	2,800	112	2,912	22·75	312	10·71	110	1,970	19,700	7·03	Strong wind.
Do. 10 ..	109	20	128	105 7 0 0	31 1 0 0	2,352	112	2,464	19·25	292	11·85	110	1,490	14,900	6·33	Fair.
Do. 12 ..	105	20	128	106 7 2 0	25 3 0 0	2,352	112	2,464	19·25	237	9·61	110	1,750	17,500	7·44	Do.
Do. 14 ..	98	20	128	101 19 0 0	31 3 0 0	2,464	112	2,576	20·12	240	9·31	110	1,700	17,000	6·89	Do.
Do. 15 ..	109	20	128	104 9 0 0	29 3 0 0	2,332	112	2,444	19·09	258	10·55	110	1,510	15,100	6·47	Do.
Total ..	..	119	..	624 13 2 0	177 19 0 0	14,428	672	15,100	117·96	1,598	63·59	660	10,240	102,400	42·71	
Average ..	..	19·83	128	104 2 1 0	29 13 0 18·66	2,404·63	112·00	2,516·66	19 66	266·33	10·59	110·00	1,706·66	17,066·66	7·12	

The Australian Lambton Coal per S.S. "New Guinea."

Six trials made with mail trains from Madras to Cuddalore, 128 miles.

January, 17 ..	105	20	128	105 9 2 0	33 3 0 0	2,128	112	2,240	17·50	245	10·93	110	1,700	17,000	7·98	Fair.
Do. 18 ..	92	20	128	105 14 1 0	33 3 0 0	2,352	112	2,464	19·25	312	12·66	110	1,810	18,100	7 69	Do.
Do. 20 ..	109	20	128	104 8 2 0	30 19 0 0	2,128	112	2,240	17·50	218	9·73	110	1,570	15,700	7·37	Do.
Do. 23 ..	92	20	128	104 7 3 0	33 3 0 0	2,464	112	2,576	20·12	321	12·46	110	1,820	18,200	7·58	Do.
Do. 22 ..	105	20	128	104 15 0 0	31 3 0 0	2,352	112	2,464	19·25	250	10·15	110	1,710	17,100	7·27	Do.
Do. 29 ..	106	20	128	98 13 1 0	28 3 0 0	2,352	112	2,464	19·25	264	10·71	110	1,900	19,000	8·07	Do.
Total ..	..	120	..	623 8 1 0	189 14 0 0	13,776	672	14,448	112·87	1,613	66·64	660	10,510	105,100	45·76	
Average ..	..	20·00	128	103 18 0 4·66	31 12 1 9·33	2,296·00	112·00	2,408·00	18·81	268·83	11·10	110·00	1,751·66	17,516·66	7·62	

The best screened Australian Lambton Coal per S.S. "Rhine."

Six trials made with mail trains from Madras to Cuddalore, 128 miles.

January, 27 ..	105	20	128	104 2 3 0	30 16 0 0	2,128	112	2,240	17·50	266	11·87	110	1,750	17,500	8·22	Fair.
Do. 28 ..	92	20	128	105 6 3 0	33 3 0 0	2,240	112	2,352	18·37	289	12·28	110	1,850	18,500	8·25	Do.
February, 1 ..	105	20	128	104 2 2 0	31 3 0 0	2,240	112	2,352	18·37	258	10·96	110	1,750	17,500	7·81	Do.
Do. 2 ..	92	20	128	105 13 2 0	33 3 0 0	2,240	112	2,352	18·37	290	12·32	110	1,830	18,300	8·16	Do.
Do. 3 ..	106	20	128	102 4 1 0	29 3 0 0	2,352	112	2,464	19·25	281	11·40	110	1,865	18,650	7·92	Do.
Do. 8 ..	106	20	128	102 8 0 0	29 3 0 0	2,352	112	2,464	19·25	265	10·75	110	1,920	19,200	8·16	Do.
Total ..	..	120	..	623 17 3 0	186 11 0 0	13,552	672	14,224	111·11	1,699	69·58	660	10,965	109,650	48·52	
Average ..	..	20·00	..	103 19 2 14·00	31 1 3 9·33	2,258·66	112 00	2,370·66	18·52	283 16	11·59	110·00	1,827·50	18,275·00	8·08	

The best screened Scottish Australian Lambton Coal per S.S. "Falls of Clyde."

