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MADRAS RECORD OFFICE.

Government of Madras.

Public Works **DEPARTMENT.**

G.O. No. 330 Press
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25-26

Dated 2 — 2 — 1867.

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PR

No. 25. Read the following Circular from the Secretary to the Government of India, Public Works Department, (Civil Works—Miscellaneous,) dated Fort William, 3rd January 1867, No. 3 :—

Preparation of Timber by the "Boucherie" process.

Read again :—

Public Works Department Circular No. 87, dated 8th September 1865.

Read also :—

From the Secretary to the Government of Madras, in the Public Works Department, to the Secretary to the Government of India, Public Works Department, dated 15th November 1866, No. 3,645.

With reference to the Circular from the Government of India, No. 87 of 1865, I am directed to forward a copy of the Proceedings of this Government of this day's date, No. 3,644, from the papers accompanying which, it will be seen that, upon further trial, the "Boucherie" process of impregnating timber, with a solution of the sulphate of copper, has not yielded the results which were at one time anticipated.

Proceedings of the Madras Government, Public Works Department, dated 15th November 1866.

From the Acting Agent and Manager of the Madras Railway, to the Consulting Engineer for Railways, Madras, dated 24th October 1866, No. 527.

1. Referring to Proceedings of Madras Government, Public Works Department, dated 9th October 1865, on the subject of the preparation of timber by Boucherie's process, further experience, and the conclusion at which the Officers of this Company have ultimately arrived, will doubtless be interesting to you and the departments to which the above Proceedings were communicated.

2. In consequence of the unfavorable Reports received from the Engineers, Messrs. Carter and Wilkinson were instructed, in the early part of this year, to collect evidence and report on the results of the Boucherie process. In reference to the liability of the impregnated woods to the attacks of worms, they state, under date of 23rd February 1866 :—

"In Paulghaut Yard, where the greatest number of pickled sleepers are stacked, the woods which appear to be most injured are Unnacarry (*Odina Wodier*), and Thawnee (*Terminalia Belerica*). Sleepers of these woods are bored to such an extent as, in many cases, to render them unfit for use. The insect is a Coleopterous one, and is said to belong to the genus Apate (Fabricius), and family Bostricidæ.

"This beetle bores into the wood to the depth of about 1½ inches, and lays its eggs in the hole. After the eggs become larvæ, the principal damage seems to commence, as the larvæ bore in all directions inside, and continue to feed on the wood until they are developed into perfect insects.

"Finding that a very general opinion prevails amongst the natives that all woods cut between the third and twelfth day after new moon are liable to the attacks of insects (which opinion is noted by Dr. Cleghorn), we had trees of the woods most liable to the attacks of the insects cut near the Depôt of Topanaud on the fifth day after new moon, parts of these trees we have had pickled, and parts left unpickled, and we intend to place them where the insects abound. Some time must elapse before we can report the results.

"It was reported to us that the larvæ of some insects were frequently driven out of some woods during pickling ; none, however, were seen by us in the four sorts of timber we experimented on ; it is Mr. Carter's opinion (who, on one occasion, saw these larvæ) that they are the larvæ of saw flies, whose attacks are principally confined to the bark.

"The fact of pickled sleepers being destroyed by insects is so important, that we consider it necessary to recommend that the contractors be prohibited from pickling Unnacarry and Thawnee for the present. The time and attention necessary to go thoroughly into the subject renders it impossible that we can now let you have an exhaustive report. We are experimenting on several woods under various conditions, and the results will be duly communicated. In the course of our enquiries we have found that several of the woods selected for sleepers are badly split. Mr. Wilkinson herewith encloses a list, showing the number of sleepers attacked by insects and split, out of the total number sent into Paulghaut. We believe that a careful revision of the woods now being used for sleepers will have to be made, as we fear several of them will be found unsuitable for the requirements of the Railway."

3. On the 3rd September, they write in continuation—"We examined the sleepers which were pickled in our presence, and afterwards put down in Paulghaut Yard; the woods were those most liable to be attacked by the boring beetles (see Appendix No. 1), and were in good condition after having been in the line for three months; the unpickled portion of the same (unburied) were attacked by the insects.

"We also had a large number of the pickled sleepers which were previously, whilst stacked in Paulghaut Yard, bored by insects, buried; on examining these, we found in every instance that the larvæ had died, the sleepers generally were in fair condition (see Appendix No. 2). We may, therefore, assume that pickled sleepers buried soon after being cut are not liable to the attacks of insects, and that, if only slightly attacked, when buried, the insects die."

