Public Works (1899) Department.

Very Urgent

Printed

RAILWAY BRANCH.

G.O., No. 342. 43 Ry.

DATED 27th March 1899

~~Return~~

~~Ry Dep. 5741897 4-98~~

7/20

36/1

[Despatch Abstract.]

Supply of Sleepers

Ordered that a copy of pros of the Bd of Revenue regarding the ___ by the Forest Dept, req? for the Ry Extensions now under contemplation as well for annual renewals on the existing lines, be Commd to the Ry Admr for infn & a copy of the pros forwarded to the Govt of I.

~~Forwarding a copy of pros embodying pros of the Bd of Rev regarding the ___ by the Forest Dept for the Ry extensions now under contemplation as well for annual renewals on the existing lines~~

Indexed

## BACK PAPERS.

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RAILWAY.

# Government {1899} of Madras.

## PUBLIC WORKS.

*Recd.* } 1899. *Enclosures*

*Regd.* } 1899. *Spare copies*

**G.O., Nos. 342, 343 Ry., 27th March 1899.**

## MARCH.

**Supply of Sleepers**

Forwarding a copy of proceedings embodying proceedings of the Board of Revenue regarding the — by the Forest Department, required for the railway extensions now under contemplation as well for annual renewals on the existing lines.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

**Railway.**

Read—

G.O., No. 373 Ry., dated 5th March 1898 (communicated to Railway Administrations).

Read also the following papers:—

From—The Agent and Manager, Madras Railway.
To—The Deputy Consulting Engineer for Railways in Charge.
Dated—Madras, 16th August 1862, No. 556.

I have the honour to acknowledge the receipt of Captain O'Connell's letter No. 1005, dated the 3rd ultimo, requesting me to transmit, for the perusal of Government, all documents which may have been received from the Engineers respecting the relative durability of the several kinds of wood used for sleepers.

2. In reply I have the pleasure to transmit, herewith, an original letter from the Acting Chief Engineer, furnishing a statement of the average life of sleepers made of fourteen descriptions of timber and annexing a copy of a draft report prepared by the late Chief Engineer Mr. Ross upon the working of the forests in the District of Malabar under his superintendence. This draft seems to have been written, consequent on Lieutenant-Col. Johnston's letter, No. 7710, dated the 5th September 1861 (replied to by me on the 16th April and 2nd May 1862). But the sudden decease of Mr. Ross unfortunately prevented the completion of his report.

No. 548, dated 14th August 1862.

3. I shall feel obliged by your returning Mr. Pinson's letter, at your early convenience.

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Enclosures.

From—The Chief Engineer, Madras Railway.
To—The Agent and Manager, Madras Railway.
Dated—Madras, 14th August 1862, No. 548.

I have to acknowledge the receipt of the Acting Consulting Engineer's letter No. 405 of the 3rd July.

I am not at present in a position to forward very extensive information upon the subject referred to, but I think it better (to avoid any further delay) to furnish you with the result of our experience upon the first or Madras division of the south-west line.

The following statement gives the average lives of sleepers of various woods, taken out of the line in a state of decay, and replaced by iron pot sleepers, up to the present date:—

| Distinguishing mark. | Name of wood. | Average life. |
|---|---|---|
| A ... | Ancha ... ... ... ... ... | 4 years, 7 months. |
| F ... | Kurrah Murdah ... ... ... ... | 3 „ 10 „ |
| C ... | Combadrie ... ... ... ... | 4 „ 2 „ |
| K ... | Cadookoy ... ... ... ... | 4 „ 1 „ |
| S ... | Saul ... ... ... ... ... | 4 „ 2 „ |
| E ... | Dud Eloopay ... ... ... ... | 3 „ 10 „ |
| Y ... | Eroovanloo ... ... ... ... | 2 „ 8 „ |
| V ... | Vangay ... ... ... ... | 4 „ 3 „ |
| P ... | Panlay ... ... ... ... ... | 2 „ 10 „ |
| R ... | Auray ... ... ... ... ... | 2 „ 6 „ |
| M ... | Myladee ... ... ... ... ... | 1 „ 5 „ |
| H ... | Myroothy ... ... ... ... | 4 „ 3 „ |
| D ... | Katvoy ... ... ... ... ... | 4 „ 4 „ |
| B ... | Karavalum ... ... ... ... | 4 „ 2 „ |



I am awaiting returns from the Engineers of the other divisions on the south-west line, to enable me to ascertain the durability of errool which we confidently expect will turn out to be the best description of wood for sleeper purposes.

The creosoted sleepers of Baltic fir, which we have from time to time received from England, are, as a rule, exceedingly durable. We had recently occasion to take some decayed ones out of the line near Sholinghur, which were ascertained to have been in the road for a period of nearly 6½ years. The cost of these sleepers, however, interferes materially with their extensive use in this country.

I append to this letter a copy of a draft report in the hand-writing of the late Chief Engineer on the timber-cutting operations in the Malabar forests. The document will probably be interesting to Government, although not bearing directly upon the subject under reply.

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Copy of Mr. Ross' Draft Reports.

In accordance with the desire of Government, I beg to submit a report about the timber-cutting operations in Malabar. These operations were conducted by myself for four years up to April 1861, since which time they have been conducted by Mr. Wilkinson, the Engineer in charge of districts 13 and 14.

It was found prior to 1857 that contractors could not be induced to bring sleepers in sufficient numbers, to supply the midland districts, and Mr. Heppel accordingly requested me to arrange for cutting timber myself, partly with a view to increase the supply, and partly for the purpose of letting contractors see that we were independent of them. The effect of these operations was to make contractors come forward and offer to supply us with sleepers, while at the same time we were supplying ourselves with a much better description of sleepers than we were able to purchase from contractors.

My first operations were in the jungles at the foot of the Anamalai Hills near Pollachi. The timber there was very fine, consisting principally of pillay murdah (*Terminalia Alata*) kurrah murdah (*Terminalia* ———— ) and errool (*Inga Xylocarpus*).

The Caders inhabiting these jungles came forward willingly to work for us then, and I had the satisfaction of teaching them, after a short time, the use of the cross-cut saw. The distance over which we had to cart the timber was so great that I was reluctantly obliged to abandon the operations in that jungle. I cannot help thinking that it might be to the interest of Government to connect the valuable forests in the Anamalai Hills by means of a tramway or light railway with the Madras Railway. The amount of timber (teak for the Bombay dockyard) now carried by bandy from Anamalai is very great. This tramway, if made to join the railway at either Palghat or Coimbatore, would run through a very rich country (that about Pollachi being considered very suitable for cotton).

After abandoning the Anamalai jungles, I was allowed by the Conservator of Forests to cut trees in the Chennet Nair forests near Palghat, and in the Walliar jungle, half way between Coimbatore and Palghat. The Walliar jungle has been almost entirely worked out, at least in those portions which are easy of access. The timber of which I found the greatest quantity was vela nagay, which, although stronger than any other, does not last more than four or five years when used as sleepers.

In working this jungle, I was able to bring common carts close up to the place where the trees were felled, and consequently had little use for elephants. In this jungle, I succeeded in getting the Malsens (natives of the jungle) to come forward and work. These tribes are averse to using any implement but the axe. I succeeded with some difficulty in inducing them to use the saw.

In working the Chennet Nair forest near Palghat, I tried to introduce a system. The trees useful for sleepers found in this forest are errool, kurrah murdah, and pillay murdah; there is also a good deal of vengay in one part of the jungle.

In this forest, I had to pay for every tree which was cut down one rupee and a half seigniorage to Government. In this agreement there were certain conditions by which I was prevented from cutting young trees, and which compelled me to cut trees not more than certain height (1′ 6″) above the ground. I was not allowed to cut teak or black wood, and it was understood that I was to do my best to conserve the forest. My system here was to do as much as possible by contract—the tree was cut down, cut into lengths of ten feet and squared, all by contract.

In cutting the tree into lengths of ten feet, the contractors occasionally used the cross-cut saw. After the tree was cut into lengths of ten feet, elephants were brought in to drag out the timber to the nearest jungle road where depots were formed along its line. At these depots the logs were tilted and all underwood cut away from near them. This was done to prevent any damage from fire during the dry season. From these depots, I carted all timbers that could be put into common bandies, the roads were bad, but as a general rule, it is better to do as much work as possible out of the jungle, and for this reason I reduced the logs only sufficiently to

enable me to cart them. In this, as in most jungles, the fever was a great hindrance to our successful working; there are high hills on three sides of it. It is said during the monsoon to be free from fever, but on one occasion I slept there for two nights during the monsoon, the result was that all my servants got fever of a very virulent kind, and one of them unfortunately died of it. With these servants, I took every usual precaution. In working these jungles it was necessary for me occasionally to bring out very large logs (40′ × 1′ 2″ × 1′ 2″) of the heaviest wood (kurrah murdah) for use in the railway.

In doing this, I tried to economise elephant labour. I used in some cases sling carts, the logs were suspended at about two-third of the length underneath the axle, and the elephant was then ordered to pull, the objections to this mode of taking heavy logs out of the jungle are the difficulty which the elephant experiences in taking the load down hill, and the great strength of which it is necessary to make the carts. I also tried a pair of small wheels placed under one end of the log, but this, although it worked well on tolerably smooth ground, was awkward to manage in crossing nullahs. These are difficulties, however, which may be overcome. For elephants in Malabar, we paid at the rate of Rs. 5 per day.

I hoped, at one time, to have been able to do a good deal of the sawing work by steam, and I proposed on first entering this forest, to get a steam engine and sawing apparatus from Home. The contract time has now nearly expired and it would not be worth while getting out a sawing apparatus without knowing whether the lease will be renewed. I would prefer steam to water power, as with steam you are more independent, and fuel would cost nothing.

Government may not think that it is profitable to let the forest to us on the same terms. It is true that the amount paid to the Conservator of Forests has not been much each year; this is because I have always made it a rule to cut not a single tree in excess of what I was able to carry out. I think, however, that this is in reality the most profitable way in which Government can use the forests, because while we take a comparatively small number of trees out of the jungle, we conserve it, and at the same time, do all in our power to avoid injury to the young trees.

My opinion is that in working forests, it would be advisable to try whether a very light tramway could not be used with advantage.

In this forest, I intended to have put up a large charcoal oven for the purpose of converting all waste branches, &c., into charcoal; this oven is now being erected and will, I have no doubt, be of great service, both in economising the timber, and in clearing the ground from waste timber which takes fire during the dry season, and injures so many young trees, and sometimes also, unless precautionary measures have been taken, destroys logs ready for transport. A charcoal oven might, I think, to be put up in most jungles.

The usual time for cutting trees in this and in other jungles is in the middle of the monsoon; this is on account of its being impossible to remain in most of them after the dry weather has set in. It is usual at Home to cost trees only when the sap is down; very few of the trees in this country are deciduous; I doubt therefore whether it is of so much consequence to cut the trees at any particular time of the year. It is, however, of great importance that after the tree is cut down it should undergo a proper seasoning. To effect this, I think that after the tree is cut, it should be squared and hauled away to some situation, when it can be tilted at a considerable angle, where no rank vegetation is allowed to grow about it, and where it can be exposed to a free current of air, but above everything rank vegetation ought not to be allowed to get near it.

It is difficult to estimate the cost of the sleepers which have as yet been turned out from the jungles worked by ourselves, as we have still a large quantity of timber unconverted. The price will not be greater than that which we have to pay contractors, while the character of the sleeper is infinitely superior.

I have gradually lost confidence in every kind of country wood, except errool and vengay. Teak I put out of the question as being too expensive; almost all other description of timber I have seen decay when used as sleepers.

With reference to many of the inferior woods, which are almost useless, I have already asked for an apparatus such as that used by Boucherie to be sent from Home. I am inclined to think that with such an apparatus the worthless timber might be made valuable. It would be difficult or next to impossible to use this apparatus with hard woods as kurrah murdah, but it would be a very great matter if, by the use of the Boucherie process such inferior woods as thanee, eloopay and padrie, &c., could be rendered useful. I do not mean merely for sleepers, but those woods which at present command very little sale, might, under these circumstances, become a source of profit as well to Government as to the Railway Company.

In conclusion, I have to say that although having so many other duties to attend to, I was unable to introduce as many improvements as I would wish in working the forests; still I believe that much could be done to work forests effectually, were pains taken to improve the means of carriage, to improve the roads, and to economise elephant labour and sawing power. These improvements could only be effected with close supervision.

I would especially recommend that the Boucherie process be tried. It is not an expensive process, and the trial would not cost much.



From—The Agent and Manager, Madras Railway.
To—The Consulting Engineer for Railways, Madras.
Dated—Madras, 12th March 1898, No. 9294/B. 218.

I have the honour to inform you that, on the 10th ultimo, I enquired of my Board, at the request of the Chief Engineer, at what rate, inclusive of freight, good creosoted pine sleepers 10′ × 10″ × 5″ could be delivered at Madras, and in reply I have to-day received the following telegram:—

Sleeper 10 feet eight and two, 9 feet six and six

which is understood to mean that sleepers 10 feet in length can be delivered at 8*s.* 2*d.*, and those 9 feet in length at 6*s.* 6*d.*

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Note by the Consulting Engineer for Railways, Madras, dated 25th March 1898.

*Railway Sleepers in Malabar.*

There will soon be a very heavy demand for 136,000 railway sleepers for the Calicut-Cannanore Railway, 62 miles; and in all probability a demand will also arise very soon for 164,000 sleepers for 74 miles of the Shoranur-Cochin Railway. The demand for Pyngadu (*Xylia dolabriformis*) from Burma is far in excess of the supply, so much so that the Burma firms were quite unable to supply the Bezwada-Madras Railway's requirements, and Deodar (*Cedrus deodara*) sleepers had to be got round from Kurrachi at a very high price, and the opening of the line has consequently been delayed by many months.

I hear that there are large quantities of timber fit for sleepers in the two forest divisions, North and South Malabar, not far from the Calicut-Cannanore Railway, and that not only is "maddi" (*Terminalia tomentosa*) found but also teak and other woods eminently fit for sleepers. I hear also that the Forest Department have machine saws working somewhere not far from Podanur whence Shoranur-Cochin and Podanur-Dindigul sleepers could perhaps be supplied.

But, however excellent and plentiful the timber may be in the forest, it is hopeless to expect to get it out, anything like fast enough or anything like honestly, through the agency of the petty sort of private enterprise that is available. It seems to me that the agency of the Forest Department might be made use of, and that Provincial finances might as well get whatever profit may accrue from the proposed expenditure of perhaps 3 to 5 rupees per sleeper.

Though nominally the work of a Railway Company, the Calicut-Cannanore Railway is really *de facto* a Government work, and it only seems right that all the help which the Forest Department can give should, under the circumstances, be given.

The Company's Agent is already enquiring into the price at which creosoted pine sleepers from Europe can be delivered. But it seems a pity to send to Europe for what we *ought* to be able, so far as I can learn, to obtain from the forests alongside of the railway through the agency of a Government department specially organized for such purposes.

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*Order*—No. 544 Ry., dated 7th April 1898.

The Board of Revenue will report upon the subject and will advise whether any special steps should be taken or expenditure incurred to enable the Forest Department to meet the probable demand of 136,000 sleepers for the Calicut-Cannanore Railway in the next two years.

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Proceedings of the Board of Revenue (Land Revenue).
Dated—7th May 1898, No. 204.

If the Forest Department is to make any special arrangements for the provision of sleepers, it is probable that a considerable initial expenditure will be involved, and the Board would be glad if some estimate could be given of the probable annual demand for sleepers for renewals at different centres, and the kinds of wood approved by the Railway authorities.

The woods which occur to the Board are :—

| | |
|---|---|
| Teak .. ... ... ... ... ... | *Tectona grandis.* |
| Maddi ... ... ... ... ... ... | *Terminalia tomentosa.* |
| Ironwood—Irul ... ... ... ... | *Xylion dolabriformis.* |
| Vengai or Yegi ... ... ... ... | *Pterocarpus marsupium.* |
| Achca or Yepi ... ... ... ... | *Hardwickia binata.* |
| Sâl ... ... ... ... ... ... | *Shorea robusta.* |
| Sóme ... ... ... ... ... ... | *Soymida febrifuga.* |
| Manjakadambai or Rudrajanapa ... ... | *Adina cordifolia.* |

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*Order*—No. 715 Ry., dated 12th May 1898.

The Board will be informed that the quantity of metre gauge sleepers, which would probably be bought from the Forest Department if proper arrangements were made for their supply would, in round numbers, be as follows :—

For the Calicut-Cannanore Railway, 136,000, within say 3 years.
For the Shoranur-Cochin Railway, 164,000 „ „ 3 „

Future requirements for both railways, 10,000 annually to begin with, rising at the end of 10 years to 30,000 and standing thenceforth at that figure. It is hoped that this estimate will enable the Forest Department to make a forecast as to what it would be possible for it to do, in order that the Madras Railway Company may be able to come to such arrangements with them as will allow of the sleepers they require being obtained in the Presidency instead of from England.

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Read—

* G.O., Nos. 841-42 Ry., dated 21st June 1898.
* G.O., No. 1141 Ry., dated 16th September 1898.

* [Note.—The orders marked with an asterisk have been communicated to Railway Administrations.]

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Read also the following papers :—

From—the Conservator of Forests, Southern Circle.
To—The Secretary to the Commissioners of Land Revenue.
Dated—Coimbatore, 30th June 1898, Ref. on C. No. 4992.

With reference to the Board's Reference No. 184, dated 23rd April, regarding the supply of sleepers for the Calicut-Cannanore Railway, I have the honour to report having consulted the District Forest-officers, Nilgiris, North Malabar, South Coimbatore, South Malabar and South Canara on the subject. The two former District Forest-officers quote rates which are either altogether prohibitive or are so high as to leave but a small profit even if the sleepers are supplied at the rates which it is stated pine creosoted sleepers could be supplied at. I am, however, not quite satisfied that North Malabar could not supply *Terminalia tomentosa* at reasonable rates, as the rates quoted for sawing and carting by the Acting District Forest-officer appear very high and could possibly be reduced considerably if proper arrangements for procuring sawyers at reasonable rates as well as for carting the sleepers to the nearest Railway Station or water way were made. I therefore propose as soon as the permanent District Forest-officer, Mr. Tireman, returns from leave to ask him to go into the matter of rates thoroughly and report further. In the meantime, North Malabar may be omitted from our calculations.

2. The District Forest-officers, South Coimbatore, South Canara, and South Malabar, report the number of sleepers of each kind of timber they can supply as well as the lowest rates it would be advisable to accept. I give below a précis of their replies together with my recommendation regarding each proposal made.