Six trials made with mail trains from Madras to Cuddalore, 128 miles.

February, 7 ..	92	20	128	105 18 0 0	33 3 0 0	2,464	112	2,576	20·12	390	15·13	110	1,900	19,000	7·71	Fair.
Do. 12 ..	92	20	128	106 12 0 0	36 1 0 0	2,464	112	2,576	20·12	365	14·16	110	1,885	18,850	7·65	Do.
Do. 13 ..	106	20	128	103 1 2 0	28 11 0 0	2,352	112	2,464	19·25	250	10·14	110	1,860	18,600	7·90	Do.
Do. 18 ..	106	20	128	104 8 0 0	29 3 0 0	2,464	112	2,576	20·12	265	10·28	110	1,890	18,900	7·67	Heavy side wind.
Do. 26 ..	105	21	128	110 2 1 0	29 11 0 0	2,464	112	2,576	20·12	304	11·80	110	1,750	17,500	7·10	Moderate ,,
March, 3 ..	105	20	128	103 5 1 0	29 3 0 0	2,352	112	2,464	19·25	305	12·37	110	1,800	18,000	7·65	Fair.
Total ..	..	121	..	633 7 0 0	185 12 0 0	14,560	672	15,232	118·98	1,879	73·88	660	11,085	110,850	45·68	
Average ..	..	20·16	..	105 11 0 18·66	30 18 2 18·66	2,426·66	112·00	2,538·66	19·83	313·16	12·31	110·00	1,847·50	18,475·00	7·61	

Average result of trials made of best screened Australian Lambton, Australian Lambton, Scottish Australian Lambton and best screened Scottish Australian Lambton Coals.

Between Madras and Cuddalore, 128 miles.

																Cost per mile. Rs. A. P.
The best screened Australian Lambton coal.	20·00	128	103 19 2 14·00	31 1 3 9·33	2,258·66	112·00	2,370·66	18·52	283·16	11·59	110·00	1,827·50	18,275·00	8·08	0 2 2·53
The Australian Lambton coal	20·00	128	103 18 0 4·66	31 12 1 9·33	2,296·00	112·00	2,408·00	18·81	268 83	11·10	110·00	1,751·66	17,516·66	7·62	0 1 10·98
The Scottish Australian Lambton coal ..	19·83	128	104 2 1 0	29 13 0 18·66	2,404·66	112·00	2,516·66	19·66	266·33	10·59	110·00	1,706·66	17,066·66	7·12	0 2 2·49
The best screened Scottish Australian Lambton coal ..	20·16	128	105 11 0 18·66	30 18 2 18·66	2,426·66	112·00	2,538·66	19·83	313·16	12·31	110·00	1,847·50	18,475·00	7·61	0 1 11·80

NEGAPATAM,
13th March 1890.

(Signed) C. E. CRIGHTON,
Locomotive and Carriage Superintendent.

Submitted to Government in continuation of this office endorsement, No. 476, dated 26th November 1889.

2. With the exception of firewood, Australian coals appear to be the cheapest fuel experimented with; but in evaporative power per lb. of fuel is lower than patent fuel and English coals. The experiments with wood were made under very adverse conditions of weather, yet it worked 8·67 pies per mile lower than the cheapest fuel.

ORDER—dated 29th April 1890, No. 585 R., Public Works.

Ordered to be forwarded to the Government of India in continuation of Public Works Department docket No. 103 R., dated 20th January 1890.

(Here enter No. 586 R., dated 29th April 1890.)

(True Extract.)

Major, R.E.,
Under-Secy. to Govt., P.W.D.,
Railway Branch.

To the Consulting Engineer for Railways.

Exd. A. Aubert.
Spare Copies

RAILWAY.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated April, 29th.

Recd. *Encl.*

G.O., 29th Apr. 1890, No. 585 R.

APRIL.

Coal

Statements showing result of trials made with different kinds of — on the South Indian Railway, ordered to be forwarded to the Government of India.

SOUTH INDIAN RAILWAY.

LOCOMOTIVE DEPARTMENT.

Cambrian Patent Fuel *per S. S. "Manitoba" from GOSMAN & SMITH.*

Six trials made with mail trains from Madras to Cuddalore 128 miles.