4. As regards the effect of the process itself on the timber, they state that, having given the matter the most careful consideration, and examined specimens of all the woods in use, both in their natural and pickled state, the conclusion at which they have arrived is, that the strength of the timber, and its durability, are rather lessened than increased. The tendency of the woods to split, under the influence of the sun, is said to be much greater in the pickled than in the natural state, and the theory, on which this is attempted to be explained, is as follows:—

"We believe that this is caused by the water of the solution being more quickly evaporated than the water in the sap would be, as the latter is in chemical combination with various alkaloids and acids, whilst the former is a solution only.

"The result is that the sleepers become prematurely and unnaturally seasoned, and as the woods generally, if unprepared, would not be suitable for sleepers, when dried up, they appear useless; most of them seem as if they would not hold a trenail, and as we are now using iron trenails, they would be more likely to become loose than even wooden ones."

5. On a recent occasion, when I had an opportunity of conversing with Mr. Carter on this subject, he told me that some of the pickled sleepers were so worthless (in consequence apparently of complete desiccation) that they broke in pieces like a carrot when thrown out of a wagon. The process has been abandoned, and we are about to revert to the use of the old sanctioned woods.

6. In connection with this subject, and with reference to the information you were so good as to communicate to me in respect to the breakage of pot-sleepers on the East Indian Railway, I may mention that Mr. Pinson, Acting Chief Engineer, has just furnished me with his Quarterly Report, from which I find that, between Madras and the Shevaroy Hill Station (1st and 2nd Divisions), a distance, including sidings, of 211 miles, the number of pots removed during the quarter amounted to 245. The number of pots in the road is 618,310, and we commenced laying them down in the beginning of 1861. I think the very large breakage on the East Indian Railway is to be accounted for, first, by the use of timber sleepers at the joints, and secondly, by the description of ballast used.

7. A mixed road (*i. e.*, a combination of iron with wood-sleepers) is invariably bad. About two years ago I was very short of fish-plates for the permanent-way of the North-West Line, and to save time I used wood-sleepers at the joints with double-chairs. The Engineers found it impossible to keep a good road, the wood and the iron offering unequal resistance to the

Proceedings of the Madras Government, Public Works Department,
2nd February 1867.

passing load. I was obliged to remove the timber sleepers at the joints as soon as fish-plates could be procured.

8. As regards the ballast, kunkur is quite unsuited to iron-sleepers, it is much too hard, and too liable to bind. A friable substance like sand, fine gravel, or morumboo, is indispensably necessary to secure a smooth road, and to prevent breakage. I believe that the greater number of the sleepers found broken in our line have been cracked in shipment, or unloading from wagons, as there are evidences, in nearly all that are removed, of slight flaws or cracks of old standing. Further than this, we are in the habit of using up the cracked, but serviceable sleepers, in sidings and lay-byes, and I have no doubt some of these, which have become useless, are included in Mr. Pinson's Return.

APPENDIX No. 1.

Sleepers buried in Paulghaut Yard immediately after being pickled.

No. in List.	Botanical Name.	Local Name.	Condition.	Remarks.
11	Terminalia Chebula ...	Pillaymurdoo ...	Good.	These sleepers were examined after having been in the line for three months.
14	Odina Wodier	Unnacarry	Do.	
31	Terminalia Belerica ...	Thawnee	Do.	
89	Bombax Malabaricum ...	Poolee	Do.	

H. R. P. CARTER,
Resident Engineer, 3rd Division.

A. T. WILKINSON,
Resident Engineer, 4th Division.

APPENDIX No. 2.

Sleepers partially attacked by insects buried in Paulghaut Yard, and examined after four months.