Presuming the demand of the Calicut-Cannanore Railway amounting to 136,000 sleepers is spread over three years, this would give an annual demand of 44,000 sleepers to be met by the Department from three Districts or, say, roughly 15,000 sleepers per District if the indent was equally divided among the three. This, of course, is neither necessary nor advisable as the possibility of each district varies. Taking them therefore in the order of greatest possibility, South Coimbatore should supply the greatest number. The District Forest-officer states that given men and money he could supply 65,000 the first year and 100,000 the second, the sources of supply being so far as concerns the first year 15,000 from Tekadi leased forests, 25,000 from Pollachi Upper Anaimalai forests, and a similar number from Udamalpet Upper Anaimalai forests. In the 15,000 sleepers proposed for supply from Tekadi forests 2,500 Teak sleepers are included, which, however it would not pay us to supply as teak in the log will pay us much better than the price we could realize for it when sawn into sleepers. This would leave 12,500 sleepers to be supplied composed of *Terminalia tomentosa* and *Lagerstræmia microcarpa* in about the proportion of nine to four respectively. It is not certain that the Railway Company would accept the latter kind of wood although it should prove fairly suitable for sleepers. I shall therefore ask the District Forest-officer to send some sample sleepers to the Company for testing and opinion at once.

3. Passing on to the supply proposed from the Pollachi and Udamalpet forests the District Forest-officer's proposals are dependent in each of these cases on methods of transport which have not yet been tried there and in the case of Pollachi Forests which are not yet available. I refer of course to the new road now under construction to connect these forests with the plains and it is evident that without this road the supply of sleepers from the Upper Anaimalai forests could not be undertaken. I therefore put myself in communication with the Superintending Engineer regarding the time it would take to construct a cart-track suitable for our purposes of slow timber traffic down hill and I would specially invite reference to this correspondence as I regard the Superintending Engineer's last letter, dated 22nd June as very hopeful in so much as he states that "it would be *possible* to make the Prince of Wales Ghât passable for carts in a very short time, but it would involve very expensive work on the fourth and fifth miles. It might, however, pay to incur this expense to enable you to take up the contract for sleepers, and accept the risk of the Prince of Wales Ghât not being eventually selected as the best line for the cart-road." I am certainly of opinion that unless the very expensive work spoken of by the Superintending Engineer is prohibitively high it should be undertaken rather than allow an indefinite period to elapse before any road at all is available, and I would point out in this connection that even if this Prince of Wales Ghât road was not chosen as the final road to connect the evergreen forests near Sirukunru and Paralai with the plains, other forests would be tapped by it or by branch cart-tracks from it, which the Department could construct and in this way it could not but prove remunerative and useful to the Department in the long run. I would, therefore, await an expression of opinion on this matter by the Board before replying to the Superintending Engineer. If however that officer could give an approximate figure as to what the cost of the heavy work on the fourth and fifth miles would be in order to make it passable for carts it would help us to come to a conclusion on this point. In the somewhat uncertain time therefore in which we may expect to utilize the new cart-road I think it would be wise not to rely on these Upper Anaimalai Pollachi forests for any supply during the first year, although it might be quite possible to bring down some sleepers towards the end of the official year, provided that arrangements can be made for Travancore or Palghat sawyers who would be required in some numbers for the work. As regards the supply from the Udamalpet Upper Anaimalai forests, the District Forest-officer contemplates utilizing the two rivers connecting the forests with the plains for the purpose of transporting sleepers, but as this means of transport in the locality is new I think it would be advisable not to rely on it for the present. In conclusion, therefore, I do not think that it would be wise to rely on a greater number of sleepers from South Coimbatore during the first year than the 12,500 to be obtained from the Tekadi leased forests, although it is quite possible that this number could be considerably increased from the Pollachi Upper Anaimalai forests, provided the cart-road is made available for slow down-hill timber traffic at an early date. During the second year I think we could with more certainty rely on the supply being largely increased from this source, although I doubt whether it would be possible to supply such a large

number as 25,000 as contemplated by the District Forest-officer when the difficulties of procuring transport and sawyer labour in an entirely new locality are taken into account. I therefore think that 10,000 sleepers would probably be as much as we might expect to supply the second year from these forests and this only provided subordinates possessing tact and interest in their work are employed on the work.

For South Coimbatore, therefore, I am of opinion that it would only be safe to rely on a supply of 12,500 sleepers the first year and 22,500 the second and possibly 30,000 the third.

4. As regards the supply that can be expected from South Malabar, the District Forest-officer of that District reports that he can supply 9,000 *Terminalia tomentosa* sleepers and 13,000 Irul (*Xylia dolabriformis*) during the next twelve months, but taking into consideration possible difficulty in procuring a sufficient number of sawyers during the first year of the work as well as possible loss in converting logs into sleepers over and above the percentage calculated I think it would be safer not to rely upon a greater number than 15,000 sleepers during each year from this District. But it must be pointed out that this number could be considerably increased if the Railway Company would accept sleepers of *Terminalia paniculata* which could moreover be supplied cheaper than either of the two other kinds of timber referred to. This can only be ascertained by sending the Railway Company some sample sleepers to test and examine, which I shall ask the District Forest-officer to do at once.

5. As regards the supply which may be expected from South Canara, the District Forest-officer reports that he can supply the following :—

| | Rs. |
|---|---|
| 1st Hopea parviflora ... ... ... ... ... ... ... | 6,000 |
| 2nd Terminalia tomentosa ... ... ... ... ... ... | 4,000 |
| 3rd Xylia dolabriformis ... ... ... ... ... ... | 3.000 |
| 4th Lagerstrœmia microcarpa ... ... ... ... ... ... | 2,000 |
| Total ... | 15,000 |

I think however for similar reasons as stated regarding the South Malabar supply that it would be better to reduce this number to 10,000 and that the reduction should as much as possible bear on the Hopea which is such a good wood and so easily disposable in the log that I am doubtful whether it would be justifiable to utilize it in large quantity for sleepers.

6. In conclusion, therefore, so far as numbers are concerned, I am of opinion that we might hope to supply 37,500 sleepers the first year and about 50,000 the second and third, which number would meet the whole demand so far as the Calicut-Cannanore Railway is concerned.

7. The next question relative to the supply is the rate at which we might expect to make it. The District Forest-officer, South Coimbatore, after going into the matter at some length proposes a rate of Rs. 3–8–0 made up of Rs. 1–6–0, actual cash disbursement per sleeper delivered in Coimbatore, Rs. 1–6–0 cost of establishment, elephants, annual lease amount of forests, &c., and As. 11–8 profit and to cover loss by rejection, &c.

I consider this amount rather low even for the smaller sleeper of $3\frac{1}{8}$ cubic feet when taking into consideration the excellent quality of timber we propose to supply, which for Indian underground purposes would probably be superior to creosoted pine sleepers. I therefore think a charge of Rs. 4–8–0 per smaller sleeper and Rs. 5–8–0 per larger one to be more reasonable; these rates moreover are more in accordance with those proposed by the District Forest-officers, South Malabar and South Canara who, however, do not differentiate between the two classes of sleepers when making their proposals on this point. If the Railway Company however would take *Terminalia paniculata* we could supply this wood at 20 per cent. below the above rates.

If the contract is taken up it will be necessary to make immediate arrangements for sawyers in each District. I would, therefore, request that orders may be passed as soon as possible in communication with the Railway Company. In the meantime I shall keep District Forest-officers informed what is being done in the matter.

8. The enclosure to the Board's Reference is herewith returned.



Enclosure No. 1.

From—The Conservator of Forests, Southern Circle.
To—The Superintending Engineer, IV Circle, Coimbatore.
Dated—30th May 1898, No. 4098.

I have the honour to enquire when a cart-road is likely to be commenced connecting Paralai with the Plains and when commenced how long (approximately of course) the cutting of it would take so as to admit of timber being brought down.

This information is asked for as it is under contemplation to supply a portion of the quantity of sleepers required by the Calicut-Cannanore Railway during the next three years from the Upper Anaimalai forests if the cart-road can be made use of during this period.

I understand from a communication (copy enclosed) from Mr. Loam, to the District Forest-officer, South Coimbatore, in reply to a similar query as that contained in this letter, that he has no orders to construct a cart-road but only to frame an estimate for one but that he is engaged in cutting a bridlepath to Sirukunru. I would beg to point out that the bridlepaths though very useful bring no direct return to Government, while from the day that a cart-road is opened connecting the forests with the plains some of the timber can be brought down and sold at remunerative rates which I estimate at from 6 annas to 1 rupee net per cubic foot.

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From—The Superintending Engineer, IV Circle.
To—The Conservator of Forests, Southern Circle, Coimbatore.
Dated—7th June 1898, No. 334-M.

In reply to your No. 4098, dated 30th May 1898, I have the honour to inform you that the construction of a metalled cart-road for three and a half miles from the Aliar Crossing will be commenced, I trust, within the next three weeks. The Bridge across the Aliar will, it is hoped, be completed by this time next year.

2. From three and a half miles there are two possible routes to Sirukunru—one by the Prince of Wales Ghât and the water-fall estate and the other by the Villoni Valley. Before deciding which route would be the more favourable for a cart-road estimates have to be prepared, and they ought to be submitted in two months' time.

3. To complete a cart-road to Sirukunru by either route would probably take from three to four years. Government are anxious to have a good cart-road made with the least possible delay.

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From—The Conservator of Forests, Southern Circle.
To—The Superintending Engineer, IV Circle, Coimbatore.
Dated—15th June 1898, Ref. on Cur. No. 4098.

With reference to paragraph 3 of your No. 334, dated 7th June 1898, I have the honour to enquire how long it would take to so far construct the road as to admit of carting of timber from the Forests to the plains, as this would only entail laden carts coming down hill.

It would be quite possible to utilize the road for timber down traffic before being metalled and widened to its full width, as a 10-feet unmetalled road would probably answer our purpose almost as well as a fully-metalled wide road which will be necessary for up-hill traffic.

I would, therefore, ask if it would not be possible to construct a cart-track of this nature in a somewhat shorter period than three or four years.

I ask for this information as I believe it would be almost possible for the Forest Department to recover a large portion of the expenditure on the road out of profits from supply of sleepers to the Calicut-Cannanore and other Railways if the road could be so far constructed at a somewhat earlier date so as to admit of slow timber traffic. The matter being of great importance to the Department with reference to timber sleeper supply contracts which will go elsewhere if not taken up by us is my reason for again troubling you for further information on the subject.

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From—The Superintending Engineer, IV Circle.
To—The Conservator of Forests, Southern Circle, Coimbatore.
Dated—22nd June 1898, No. 363-M.

In reply to your No. 4098, dated 15th June 1898, I have the honour to inform you that it would certainly be possible to get the road ready for carts carrying sleepers down to the plains in a shorter time than three years.

2. As soon as the line for the cart-road has been definitely decided on every endeavour will be made to form a road which will answer your requirements without loss of time, as I fully appreciate the importance of the work.

3. I should be glad to know when you would be ready to begin carting sleepers. It would be *possible* to make the Prince of Wales Ghât passable for carts in a very short time, but it would involve very expensive work in the 4th and 5th miles. It might, however, pay to incur this expense to enable you to take up the contract for sleepers, and accept the risk of the Prince of Wales Ghât not being eventually selected as the best line for the cart-road.

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Enclosure No 2.

From—The Executive Engineer on Special duty.
To—The District Forest-officer, South Coimbatore.
Dated—15th May 1898, No. 240.

With reference to your letter No. 497-Cur. (*b*), dated 9th May 1898, I have the honour to report that I am making a bridlepath to Sirukunru and have orders only to make estimates for a bandy road.

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Endorsement by—The District Forest-officer.
Dated—23rd May 1898, Ref. No. C-497.

Forwarded to the Conservator of Forests for information; this is the reply to my query as to when carts would be able to get through.

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Resolution—Forest No. 301, dated 21st July 1898.

In March last the Consulting Engineer for Railways brought to the notice of Government, in the Public Works Department, Railway Branch, that there was an immediate prospect of a very heavy demand for Railway sleepers in connection with the construction of the line from Calicut to Cannanore and afterwards that from Shoranur to Cochin. He represented that the demand for Pyngadu (*Xylia dolabriformis*) from Burma was far in excess of the supply, and that as large quantities of timber fit for sleepers are said to exist in the North and South Malabar forest Divisions, it would be a pity to ignore the agency of the Forest Department in the matter of this supply and to obtain creosoted pine sleepers from Europe. In its order, No. 544, Railway, dated 7th April 1898, the Government enquired of the Board whether any special steps should be taken, or expenditure incurred, to enable the Forest Department to supply about 136,000 sleepers for the Calicut-Cannanore Railway in the next two years.

2. The Board referred the matter to the Conservator of Forests, Southern Circle, for report, but as the undertaking was one which would involve considerable initial expenditure from forest funds, it desired the Railway Branch of the Public Works Department to furnish an estimate of the probable annual demand for sleepers for renewals at different centres and the kinds of wood approved by the railway authorities. The Board at the same time specified the marginally-noted woods which occurred to it as suitable for the purpose and in a separate communication added *Mesua ferrea* or *speciosa*. The Railway Branch replied that the quantity of metre gauge sleepers which would probably be bought from the Forest Department for the Calicut-Cannanore line within, say, three years would amount to 136,000 sleepers, and those for the Shoranur-Cochin line, within the same period, to 164,000, and that the future annual requirements would amount to 10,000 sleepers for both railways, rising eventually to 30,000 sleepers at the end of ten years. The Board forwarded this reply to the Conservator of Forests, Southern Circle, and at the same time requested the Railway Branch to furnish an estimate of the probable demand for renewals in the Madras, South Indian and East Coast Railways. The reply to the latter reference has not yet been received.

| | |
|---|---|
| Teak ... ... | *Tectona grandis.* |
| Maddi ... ... | *Terminalia tomentosa.* |
| Ironwood (Irul) ... | *Xylia dolabriformis.* |
| Vengai or Yegi ... | *Pterocarpus marsupium.* |
| Achea or Yepi ... | *Hardwickia binata.* |
| Sâl ... ... | *Shorea robusta.* |
| Sóme ... ... | *Soymida febrifuga.* |
| Manjakadambi or Rudrajanapa. | *Adina cordifolia.* |



3. The paper last read above is the Conservator's reply to the references made to him. Mr. Brasier states that he has consulted the District Forest-officers of the Nilgiris, North Malabar, South Coimbatore, South Malabar and South Canara. He considers that the rates quoted by the District Forest-officers of the first-named two forest divisions are either altogether prohibitive or so high as to leave but a small margin of profit, even assuming that the railways would pay as much as they would for creosoted pine sleepers. He is, however, of opinion that from North Malabar *Terminalia tomentosa* can be supplied at a much lower price than that given by the District Forest-officer by a possible reduction in the rates for sawing and carting, and the Board notes that the matter is engaging the Conservator's attention. Leaving, however, these two forest divisions out of account, Mr. Brasier hopes that the estimated quantity of 136,000 sleepers for the Calicut-Cannanore Railway can be met from the remaining three divisions at 37,500 sleepers during the first year and about 50,000 during each of the following two years.

4. As regards the rate, Mr. Brasier proposes to charge Rs. 4–8–0 per smaller sleeper and Rs. 5–8–0 per larger one. He has not named the stations at which he would deliver the supply at the proposed rates except in the case of sleepers from the South Coimbatore division, which it is said will be delivered at Coimbatore, by which is probably meant the Podanúr Railway station. The sleepers from South Malabar will no doubt be delivered at Calicut, and those from South Canara at such port as may be most convenient to the Railway Company. Mr. Brasier states that the rates proposed by him are more in accordance with those suggested by the District Forest-officers of South Malabar and South Canara, whereas the rate of Rs. 3-8-0 quoted by the District Forest- fficer, South Coimbatore, is low even for the smaller sleepers, considering that the quality of timber which it is proposed to supply is excellent. The Board considers that Mr. Brasier's rates are reasonable. Apart from the question of the excellence of the timber the Board does not consider that it would be safe to undertake the work at the rates proposed by the District Forest-officer, South Coimbatore. Some of the localities to be worked are isolated and have to be newly opened out, and there may be difficulties with regard to sawyers and carriage involving revised rates as well as the appointment of additional supervising establishments.

5. Mr. Brasier's remarks and conclusions with regard to the quantities that can be supplied from each of the forest divisions of South Coimbatore, South Malabar and South Canara will now be considered. Taking South Coimbatore, the District Forest-officer is of opinion that, given men and money, he could supply 65,000 sleepers the first year and 100,000 the second year. He expects to supply during the first year 15,000 sleepers from the Tekadi leased forests, 25,000 from the Pollachi Upper Anaimalai forests, and 25,000 from the Udumalpet Upper Anaimalai forests. The District Forest-officer's estimate of the proposed supply from the Tekadi forests includes 2,500 teak sleepers. Mr. Brasier rightly thinks that teak would fetch better prices if sold in the log than when converted into sleepers. He would accordingly deduct 2,500 from the number proposed by the District Forest-officer. The balance, viz., 12,500 sleepers, is composed of *Terminalia tomentosa* and *Lagerstræmia microcarpa* in about the proportion of 9 to 4, respectively, and the Board notes that the Conservator is arranging to ascertain the opinion of the railway authorities as to the quality of this latter wood after test. As regards the supplies from the Pollachi and Udumalpet forests, Mr. Brasier considers that the difficulty of transport largely discounts the sanguine view of the District Forest-officer. The supply from the Pollachi Upper Anaimalai forests is dependent on the completion of the road now in course of construction in connection with the grant of leases for planting in the Anaimalai forest reserve. It seems that it would be possible to make the Prince of Wales Ghaut passable for carts in a very short time, but a large expenditure would have to be incurred on the 4th and 5th miles. Apart from the uncertainty as to whether this Ghaut will eventually be selected as the best line for the cart road to connect the evergreen forests near Sirukunru and Paralai with the plains, Mr. Brasier considers that unless the very large expenditure said to be necessary for this work is regarded as prohibitive, it might be undertaken rather than have no road at all for an indefinite period. In his opinion the Prince of Wales Ghaut road would prove useful and remunerative as other forests would be tapped by it or by branch cart-tracks from it which the Department could construct. The Board trusts that by the time the railway is in a position

to give definite orders for the supply of sleepers, the Superintending Engineer will have decided on the line which the new cart road should take, or if this is not possible, he could frame an estimate showing the probable cost of rendering the Prince of Wales Ghaut fit for cart traffic. Owing to the difficulty of transport from the Pollachi Upper Anaimalais forests as well as from the Udumalpet Upper Anaimalais where the method of transporting the wood by rivers has yet to be tried, Mr. Brasier thinks it wise not to calculate on any supply from these forests during the first year. In the second year a supply would no doubt be obtained from the Pollachi Upper Anaimalais, but when the difficulties of procuring transport and sawyer labour in an entirely new locality are considered, Mr. Brasier doubts whether a supply of 25,000 sleepers could be relied on and thinks that the figures might be taken at 10,000; to procure even this number it would in his opinion be necessary to employ subordinates possessing special tact and interest in the work. In the third year the number might be raised to 17,500, making 30,000 in all from South Coimbatore. The wood of which the sleepers from the Pollachi Upper Anaimalais would be made is not stated, but from other correspondence on the subject there is no doubt that it is *Mesua ferrea* or *speciosa*.