A Month and Date.	B No. of Engine.	C No. of Vehicles.	D No. of Miles.	E Gross weight of Train. Tons.	Cwt.	Qrs.	lbs.	F Weight of Load. Tons.	Cwt.	Qrs.	lbs.	Coal Consumed. G For Journey. lbs.	H For Lighting. lbs.	I Total. lbs.	J Per mile column I.	K Weight of ashes. lbs.	L Ash per 100 miles of coal consumed column I. lbs.	M Average pressure of steam per square inch. lbs.	N Water consumed in gallons.	O Water consumed in pounds. lbs.	P Pounds of water evaporated per lb. of coal column G. lbs.	State of Weather.
1889.																						
JANUARY.....	21	106	20	128	97	18	...	...	27	10	...	...	2016	112	2128	16·62	262	12·31	115	1750	17500	8·68	Fair weather.
"	23	91	20	128	103	17	...	...	29	9	...	...	2240	112	2352	18·38	242	10·28	105	1765	17650	7·88	Do.
"	26	106	20	128	105	10	...	...	30	17	...	...	1904	112	2016	15·75	263	13·05	115	1760	17600	9·24	Do.
"	28	91	20	128	103	2	2	...	29	3	...	...	1960	112	2072	16·19	255	12·31	110	1760	17600	8·98	Fair up to Villupuram. Head wind from Vm. to Cud.
"	28	91	20	128	103	19	3	...	31	19	...	...	1904	112	2016	15·75	266	13·19	110	1780	17800	9·35	Fair weather.
"	31	106	20	128	103	19	3	...	29	19	...	...	2128	112	2240	17·50	235	10·49	110	1830	18300	8·59	Do.
FEBRUARY.....	2	91	20	128	104	2	3	...															
Total...		6	120	...	618	10	...	...	178	17	...	...	12152	672	12824	100·19	1523	71·63	665	10645	106,450	52·72	
Average...			20	128	103	1	2	18·66	29	16	...	18·66	2025·33	112·00	2137·33	16·70	253·83	11·94	110·83	1774·16	17741·66	8·79	

Llay Hall Brymbo Main steam *Coal per S. S. "Eastern Prince" from HOWARD HOULDER & CO.*

Three trials made with mail trains from Madras to Cuddalore 128 miles.

JANUARY.....	22	106	21	128	105	18	2	...	28	17	...	...	2464	56	2520	19·69	343	13·61	110	1880	18800	7·63	(Strong wind blowing from North East.
"	24	91	20	128	105	8	...	...	27	11	...	...	2800	112	2912	22·75	337	11·57	105	2065	20650	7·37	Strong side head winds.
"	27	106	19	128	100	11	2	...	27	11	...	...	2464	56	2520	19·69	409	16·23	110	1920	19200	7·79	" " winds.
Total...		3	60	...	311	18	...		83	19	...	...	7728	224	7952	62·13	1089	41·41	325	5865	58650	22·79	
Average...			20	128	103	19	1	9·33	27	19	2	18·66	2576·00	74·66	2650·66	20·71	363·00	13·80	108·33	1955·00	19550·00	7·59	

Singareni *Coal received from Messrs. PARRY & CO. of Madras.*

Four trials made with trains from Madras to Cuddalore 128 miles.

FEBRUARY.....	5	106	19	128	98	5	2	...	27	11	...	...	2912	112	3024	23·63	708	23·41	110	1980	19800	6·80	Fair weather.
"	10	106	20	128	103	8	3	...	28	15	...	...	2800	112	2912	22·75	610	20·95	110	1870	18700	6·68	Do.
"	15	106	20	128	99	4	1	...	26	5	...	...	2912	112	3024	23·63	600	19·84	110	1900	19000	6·52	Do.
"	21	98	20	128	106	4	3	...	29	13	...	...	3024	112	3136	24·50	513	16·36	120	1880	18800	6·22	Do.
Total...		4	79	...	407	3	1	...	112	4	...	...	11648	448	12096	94·51	2431	80·56	450	7630	76300	26·22	
Average...			19·75	128	101	15	3	7·00	28	1	...	...	2912·00	112·00	3024·00	23·63	607·75	20·14	112·50	1907·50	19075·00	6·55	

Bersham Wraxham North Wales steam *Coal per S. S. "Macgreger" from GOSMAM & SMITH.*

Three trials made with mail trains from Madras to Cuddalore 128 miles.