No. in List.	Botanical Name.	Local Name.	Condition.	Remarks.
	First class.			
1	... ...	Erembogum ...	Good.	
2	Terminalia Glabra ...	Kurramurdoo ...	Do.	Fit for sleepers without pickling.
3	Bridelia Spinosa ...	Kinee, also called Mooloovenga.	Do.	Dark colored, hard and durable (Roxburgh).
4	Shleichera trijuga ...	Poovum ...	Do.	Red, strong, hard wood (Ainslie).
6	Eugenia Jambolana ...	Cooty Nawel ...	Do.	Fine, hard and close grained (Roxburgh).
8	Diospyros Cordifolia ...	Vuckanay ...	Do.	Hard, heavy wood, strong (Wight, Roxburgh).
9	Stychnos nux vomica ...	Cangerum ...	Do.	White and hard (Wight).
10	Phylanthus Emblica ...	Nelly ...	Do.	Hard and valuable timber (Drury).
11	Terminalia Chebula ...	Pillaymurdoo ...	Do.	Heavy and hard (Wight).
12	Dillenia Pentagyna ...	Pinnay ...	Do.	
13	Stereospermum Chelonoides	Padree ...	Do.	Wood dark and good (do.).
14	Odina Wodier ...	Unnacarry ...	Do.	Difficult to season.
15	Artocarpus hirsuta ...	Inee ...	Rotten.	Used in ship-building (Ainslie).
16	Do. hisuta ...	Cuddelynee ...	Good.	Probably a variety of No. 15.
17	Do. Sylvestris ...	Vellynee ...	Do.	Wood inferior to Nos. 15 and 16 (Gibson).
18	Not known ...	Canagum ...	Do.	
19	Grewia tiliœfolia ...	Chadachee ...	Do.	Wood soft, expands and contracts generally (Wight).
20	Rottlera tinctoria ...	Shenduram ...	Do.	

Sleepers partially attacked by insects buried in Paulghant, &c.,—*(Continued.)*

No. in List.	Botanical Name.	Local Name.	Condition.	Remarks.
	Second class.			
21	Terminalia Chebula			
22	Vitex Alata ...	Manukadookay ...	Do.	A good timber (Drury).
23	Acacia Odoratissima ...	Mile Elloo ...	Do.	A dark colored, strong and heavy wood (Wight).
31	Terminalia Belerica ...	Curry Vengay ...	Do.	
		Thawnee ...	Good.	Large and valuable timber, white and durable (Drury).
32	Lagerstrœmia Microcarpa			
33	Do. Regina ...	Venteak ...	Do.	
		Poyamurdoo ...	Do.	In Rangoon, used for knees for ships (Drury).
35	Nauclea Orientalis ...	Teroocadambay ...	Do.	Wood strong and serviceable, used for gun stocks (Gibson).
36	Do. Cordifolia ...	Cadambay ...	Do.	Soft (Wight); weight of a cubic inch 214 grs. (Fray).
38	Do. Parviflora ...	Neercadambay ...	Do.	Strong and close grained, rots if exposed to wet (Roxburgh, Wight).
39	Sapindus Emarginatus ...	Oormjee ...	Do.	Said to be only fit for fuel (Wight).
40	Melia Azedarach ...	Mullavamboo ...	Do.	Soft, used for cabinet-making purposes (Wight).
41	Ficus Asperrima ...	Paragum ...	Do.	All species of Ficus are of little value as timber (Wight).
42	Not known			
43	Do. ...	Podee Cumly ...	Do.	A light wood.
48	Calosanthes Indica ...	Neervetty ...	Do.	
		Pulgay hyanee ...	Do.	Soft, and of no value (Wight).
49	Not known ...	Vallay Cunny ...	Do.	
	Third class.			
61	Garcinia Purpurea ...	Adapoolee ...	Good.	
62	Spondias Mangifera ...	Ambalam ...	Rotten.	
63	Mangifera Indica ...	Moochee ...	Good.	Common Mango, useless for sleepers.
64	Not known			
65	Ditto ...	Ahvul ...	Do.	
		Coray ...	Do.	Wood good for houses and beams (Drury).
66	Holigarna Longifolia ...	Chayro ...	Do.	Wood light and not durable (Roxburgh, Drury).
70	Alianthus Excelsa ...	Pootay Chaney ...	Do.	All species of Ficus are of little value as timber.
71	Ficus			
72	Not known ...	Moolumpilatchee ...	Do.	Rejected, unfit for sleepers.
		Vennay ...	Do.	
	Fourth class.			
83	Not known			
88	Alstonia Scholaris ...	Poreecanjeram ...	Good.	
		Paulay ...	Do.	Wood white and compact (Gibson).

The rest of 4th class woods rejected.

H. R. P. CARTER,
Resident Engineer, 3rd ... n.

A. T. WILKINSON,
Resident Engineer, 4th Division.

MADRAS RAILWAY.

Statement showing the condition of certain Pickled Sleepers now lying in Paulghaut Depôt.