6. In South Malabar, the District Forest-officer estimates a supply of 9,000 sleepers of *Terminalia tomentosa* and 13,000 of *Xylia dolabriformis* during the next twelve months. Taking into account the difficulty of procuring a sufficient number of sawyers during the first year of the work and the possible loss in converting logs into sleepers over and above the percentage calculated, Mr. Brasier relies upon a supply from this division of 15,000 sleepers annually. He adds that this number could be considerably increased if the Railway Company would accept sleepers of *Terminalia paniculata* which could be supplied at rates 20 per cent. cheaper than those given above. It is noted that arrangements are being made to test the usefulness of this wood as a railway sleeper. For reasons similar to those adduced for South Malabar, Mr. Brasier reduces the estimate of the District Forest-officer, South Canara, from 15,000 to 10,000 sleepers.

7. To sum up, the proposals for supply are as follows :—

| — | *Terminalia tomentosa.* | *Xylia dolabriformis.* | *Mesua ferrea or speciosa.* | *Lagerstræmia microcarpa.* | *Hopea parviflora.* |
|---|---|---|---|---|---|
| South Malabar— | | | | | |
| First year .. .. .. .. | 5,000 | 10,000 | .. | .. | .. |
| Second year .. .. .. .. | 5,000 | 10,000 | .. | .. | .. |
| Third year .. .. .. .. | 5,000 | 10,000 | .. | .. | .. |
| South Coimbatore— | | | | | |
| First year .. .. .. .. | 7,500 | .. | .. | 4,500 | .. |
| Second year .. .. .. .. | 7,500 | .. | 10,000 | 4,500 | .. |
| Third year .. .. .. .. | 7,500 | .. | 17,500 | 4,500 | .. |
| South Canara— | | | | | |
| First year .. .. .. .. | 4,000 | 3,000 | .. | 2,000 | 1,000 |
| Second year .. .. .. .. | 4,000 | 3,000 | .. | 2,000 | 1,000 |
| Third year .. .. .. .. | 4,000 | 3,000 | .. | 2,000 | 1,000 |
| Total .. | 49,500 | 39,000 | 27,500 | 19,500 | 3,000 |

| | |
|---|---|
| *Terminalia tomentosa* .. .. .. .. .. .. .. .. | 49,500 |
| *Xylia dolabriformis* .. .. .. .. .. .. .. .. | 39,000 |
| *Mesua ferrea* .. .. .. .. .. .. .. .. .. | 27,500 |
| *Lagerstræmia microcarpa* .. .. .. .. .. .. .. | 19,500 |
| *Hopea parviflora* .. .. .. .. .. .. .. .. | 3,000 |
| Total .. | 138,500 |

From the Consulting Engineer's note recorded in Government Order, No. 841 Ry., dated 21st June 1898, and from Gamble's Manual of Indian Timbers there can be no doubt as to the suitability of *Xylia dolabriformis* and *Mesua ferrea* or *speciosa* for the manufacture of sleepers, and the same may probably be said of *Hopea parviflora* though the Board has no information of any experiment having actually been made. With regard to *Terminalia tomentosa*, definite information can probably be obtained from the Northern Bengal State Railway, who are said, by Gamble, to have made experiments on a considerable scale in 1876. *Lagerstræmia microcarpa* does not seem to have been tried for sleepers anywhere but it is a favourite wood for building on the West Coast.



If all the timbers above mentioned be accepted and the road to the Pollachi Upper Anaimalai forests be pushed on with, the Board considers that Government may safely undertake the supply, by the Forest Department, of all the sleepers required for the Calicut-Cannanore Railway, and possibly some, if not all, of those required for the other extensions mentioned by the Consulting Engineer as likely to be taken in hand at an early date, but the result of the first year's working must be awaited before any further definite proposals can be submitted. As has been represented in Board's Proceedings, No. 227, dated 11th June 1898 the completion of the Anaimalai Ghaut road is a matter of prime importance in connection with the provision of railway sleepers, the supply of suitable timber in that locality being practically unlimited.

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G.O., No. 1141, Railway, dated 16th September 1898.

Abstract.—Informing the Board of Revenue of the number of sleepers which are likely to be required annually for renewals on the standard and metre-gauge railways in the Madras Presidency, and requesting it to report what steps it proposes to take for supplying them.

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Resolution—Forest No. 427, dated 6th October 1898.

In the Government Order read above the Board is directed to report as early as possible for the information of Government what steps it is proposed to take in the matter of the direct supply of sleepers to railways in this Presidency.

2. Certain proposals were submitted in Board's Proceedings, No. 301, dated 21st July 1898, but the figures given in the Government Order now read show that there has been a misunderstanding as regards the size of the sleepers required for the Calicut-Cannanore Railway.

3. The letter from the Agent, Madras Railway, forwarded with G.O., No. 544, Railway, dated 7th April 1898, gave quotations for two sizes of sleepers, and the Board assumed that the smaller of these, viz., a sleeper of $3\frac{1}{8}$ cubic feet was that which is required for the Calicut-Cannanore Railway and based its proposals accordingly, but from the enclosure to G.O., No. 1141, Railway, dated 16th September 1898, it would appear that the size required is either that used by the South Indian Railway, viz., 6′ 6″ × 9″ × $4\frac{1}{2}$″ or that proposed for the Shoranur-Cochin Railway, viz., 6′ × 8″ × $4\frac{1}{2}$″. The Board will require to have definite information on the point before commencing work.

4. It is observed that the Madras and South Indian Railways pay different prices per sleeper according to the wood of which it is made, and if necessary differential prices can be quoted, after further enquiry, with reference to the wood used and the locality from which it is supplied, but the Board would prefer an all-round rate of Rs. 3–4–0 for a sleeper 6′ 6″ × 9″ × $4\frac{1}{2}$″ which, it is observed, is the rate that has been paid by the South Indian Railway for Irul sleepers. The price per sleeper 6′ × 8″ × $4\frac{1}{2}$″ would be Rs. 2–12–0. Delivery would be made at Podanur from Coimbatore, at Kallai from South Malabar, at Calicut and Tellicherry from North Malabar, while those from South Canara would be delivered at any port in Malabar which might be found convenient for the Railway Company.

5. In its Proceedings of the 21st July 1898, No. 301, paragraph 7, the Board offered to supply all the sleepers required for the Calicut-Cannanore Railway if all the timbers mentioned by it were accepted and the road to the Pollachi Upper Anamalai forest were pushed on with. The present Acting Conservator of Forests, Mr. Gass, in consultation with whom the present Proceedings are written and who is also permanent District Forest-officer, Coimbatore, considers that we do not yet know enough of the Pollachi Upper Anamalai forests to justify us in offering to make any supply from there owing to the long carriage, and the difficulty of converting the prevailing timber, viz., *Mesua ferrea or speciosa;* he also considers that the capabilities of the Lower Anamalai forests have been overestimated. The smaller size of the sleeper required, however, makes it unnecessary for the Board to withdraw its

proposal to supply 136,000 sleepers within three years using only the woods which it now appears are already approved by the Madras and South Indian Railways, viz., Karimaradu (*Terminalia tomentosa*), Irul (*Xylia dolabriformis*) and Irumbogam (*Hopea parviflora*). Further information from North Malabar even enables it to raise its offer to 200,000 within three years, and if the smaller sleeper be used the number would be 250,000. This does not include the demand for the Tinnevelly-Quilon Railway. This railway was not mentioned in the former orders of Government and consequently full enquiries have not yet been made as to the capabilities of the Tinnevelly forests. A further communication will be submitted on the point, as well as with regard to experiments which are now being made with other kinds of wood in communication with the officers of the Madras Railway Company.

6. It is also proposed to thoroughly investigate the capabilities of the Pollachi Upper Anamalai forests. A saw-mill and wire ropeway have just been successfully installed in the Lower Anamalais in which a tramway has been in work for years, and if similar arrangements on a larger scale can be made for the exploitation of the more extensive and more fully stocked forests of the Upper Anamalais, the Board sees no reason to doubt that it will be in a position largely to increase its contribution towards meeting the very large demand for sleepers which has arisen in connection with the extension of railway construction in the Presidency.

7. The most important timber in the Upper Anamalai forests being *Mesua ferrea*, the Board would be glad to be informed at the earliest possible date whether sleepers of that wood would be accepted. It does not appear that any of them has been used by the Madras or South Indian Railways, but Gamble, at page 27 of his Manual of Indian Timbers, states that it has been found to answer for sleepers equally well with Pynkadu.

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Order—No. 1311, Railway, dated 21st October 1898.

A copy of the Board's Resolution, together with a copy of the description of *Mesua ferrea* given in page 27 of Mr. Gamble's book, will be forwarded to the Madras, South Indian, and East Coast Railways, with an enquiry whether they will be prepared to accept sleepers of the timber for extensions and renewals, and with a request that they will specify the size of sleepers, standard or metre gauge, which they would be prepared to take. It is noted that in the Government of India standard dimensions, the following sizes are recommended: viz., for broad gauge 9′ 6″ × 9″ × 5″, with as a minimum 8′ 11″ × 8″ × 5″, and for metre gauge 6′ 0″ × 7″ × 4½″ with as a minimum 5′ 9″ × 6″ × 4″.

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Enclosure.

*Mesua ferrea.*

Vernacular names: *Nagesar*, Bengali; *Nahor*, Assamese; *Nangal*, Tamil; *Naga-kesara*, Telugu.

A large evergreen tree. Heartwood dark red, extremely hard. Pores moderate-sized, often in groups, scanty, often filled with yellow resin. Medullary rays extremely fine, uniform, equidistant, very numerous. Numerious fine, many, concentric lines of light-coloured tissue.

Eastern Bengal from the Monas eastward (though traces of its having formerly been found west of that river occur sometimes in the names of places, *e.g.*, Nageshwarbari, or Naksarbari, a town in the Sikkim Terai on the Nepal frontier), Assam, South India, Ceylon, Burma and the Andamans, often cultivated.

The weight and transverse strengh have been determined by the following experiments—

| | | | | | Weight. | Value of P. |
|---|---|---|---|---|---|---|
| | | | | | LB. | |
| A. Mendis—Ceylon No. 59, with bars 2′ × 1″ × 1″ | | | | ... found | 72 | 994 |
| Brandis—Burma, No. 18, 1862, | | | | ,, | 69 | ... |
| Bennett—Andamans, No. 4, 1872, | | | | ,, | 70 | 1,053 |
| Smythies | Assam (4 specimens) 1878, | | | ,, | 67·5 | ... |
| | Kanara (1 specimen) ,, | | | ,, | 62 | ... |
| | Burma (6 specimens) ,, | | | ,, | 70 | ... |



Several of our specimens, however, reached 74 to 76 lb. per cubic foot in weight. It is very durable. It has been found to answer for sleepers equally well with Pynkado, but the cost of cutting the hard wood, its weight, and the freight from the Tenasserim forests to Calcutta prevent its being much used, as the total cost is scarcely covered by the price (Rs. 5) per broad-gauge sleeper. It is used for building, for bridges, gunstocks and tool handles; but its more general use is prevented by its great hardness, weight and the difficulty of working it. In Ceylon an oil is obtained from the nut, and the tree is often planted for the sake of its handsome flowers.

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*Note by the Consulting Engineer for Railways.*

In Assam *Nahor* (Mesua ferrea) is known to be an excellent sleeper timber.

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Order—No. 772, Revenue, dated 13th December 1898.

Recorded. The Board of Revenue should do all they can to develop the market for railway sleepers.

2. The question of the alignment of the Anamalai ghât road is under the consideration of the Government.

---

Resolution of the Board of Revenue, dated 7th January 1899, Forest No. 17.

Communicated to the Conservator of Forests, Southern Circle, and the Collectors of Coimbatore, Malabar and South Canara whose special attention is drawn to the remarks of Government regarding the development of the market for railway sleepers.

The Board understands that trees were felled in several districts some time ago in view to the manufacture of railway sleepers, but definite information as to the size of the sleepers required for the proposed new railways is still awaited. The sizes required for annual renewals on the Madras and South Indian Railways are given in Government Order, No. 1141, Railway, dated 16th September 1898.

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Read—G.O., No. 53 Ry., dated 11th January 1899.

[This order has been communicated to Railway Administration.]

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Resolution of the Board of Revenue, dated 3rd February 1899, Forest No. 65.

From the papers read above there seems reason to believe that the forests of the Madras Presidency are capable of supplying a considerable proportion of the sleepers required for the Railway extensions now under contemplation as well for annual renewals on the existing lines, and Government has directed that all that is possible shall be done to develop the market for railway sleepers.

2. Conservators or, in cases in which it may be more convenient, District Forest-officers, should place themselves in direct communication with the Chief Engineers of the different railways in view to obtaining any information regarding requirements which cannot be found in the orders of Government which have been communicated to them.

3. The Board concurs with the Chief Engineer of the Madras Railway in considering that it must be clearly understood that sleepers supplied by the Forest Department will be subject to the conditions of ordinary contracts and should be in accordance with specification, and subject to rejection if considered unfit for use and not up to specification. It has also no objection to the condition that the officers of the railway concerned shall be sole judges in this respect, if it be understood that rejections by a subordinate officer shall, if necessary, be subject to revision by the head of his department.

4. As District Forest-officers will have difficulty in finding time to devote personal supervision to all the details of operations on a large scale, the Board considers that endeavours should be made to secure the services of trustworthy, and, if possible, experienced contractors who could work under conditions prescribed by the District Forest-officer. The officers of the railway administration may be in a position to assist in this matter.

5. The main object in view is the utilization of local resources, and the consequent retention in the country of large sums of money which must otherwise be sent out of it. To this the Board attaches very great importance and it may be understood that there will be no difficulty in obtaining sanction to any well-considered schemes for expenditure in opening out markets which are at present closed for want of facilities for transport or manufacture.

---

Order—No. 342 Ry., dated 27th March 1899.

A copy of these Proceedings, containing the Board of Revenue's Resolutions, Forest Nos. 17, dated 7th January 1899, and 65, dated 3rd February 1899, will be communicated to railway administrations for information.

2. It is the desire of Government that the Railway Companies should make every endeavour to place the Forest-officers in possession of sufficient information, well in advance, so as to enable local sleepers to compete on equal terms with Burma or Australian or English supplies. It is now the definite policy of Government to endeavour by all practicable means to meet the demand for railway sleepers, at first to a somewhat limited extent until the local forests get opened out, but later on more fully.

3. A copy of these Proceedings will be forwarded to the Government of India.

[Here enter No. 343 Ry., dated 27th March 1899.]

(True Extract.)

Francis J. E. Spring,
Joint Secretary.

To the Agent, Madras Railway.
" Agent, South Indian Railway.
" Agent, His Highness the Nizam's Guaranteed State Railway.
" Manger, East Coast Railway.
" Board of Revenue.
" Revenue Department.
" Consulting Engineer for Railways.

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Endorsement—No. 343 Ry., dated 27th March 1899.

Forwarded.

(By order.)

Francis J. E. Spring,
Joint Secretary.

Exd. T. K. Narayana Aiyangar.

Madras Railway

No. 556. Madras, 16th August 1862.

From

R. B. Elwin Esqr.
Agent and Manager

CONSULTING ENGINEER FOR RAILWAYS
RECEIVED
22 FEB. 1899
MADRAS.

To

Captain A. L. Prendergast
Acting Dy. Consulting Engineer
for Railways in Charge.

Sir,

I have the honour to acknowledge the receipt of Captain O'Connell's letter No. 1005 dated the 3d ultimo, requesting me to transmit for the perusal of Government, all documents which may have been received from the Engineers respecting the relative durability of the several kinds of wood used for sleepers.

2. In reply I have the pleasure to transmit herewith an original letter from the Acting Chief Engineer furnishing a statement of the average life of sleepers made of fourteen descriptions of timber and annexing a copy of a draft-report prepared by the late Chief Engineer, Mr. Ross, upon the working of the Forests in the District of Malabar under his superintendence. This draft seems to have been written, consequent on Lieut.-Col. Johnston's letter No. 7710 dated the 5th September 1861 (replied to by me on the 16th April and 2d May 1862). But the sudden decease of Mr. Ross unfortunately prevented

No. 548 — 14th August 1862.

1
197 989 9
21.2.99
Ans

No. 548. 2 c 5 p

Madras Railway.
Madras 14th August 1862.

Dear Sir,

I have to acknowledge the receipt of the Acting Consulting Engineer's letter No. 405 of the 3rd July.

I am not at present in a position to forward very extensive information upon the subject referred to, but I think it better (to avoid any further delay) to furnish you with the results of our experience upon the 1st or Madras Division of the South West Line.

The following statement gives the average lives of sleepers of various woods, taken out of the line in a state of decay, and replaced by iron pot sleepers, up to the present date.

| Distinguishing Mark. | Name of Wood. | Average life. |
|---|---|---|
| A | Anchoa | 4 years 7 months |
| Z | Kurrah Murdah | 3 " 10 " |
| C | Combadrie | 4 " 2 " |
| K | Cadoothay | 4 " 1 " |
| S | Saul | 4 " 2 " |
| E | Dud Clospay | 3 " 10 " |
| Y | Erooviloo | 2 " 8 " |
| O | Vungay | 4 " 3 " |
| P | Pooloy | 2 " 10 " |
| R | Auray | 2 " 6 " |
| M | Myladee | 1 " 5 " |
| H | Myroothy | 4 " 3 " |
| D | Kaluy | 4 " 4 " |
| B | Karavalum | 4 " 2 " |

I am awaiting returns from the Engineers of the

(No. 1.)

No.

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE,

MADRAS, _____ 188

From

The Agent and Manager,
Madras Railway Company,

To

The Consulting Engineer for Railways.

Sir,

5000-15-3-88.

the other Divisions on the South West Line, to enable me to ascertain the durability of Creek, which we confidently expect will turn out to be the best description of wood for sleeper purposes.

The Creosoted Sleepers of Baltic Fir, which we have from time to time received from England, are as a rule, exceedingly durable. We had recently occasion to take some decayed ones out of the Line near Shalungur, which were ascertained to have been in the road for a period of nearly 6½ years. The cost of these sleepers however interferes materially with their extensive use in this country.