FEBRUARY.....	7	91	20	128	106	14	3	...	27	3	...	...	2352	112	2464	19·25	254	10·31	110	1830	18300	7·78	Fair weather.
"	12	91	20	128	104	6	1	...	28	19	...	...	2240	112	2352	18·38	253	10·76	110	1850	18500	8·26	Do.
"	17	91	20	128	103	9	3	...	29	19	...	...	2240	112	2352	18·38	259	11·01	110	1780	17800	7·94	Do.
Total...		3	60	...	314	10	3	...	86	1	...	...	6832	336	7168	56·01	766	32·08	330	5460	54600	23·98	
Average...			20·00	128	104	16	3	18·66	28	13	2	18·66	2277·33	112·00	2389·33	18·67	255·33	10·69	110·00	1820·00	18200·00	7·99	

West Hartley Main large steam *Coal per S. S. "Tiverton" from HOWARD HOULDER & CO.*

Four trials made with mail trains from Madras to Cuddalore 128 miles.

MARCH	27	106	20	128	105	3	...	...	28	7	...	...	2352	112	2464	19·25	336	13·64	110	1930	19300	8·20	Strong side winds.
"	28	106	22	128	115	3	...	...	28	8	...	...	2128	56	2184	17·06	295	13·50	110	1920	19200	9·02	Fair weather.
"	28	98	20	128	105	3	...	...	28	7	...	...	2404	112	2516	19·66	251	9·98	110	1800	18000	7·49	Strong head & side winds.
"	29	98	20	128	104	18	...	...	28	3	...	...	2432	112	2544	19·87	201	7·90	110	1810	18100	7·44	Fair weather.
Total...		4	82	...	430	7	...	...	113	5	...	...	9316	392	9708	75·84	1083	45·02	440	7460	74600	32·15	
Average...			21·00	128	107	11	3	...	28		1	...	2329·00	98·00	2427·00	18·96	270·75	11·25	110·00	1865·00	18650·00	8·04	

Hastings Hartley steam *Coal per S. S. "Starthblane."*

Six trials made with mail trains between Madras and Cuddalore 128 miles.

APRIL.....	16	106	20	128	103	2	1	...	31	3	...	...	2352	112	2464	19·25	220	8·92	110	1820	18200	7·73	Strong head & side winds.
"	17	106	20	128	102	14	2	...	31	3	...	...	2128	56	2184	17·06	223	10·21	110	1770	17700	8·31	Do.
"	17	98	19	128	99	16	3	...	31	11	...	...	2464	112	2576	20·12	275	10·67	110	1750	17500	7·10	Fair weather.
"	18	98	20	128	105	11	...	...	32	7	...	...	2464	...	2464	19·25	204	8·28	110	1700	17000	6·90	Do.
"	18	92	19	128	95	19	...	...	28	11	...	...	2240	112	2352	18·37	134	5·69	110	1720	17200	7·67	Do.
"	19	92	18	128	95	4	2	...	29	3	...	...	2352	...	2352	18·37	192	8·16	110	1810	18100	7·69	Do.
Total...		6	116	...	602	8	...	...	183	18	...	...	14000	392	14392	112·42	1248	51·93	660	10570	105,700	45·40	
Average...			19·33	128	100	8	...	...	30	13	...	...	2333·33	65·33	2398·66	18·74	208·00	8·65	110·00	1761·66	17616·66	7·56	

South Bulli *Coal per S. S. "Cloncurry."*

Four trials made with mail trains between Madras and Cuddalore 128 miles.

MAY.....	7	98	20	128	103	10	2	...	31	3	...	...	2352	112	2464	19·25	391	15·86	110	1950	19500	14·42	Fair weather.
"	8	99	19	128	99	7	...	...	31	11	...	...	2240	...	2240	17·50	286	12·76	110	1750	17500	7·81	Do.
"	8	92	20	128	103	16	...	...	33	3	...	...	2464	112	2576	20·12	409	15·87	110	1990	19900	8·07	Do.
"	9	92	20	128	104	5	2	...	33	3	...	...	2240	...	2240	17·50	364	16·25	110	1970	19700	8·79	Do.
Total...		4	79	...	410	19	...	...	129	...	...	...	9296	224	9520	73 47	1450	60·74	440	7660	76600	39·09	
Average...			19·75	128	102	14	3	...	32	5	...	...	2324·00	56·00	2380·00	18·37	362·50	15·18	110·00	1915·00	19150·00	9·77	

Bengal *Coal per S. S. "Umballa."*

Five trials made with mail trains between Madras and Cuddalore 128 miles.