Names of Woods.	Number of the Wood.	Good condition.	Split.		Affected by insects.	Rotten.	Total.	Remarks.
			Slightly.	Badly.				
Pinnay	12	2,000	2,068	106	...	...	4,174	
Pillaymurdoo ...	11	1,928	75	90	5	4	2,102	
Padree	13	100	112	4	1	...	217	
Thawnee ...	31	600	120	33	150	...	903	
Chadachee ...	19	233	...	8	1	...	242	
Venteak ...	32	701	...	25	1	...	727	
Nelly	10	...	...	11	...	...	11	
Poolay	89	130	55	19	3	2	209	
Unnacarry ...	14	400	217	26	17	...	660	
Canagum ...	18	31	...	2	...	...	33	
Nawvel	5	100	15	3	...	...	118	
Ambalam ...	62	61	...	4	...	...	65	
Mullayvamboo ...	40	5	5	3	...	...	13	
Kanakiday ...	18	12	7	2	...	..	21	
Calamon ...	65	25	12	6	...	...	43	
Nychayroo ...	66	59	21	3	...	...	83	
Pootay Chaney ...	70	29	...	2	...	...	31	
Podee Cunny ...	42	21	12	1	...	...	34	
Munja Cadambay.	36	33	...	1	...	...	34	
Dava Paulay ...	88	42	12	1	...	...	55	
Vennoothungolly.	...	68	15	6	4	...	93	Reference being made.
Caut Moochee ...	63	12	...	...	1	...	13	
Thoodyempolly ...	...	19	...	...	...	...	19	Do.
Neercadambay ...	38	42	...	...	...	...	42	
Kul Allay ...	69	3	...	...	...	...	3	
Paragum ...	41	16	...	...	...	...	16	
Conjeram ...	9	74	...	...	...	...	74	
Moorkoo ...	87	43	16	...	...	...	59	
Vullay Cunny ...	49	17	...	...	...	...	17	
Kinee	3	12	...	...	...	...	12	
Adapoolee ...	67	21	18	...	...	...	39	
Ahvul	64	7	3	...	...	...	10	
Caut Nawul ...	6	38	...	...	...	...	38	
Kurramurdoo ...	2	1	...	...	...	...	1	
Inee	15	13	2	...	...	...	15	
Cuddelynee ...	16	45	...	...	...	...	45	
Molumpilatchee...	71	142	...	...	...	...	142	
Oopelee	67	2	...	...	...	...	2	
Pooreecanjeram...	83	19	11	...	1	...	31	
Mullumpallay ...	68	8	...	...	...	...	8	
Teeroo Cadambay.	35	21	...	...	...	...	21	
Cholay Chadachee	19	7	...	...	...	...	7	
Pottaycallum ...	82	...	6	...	...	...	6	
Poovum	4	3	...	...	...	...	3	
Total ...	...	...	...	...	...	...	10,491	

To accompany the Report.

(Signed) A. T. WILKINSON,
Resident Engineer, 4th Division.

26th February 1866.

No. 423, dated 30th October 1866.

Endorsed by Consulting Engineer for Railways, Madras.

1. Forwarded for the information of Government, and for communication to the Government of India, with reference to their Proceedings, dated 8th September 1865, Circular No. 87.

G. O. No. 2,083, dated 9th October 1865.

Proceedings of the Madras Government, Public Works Department, 2nd February 1867.

2. As the Government of India have circulated Captain Lindsay's Report of the preparation of timber according to the "Boucherie" system, it seems desirable that the papers now forwarded should also be circulated to the Departments concerned, as it would now appear that the process has not yielded the satisfactory results which were anticipated.

No. 3,644, dated 15th November 1866.

Order thereon by the Government of Madras, in the Public Works Department.

These papers will be communicated to the Superintending Engineers, to the Officer in charge of the Store Department, and to the Consulting Engineer for the Madras Irrigation and Canal Company, with reference to the Order in this Department of the 9th October 1865, No. 2,963. They will also be forwarded to the Government of India, with reference to the Circular from that Government, dated the 8th September 1865, No. 87.

Governments of Madras, Bombay, Bengal, North-Western Provinces and Punjab, Public Works and Railway Departments.
Governor, Straits Settlements.
Chief Commissioners of Oudh, Central Provinces, and British Burmah.
Commissioners of Mysore and Coorg.
Resident at Hyderabad.
Agents, Governor General for Rajpootana and Central India.

ORDER.—Ordered, that the above be forwarded for information to the Local Governments and Administrations marginally noted.

(Signed) C. H. DICKENS, Lieut.-Colonel, R. A.,
Secy. to the Govt. of India.

No. 26.

ORDER THEREON, 2nd February 1867, No. 330.

CIVIL WORKS, No. 3.

Ordered to be recorded.

(True Extract.)
(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

Exd. S. T. Augustin.

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& No. 330
Recorded
Fort St. George
2nd Feby 1867