I append to this letter a copy of a draft report in the hand writing of the late Chief Engineer on the timber cutting operations in the Malabar Forests. The document will probably be interesting to Government although not bearing directly upon the subject under reply.

Yours faithfully
John G. Fraser
Ag. Chief Engineer

To
The Agent and Manager

3d Sp

Copy of Mr. Ross' Draft Report.

Dear Sir.

In accordance with the desire of Government, I beg to submit a report about the timber cutting operations in Malabar. These operations were conducted by myself for 4 years up to April 1861, since which time they have been conducted by Mr. Wilkinson the Engineer in charge of Districts 13 and 14.

It was found prior to 1857 that Contractors could not be induced to bring sleepers in sufficient numbers to supply the midland Districts, and Mr. Kelsall accordingly requested me to arrange for cutting timber myself, partly with a view to increase the supply, and partly for the purpose of letting Contractors see that we were independent of them. The effect of these operations was to make Contractors come forward and offer to supply us with sleepers, while at the same time we were supplying ourselves with a much better description of sleepers than we were able to purchase from Contractors.

My first operations were in the jungles at the foot of the Annamalay Hills near Polachy. The timber there was very fine, consisting principally of Pillay Vunnolah (Terminalia Alata) Vurrah Vurdah (Terminalia ——) and Errool (Inga Xylocarpus).

The Caders inhabiting these jungles came forward willingly to work for us then, and I had the satisfaction of teaching them, after a short time, the use of the Cross cut saw. The distance over which we had to cart the timber was so great, that I was reluctantly obliged to abandon the operations in that jungle. I cannot help thinking that it might be to the interest of Government to connect the valuable forests in the Annamalay

Annamalay Hills by means of a tramway or light railway with the Madras Railway. The amount of timber (teak for the Bombay Dock yard) now carried by Bandy from Annamalay, is very great. This tramway, if made to join the Railway at either Pollghat or Coimbatoor, would run through a very rich country (that about Pollachy being considered very suitable for Cotton).

After abandoning the Annamalay jungles, I was allowed by the Conservator of Forests to cut trees in the Chunnet Nair forest near Pollghat, and in the Walliar jungle, half way between Coimbatore and Pollghat. The Walliar jungle has been almost entirely worked out, at least in those portions which are easy of access. The timber of which I found the greatest quantity was Vela Vagay, which although stronger than any other does not last more than four or five years when used as Sleepers.

In working this jungle, I was able to bring common carts close up to the places where the trees were felled, and consequently had little use for elephants. In this jungle, I succeeded in getting the Malsens (natives of the jungle) to come forward and work. These tribes are averse to using any implement but the axe. I succeeded with some difficulty in inducing them to use the saw.

In working the Chunnet Nair forest near Pollghat, I tried to introduce a system. The trees useful for Sleepers found in this forest are Erool, Kurrale Kurrdale, and Pallay Kurrdale, there is also a good deal of Vengay in one part of the jungle.

In this forest, I had to pay for every tree which was cut down one Rupee and a half Seigniorage to Government. In this Agreement there were certain conditions by which I was prevented from cutting young trees, and which compelled me to cut trees not more than certain height (1'6") above the ground. I was not allowed to cut teak or black wood, and it was understood that I was to do my best to conserve the forest. My system here was to do as much as possible by Contract, the tree was cut down, cut into lengths of ten feet and squared, all by Contract.

In cutting the tree into lengths of ten feet, the Contractors occasionally used the cross cut saw. After the tree was cut into lengths of ten feet, Elephants were brought in to drag out the timber to the nearest jungle road where depôts were formed along side line. At these depôts the logs were tilted and all underwood cut away from near them. This was done to prevent any damage from fire during the dry season. From these depôts, I carted all timber that could be put into common bandies, the roads were bad, but as a general rule, it is better to do as much work as possible out of the jungle, and for this reason I reduced the logs only sufficiently to enable me to cart them. In this as in most jungles, the fever was a great hindrance to our successful working, there are high hills on three sides of it. It is said during the Monsoon to be free from fever, but on one occasion I slept there for two nights during the Monsoon, the result was that all my servants got fever of a very virulent kind, and one of them unfortunately died of it. With these servants, I took every usual precaution. In working these jungles it was necessary for me occasionally to bring out very large logs (40' x 1'2" x 1'2") of the heaviest wood (Kurrale Kurrdale) for use in the Railway.

In doing this I tried to economise Elephant labor. I used in some cases sling carts, the logs were

suspended

as suspended at about 2/3 of the length underneath the axle, and the Elephant was then ordered to pull, the objections to this mode of taking heavy logs out of the jungle, are the difficulty which the Elephant experiences in taking the load down hill, and the great strength of which it is necessary to make the carts. I also tried a pair of small wheels placed under one end of the log, but this although it worked well on tolerably smooth ground, were awkward to manage in crossing nullahs. These are difficulties however which may be overcome. For Elephants in Malabar, we paid at the rate of 5 Rs per day.

I hoped, at one time, to have been able to do a good deal of the sawing work by steam, and I proposed on first entering this forest, to get a steam Engine and sawing Apparatus from home. The contract time has now nearly expired and it would not be worth while getting out a sawing Apparatus without knowing whether the lease will be renewed. I would prefer steam to water power, as with steam you are more independent, and fuel would cost nothing.

Government may not think that it is profitable to let the forest to us on the same terms. It is true that the ammount paid to the Conservator of forests, has not been much each year, this is because I have always made it a rule to cut not a single tree in excess of what I was able to carry out. I think however, that this is in reality the most profitable way in which Government can use the Forests, because while we take a comparatively small number of trees out of the jungle, we conserve it, and at the same time, do all in our power to avoid injury to the young trees.

My opinion is that in working forests, it would be advisable to try whether a very light

tramway

2F

tramway could not be used with advantage.

In this Forest, I intended to have put up a large Charcoal oven for the purpose of converting all waste branches &c into Charcoal, this oven ~~is now~~ is now being erected and will, I have no doubt be of great service, both in economising the timber, and in clearing the ground from waste timber which takes fire during the dry season, and injures so many young trees, and sometimes also, unless precautionary measures have been taken, destroys logs ready for transport. A Charcoal oven might I think, to be put up in most jungles.

The usual time for cutting trees in this and in other jungles, is in the middle of the monsoon, this is on account of its being impossible to remain in most of them after the dry weather has set in. It is usual at home to cut trees only when the sap is down, very few of the trees in this country are deciduous, I doubt therefore whether it is of so much consequence to cut the trees at any particular time of the year. It is however, of great importance that after the tree is cut down it should undergo a proper seasoning. To effect this, I think that after the tree is cut, it should be squared and hauled away to some situation, where it can be tilted at a considerable angle, where no rank vegetation is allowed to grow about it, and where it can be exposed to a free current of air. But above everything rank vegetation ought not to be allowed to get near it.

It is difficult to estimate the cost of the sleepers which have as yet been turned out from the jungles worked by ourselves, as we have still a large quantity of timber unconverted. The price will not be greater than that which we have to pay Contractors, while the character of the sleeper is infinitely superior.

I

No. 373 Ry., 5th March 1898.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

**Railway.**

Read the following paper :—

## PRESERVATION OF TIMBER FOR RAILWAY SLEEPER PURPOSES.

*Note by the Senior Government Inspector of Railways, Madras.*

The object of this note is to invite the attention of the Railway and Forest Departments to an article in *The Engineer* of January 28th, 1898, pages 81—84, on The Haskin Process of Preserving Timber. The subject of the article is of the highest interest to Indian Railways and also to the Indian Forest Department; for, if the process therein described can be shown to be successfully applicable to local Indian timbers, other than the very limited and now very scarce sorts for which we depend for our sleeper supply, the economic gain will be very great indeed. Nothing is said in the article about the cost of the process; but if for large quantities it should turn out to be not too expensive, and if the result should be all that is anticipated, it will apparently be possible to utilize many sorts of trees which for sleeper purposes are now nearly valueless.

Briefly described, the process is as follows: Into great boiler-like receptacles, 120′ long and 6′ 6″ diameter, with one end open but capable of being hermetically closed in a couple of minutes, truck-loads of timber are wheeled. Air, at a temperature of 400° Fahrenheit and at a pressure of 200 lb. per square inch, is kept in steady circulation through these receptacles by means of powerful special machinery, for a period of about 8 hours. The effect on the timber is not only to kill the germs of all destructive organisms, but to convert the saps, and part of the fibre, into antiseptic preservatives of the turpene-phenol-carbolic type, which find birth, and remain, in the very pores and fibres of the wood itself, and so preserve it.

The article says: "In all cases a preservative effect is obtained from the products of the wood itself, without the addition of any extraneous material. Tests of sleepers, under heavy conditions of wear and exposure, have been made in America with satisfactory results."

Mr. Haskin's works are on the site of the old Samuda Shipyard in the Isle of Dogs, close to Messrs. Yarrow and Co.'s works. The machinery, which is described as being of great magnitude, has been all supplied by Messrs. Galloway. Rails are laid through the compressing cylinders, and trollies carrying the sleepers or scantlings to be treated are wheeled right in.

I have no figures by me to show the annual renewals of wooden sleepers on Indian Railways. But I suppose that two millions annually will not be much over the mark for renewals alone, with another million for new extensions. If by any means we could save a rupee all round per sleeper on this quantity, it would represent the not-inconsiderable saving of Rs. 30 lakhs per annum. There is no need to go deeper into details to show that it is well worth while to see whether anything can be done to utilize other timbers than *deodar*, *pyngadu*, *sâl*, *teak* and *creosoted pine*. There are many well known woods which would make very excellent sleepers if it were not that they are destroyed in a period of from two to eight years in the road by internal chemical processes and by fungoidal and other enemies which, if the article to which I call attention is to be credited, can now be satisfactorily dealt with.

I now make a definite suggestion; namely, that it would be well worth spending a few thousand rupees on the experiment if the Forest Department were to send home specimens, on a fairly large scale, say, 50 of each of 10 likely timbers, cut into sleeper sizes, for treatment at the hands of Mr. S. E. Haskin. On return to India these could all be subjected to crucial tests under various inimical conditions. But as it seems a long time to wait until we learn, by lapse of ten or fifteen years, whether the experiment has or has not been successful, it might be possible for the Forest Department to advise, in consultation with their experts, whether it would or would not be advisable to encourage the patentees to start experimental works in some favourable locality for treating certain selected Indian timbers on a sufficiently large scale to give confidence to purchasers; and so, perhaps, to neutralize what at present looks like an unnatural restriction of the supply of the better known woods which are most in demand.

In this connection, it suggests itself that I have never learnt of any Indian railway trying the Australian Karri wood which is coming so largely into use in Europe for street paving.

21st February 1898.

Francis J. E. Spring, M.I.C.E.,
Senior Govt. Inspector of Rys., Madras.

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Order—No. 373 Ry., dated 5th March 1898.

Communicated to the Agents, Madras, South Indian, His Highness the Nizam's and Nilgiri Railways, and Manager, East Coast Railway, and to the Revenue Department for information.

A copy of these Proceedings will also be forwarded to the Governments of India and Bombay for information.

[Here enter No. 374 Ry., dated 5th March 1898.]

(True Extract.)

Francis J. E. Spring,
Joint Secretary.

To the Agent and Manager, Madras Railway.
" Agent, South Indian Railway.
" Agent and Manager, His Highness the Nizam's Railway.
" Agent and Chief Engineer, Nilgiri Railway.
" Manager, East Coast Railway.
" Revenue Department.
" Consulting Engineer for Railways.

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Endorsement—No. 374 Ry., dated 5th March 1898.

Forwarded.

(By order.)

Francis J. E. Spring,
Joint Secretary.

Exd. T. K. Narayana Aiyangar.

RAILWAY.

# Government {1898} of Madras.

## PUBLIC WORKS.

| | | |
|---|---|---|
| *Recd.* | } 1898. | *Enclosures* |
| *Regd.* | | *Spare copies* |

**G.O., Nos. 373, 374 Ry., 5th March 1898.**

**MARCH.**

**Preservation of Timber for Railway Sleeper purposes**

Forwarding, for information, copy of the proceedings embodying the note by the Senior Government Inspector of Railways, Madras, on the —.

No: 9294/3218

Madras Railway
Agent & Manager's Office
Madras 12th March 1898.

2d

E.R. C.No. 1245

From

The Agent and Manager
Madras Railway

To

The Consulting Engineer for Rys.
Madras

Sir,

I have the honour to inform you that on the 10th instant, Deputy Chief Engineer at Arkonam reported that goods crossed nine sleepers 10' x 10" x 5" could be delivered at Madras, and in reply I have today received the following telegram

"Sleeper 10 feet eight and two, 9 feet six and six"

which is understood to mean that sleepers 10 feet in length can be delivered at 8-2 and those 9 feet in length, at 6-6.

I have &c
by Louis S. Moss
Agent & Manager

Put all this into proper G.O. shape for approval of H.E. the Governor

7/4
25/3

Read: Letter from Govt Madras P.C.
No. 9294/B. 48 dated 12th March 98.
(Annots & pfl)
Read Note by Con. Engr.
(Do. 2.)

Print

Order thereon.

The Board of Revenue will report upon the subject in communication with the Collector of Malabar. and will advise whether any special steps should be taken or expenditure incurred to enable the Forest Dept to meet the probable demand of 136000 sleepers for the Calicut Cannanore Ry. in the next 2 years.

J Rs
25/3/98

I learn also that the Forest Dept have machine saws working somewhere not far from Podanur where Sleeper-Cubes and Podanur-Dindigul sleepers could perhaps be supplied.

49

# Railway Sleepers in Malabar

Note by the Consulting Engineer for Railways.

Print

There will soon be a very heavy demand for 136000 railway sleepers for the Calicut Cannanore Railway. 62 miles: and in all probability a demand will also arise very soon for 164000 sleepers for 74 miles of the Shoranoor Cochin Railway. The demand for Pynadu, Xylia Dolabriformis, from Burma is for in lieu of the supply, so much so that the Burma firms were quite unable to supply the Beypore Nilambur Railway requirement, and Deodar (Cedrus Deodara) sleepers had to be got round from Karachee, at a very high price, and the opening of the line consequently has been delayed for many months.

I learn that there are large quantities of timber fit for sleepers in the two forest Divisions, North and South Malabar, not far from the Calicut Cannanore Railway, and that not only is "Maddi" found (Terminalia tomentosa) but also Teak and other woods eminently fit for sleepers.

But however excellent and plentiful the timber may be in the forest, it is hopeless to expect to get it out, anything like fast enough or anything like cheaply, through the agency of the petty sort of private enterprise that is available. It seems to me that the agency of the Forest Dept might be made use of, and that Provincial finances might as well get whatever profit accrues from the proposed expenditure of perhaps 3 to 5 rupees per sleeper.

Though nominally the work of a Railway Company the Calicut Cannanore Ry is really de facto a Government work. And it appears right that all the help which the Forest Dept can give should under the circumstances be given.

The Company's Agent is already engaging it the private sawpits creosoted pine sleepers from Europe are to be delivered. But it seems that the Company's Agent has been instructed to engage for what we ought to be able, so far as I can learn, to obtain from the Forest officers of the Railway through the agency of a Government Department specially organised for such purposes. JHS 25/3/98

Form No. (2.)

PUBLIC WORKS DEPARTMENT,

RAILWAY BRANCH.

No 544 Rly dt 7-4-98.

# PROCEEDINGS OF THE MADRAS GOVERNMENT.

38

READ the following

Letter from the Agent & Manager Malabar Ry } H.C. No. 9294/B218 dt 12th March 1898

Note by the Consg Engr. for Rys ——— } — " — " ——— dt 25 — do —

The Board of Revenue will report upon the subject & will advise whether any special steps should be taken or expenditure incurred to enable the Forest Department to meet the probable demand of 136,000 sleepers for the Calicut-Cannanore Railway in the next two years.

Init F. T. E. S.
R

To

The Board of Revenue
through the Rev. Depto.

But timber bullets and plastic

5P

Public Works Department,
Railway Branch.

SERIAL No. 9

Proceedings of the Madras Government.

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Read the following:-

Print

Proceedings of the Board of Revenue (Land Revenue).

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Read Endorsement of the Acting Under Secretary to Government, Revenue Department, dated 16th April 1898, Mis. No. 1652 forwarding to the Board Proceedings from the P.W. Department, Railway Branch, dated 7th April 1898, No. 544 Ry. and the following reference thereon dated 23rd April 1898, No. 184.

Referred to the Conservator, Southern Circle for very early report.

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Reference No. 204 dated 7th May 1898.

If the Forest Department is to make any special arrangements for the provision of sleepers it is probable that a considerable initial expenditure will be involved, and the Board would be glad if some estimate could be given of the probable annual demand for sleepers for renewals at different centres, and the kinds of wood approved by the Railway authorities.

The woods which occur to the Board are:-

| | | |
|---|---|---|
| Teak | ... | Tectona Grandis. |
| Maddi | ... | Terminalia. Tomentosa. |
| Ironwood (Irul) | ... | Xylion Delabriformis. |
| Vengai or Yegi | ... | Pterocarpus Marsupium. |
| Achca or Yepi | ... | Hardwickia Binata. |
| Sal | ... | Shorea Robusta. |
| Some | ... | Soymida Febrifuga. |
| Manja Kadambai or Rudrajanapa. | ... | Adina Cordifolia. |

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Order thereon:-No. 715 Ry. dated 12th May 1898.

The Board will be informed that the quantity of metre gauge sleepers which would probably be bought from the Forest Department if proper arrangements were made for their supply would in round numbers, be as follows:-

For the Calicut-Cannanore Railway 1,36,000 within say 3 years.

For the Shoranur-Cochin Railway 1,64,000 " " "

Future requirements for both Railways, 10,000 annually to begin with rising at the end of 10 years to 30,000 and standing thenceforth at that figure. It is hoped that this estimate will enable the Forest Department to make a forecast as to what it would be possible for it to do, in order that the Madras Railway Company may be able to come to such arrangements with them as will allow of the sleepersthey require being obtained in the Presidency instead of from England.

(True Extract)

(Signed) F. J. E. Spring,

Joint Secretary.

To,

The Board of Revenue.

RAILWAY.

# Government {1898} of Madras.

## PUBLIC WORKS.

*Recd.* } 1898. *Enclosures*

*Regd.* } *are copies*

**G.O., Nos. 841, 842 Ry., 21st June 1898.**

**JUNE.**

**Sleeper Timbers**

Forwarded.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

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**Railway.**

Read again the following papers :—

G.O., Nos. 373–74 Ry., dated 5th March 1898.
„ No. 715 Ry. „ 12th May „

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Read also the following papers :—

From—The Secretary to the Government of India, Public Works Department.
To—The Joint Secretary to the Government of Madras, P.W. Dept., Railway Branch.
Dated—Simla, 3rd May 1898, No. 151/R.S.