JUNE	5	106	20	128	103	8	...	...	30	7	...	...	2800	112	2912	22·75	753	25·85	60	2200	22000	7·85	Strong side winds.
"	6	98	20	128	106	9	3	...	36	1	...	...	3136	112	3248	25·37	857	26·38	110	2000	20000	6·38	Fair weather.
"	7	98	20	128	102	19	2	...	29	3	...	...	3136	...	3136	24·50	847	27·00	110	1850	18500	5·89	Do.
"	7	92	20	128	103	12	2	...	33	3	...	...	3360	112	3472	27·12	874	25·17	110	2200	22000	6·55	Do.
"	8	92	20	128	103	10	1	...	33	3	...	...	3360	...	3360	26·25	698	20·77	110	2130	21300	6·34	Do.
Total...		5	100	...	520	...	...	...	159	17	...	...	15792	336	16128	125·99	4029	125·17	500	10380	103800	33·01	
Average...			20·00	128	104	...	...	...	31	19	1	16·80	3158·40	67·20	3225·60	25·19	805·80	25·03	100·00	2076·00	20760·00	6·60	

Firewood.

Five trials made with mail trains between Madras and Cuddalore 128 miles.

APRIL.....	3	92	20	128	105	5	...	...	33	3	...	...	3992	112	4104	32·06	112	2·73	110	1510	15100	3·78	Strong side winds.
"	6	106	20	128	105	8	2	...	29	3	...	...	4297	112	4409	34·45	131	2·97	110	1880	18300	4·25	" head and side winds.
"	7	98	20	128	105	10	2	...	33	3	...	...	4403	112	4515	35·27	220	4·87	110	1750	17500	3·97	Very heavy head & side winds.
"	8	92	20	128	103	16	3	...	33	3	...	...	3920	112	4032	31·50	122	3·03	110	1760	17600	4·49	Do.
"	11	106	20	128	104	19	1	...	29	3	...	...	4200	112	4312	33·68	200	4·64	110	1700	17000	4·05	Do.
Total...		5	100	...	525	...	...	...	157	15	...	...	20812	560	21372	166·96	785	18·24	550	8550	85500	20·54	
Average...			20·00	128	105	...	...	...	31	11	...	...	4162·40	112·00	4274·40	33·39	157·00	3·65	110·00	1710·00	17100·00	4·11	

Average result of trials made of Patent Fuel, South Bulli, Berham Wroxham North Wales steam, Hastings Hartley steam, West Hartley Main large steam, Llay Hall Brymbo Main steam, Singareni, Bengal *Coal and* Firewood

Between Madras and Cuddalore 128 miles.

																					Cost per mile. Rs.	As.	P.
Patent Fuel	20·00	128	103	1	2	18·66	29	16	...	18·66	2025·33	112·00	2137·33	16·70	253·83	11·94	110·83	1774·16	17741·66	8·79	0	2	1·79
South Bulli Coal.....	19·75	128	102	14	3	...	32	5	...	...	2324·00	56·00	2380·00	18·37	362·50	15·18	110·00	1915·00	19150·00	9·77	...	...	...
Bersham Wroxham North Wales Steam Coal	20·00	128	104	16	3	18·66	28	13	2	18·66	2277·33	112·00	2389·33	18·62	255·33	10·69	110·00	1820·00	18200·00	7·99	0	2	7·15
Hastings Hartley Steam Coal.	19·33	128	100	8	...	...	30	13	...	...	2333·33	65·33	2398·66	18·74	208·00	8·65	110·00	1761·66	17616·66	7·56	0	2	5·11
West Hartley Main large Steam Coal	21·00	128	107	11	3	...	28	6	1	...	2329·00	98·00	2427·00	18·96	270·75	11·25	110·00	1865·00	18650·00	8·04	0	2	6·42
Llay Hall Brymbo Main Steam Coal	20·00	128	103	19	1	9·33	27	19	2	18·66	2576·00	74·66	2650·66	20·71	363·00	13·80	108·33	1955·00	19550·00	7·59	0	2	4·51
Singareni Coal.....	19·75	128	101	15	3	7·00	28	1	...	...	2912·00	112·00	3024·00	23·63	607·75	20·14	112·50	1907·50	19075·00	6·55	0	3	2·47
Bengal Coal.....	20·00	128	104	...	...	...	31	19	1	16·80	3158·40	67·20	3225·60	25·19	805·80	25·03	100·00	2076·00	20760·00	6·60	0	2	10·56
Firewood	20·00	128	105	...	...	...	31	11	...	...	4162·40	112·00	4274·40	33·39	157·00	3·65	110·00	1710·00	17100·00	4·11	0	1	2·31

LOCO. & CARR. SUPTT.'S OFFICE,
Negapatam, 19th July, 1889.

C. E. CRIGHTON,
Loco. & Carr. Suptt.

AV3852

SOUTH INDIAN RAILWAY.

LOCOMOTIVE DEPARTMENT.

The Scottish Australian Lambton *Coal per S. S. "Cloncurry."*

Six trials made with Mail trains from Madras to Cuddalore 128 miles.

A		B	C	D	E				F				Coal Consumed. G	H	I	J	K	L	M	N	O	P	
Month and date.		No. of Engine.	No. of Vehicles.	No. of Miles.	Gross weight of Train.				Weight of Load.				For Journey.	For Lighting	Total.	Per mile column I.	Weight of ashes.	As per 100 miles of coal consumed column I.	Average pressure of steam per square inch.	Water consumed in gallons.	Water consumed in pounds.	Pounds of water evaporated per lb. of coal column g.	State of weather.
1890.					Tons.	Cwt.	Qrs.	lbs.	Tons.	Cwt.	Qrs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.		lbs.	lbs.	
January	7	105	19	128	101	12	2	...	27	8	...	...	2128	112	2240	17·50	259	11·56	110	1820	18200	8·55	Moderate.
,, ...	9	98	20	128	104	18	2	...	34	1	...	...	2800	112	2912	22·75	312	10·71	110	1970	19700	7·03	Strong wind.
,, ...	10	109	20	128	105	7	...	...	31	1	...	...	2352	112	2464	19·25	292	11·85	110	1490	14900	6·33	Fair.
,, ...	12	105	20	128	106	7	2	...	25	3	...	...	2352	112	2464	19·25	237	9·61	110	1750	17500	7·44	Fair.
,, ...	14	98	20	128	101	19	...	...	31	3	...	...	2464	112	2576	20·12	240	9·31	110	1700	17000	6·89	Fair.
,, ...	15	109	20	128	104	9	...	...	29	3	...	...	2332	112	2444	19·09	258	10·55	110	1510	15100	6·47	Fair.
Total ...			119		624	13	2	...	177	19	...	...	14428	672	15100	117·96	1598	63·59	660	10240	102400	42·71	
Average ...			19·83	128	104	2	1	...	29	13	...	18·66	2404·66	112·00	2516·66	19·66	266·33	10·59	110·00	1706·66	17066·66	7·12	

The Australian Lambton *Coal per S. S. "New Guinea."*

Six trials made with Mail trains from Madras to Cuddalore 128 miles.

January	17	105	20	128	105	9	2	...	33	3	...	...	2128	112	2240	17·50	245	10·93	110	1700	17000	7·98	Fair.
,, ...	18	92	20	128	105	14	1	...	33	3	...	...	2352	112	2464	19·25	312	12·66	110	1810	18100	7·69	Do.
,, ...	20	109	20	128	104	8	2	...	30	19	...	...	2128	112	2240	17·50	218	9·73	110	1570	15700	7·37	Do.
,, ...	28	92	20	128	104	7	3	...	33	3	...	...	2464	112	2576	20·12	321	12·46	110	1820	18200	7·38	Do.
,, ...	22	105	20	128	104	15	...	...	31	3	...	...	2352	112	2464	19·25	250	10·15	110	1710	17100	7·27	Do.
,, ...	29	106	20	128	98	13	1	...	28	3	...	...	2352	112	2464	19·25	264	10·71	110	1900	19000	8·07	Do.
Total ...			120		623	8	1	...	189	14	...	...	13776	672	14448	112·87	1613	66·64	660	10510	105100	45·76	
Average ...			20·00	128	103	18	...	4·66	31	12	1	9·33	2296·00	112·00	2408·00	18·81	268·83	11·10	110·00	1751·66	17516·66	7·62	

Six trials made with Mail trains from Madras to Cuddalore 128 miles.