I am directed to acknowledge the receipt of your No. 374 Ry., dated 5th March 1898, forwarding copy of the Proceedings of the Government of Madras embodying a note by the Senior Government Inspector of Railways, Madras, regarding the preservation of timber for railway sleeper purposes by the Haskin process of preserving timber as described in an article in *The Engineer* of 28th January 1898, pages 81—4.

2. In reply I am to forward, for the information of the Government of Madras, copy of a note, dated 14th April 1898, by the Inspector-General of Forests on the subject.

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ENCLOSURE.

COPY of note, dated 14th April 1898, by the Inspector-General of Forests.

I have seen haskinized wood in America and have studied some papers relating to the process. I have also seen the method employed, but in a less perfect degree in Victoria.

There is no doubt that as regards green freshly-felled timber the effect of the system is wonderful. A heat of over 300 degrees can be employed, changing the sap and forming tissues into antiseptics without damaging the hard texture of the wood. However, with dry wood or with wood which has undergone a long water transport like our Himalayan firs, the same degree of heat cannot be employed without endangering the structural value of the wood, and the system is merely reduced to an artificial seasoning process. In these cases nothing but impregnation will *fully* meet the purpose of giving the timber an artificially longer life.

2. There seems to be no necessity of sending experimental consignments of timber home to be vulcanized; nor would the experiment be a fair one.

We have large forest areas in Burma, which contain enormous quantities of timber of species which I consider structurally and physically fit for railway sleepers or any other works, but which for other reasons have not the same length of life as pynkadu, teak, &c., for instance, *Terminalia tomentosa*, *Dipterocarpus tuberculatus*, &c., and I should feel much inclined to support the erection of an haskinizing apparatus in these localities, if the engineering authorities agree with me as regards the structural value of the woods of which we have large quantities growing in compact areas.

3. From the outset I must, however, dispel the optimistic view that, by Haskin's or any other process, we could save a rupee all round per sleeper, for this would be in many cases more than the entire value of the wood in deodar, pynkadu, sâl and teak sleepers; and would often intrench on the amount to be paid for extraction, conversion, &c.



*Read also the following Note by the Consulting Engineer for Railways, Madras, dated 17th May 1898, on the subject of* SLEEPER TIMBERS.

Since my note on the haskinizing preserving process, which was embodied in G.O., No. 373 Ry., dated 5th March 1898, was written, I have been in communication with the Board of Revenue on the subject of the probable sources of sleeper supply on the West Coast of this Presidency. The Board of Revenue have furnished a list of woods which will probably be found to be available in the Malabar forests. Some of them are undoubtedly good for the purpose in view. Of others I know little except that, though structurally good, they may, for all I can tell, be likely to fail through not being immune against internal decomposition. I understand that in the West Coast forests the Forest Department have heretofore devoted greater attention to conservation than to commercial utilization; and that, before they can launch out into a departmental system for supplying sleepers directly to the railways which are projected on that side of the Presidency, they must see their way to a reasonably extensive market to justify the necessary initial expenditure on roads, machinery, &c.

2. The list of woods above referred to is as follows:—There is said to be an unlimited quantity of No. (10) in the Upper Annamalai forests, and it is said to be a splendid sleeper timber.

| | | |
|---|---|---|
| (1) | TEAK ... ... ... ... ... ... | *Tectona grandis.* |
| (2) | MADDI ... ... ... ... ... ... | *Terminalia tomentosa.* |
| (3) | ... ... ... ... ... ... ... | *Terminalia paniculata.* |
| (4) | IRONWOOD, Irul ... ... ... ... ... | *Xylia dolabriformis.* |
| (5) | VENGAI, or Yegi ... ... ... ... ... | *Pterocarpus marsupium.* |
| (6) | ACHEA, or Yepi ... ... ... ... ... | *Hardwickia binata.* |
| (7) | SAL ... ... ... ... ... ... | *Shorea robusta.* |
| (8) | SOME ... ... ... ... ... ... | *Soymida febrifuga.* |
| (9) | MANJA KADAMBAI, or Rudrajanapa ... ... | *Adina cordifolia.* |
| (10) | SHURALI ... ... ... ... ... ... | *Mesna speciosa.* |

3. I find in my notes the following information, doubtless taken straight from Gamble, about the true *Pynkadu*, or Ironwood, timber and its rival, *Eng*.

4. PYNKADU is of the Order *Leguminosæ*; the order to which belong the well known trees Sissu, Pulás, Tamarind, Babul, &c.

| | |
|---|---|
| Sub-order, *Mimosæ*. | Genus, *Xylia*. |
| Tribe, *Eumimoseæ*. | Species, *Xylia dolabriformis*. |

A large diciduous tree, bark gray or reddish brown, $\frac{1}{4}$″ thick, with short cracks irregularly distributed; sapwood small; heartwood dark brown, or reddish brown; extremely hard, beautifully mottled, crossgrained, the fibres on a longitudinal section being wavy. The wood is very resinous and the resin is partly soluble in hot water, to which it imparts a reddish colour. Mean weight 73·5 lb., P = 955 lb.

5. The more common ENG of Burma is *Dipterocarpus tuberculatus*, whose weight is about 54 lb. per cb. ft., P = 750 lb. But the species which is apt to replace Pynkadu is Kya-Eng, or *Dipterocarpus obtusifolius*, which has characteristics very similar to those enumerated above for *Xylia*, but the wood floats instead of sinking.

6. TEAK and SAL we all know. I am familiar with the good structural qualities of MADDI and SOME for house-building purposes, but know nothing about their lasting qualities when used as sleepers. IRONWOOD, *Xylia dolabriformis* is the Burmese PYNKADU, called *Irul* in Tamil, and *Konda Tangedu*, *Eruvalu*, or *Bojeh* in Telugu. It is one of the very best of our sleeper timbers, and if there is nothing in the climate of the West Coast, or in the soil, or in the conditions of its growth, which would cause the Malabar Irul tree to have qualities less excellent than those of the Burma Pynkadu, we need ask for no better timber. The remaining three timbers I personally know nothing about, and as a copy of Gamble is not at hand, I cannot at the moment find out anything about them. The absence of Gamble must also be my excuse for errors, if any, in botanical or vernacular names.

7. This is a convenient place to note about the false Pynkadu which comes sometimes from Burma. There is so little difference between the appearance of true Pynkadu and that of its very inferior substitute Kya-Eng, that the latter is very apt to be palmed off on confiding railway engineers by unscrupulous suppliers in lieu of Pynkadu. There is, however, a very simple test which can always be applied, for Pynkadu ought always to sink and Eng ought always to float, the weight of the former running from about 65 to 80 lb. and of the latter from about 55 to 60 lb. per cb. ft. Pynkadu as already remarked is *Xylia dolabriformis*, Kya-Eng is *Dipterocarpus obtusifolius*.

8. I have now received a copy of the note by the Inspector-General of Forests which accompanied the Government of India letter No. 151-R.S., dated 3rd May 1898, on the subject of my note on the Haskin process, and am very glad to find that Mr. Ribbentrop has so good an opinion of the process. It is easy to understand that, inasmuch as the success of the Haskin process depends entirely on the chemical changes caused in the natural juices of the wood by the action of heat, once these juices are washed out by ordinary seasoning, such as takes place with deodar sleepers from the Himalayas while floating down the rivers, any attempt to apply the process must be ineffective, except in so far as it may serve to complete the seasoning. I recognise, too, now that Mr. Ribbentrop points it out, that as to send home specimens of timber would be to dry up their juices it would be unfair to haskinise them under such conditions. Apparently the only fair conditions for applying the process is in or near the forests, where the freshly cut timber can be quickly brought to the apparatus.

9. But I must differ from the Inspector-General of Forests about the reduction of price likely to be effected by the use of some process whereby trees now growing to waste may be utilised for sleeper purposes, and I adhere to my rough estimate of a saving of one rupee per sleeper all round by the use of a cheap and effective preservative process.

10. I do not say that a haskinised sleeper of *Terminalia tomentosa* or of *Dipterocarpus tuberculatus* will cost a rupee less when it leaves the factory than a pynkadu, sâl, teak or deodar sleeper costs when stacked where cut. But I claim that anything we do to largely increase the available area from which sleepers may be derived must at once reduce the price which the dealers charge us for a sleeper delivered in depôt. The demand is so great for the very limited number of species of timber which are all that are now available that the dealers are driven to charge high prices by reason of the sources of supply being year by year found at an increasing distance from rivers and railways.

11. We may very roughly take the relative cost of transport at, for railways one pie, for good roads ten pies, and for jungle roads twenty pies, per maund per ten miles (or per ten maunds per mile). The average weight of a sleeper, broad or metre and of average quality of wood, may perhaps be taken at $1\frac{3}{4}$ maund. So that for every 50 miles by which we reduce its haulage along bad roads, or for every 100 miles by which we reduce its haulage along good roads, or for every 1000 miles by which we reduce its haulage by rail, we knock one rupee off the ultimate price of each separate sleeper.

12. It seems to me that if by any process, that of Haskin or any other, we can bring our railways in touch with those forests of India which are full of timber, structurally excellent but chemically impossible for sleeper purposes, we shall easily succeed in reducing the all round average length of haulage by something not very far from the above figure. And in this reckoning I take no account of the effect of the breaking down of the monopolies or semi-monopolies which now exist, and which cannot but tend to raise prices.

13. To give an illustration from Assam. The Province is full of magnificent forests of grand-looking timber trees, and the little Jorhat 2 ft. Railway gets all it wants locally at, I think, five or six annas per sleeper. The metre gauge Dibru-Sadiya Railway was getting structurally excellent but chemically impossible sleepers, that is sleepers which turned to tinder in two or three years, at I think twelve or fourteen annas per sleeper. The Assam-Bengal Railway, with the example before it of the rapid failure of local sleepers, was obliged to arrange for nearly the whole of its



supply of sleepers to be Burma Pynkadu. The margin between the price of local timber sleepers as paid by the Dibru-Sadiya Railway and that of Pynkadu as paid by the Assam-Bengal Railway, a margin I think of about three rupees per sleeper, would I imagine pay for haskinizing several times over. One rupee each saved on the sleepers of this one railway alone would have meant about fifteen lakhs of rupees to the good.

Ootacamund,
17th May 1898.

Francis J. E. Spring,
Consulting Engineer for Railways.

---

Order—No. 841 Ry., dated 21st June 1898.

A copy of these proceedings will be communicated to the Agents, Madras, South Indian, His Highness the Nizam's, and Nilgiri Railways, to the Manager, East Coast Railway, and to the Revenue Department for information.

2. A copy of these proceedings will also be forwarded to the Governments of India and Bombay for information.

[Here enter No. 842 Ry., dated 21st June 1898.]

(True Extract.)

Francis J. E. Spring,
Joint Secretary.

To the Agent and Manager, Madras Railway.
" Agent, South Indian Railway.
" Agent and Manager, His Highness the Nizam's Railway.
" Agent and Chief Engineer, Nilgiri Railway.
" Manager, East Coast Railway.
" Revenue Department.
" Consulting Engineer for Railways.

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Endorsement—No. 842 Ry., dated 21st June 1898.

Forwarded.

(By order.)

Francis J. E. Spring,
Joint Secretary.

Exd. Shaik Kadim.

SERIAL
No. 18

RAILWAY.

# Government {1898} of Madras.

## PUBLIC WORKS.

*Recd.* } 1898. *Enclosures*

*Regd.* } *Spare copies*

**G.O., No. 1141 Ry., 16th September 1898.**

**SEPTEMBER.**

### Sleeper Supply

Informing the Board of Revenue of the number of sleepers which are likely to be required annually for renewals on the standard and metre gauge railways in the Madras Presidency, and requesting it to report what steps it proposes to take for supplying them.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

**Railway.**

Read the following papers:—

Endorsement of the Board of Revenue (Land Revenue), Reference No. 217, dated 20th May 1898, on G.O., No. 715 Ry., dated 12th May 1898.

Read—G.O., No. 715 Ry., dated 12th May 1898.

Forwarded to the Conservator of Forests, Southern Circle, for early attention.

2. The Board would be glad if it could be supplied with a similar estimate of the probable demand for renewals on the Madras, South Indian and East Coast Railways.

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From—The Consulting Engineer for Railways, Madras.
To—The Agents, Madras and South Indian Railways.
Dated—Ootacamund, 27th May 1898, No. 46/O.

I shall be glad of a rough estimate of the probable number of timber sleepers which are usually required annually by your railway without reference to contemplated extensions. I make the enquiry in connection with a question now under reference, whether or not the Forest Department could arrange to manufacture railway sleepers. Will you also please tell me the usual prices you pay for them in depôt, and at which depôts. An early reply will oblige.

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From—The Agent and Manager, Madras Railway Company.
To—The Consulting Engineer for Railways, Madras.
Dated—Madras, 6th June 1898, No. 10661/499.

In compliance with the request contained in your letter, No. 46/O., dated the 27th ultimo, I have the honour to give, below, a statement of wooden sleepers giving the desired information:—

Statement of wooden sleepers showing probable number and size required annually with price.

| Dimensions. | Average annual requirements. No. | Irul wood at Calicut. Rs. A. P. | Irumbugam and Karimurdoo at Calicut. Rs. A. P. | Teak at Arkonam. Rs. A. P. |
|---|---|---|---|---|
| 10′ × 10″ × 5″ | 2,024 | 4 2 0 | 5 3 0 | .. |
| 12′ × 12″ × 7″ | 576 | 8 12 0 | 12 4 0 | 25 10 1 |
| 16′ × 12″ × 6″ | 622 | 9 10 6 | 13 12 0 | 29 4 8 |

---

From—The Agent, South Indian Railway.
To—The Consulting Engineer for Railways, Madras.
Dated—Trichinopoly, 17th August 1898, No. 770.

With reference to your letter, No. 46/O. of the 27th May 1898, which I regret has not been replied to earlier, I have the honour to inform you that the number of sleepers annually required by this railway may be taken as 30,000.



The average prices per 6′ 6″ × 9″ × 4½″ sleeper are—

| | Rs. | A. | P. |
|---|---|---|---|
| Pyngadu (Irul) from Kallai, near Calicut, delivered at *Erode* ... | 3 | 4 | 0 |
| Pyngadu from Burma, delivered on the wharf at *Negapatam* ... | 3 | 1 | 0 |

We are now obtaining 15,000 Jarrah sleepers from West Australia at Rs. 3–8–0 per sleeper delivered over ships side at Negapatam, the landing charge being an additional anna per sleeper.

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Order—No. 1141 Ry., dated 16th September 1898.

The Board of Revenue will be informed in reply to their reference No. 217, dated 20th May 1898, that the Madras Railway Company's estimate of probable annual consumption of wooden sleepers is equivalent to about 3,000 sleepers 10′ × 10″ × 5″. Also that the South Indian Railway Company's estimate is for about 30,000 metre gauge sleepers 6′ 6″ × 9″ × 4½″ annually. The 700 miles of East Coast Railway in this Presidency will probably, after a few years more, require 1,00,000 broad guage sleepers 10′ × 10″ × 5″ for annual renewals.

2. The prices now paid are approximately as follows:—

| | Rs. | A. | P. |
|---|---|---|---|
| Standard gauge, *Irul*, delivered at Calicut ... ... ... ... | 4 | 2 | 0 |
| „ „ *Irumbugam*, „ ... ... ... ... | 5 | 3 | 0 |
| „ „ *Karimurdoo*, „ ... ... ... ... | 5 | 3 | 0 |
| „ „ *Ganjám Sal*, at Berhampore ... ... ... | 4 | 8 | 0 |
| Metre gauge, *Irul*, delivered at Erode ... ... ... ... | 3 | 4 | 0 |
| „ „ *Pyngadu* from Burma at Negapatam ... ... | 3 | 1 | 0 |
| „ „ *Jarrah* from Australia at „ ... ... | 3 | 9 | 0 |

3. The Board of Revenue will be furnished with a copy of the Consulting Engineer's inspection report of the East Coast Railway for the half-year ending 30th June 1898, with special reference to paragraph 7 thereof.

4. The number of sleepers given above as likely to be required for annual renewals, added to those mentioned in G.O., No. 715 Ry., dated the 12th May 1898, may be taken as roughly equivalent to an annual supply of—

| | |
|---|---|
| Standard gauge sleepers ... ... ... ... ... ... | 1,00,000 |
| Metre „ „ ... ... ... ... ... ... | 50,000 |

involving an expenditure by the railways of perhaps 6 lakhs of rupees per annum.

5. But the immediately pressing question is the source of supply for the Calicut-Cannanore, Shoranur-Cochin, Madura-Pamban, Tinnevelly-Quilon, and Mutupet-Avadyarkovil Railways, which may, perhaps, be roughly estimated at about 2,50,000 metre gauge sleepers annually for first construction only, during the next three or four years, in addition to those for annual renewals referred to in paragraph 4. The annual renewals of these last five lines will ultimately amount to, perhaps, 75,000 per annum.

6. The Board of Revenue will report as early as possible, for the information of Government, what steps it is proposed to take in the matter of the direct supply of sleepers to Railways in this Presidency.

(True Extract.)

Francis J. E. Spring,
Joint Secretary.

To the Agent and Manager, Madras Railway.
„ Agent, South Indian Railway.
„ Consulting Engineer for Railways.
„ Manager, East Coast Railway.
„ Resident in Travancore and Cochin (through the Political Department).
„ Board of Revenue (Land Revenue), with copy of the Inspection Report of the East Coast Railway for half-year ending 30th June 1898.

Exd. T. K. Narayana Aiyangar.

SERIAL
31(a)

# Government {1898} of Madras.

## REVENUE.

P. W. Rycn^o 1487

Recd. 6-12-98

| | | |
|---|---|---|
| *Recd.* | 1899. | *Enclosures* |
| *Regd.* | | *Spare copies* |

SR

For orders

**G.O., No. 772, 13th December 1898.**

## DECEMBER.

**Supply of Sleepers to Railways.**

Recording, with remarks, Board's Proceedings submitting proposals regarding the — by the Madras Forest Department.

GOVERNMENT OF MADRAS.

## REVENUE DEPARTMENT.

**Read**—the following Proceedings of the Board of Revenue (Land Revenue), Forest No. 301, dated 21st July 1898:—

*Read*—the following Government Order, No. 544, Railway, dated 7th April 1898:—

Read—the following letter from the Agent and Manager, Madras Railway, dated 12th March 1898, No. 9294/B-218:—

I have the honour to inform you that on the 10th ultimo I enquired of the Board at the request of the Chief Engineer, at what rate inclusive of freight, good creosoted pine sleepers 10′×10″×5″ could be delivered at Madras, and in reply I have to-day received the following telegram:—

"Sleeper 10 feet eight and two, 9 feet six and six," which is understood to mean that sleepers 10 feet in length can be delivered at 8*s*. 2*d*. and those in 9 feet in length at 6*s*. 6*d*.

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*Note by the Consulting Engineer for Railways, Madras, dated 25th March* 1898.

There will soon be a very heavy demand for 136,000 Railway sleepers for the Calicut-Cannanore Railway 62 miles, and in all probability a demand will also arise very soon for 164,000 sleepers for 74 miles of the Shoranur-Cochin Railway. The demand for Pyngadu (*Xylia dolabriformis*) from Burma is far in excess of the supply, so much so that the Burma firms were quite unable to supply the Bezwada-Madras Railway's requirements, and Deodar (*Cedrus Deodara*) sleepers had to be got round from Kurrachee at a very high price, and the opening of the line has consequently been delayed by many months.

2. I hear that there are large quantities of timber fit for sleepers in the two forest Divisions, North and South Malabar, not far from the Calicut-Cannanore Railway, and that not only is "Maddi" (*Terminalia tomentosa*) found but also Teak, and other woods eminently fit for sleepers.

3. I hear also that the Forest Department have machine saws working somewhere not far from Pódanúr whence Shoranur-Cochin and Pódanúr-Dindigul sleepers could perhaps be supplied.

But, however excellent and plentiful the timber may be in the forest, it is hopeless to expect to get it out, anything like fast enough or anything like honestly, through the agency of the petty sort of private enterprise that is available. It seems to me that the Agency of the Forest Department might be made use of, and that Provincial finances might as well get whatever profit accrues from the proposed expenditure of perhaps 3 to 5 rupees per sleeper.

Though nominally the work of a Railway Company, the Calicut-Cannanore Railway is really *de facto* a Government work, and it only seems right that all the help which the Forest Department can give should under the circumstances be given.

The Company's Agent is already enquiring into the price at which creosoted pine sleepers from Europe can be delivered. But it seems a pity to send to Europe for what we ought to be able, so far as I can learn to obtain from the forests alongside of the railway through the Agency of a Government Department specially organized for such purposes.



Order—No. 544, Railway, dated 7th April 1898.

The Board of Revenue will report upon the subject and will advise whether any special steps should be taken or expenditure incurred to enable the Forest Department to meet the probable demand of 136,000 sleepers for the Calicut-Cannanore Railway in the next two years.

(True Extract.)

(Signed) F. D. FOWLER,
Under Secretary.

To the Board of Revenue, through the Revenue Department.

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Mis. No. 1652, Revenue.

Forwarded to the Board of Revenue (Land Revenue).

Ootacamund, 16th April 1898.

(Signed) N. E. MARJORIBANKS,
Ag. Under Secretary to Government.

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Reference on the above, dated 23rd April 1898, No. 184.

Referred to the Conservator of Forests, Southern Circle, for very early report.

(Signed) LIONEL DAVIDSON,
Acting Secretary.

To the Conservator of Forests, Southern Circle, with Government reference in original to be returned.

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Reference on the above, dated 7th May 1898, No. 204.

If the Forest Department is to make any special arrangements for the provision of sleepers it is probable that a considerable initial expenditure will be involved, and the Board would be glad if some estimate could be given of the probable annual demand for sleepers for renewals at different centres, and the kinds of wood approved by the Railway authorities.

The woods which occur to the Board are—

Teak (*Tectona Grandis*).
Maddi (*Terminalia Tomentosa*).
Ironwood (Irul)—(*Xylia Dolabriformis*).
Vengai or Yegi (*Pterocarpus Marsupium*).
Achca or Yepi (*Hardwickia Binata*).
Sál (*Shorea Robusta*).
Sóme (*Loymida Febrifuga*).
Manja Kadambai or Rudraganapa (*Adina Cordifolia*).

(Signed) LIONEL DAVIDSON,
Acting Secretary.

To the Secretary to Government, Public Works Department (Railway Branch).
" Conservator of Forests, Southern Circle.

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*Read*—following Government Order, No. 715, Railway, dated 12th May 1898:—

Read—Proceedings of the Board of Revenue (Land Revenue), No. 204, dated 7th May 1898.

Order—No. 715, Railway, dated 12th May 1898.

The Board will be informed that the quantity of metre-gauge sleepers which would probably be bought from the Forest Department, if proper arrangements were made for their supply, would, in round numbers, be as follows:—

For the Calicut-Cannanore Railway, 136,000 within, say, three years.
For the Shoranur-Cochin Railway, 164,000 ,, ,,

Future requirements for both Railways, 10,000 annually to begin with, rising at the end of ten years to 30,000, and standing thenceforth at that figure. It is hoped that this estimate will enable the Forest Department to make a forecast, as to what it would be possible for it to do, in order that the Madras Railway Company may be able to come to such arrangements with them as will allow of the sleepers they require being obtained in the Presidency instead of from England.

(True Extract.)

(Signed) F. J. E. SPRING,
Joint Secretary.

To the Board of Revenue (Land Revenue).

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Reference on the above, dated 20th May 1898, No. 217.

Forwarded to the Conservator of Forests, Southern Circle, for early attention.

2. The Board would be glad if it could be supplied with a similar estimate of the probable demand for renewals on the Madras, South Indian and East Coast Railways.

(Signed) LIONEL DAVIDSON,
Acting Secretary.

To the Conservator of Forests, Southern Circle.
,, Secretary to Government, Public Works Department (Railway Branch).

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*Road*—the following letter from C. E. BRASIER, Esq., Acting Conservator of Forests, Southern Circle, to the Secretary to the Commissioners of Land Revenue, dated Coimbatore, 30th June 1898, Ref. on C. No. 4992:—

With reference to the Board's Reference No. 184, dated 23rd April, regarding the supply of sleepers for the Calicut-Cannanore Railway, I have the honour to report having consulted the District Forest-officers, Nilgiris, North Malabar, South Coimbatore, South Malabar and South Canara on the subject. The two former District Forest-officers quote rates which are either altogether prohibitive or are so high as to leave but a small profit even if the sleepers are supplied at the rates which it is stated pine creosoted sleepers could be supplied at. I am, however, not quite satisfied that North Malabar could not supply *Terminalia tomentosa* at reasonable rates, as the rates quoted for sawing and carting by the Acting District Forest-officer appear very high and could possibly be reduced considerably if proper arrangements for procuring sawyers at reasonable rates as well as for carting the sleepers to the nearest Railway Station or water way were made. I therefore propose as soon as the permanent District Forest-officer, Mr. Tireman, returns from leave to ask him to go into the matter of rates thoroughly and report further. In the meantime, North Malabar may be omitted from our calculations.

2. The District Forest-officers, South Coimbatore, South Canara, and South Malabar, report the number of sleepers of each kind of timber they can supply as well as the lowest rates it would be advisable to accept. I give below a précis of their replies together with my recommendation regarding each proposal made.

Presuming the demand of the Calicut-Cannanore Railway amounting to 1,36,000 sleepers is spread over three years, this would give an annual demand of 44,000 sleepers to be met by the Department from three Districts or, say, roughly 15,000 sleepers per District if the indent was equally divided among the three. This, of course, is neither necessary nor advisable as the possibility of each district varies. Taking them therefore in the order of greatest possibility, South Coimbatore should supply the greatest number. The District Forest-officer states that given men and money he could supply 65,000 the first year and 100,000 the second, the sources of supply being so far as concerns the first year 15,000 from Tekadi leased forests, 25,000 from Pollachi Upper Anaimalai forests, and a similar number from Udamalpet Upper Anaimalai forests. In the 15,000 sleepers proposed for supply from Tekadi forests 2,500 Teak sleepers are included, which, however it would not pay us to supply as teak in the log will pay us much better than the price we could realize for it when sawn into sleepers. This would leave 12,500 sleepers to be supplied composed of *Terminalia tomentosa* and *Lagerstræmia microcarpa* in about the proportion of nine to four respectively. It is not certain that the Railway Company would accept the latter kind of wood although it should prove fairly suitable for sleepers. I shall therefore ask the District Forest-officer to send some sample sleepers to the Company for testing and opinion at once.



3. Passing on to the supply proposed from the Pollachi and Udamalpet forests the District Forest-officer's proposals are dependent in each of these cases on methods of transport which have not yet been tried there and in the case of Pollachi Forests which are not yet available. I refer of course to the new road now under construction to connect these forests with the plains and it is evident that without this road the supply of sleepers from the Upper Anaimalai forests could not be undertaken. I therefore put myself in communication with the Superintending Engineer regarding the time it would take to construct a cart-track suitable for our purposes of slow timber traffic down hill and I would specially invite reference to this correspondence as I regard the Superintending Engineer's last letter, dated 22nd June as very hopeful in so much as he states that "it would be *possible* to make the Prince of Wales Ghât passable for carts in a very short time, but it would involve very expensive work on the fourth and fifth miles. It might, however, pay to incur this expense to enable you to take up the contract for sleepers, and accept the risk of the Prince of Wales Ghât not being eventually selected as the best line for the cart-road." I am certainly of opinion that unless the very expensive work spoken of by the Superintending Engineer is prohibitively high it should be undertaken rather than allow an indefinite period to elapse before any road at all is available, and I would point out in this connection that even if this Prince of Wales Ghât road was not chosen as the final road to connect the evergreen forests near Sirukunru and Paraiai with the plains, other forests would be tapped by it or by branch cart-tracks from it, which the Department could construct and in this way it could not but prove remunerative and useful to the Department in the long run. I would, therefore, await an expression of opinion on this matter by the Board before replying to the Superintending Engineer. If however that officer could give an approximate figure as to what the cost of the heavy work on the fourth and fifth miles would be in order to make it passable for carts it would help us to come to a conclusion on this point. In the somewhat uncertain time therefore in which we may expect to utilize the new cart-road I think it would be wise not to rely on these Upper Anaimalai Pollachi forests for any supply during the first year, although it might be quite possible to bring down some sleepers towards the end of the official year, provided that arrangements can be made for Travancore or Palghat sawyers who would be required in some numbers for the work. As regards the supply from the Udamalpet Upper Anaimalai forests, the District Forest-officer contemplates utilizing the two rivers connecting the forests with the plains for the purpose of transporting sleepers, but as this means of transport in the locality is new I think it would be advisable not to rely on it for the present. In conclusion, therefore, I do not think that it would be wise to rely on a greater number of sleepers from South Coimbatore during the first year than the 12,500 to be obtained from the Tekadi leased forests, although it is quite possible that this number could be considerably increased from the Pollachi Upper Anaimalai forests, provided the cart-road is made available for slow down-hill timber traffic at an early date. During the second year I think we could with more certainty rely on the supply being largely increased from this source, although I doubt whether it would be possible to supply such a large number as 25,000 as contemplated by the District Forest-officer when the difficulties

of procuring transport and sawyer labour in an entirely new locality are taken into account. I therefore think that 10,000 sleepers would probably be as much as we might expect to supply the second year from these forests and this only provided subordinates possessing tact and interest in their work are employed on the work.

For South Coimbatore, therefore, I am of opinion that it would only be safe to rely on a supply of 12,500 sleepers the first year and 22,500 the second and possibly 30,000 the third.

4. As regards the supply that can be expected from South Malabar, the District Forest-officer of that District reports that he can supply 9,000 *Terminalia tomentosa* sleepers and 13,000 Irul (*Xylia dolabriformis*) during the next twelve months, but taking into consideration possible difficulty in procuring a sufficient number of sawyers during the first year of the work as well as possible loss in converting logs into sleepers over and above the percentage calculated I think it would be safer not to rely upon a greater number than 15,000 sleepers during each year from this District. But it must be pointed out that this number could be considerably increased if the Railway Company would accept sleepers of *Terminalia paniculata* which could moreover be supplied cheaper than either of the two other kinds of timber referred to. This can only be ascertained by sending the Railway Company some sample sleepers to test and examine, which I shall ask the District Forest-officer to do at once.

5. As regards the supply which may be expected from South Canara, the District Forest-officer reports that he can supply the following :—

| | | Rs. |
|---|---|---|
| 1st | Hopea parviflora ... ... ... ... ... ... ... | 6,000 |
| 2nd | Terminalia tomentosa ... ... ... ... ... ... | 4,000 |
| 3rd | Xylia dolabriformis ... ... ... ... ... ... | 3,000 |
| 4th | Lagerstræmia microcarpa ... ... ... ... ... ... | 2,000 |
| | Total ... | 15,000 |

I think however for similar reasons as stated regarding the South Malabar supply that it would be better to reduce this number to 10,000 and that the reduction should as much as possible bear on the Hopea which is such a good wood and so easily disposable in the log that I am doubtful whether it would be justifiable to utilize it in large quantity for sleepers.

6. In conclusion, therefore, so far as numbers are concerned, I am of opinion that we might hope to supply 37,500 sleepers the first year and about 50,000 the second and third, which number would meet the whole demand so far as the Calicut-Cannanore Railway is concerned.

7. The next question relative to the supply is the rate at which we might expect to make it. The District Forest-officer, South Coimbatore, after going into the matter at some length proposes a rate of Rs. 3–8–0 made up of Rs. 1–6–0, actual cash disbursement per sleeper delivered in Coimbatore, Rs. 1–6–0 cost of establishment, elephants, annual lease amount of forests, &c., and as. 11–8 profit and to cover loss by rejection, &c.

I consider this amount rather low even for the smaller sleeper of $3\frac{1}{8}$ cubic feet when taking into consideration the excellent quality of timber we propose to supply, which for Indian underground purposes would probably be superior to creosoted pine sleepers. I therefore think a charge of Rs. 4–8–0 per smaller sleeper and Rs. 5–8–0 per larger one to be more reasonable; these rates moreover are more in accordance with those proposed by the District Forest-officers, South Malabar and South Canara who, however, do not differentiate between the two classes of sleepers when making their proposals on this point. If the Railway Company however would take *Terminalia paniculata* we could supply this wood at 20 per cent. below the above rates.

If the contract is taken up it will be necessary to make immediate arrangements for sawyers in each District. I would, therefore, request that orders may be passed as soon as possible in communication with the Railway Company. In the meantime I shall keep District Forest-officers informed what is being done in the matter.

8. The enclosure to the Board's Reference is herewith returned.



Enclosure No. 1.

From C. E. BRASIER, Esq., Acting Conservator of Forests, Southern Circle, to the Superintending Engineer, IV Circle, Coimbatore, dated 30th May 1898, No. 4098.

I have the honour to enquire when a cart-road is likely to be commenced connecting Paralai with the Plains and when commenced how long (approximately of course) the cutting of it would take so as to admit of timber being brought down.

This information is asked for as it is under contemplation to supply a portion of the quantity of sleepers required by the Calicut-Cannanore Railway during the next three years from the Upper Anaimalai forests if the cart-road can be made use of during this period.

I understand from a communication (copy enclosed) from Mr. Loam, to the District Forest-officer, South Coimbatore, in reply to a similar query as that contained in this letter, that he has no orders to construct a cart-road but only to frame an estimate for one but that he is engaged in cutting a bridlepath to Sirukunru. I would beg to point out that the bridlepaths though very useful bring no direct return to Government, while from the day that a cart-road is opened connecting the forests with the plains some of the timber can be brought down and sold at remunerative rates which I estimate at from 6 annas to 1 rupee net per cubic foot.

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From A. H. GARRETT, Esq., Superintending Engineer, IV Circle, to the Conservator of Forests, Southern Circle, Coimbatore, dated 7th June 1898, No. 334-M.

In reply to your No. 4098, dated 30th May 1898, I have the honour to inform you that the construction of a metalled cart-road for three and a half miles from the Aliar Crossing will be commenced, I trust, within the next three weeks. The Bridge across the Aliar will, it is hoped, be completed by this time next year.

2. From three and a half miles there are two possible routes to Sirukunru—one by the Prince of Wales Ghât and the water-fall estate and the other by the Villoni Valley. Before deciding which route would be the more favourable for a cart-road estimates have to be prepared, and they ought to be submitted in two months' time.

3. To complete a cart-road to Sirukunru by either route would probably take from three to four years. Government are anxious to have a good cart-road made with the least possible delay.

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From C. E. BRASIER, Esq., Acting Conservator of Forests, Southern Circle, to the Superintending Engineer, IV Circle, Coimbatore, dated 15th June 1898, Ref. on Cur. No. 4098.

With reference to paragraph 3 of your No. 334, dated 7th June 1898, I have the honour to enquire how long it would take to so far construct the road as to admit of carting of timber from the Forests to the plains, as this would only entail laden carts coming down hill.

It would be quite possible to utilize the road for timber down traffic before being metalled and widened to its full width, as a 10-feet unmetalled road would probably answer our purpose almost as well as a fully-metalled wide road which will be necessary for up-hill traffic.

I would, therefore, ask if it would not be possible to construct a cart-track of this nature in a somewhat shorter period than three or four years.

I ask for this information as I believe it would be almost possible for the Forest Department to recover a large portion of the expenditure on the road out of profits from supply of sleepers to the Calicut-Cannanore and other Railways if the road could be so far constructed at a somewhat earlier date so as to admit of slow timber traffic. The matter being of great importance to the Department with reference to timber sleeper supply contracts which will go elsewhere if not taken up by us is my reason for again troubling you for further information on the subject.

---

From A. H. GARRETT, Esq., Superintending Engineer, IV Circle, to the Conservator of Forests, Southern Circle, Coimbatore, dated 22nd June 1898, No. 363-M.

In reply to your No. 4098, dated 15th June 1898, I have the honour to inform you that it would certainly be possible to get the road ready for carts carrying sleepers down to the plains in a shorter time than three years.

2. As soon as the line for the cart-road has been definitely decided on every endeavour will be made to form a road which will answer your requirements without loss of time, as I fully appreciate the importance of the work.

3. I should be glad to know when you would be ready to begin carting sleepers. It would be *possible* to make the Prince of Wales Ghât passable for carts in a very short time, but it would

involve very expensive work in the 4th and 5th miles. It might, however, pay to incur this expense to enable you to take up the contract for sleepers, and accept the risk of the Prince of Wales Ghât not being eventually selected as the best line for the cart-road.

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Enclosure No 2.

From M. LOAM, Esq., Executive Engineer on Special duty, to the District Forest-officer, South Coimbatore, dated 15th May 1898, No. 240.