January	27	105	20	128	104	2	3	...	30	16	..	...	2128	112	2240	17·50	266	11·67	110	1750	17500	8·22	Fair.
,, ...	28	92	20	128	105	6	3	...	33	3	...	...	2240	112	2352	18·37	289	12·28	110	1850	18500	8·25	Do.
February.....	1	105	20	128	104	2	2	..	31	3	...	...	2240	112	2352	18·37	258	10·96	110	1750	17500	7·81	Do.
,, ...	2	92	20	128	105	13	2	...	33	3	...	...	2240	112	2352	18·37	290	12·32	110	1830	18300	8·16	Do.
,, ...	3	106	20	128	102	4	1	...	29	3	...	...	2352	112	2464	19·25	281	11·40	110	1865	18650	7·92	Do.
,, ...	8	106	20	128	102	8	...	...	29	3	...	...	2352	112	2464	19·25	265	10·75	110	1920	19200	8·16	Do.
Total ...			120		623	17	3	...	186	11	...	...	13552	672	14224	111.11	1699	69·58	660	10965	109650	48·52	
Average ...			20·00		103	19	2	14·00	31	1	3	9·33	2258·66	112·00	2370·66	18·52	283·16	11·59	110·00	1827·50	18275·00	8·08	

The best screened Scottish Australian Lambton *Coal per S. S. 'Falls of Clyde."*

Six trials made with Mail trains from Madras to Cuddalore 128 miles.

February..	7	92	20	128	105	18	...	...	33	3	..	...	2464	112	2576	20·12	390	15·13	110	1900	19000	7·71	Fair.
,, ...	12	92	20	128	106	12	...	...	36	1	...	...	2464	112	2576	20·12	365	14·16	110	1885	18850	7·65	Do.
,, ...	13	106	20	128	103	1	2	...	28	11	...	...	2352	112	2464	19·25	250	10·14	110	1860	18600	7·90	Do.
,, ...	18	106	20	128	104	8	...	...	29	3	...		2464	112	2576	20·12	265	10·28	110	1890	18900	7·67	Heavy side wind.
,, ...	26	105	21	128	110	2	1	...	29	11	...	...	2464	112	2576	20·12	304	11·80	110	1750	17500	7·10	Moderate. ,,
March	3	105	20	128	103	5	1	...	29	3	...	...	2352	112	2464	19·25	305	12·37	110	1800	18000	7·65	Fair.
Total ..			121		633	7	...	...	185	12	...	...	14560	672	15232	118·98	1879	73·88	660	11085	110850	45·68	
Average ...			20·16		105	11	...	18·66	30	18	2	18·66	2426·66	112·00	2538·66	19·83	313·16	12·31	110·00	1847·50	18475·00	7·61	

Average result of trials made of best screened Australian Lambton, Australian Lambton, Scottish Australian Lambton & best screened Scottish Australian Lambton *Coals*

Between Madras and Cuddalore 128 miles.

																			Cost per mile. Rs.	A.	P.
The best screened Australian Lambton Coal.....	20·00	128	103	19	2	14·00	31	1	3	9·33	2258·66	112·00	2370·66	18·52	283·16	11·59	110·00	1827·50	18275·00	8·08	0	2	2·53
The Australian Lambton Coal.....	20·00	128	103	18	...	4·66	31	12	1	9·33	2296·00	112·00	2408·00	18·81	268·83	11·10	110·00	1751·66	17516·66	7·62	0	1	10·98
The Scottish Australian Lambton Coal	19·83	128	104	2	1	...	29	13	...	18·66	2404·66	112·00	2516·66	19·66	266·33	10·59	110·00	1706·66	17066·66	7·12	0	2	2·49
The best screened Scottish Australian Lambton Coal..	20·16	128	105	11	...	18·66	30	18	2	18·66	2426·66	112·00	2538·66	19·83	313·16	12·31	110·00	1847·50	18475·00	7·61	0	1	11·80

C. E. CRIGHTON,

Loco. and Carr. Suptt.