With reference to your letter No. 497-Cur. (b), dated 9th May 1898, I have the honour to report that I am making a bridlepath to Sirukunru and have orders only to make estimates for a bandy road.

---

Endorsement by F. LODGE, Esq., District Forest-officer, dated 23rd May 1898, Ref. No. C-497.

Forwarded to the Conservator of Forests for information; this is the reply to my query as to when carts would be able to get through.

---

*Resolution*—Forest No. 301, dated 21st July 1898.

In March last the Consulting Engineer for Railways brought to the notice of Government, in the Public Works Department, Railway Branch, that there was an immediate prospect of a very heavy demand for Railway sleepers in connection with the construction of the line from Calicut to Cannanore and afterwards that from Shoranur to Cochin. He represented that the demand for Pyngadu (*Xylia dolabriformis*) from Burma was far in excess of the supply, and that as large quantities of timber fit for sleepers are said to exist in the North and South Malabar forest Divisions, it would be a pity to ignore the agency of the Forest Department in the matter of this supply and to obtain creosoted pine sleepers from Europe. In its order, No. 544, Railway, dated 7th April 1898, the Government enquired of the Board whether any special steps should be taken, or expenditure incurred, to enable the Forest Department to supply about 136,000 sleepers for the Calicut-Cannanore Railway in the next two years.

2. The Board referred the matter to the Conservator of Forests, Southern Circle, for report, but as the undertaking was one which would involve considerable initial expenditure from forest funds, it desired the Railway Branch of the Public Works Department to furnish an estimate of the probable annual demand for sleepers for renewals at different centres and the kinds of wood approved by the railway authorities. The Board at the same time specified the marginally-noted woods which occurred to it as suitable for the purpose and in a separate communication added *Mesua ferrea* or *speciosa*. The Railway Branch replied that the quantity of metre gauge sleepers which would probably be bought from the Forest Department for the Calicut-Cannanore line within, say, three years would amount to 136,000 sleepers, and those for the Shoranur-Cochin line, within the same period, to 164,000, and that the future annual requirements would amount to 10,000 sleepers for both railways, rising eventually to 30,000 sleepers at the end of ten years. The Board forwarded this reply to the Conservator of Forests, Southern Circle, and at the same time requested the Railway Branch to furnish an estimate of the probable demand for renewals in the Madras, South Indian and East Coast Railways. The reply to the latter reference has not yet been received.

| | |
|---|---|
| Teak ... ... | *Tectona grandis.* |
| Maddi ... ... | *Terminalia tomentosa.* |
| Ironwood (Irul) ... | *Xylia dolabriformis.* |
| Vengai or Yegi ... | *Pterocarpus marsupium.* |
| Achea or Yepi ... | *Hardwickia binata.* |
| Sal ... ... | *Shorea robusta.* |
| Sóme ... ... | *Soymida febrifuga.* |
| Manjakadambi or Rudraganapa. | *Adina cordifolia.* |



3. The paper last read above is the Conservator's reply to the references made to him. Mr. Brasier states that he has consulted the District Forest-officers of the Nilgiris, North Malabar, South Coimbatore, South Malabar and South Canara. He considers that the rates quoted by the District Forest-officers of the first-named two forest divisions are either altogether prohibitive or so high as to leave but a small margin of profit, even assuming that the railways would pay as much as they would for creosoted pine sleepers. He is, however, of opinion that from North Malabar *Terminalia tomentosa* can be supplied at a much lower price than that given by the District Forest-officer by a possible reduction in the rates for sawing and carting, and the Board notes that the matter is engaging the Conservator's attention. Leaving, however, these two forest divisions out of account, Mr. Brasier hopes that the estimated quantity of 136,000 sleepers for the Calicut-Cannanore Railway can be met from the remaining three divisions at 37,500 sleepers during the first year and about 50,000 during each of the following two years.

4. As regards the rate, Mr. Brasier proposes to charge Rs. 4–8–0 per smaller sleeper and Rs. 5–8–0 per larger one. He has not named the stations at which he would deliver the supply at the proposed rates except in the case of sleepers from the South Coimbatore division, which it is said will be delivered at Coimbatore, by which is probably meant the Podanúr Railway station. The sleepers from South Malabar will no doubt be delivered at Calicut, and those from South Canara at such port as may be most convenient to the Railway Company. Mr. Brasier states that the rates proposed by him are more in accordance with those suggested by the District Forest-officers of South Malabar and South Canara, whereas the rate of Rs. 3–8–0 quoted by the District Forest-officer, South Coimbatore, is low even for the smaller sleepers, considering that the quality of timber which it is proposed to supply is excellent. The Board considers that Mr. Brasier's rates are reasonable. Apart from the question of the excellence of the timber the Board does not consider that it would be safe to undertake the work at the rates proposed by the District Forest-officer, South Coimbatore. Some of the localities to be worked are isolated and have to be newly opened out, and there may be difficulties with regard to sawyers and carriage involving revised rates as well as the appointment of additional supervising establishments.

5. Mr. Brasier's remarks and conclusions with regard to the quantities that can be supplied from each of the forest divisions of South Coimbatore, South Malabar and South Canara will now be considered. Taking South Coimbatore, the District Forest-officer is of opinion that, given men and money, he could supply 65,000 sleepers the first year and 100,000 the second year. He expects to supply during the first year 15,000 sleepers from the Tekadi leased forests, 25,000 from the Pollachi Upper Anaimalai forests, and 25,000 from the Udumalpet Upper Anaimalai forests. The District Forest-officer's estimate of the proposed supply from the Tekadi forests includes 2,500 teak sleepers. Mr. Brasier rightly thinks that teak would fetch better prices if sold in the log than when converted into sleepers. He would accordingly deduct 2,500 from the number proposed by the District Forest-officer. The balance, viz., 12,500 sleepers, is composed of *Terminalia tomentosa* and *Lagerstræmia microcarpa* in about the proportion of 9 to 4, respectively, and the Board notes that the Conservator is arranging to ascertain the opinion of the railway authorities as to the quality of this latter wood after test. As regards the supplies from the Pollachi and Udumalpet forests, Mr. Brasier considers that the difficulty of transport largely discounts the sanguine view of the District Forest-officer. The supply from the Pollachi Upper Anaimalai forests is dependent on the completion of the road now in course of construction in connection with the grant of leases for planting in the Anaimalai forest reserve. It seems that it would be possible to make the Prince of Wales Ghaut passable for carts in a very short time, but a large expenditure would have to be incurred on the 4th and 5th miles. Apart from the uncertainty as to whether this Ghaut will eventually be selected as the best line for the cart road to connect the evergreen forests near Sirukunru and Paralai with the plains, Mr. Brasier considers that unless the very large expenditure said to be necessary for this work is regarded as prohibitive, it might be undertaken rather than have no road at all for an indefinite period. In his opinion the Prince of Wales Ghaut road would prove useful and remunerative as

South Indian Railway, viz., 6′ 6″ × 9″ × 4½″ or that proposed for the Shoranur-Cochin Railway, viz., 6′ × 8″ × 4½″. The Board will require to have definite information on the point before commencing work.

4. It is observed that the Madras and South Indian Railways pay different prices per sleeper according to the wood of which it is made, and if necessary differential prices can be quoted, after further enquiry, with reference to the wood used and the locality from which it is supplied, but the Board would prefer an all-round rate of Rs. 3-4-0 for a sleeper 6′ 6″ × 9″ × 4½″ which, it is observed, is the rate that has been paid by the South Indian Railway for Irul sleepers. The price per sleeper 6′ × 8″ × 4½″ would be Rs. 2-12-0. Delivery would be made at Podanur from Coimbatore, at Kallai from South Malabar, at Calicut and Tellicherry from North Malabar, while those from South Canara would be delivered at any port in Malabar which might be found convenient for the Railway Company.

5. In its Proceedings of the 21st July 1898, No. 301, paragraph 7, the Board offered to supply all the sleepers required for the Calicut-Cannanore Railway if all the timbers mentioned by it were accepted and the road to the Pollachi Upper Anamalai forest were pushed on with. The present Acting Conservator of Forests, Mr. Gass, in consultation with whom the present Proceedings are written and who is also permanent District Forest-officer, Coimbatore, considers that we do not yet know enough of the Pollachi Upper Anamalai forests to justify us in offering to make any supply from there owing to the long carriage, and the difficulty of converting the prevailing timber, viz., *Mesua ferrea or speciosa;* he also considers that the capabilities of the Lower Anamalai forests have been overestimated. The smaller size of the sleeper required, however, makes it unnecessary for the Board to withdraw its proposal to supply 136,000 sleepers within three years using only the woods which it now appears are already approved by the Madras and South Indian Railways, viz., Karimaradu (*Terminalia tomentosa*), Irul (*Xylia dolabriformis*) and Irumbogam (*Hopea parviflora*). Further information from North Malabar even enables it to raise its offer to 200,000 within three years, and if the smaller sleeper be used the number would be 250,000. This does not include the demand for the Tinnevelly-Quilon Railway. This railway was not mentioned in the former orders of Government and consequently full enquiries have not yet been made as to the capabilities of the Tinnevelly forests. A further communication will be submitted on the point, as well as with regard to experiments which are now being made with other kinds of wood in communication with the officers of the Madras Railway Company.

6. It is also proposed to thoroughly investigate the capabilities of the Pollachi Upper Anamalai forests. A saw-mill and wire ropeway have just been successfully installed in the Lower Anamalais in which a tramway has been in work for years, and if similar arrangements on a larger scale can be made for the exploitation of the more extensive and more fully stocked forests of the Upper Anamalais, the Board sees no reason to doubt that it will be in a position largely to increase its contribution towards meeting the very large demand for sleepers which has arisen in connection with the extension of railway construction in the Presidency.

7. The most important timber in the Upper Anamalai forests being *Mesua ferrea*, the Board would be glad to be informed at the earliest possible date whether sleepers of that wood would be accepted. It does not appear that any of them has been used by the Madras or South Indian Railways, but Gamble, at page 27 of his Manual of Indian Timbers, states that it has been found to answer for sleepers equally well with Pynkadu.

(True Extract.)

(Signed) LIONEL DAVIDSON,
Acting Secretary.

To the Joint Secretary to Government, Public Works Department, Railway Branch.
Copy to the Secretary to Government, Revenue Department.



Read—the following G.O., No. 1311, Railway, dated 21st October 1898:—

*Read*—again G.O., No. 1141, Railway, dated 16th September 1898.

*Read*—also Proceedings of the Board of Revenue (Land Revenue), Forest No. 427, dated 6th October 1898.

*Order*—No. 1311, Railway, dated 21st October 1898.

A copy of the Board's Resolution, together with a copy of the description of *Mesua ferrea* given in page 27 of Mr. Gamble's book, will be forwarded to the Madras, South Indian, and East Coast Railways, with an enquiry whether they will be prepared to accept sleepers of the timber for extensions and renewals, and with a request that they will specify the size of sleepers, standard or metre gauge, which they would be prepared to take. It is noted that in the Government of India standard dimensions, the following sizes are recommended: viz., for broad gauge 9′ 6″ × 9″ × 5″, with as a minimum 8′ 11″ × 8″ × 5″, and for metre gauge 6′ 0″ × 7″ × 4½″ with as a minimum 5′ 9″ × 6″ × 4″.

(True Extract.)

(Signed) Francis J. E. Spring,
Joint Secretary.

To the Agent and Manager, Madras Railway.
„ Agent, South Indian Railway.
„ Manager, East Coast Railway.
„ Secretary, Board of Revenue (Land Revenue).
„ Consulting Engineer for Railways.
„ Revenue Department.

Enclosure.

*Mesua ferrea.*

Vernacular names: *Nagesar*, Bengali; *Nahor*, Assamese; *Nangal*, Tamil; *Naga-kesara*, Telugu.

A large evergreen tree. Heartwood dark red, extremely hard. Pores moderate-sized, often in groups, scanty, often filled with yellow resin. Medullary rays extremely fine, uniform, equidistant, very numerous. Numerious fine, many, concentric lines of light-coloured tissue.

Eastern Bengal from the Monas eastward (though traces of its having formerly been found west of that river occur sometimes in the names of places, *e.g.*, Nageshwarbari, or Naksarbari, a town in the Sikkim Terai on the Nepal frontier), Assam, South India, Ceylon, Burma and the Andamans, often cultivated.

The weight and transverse strengh have been determined by the following experiments—

| | | | | Weight. LB. | Value of P. |
|---|---|---|---|---|---|
| A. Mendis—Ceylon No. 59, with bars 2′ × 1″ × 1″ | | | | | |
| Brandis—Burma, No. 18, 1862, | | ... | ... | found 72 | 994 |
| Bennett—Andamans, No. 4, 1872, | | ... | ... | „ 69 | ... |
| Smythies | Assam (4 specimens) 1878, | | ... | „ 70 | 1,053 |
| | Kanara (1 specimen) „ | | ... | „ 67·5 | ... |
| | Burma (6 specimens) „ | | ... | „ 62 | ... |
| | | | ... | „ 70 | ... |

Several of our specimens, however, reached 74 to 76 lb. per cubic foot in weight. It is very durable. It has been found to answer for sleepers equally well with Pynkado, but the cost of cutting the hard wood, its weight, and the freight from the Tenasserim forests to Calcutta prevent its being much used, as the total cost is scarcely covered by the price (Rs. 5) per broad-gauge sleeper. It is used for building, for bridges, gunstocks and tool handles; but its more general use is prevented by its great hardness, weight and the difficulty of working it. In Ceylon an oil is obtained from the nut, and the tree is often planted for the sake of its handsome flowers.

*Note by the Consulting Engineer for Railways.*

In Assam *Nahor* (Mesua ferrea) is known to be an excellent sleeper timber.

SNo. 25

Order—No. 772, Revenue, dated 13th December 1898.

Miscellaneous.

Recorded. The Board of Revenue should do all they can to develop the market for railway sleepers.

2. The question of the alignment of the Anamalai ghât road is under the consideration of the Government.

(True Extract.)

(Signed) G. S. FORBES,
Secretary to Government.

To the Board of Revenue (Land Revenue).
„ the Public Works Department (Works).
„ the Public Works Department (Railway).

Exd. A. Rungasawmy Aiyangar.

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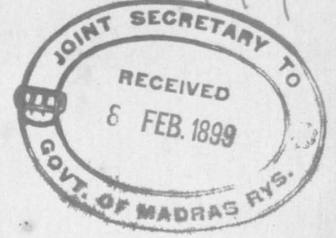
# Revenue (1899) Department.

Railway

CURRENT No. 197

2 currents.

Print




**From** The Secretary to the Commissioner of Land Revenue

**Order**

Forest No. 17

**Dated** 7 January 1899

**Received**

**Registered** } 8.2.99.

**Enclosures**

**Spare copies**

SUBJECT.

Communicating to the Conservators of Forests, S. C. and certain Collectors G.O. regarding the supply of sleepers to Railways by the Madras Forest department and availing definite information as to the size of the sleepers required for the railways

R/

BACK PAPERS.

| G.O. | No. | Department. | Date. |
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FURTHER PAPERS.

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

P Stanley
Dk.
24-2-99

REVENUE DEPARTMENT.

1899.

# Board of Revenue

(Land Revenue),

**MADRAS.**

Print

*Printed February th.*

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**Proceedings, Forest No. 17, 7th January 1899.**

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**JANURAY.**

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Communicating to the Conservator of Forests, Southern Circle, and certain Collectors Government Order regarding the supply of sleepers to railways by the Madras Forest Department and awaiting definite information as to the size of the sleepers required for the railways.

## PROCEEDINGS OF THE BOARD OF REVENUE
(Land Revenue).

Read—the following Government Order, No. 772, Revenue, dated 13th December 1898 :—

*Read*—the following Proceedings of the Board of Revenue (Land Revenue), Forest No. 301, dated 21st July 1898 :—

Read—the following Government Order, No. 544, Railway, dated 7th April 1898 :—

Read—the following letter from the Agent and Manager, Madras Railway, dated 12th March 1898, No. 9294/B-218 :—

I have the honour to inform you that on the 10th ultimo I enquired of the Board at the request of the Chief Engineer, at what rate inclusive of freight, good creosoted pine sleepers 10′×10″×5″ could be delivered at Madras, and in reply I have to-day received the following telegram :—

"Sleeper 10 feet eight and two, 9 feet six and six," which is understood to mean that sleepers 10 feet in length can be delivered at 8*s*. 2*d*. and those in 9 feet in length at 6*s*. 6*d*.

*Note by the Consulting Engineer for Railways, Madras, dated 25th March 1898.*

There will soon be a very heavy demand for 136,000 Railway sleepers for the Calicut-Cannanore Railway 62 miles, and in all probability a demand will also arise very soon for 164,000 sleepers for 74 miles of the Shoranur-Cochin Railway. The demand for Pyngadu (*Xylia dolabriformis*) from Burma is far in excess of the supply, so much so that the Burma firms were quite unable to supply the Bezwada-Madras Railway's requirements, and Deodar (*Cedrus Deodara*) sleepers had to be got round from Kurrachee at a very high price, and the opening of the line has consequently been delayed by many months.

2. I hear that there are large quantities of timber fit for sleepers in the two forest Divisions, North and South Malabar, not far from the Calicut-Cannanore Railway, and that not only is "Maddi" (*Terminalia tomentosa*) found but also Teak, and other woods eminently fit for sleepers.

3. I hear also that the Forest Department have machine saws working somewhere not far from Pódanúr whence Shoranur-Cochin and Pódanúr-Dindigul sleepers could perhaps be supplied.

But, however excellent and plentiful the timber may be in the forest, it is hopeless to expect to get it out, anything like fast enough or anything like honestly, through the agency of the petty sort of private enterprise that is available. It seems to me that the Agency of the Forest Department might be made use of, and that Provincial finances might as well get whatever profit accrues from the proposed expenditure of perhaps 3 to 5 rupees per sleeper.

Though nominally the work of a Railway Company, the Calicut-Cannanore Railway is really *de facto* a Government work, and it only seems right that all the help which the Forest Department can give should under the circumstances be given.

The Company's Agent is already enquiring into the price at which creosoted pine sleepers from Europe can be delivered. But it seems a pity to send to Europe for what we ought to be able, so far as I can learn to obtain from the forests alongside of the railway through the Agency of a Government Department specially organized for such purposes.

7 Sheets



Order—No. 544, Railway, dated 7th April 1898.

The Board of Revenue will report upon the subject and will advise whether any special steps should be taken or expenditure incurred to enable the Forest Department to meet the probable demand of 136,000 sleepers for the Calicut-Cannanore Railway in the next two years.

(True Extract.)

(Signed) F. D. FOWLER,
Under Secretary.

To the Board of Revenue, through the Revenue Department.

Mis. No. 1652, Revenue.