Loco. & Carr. Suptt's Office,

Negapatam, 13th March, 1890.

No 1250

South Indian Railway,
AGENT'S OFFICE,

TRICHINOPOLY, 1st October 1889

From

The AGENT,
SOUTH INDIAN RAILWAY,

To

The CONSULTING ENGINEER FOR RAILWAYS,
MADRAS.

Sir,

Referring to your letter No 656 of 24th Sept^r I have the pleasure to send you herewith 2 printed Statements showing the result of some Comparative trials of Suigareni and other descriptions of Coal.

I am
Sir
Your most Obed^t Servant
Wallis J. Hooper
for Agent

2 Enclosures.

66

X one copy retained by Rly Office.

E.2

PW3854/91

No 5 P. Rs

South Indian Railway,

AGENT'S OFFICE,

TRICHINOPOLY, 16th April 1890.

From

The AGENT,
SOUTH INDIAN RAILWAY,

To

The CONSULTING ENGINEER FOR RAILWAYS,
MADRAS.

Sir,

In continuation of my letter, No. 1250, 1st October 1889, I beg to send you herewith 2 copies of a statement showing the result of trials made with Australian Coal,

one copy returned by Mr. Rice

I am
Sir
Your most obedient Servant
Walter J. Goodfellow
for
Agent

Enclosures - 2.

From
THE AGENT,
South Indian Railway,
Trichinopoly.

To
THE CONSULTING ENGINEER FOR
RAILWAYS,
Madras.

Dated 16th April 1890
Received 17th April 1890
No. 1250.
ENCLOSURE. 2.

Re. comparative trials of certain coal.

E1
W3854
/90

Form No. 1.

PUBLIC WORKS DEPARTMENT.

OFFICE OF CONSULTING ENGINEER FOR RAILWAYS,

Madras, 21st April 1890.

From

THE AGENT,

South Indian Railway,

Trichinopoly.

To

THE CONSULTING ENGINEER FOR

RAILWAYS,

Madras.

Dated 16th April 1890.
Received 19th

No. 522
ENCLOSURE.

Letter from the Agent, South Indian Railway, No. 1250, dated 1st October 1889, with enclosure.

—— Do. —— No. 522, dated 16th April 1890, —Do.

~~SUBMITTED.~~

No. 279

Submitted to Government in continuation of this office Endorsement No. 476, dated 26th November 1889.

2. With the exception of firewood, Australian Coals appear to be the cheapest fuel experimented with; but in evaporative power per lb of fuel is lower than patent fuel and English coals. The experiments with wood were made under very adverse conditions of weather, yet it work

.67 pies per mile lower
than the cheapest fuel.

Richard Smith
Major R.E.

Dy consg: Engr for Rys

Form No. 3.

A
No. 585 R - 29th April 90.

B

Ord. slip
Ordered to be for-
warded to the Govern-
ment of India in con-
tinuation of P. D. docket
No. 103 R, dated 20th January
1890.

A.G. No. 586 R of 29th April 90.

Forwarded.

Rueda
25.4.90

for C.

G.O. No. 102. 3R of 20-1-90

Rec'd by Govt of India
with 2 statements.
29/4/90

Noted
7/5

To
The Consulting for Rlys:

O
23/4 R 1-5-90
Sth. 25/4 R 28.4.90

From

THE CONSULTING ENGINEER
FOR RAILWAYS,
MADRAS,

No. 279

Dated 21st
Received 22 } April 1890

No. OF ENCLOSURES. 4

Subject.

Submitting, correspondence shewing the result of some comparative trials of Singareni & other descriptions of coal.

A
No. 585-86 R - 29th April 90.

Govt. of 18 Madras.

PUBLIC WORKS.

Dated

Read. Encl.

G.O. 29 Apl 1890 No. 585-6 R

Coal

=

Statements showing Result of trials made with different Kinds of — on the S. I. Railway, ordered to be forwarded to the Govt of India.

Coal

=

Forwards Statements showing result of trials made with different Kinds of — ~~ordered to be forwarded~~ on the S. I. Ry.