Forwarded to the Board of Revenue (Land Revenue).

Ootacamund,
16th April 1898.

(Signed) N. E. MARJORIBANKS,
Ag. Under Secretary to Government.

Reference on the above, dated 23rd April 1898, No. 184.

Referred to the Conservator of Forests, Southern Circle, for very early report.

(Signed) LIONEL DAVIDSON,
Acting Secretary.

To the Conservator of Forests, Southern Circle, with Government reference in original to be returned.

Reference on the above, dated 7th May 1898, No. 204.

If the Forest Department is to make any special arrangements for the provision of sleepers it is probable that a considerable initial expenditure will be involved, and the Board would be glad if some estimate could be given of the probable annual demand for sleepers for renewals at different centres, and the kinds of wood approved by the Railway authorities.

The woods which occur to the Board are—

Teak (*Tectona Grandis*).
Maddi (*Terminalia Tomentosa*).
Ironwood (Irul)—(*Xylia Dolabriformis*).
Vengai or Yegi (*Pterocarpus Marsupium*).
Achca or Yepi (*Hardwickia Binata*).
Sál (*Shorea Robusta*).
Sóme (*Loymida Febrifuga*).
Manja Kadambai or Rudraganapa (*Adina Cordifolia*).

(Signed) LIONEL DAVIDSON,
Acting Secretary.

To the Secretary to Government, Public Works Department (Railway Branch).
" Conservator of Forests, Southern Circle.

Read—following Government Order, No. 715, Railway, dated 12th May 1898 :—

Read—Proceedings of the Board of Revenue (Land Revenue), No. 204, dated 7th May 1898.

8 Sheets

Order—No. 715, Railway, dated 12th May 1898.

The Board will be informed that the quantity of metre-gauge sleepers which would probably be bought from the Forest Department, if proper arrangements were made for their supply, would, in round numbers, be as follows:—

For the Calicut-Cannanore Railway, 136,000 within, say, three years.
For the Shoranur-Cochin Railway, 164,000 ,, ,,

Future requirements for both Railways, 10,000 annually to begin with, rising at the end of ten years to 30,000, and standing thenceforth at that figure. It is hoped that this estimate will enable the Forest Department to make a forecast, as to what it would be possible for it to do, in order that the Madras Railway Company may be able to come to such arrangements with them as will allow of the sleepers they require being obtained in the Presidency instead of from England.

(True Extract.)

(Signed) F. J. E. SPRING,
Joint Secretary.

To the Board of Revenue (Land Revenue).

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Reference on the above, dated 20th May 1898, No. 217.

Forwarded to the Conservator of Forests, Southern Circle, for early attention.

2. The Board would be glad if it could be supplied with a similar estimate of the probable demand for renewals on the Madras, South Indian and East Coast Railways.

(Signed) LIONEL DAVIDSON,
Acting Secretary.

To the Conservator of Forests, Southern Circle.
,, Secretary to Government, Public Works Department (Railway Branch).

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Read—the following letter from C. E. BRASIER, Esq., Acting Conservator of Forests, Southern Circle, to the Secretary to the Commissioners of Land Revenue, dated Coimbatore, 30th June 1898, Ref. on C. No. 4992:—

With reference to the Board's Reference No. 184, dated 23rd April, regarding the supply of sleepers for the Calicut-Cannanore Railway, I have the honour to report having consulted the District Forest-officers, Nilgiris, North Malabar, South Coimbatore, South Malabar and South Canara on the subject. The two former District Forest-officers quote rates which are either altogether prohibitive or are so high as to leave but a small profit even if the sleepers are supplied at the rates which it is stated pine creosoted sleepers could be supplied at. I am, however, not quite satisfied that North Malabar could not supply *Terminalia tomentosa* at reasonable rates, as the rates quoted for sawing and carting by the Acting District Forest-officer appear very high and could possibly be reduced considerably if proper arrangements for procuring sawyers at reasonable rates as well as for carting the sleepers to the nearest Railway Station or water way were made. I therefore propose as soon as the permanent District Forest-officer, Mr. Tireman, returns from leave to ask him to go into the matter of rates thoroughly and report further. In the meantime, North Malabar may be omitted from our calculations.

2. The District Forest-officers, South Coimbatore, South Canara, and South Malabar, report the number of sleepers of each kind of timber they can supply as well as the lowest rates it would be advisable to accept. I give below a précis of their replies together with my recommendation regarding each proposal made.

Presuming the demand of the Calicut-Cannanore Railway amounting to 1,36,000 sleepers is spread over three years, this would give an annual demand of 44,000 sleepers to be met by the Department from three Districts or, say, roughly 15,000 sleepers per District if the indent was equally divided among the three. This, of

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course, is neither necessary nor advisable as the possibility of each district varies. Taking them therefore in the order of greatest possibility, South Coimbatore should supply the greatest number. The District Forest-officer states that given men and money he could supply 65,000 the first year and 100,000 the second, the sources of supply being so far as concerns the first year 15,000 from Tekadi leased forests, 25,000 from Pollachi Upper Anaimalai forests, and a similar number from Udamalpet Upper Anaimalai forests. In the 15,000 sleepers proposed for supply from Tekadi forests 2,500 Teak sleepers are included, which, however it would not pay us to supply as teak in the log will pay us much better than the price we could realize for it when sawn into sleepers. This would leave 12,500 sleepers to be supplied composed of *Terminalia tomentosa* and *Lagerstræmia microcarpa* in about the proportion of nine to four respectively. It is not certain that the Railway Company would accept the latter kind of wood although it should prove fairly suitable for sleepers. I shall therefore ask the District Forest-officer to send some sample sleepers to the Company for testing and opinion at once.

3. Passing on to the supply proposed from the Pollachi and Udamalpet forests the District Forest-officer's proposals are dependent in each of these cases on methods of transport which have not yet been tried there and in the case of Pollachi Forests which are not yet available. I refer of course to the new road now under construction to connect these forests with the plains and it is evident that without this road the supply of sleepers from the Upper Anaimalai forests could not be undertaken. I therefore put myself in communication with the Superintending Engineer regarding the time it would take to construct a cart-track suitable for our purposes of slow timber traffic down hill and I would specially invite reference to this correspondence as I regard the Superintending Engineer's last letter, dated 22nd June as very hopeful in so much as he states that "it would be *possible* to make the Prince of Wales Ghât passable for carts in a very short time, but it would involve very expensive work on the fourth and fifth miles. It might, however, pay to incur this expense to enable you to take up the contract for sleepers, and accept the risk of the Prince of Wales Ghât not being eventually selected as the best line for the cart-road." I am certainly of opinion that unless the very expensive work spoken of by the Superintending Engineer is prohibitively high it should be undertaken rather than allow an indefinite period to elapse before any road at all is available, and I would point out in this connection that even if this Prince of Wales Ghât road was not chosen as the final road to connect the evergreen forests near Sirukunru and Paralai with the plains, other forests would be tapped by it or by branch cart-tracks from it, which the Department could construct and in this way it could not but prove remunerative and useful to the Department in the long run. I would, therefore, await an expression of opinion on this matter by the Board before replying to the Superintending Engineer. If however that officer could give an approximate figure as to what the cost of the heavy work on the fourth and fifth miles would be in order to make it passable for carts it would help us to come to a conclusion on this point. In the somewhat uncertain time therefore in which we may expect to utilize the new cart-road I think it would be wise not to rely on these Upper Anaimalai Pollachi forests for any supply during the first year, although it might be quite possible to bring down some sleepers towards the end of the official year, provided that arrangements can be made for Travancore or Palghat sawyers who would be required in some numbers for the work. As regards the supply from the Udamalpet Upper Anaimalai forests, the District Forest-officer contemplates utilizing the two rivers connecting the forests with the plains for the purpose of transporting sleepers, but as this means of transport in the locality is new I think it would be advisable not to rely on it for the present. In conclusion, therefore, I do not think that it would be wise to rely on a greater number of sleepers from South Coimbatore during the first year than the 12,500 to be obtained from the Tekadi leased forests, although it is quite possible that this number could be considerably increased from the Pollachi Upper Anaimalai forests, provided the cart-road is made available for slow down-hill timber traffic at an early date. During the second year I think we could with more certainty rely on the supply being largely increased from this source, although I doubt whether it would be possible to supply such a large number as 25,000 as contemplated by the District Forest-officer when the difficulties

Q 10 Sunday

of procuring transport and sawyer labour in an entirely new locality are taken into account. I therefore think that 10,000 sleepers would probably be as much as we might expect to supply the second year from these forests and this only provided subordinates possessing tact and interest in their work are employed on the work.

For South Coimbatore, therefore, I am of opinion that it would only be safe to rely on a supply of 12,500 sleepers the first year and 22,500 the second and possibly 30,000 the third.

4. As regards the supply that can be expected from South Malabar, the District Forest-officer of that District reports that he can supply 9,000 *Terminalia tomentosa* sleepers and 13,000 Irul (*Xylia dolabriformis*) during the next twelve months, but taking into consideration possible difficulty in procuring a sufficient number of sawyers during the first year of the work as well as possible loss in converting logs into sleepers over and above the percentage calculated I think it would be safer not to rely upon a greater number than 15,000 sleepers during each year from this District. But it must be pointed out that this number could be considerably increased if the Railway Company would accept sleepers of *Terminalia paniculata* which could moreover be supplied cheaper than either of the two other kinds of timber referred to. This can only be ascertained by sending the Railway Company some sample sleepers to test and examine, which I shall ask the District Forest-officer to do at once.

5. As regards the supply which may be expected from South Canara, the District Forest-officer reports that he can supply the following :—

| | Rs. |
|---|---|
| 1st Hopea parviflora ... ... ... ... ... ... ... | 6,000 |
| 2nd Terminalia tomentosa ... ... ... ... ... ... | 4,000 |
| 3rd Xylia dolabriformis ... ... ... ... ... ... | 3,000 |
| 4th Lagerstræmia microcarpa ... ... ... ... ... ... | 2,000 |
| Total ... | 15,000 |

I think however for similar reasons as stated regarding the South Malabar supply that it would be better to reduce this number to 10,000 and that the reduction should as much as possible bear on the Hopea which is such a good wood and so easily disposable in the log that I am doubtful whether it would be justifiable to utilize it in large quantity for sleepers.

6. In conclusion, therefore, so far as numbers are concerned, I am of opinion that we might hope to supply 37,500 sleepers the first year and about 50,000 the second and third, which number would meet the whole demand so far as the Calicut-Cannanore Railway is concerned.

7. The next question relative to the supply is the rate at which we might expect to make it. The District Forest-officer, South Coimbatore, after going into the matter at some length proposes a rate of Rs. 3-8-0 made up of Rs. 1-6-0, actual cash disbursement per sleeper delivered in Coimbatore, Rs. 1-6-0 cost of establishment, elephants, annual lease amount of forests, &c., and as. 11-8 profit and to cover loss by rejection, &c.

I consider this amount rather low even for the smaller sleeper of $3\frac{1}{8}$ cubic feet when taking into consideration the excellent quality of timber we propose to supply, which for Indian underground purposes would probably be superior to creosoted pine sleepers. I therefore think a charge of Rs. 4-8-0 per smaller sleeper and Rs. 5-8-0 per larger one to be more reasonable; these rates moreover are more in accordance with those proposed by the District Forest-officers, South Malabar and South Canara who, however, do not differentiate between the two classes of sleepers when making their proposals on this point. If the Railway Company however would take *Terminalia paniculata* we could supply this wood at 20 per cent. below the above rates.

If the contract is taken up it will be necessary to make immediate arrangements for sawyers in each District. I would, therefore, request that orders may be passed as soon as possible in communication with the Railway Company. In the meantime I shall keep District Forest-officers informed what is being done in the matter.

8. The enclosure to the Board's Reference is herewith returned.

11 Endg



ENCLOSURE No. 1.

From C. E. BRASIER, Esq., Acting Conservator of Forests, Southern Circle, to the Superintending Engineer, IV Circle, Coimbatore, dated 30th May 1898, No. 4098.

I have the honour to enquire when a cart-road is likely to be commenced connecting Paralai with the Plains and when commenced how long (approximately of course) the cutting of it would take so as to admit of timber being brought down.

This information is asked for as it is under contemplation to supply a portion of the quantity of sleepers required by the Calicut-Cannanore Railway during the next three years from the Upper Anaimalai forests if the cart-road can be made use of during this period.

I understand from a communication (copy enclosed) from Mr. Loam, to the District Forest-officer, South Coimbatore, in reply to a similar query as that contained in this letter, that he has no orders to construct a cart-road but only to frame an estimate for one but that he is engaged in cutting a bridlepath to Sirukunru. I would beg to point out that the bridlepaths though very useful bring no direct return to Government, while from the day that a cart-road is opened connecting the forests with the plains some of the timber can be brought down and sold at remunerative rates which I estimate at from 6 annas to 1 rupee net per cubic foot.

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From A. H. GARRETT, Esq., Superintending Engineer, IV Circle, to the Conservator of Forests, Southern Circle, Coimbatore, dated 7th June 1898, No. 334-M.

In reply to your No. 4098, dated 30th May 1898, I have the honour to inform you that the construction of a metalled cart-road for three and a half miles from the Aliar Crossing will be commenced, I trust, within the next three weeks. The Bridge across the Aliar will, it is hoped, be completed by this time next year.

2. From three and a half miles there are two possible routes to Sirukunru—one by the Prince of Wales Ghât and the water-fall estate and the other by the Villoni Valley. Before deciding which route would be the more favourable for a cart-road estimates have to be prepared, and they ought to be submitted in two months' time.

3. To complete a cart-road to Sirukunru by either route would probably take from three to four years. Government are anxious to have a good cart-road made with the least possible delay.

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From C. E. BRASIER, Esq., Acting Conservator of Forests, Southern Circle, to the Superintending Engineer, IV Circle, Coimbatore, dated 15th June 1898, Ref. on Cur. No. 4098.

With reference to paragraph 3 of your No. 334, dated 7th June 1898, I have the honour to enquire how long it would take to so far construct the road as to admit of carting of timber from the Forests to the plains, as this would only entail laden carts coming down hill.

It would be quite possible to utilize the road for timber down traffic before being metalled and widened to its full width, as a 10-feet unmetalled road would probably answer our purpose almost as well as a fully-metalled wide road which will be necessary for up-hill traffic.

I would, therefore, ask if it would not be possible to construct a cart-track of this nature in a somewhat shorter period than three or four years.

I ask for this information as I believe it would be almost possible for the Forest Department to recover a large portion of the expenditure on the road out of profits from supply of sleepers to the Calicut-Cannanore and other Railways if the road could be so far constructed at a somewhat earlier date so as to admit of slow timber traffic. The matter being of great importance to the Department with reference to timber sleeper supply contracts which will go elsewhere if not taken up by us is my reason for again troubling you for further information on the subject.

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From A. H. GARRETT, Esq., Superintending Engineer, IV Circle, to the Conservator of Forests, Southern Circle, Coimbatore, dated 22nd June 1898, No. 363-M.

In reply to your No. 4098, dated 15th June 1898, I have the honour to inform you that it would certainly be possible to get the road ready for carts carrying sleepers down to the plains in a shorter time than three years.

2. As soon as the line for the cart-road has been definitely decided on every endeavour will be made to form a road which will answer your requirements without loss of time, as I fully appreciate the importance of the work.

3. I should be glad to know when you would be ready to begin carting sleepers. It would be *possible* to make the Prince of Wales Ghât passable for carts in a very short time, but it would

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involve very expensive work in the 4th and 5th miles. It might, however, pay to incur this expense to enable you to take up the contract for sleepers, and accept the risk of the Prince of Wales Ghât not being eventually selected as the best line for the cart-road.

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ENCLOSURE No 2.

From M. LOAM, Esq., Executive Engineer on Special duty, to the District Forest-officer, South Coimbatore, dated 15th May 1898, No. 240.

With reference to your letter No. 497-Cur. (b), dated 9th May 1898, I have the honour to report that I am making a bridlepath to Sirukunru and have orders only to make estimates for a bandy road.

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Endorsement by F. LODGE, Esq., District Forest-officer, dated 23rd May 1898, Ref. No. C-497.

Forwarded to the Conservator of Forests for information; this is the reply to my query as to when carts would be able to get through.

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Resolution—Forest No. 301, dated 21st July 1898.

In March last the Consulting Engineer for Railways brought to the notice of Government, in the Public Works Department, Railway Branch, that there was an immediate prospect of a very heavy demand for Railway sleepers in connection with the construction of the line from Calicut to Cannanore and afterwards that from Shoranur to Cochin. He represented that the demand for Pyngadu (*Xylia dolabriformis*) from Burma was far in excess of the supply, and that as large quantities of timber fit for sleepers are said to exist in the North and South Malabar forest Divisions, it would be a pity to ignore the agency of the Forest Department in the matter of this supply and to obtain creosoted pine sleepers from Europe. In its order, No. 544, Railway, dated 7th April 1898, the Government enquired of the Board whether any special steps should be taken, or expenditure incurred, to enable the Forest Department to supply about 136,000 sleepers for the Calicut-Cannanore Railway in the next two years.

2. The Board referred the matter to the Conservator of Forests, Southern Circle, for report, but as the undertaking was one which would involve considerable initial expenditure from forest funds, it desired the Railway Branch of the Public Works Department to furnish an estimate of the probable annual demand for sleepers for renewals at different centres and the kinds of wood approved by the railway authorities. The Board at the same time specified the marginally-noted woods which occurred to it as suitable for the purpose and in a separate communication added *Mesua ferrea* or *speciosa*. The Railway Branch replied that the quantity of metre gauge sleepers which would probably be bought from the Forest Department for the Calicut-Cannanore line within, say, three years would amount to 136,000 sleepers, and those for the Shoranur-Cochin line, within the same period, to 164,000, and that the future annual requirements would amount to 10,000 sleepers for both railways, rising eventually to 30,000 sleepers at the end of ten years. The Board forwarded this reply to the Conservator of Forests, Southern Circle, and at the same time requested the Railway Branch to furnish an estimate of the probable demand for renewals in the Madras, South Indian and East Coast Railways. The reply to the latter reference has not yet been received.

| | |
|---|---|
| Teak ... ... | *Tectona grandis.* |
| Maddi ... ... | *Terminalia tomentosa.* |
| Ironwood (Irul) ... | *Xylia dolabriformis.* |
| Vengai or Yegi ... | *Pterocarpus marsupium.* |
| Achea or Yepi ... | *Hardwickia binata.* |
| Sal ... ... | *Shorea robusta.* |
| Sóme .. ... | *Soymida febrifuga.* |
| Manjakadambi or Rudraganapa. | *Adina cordifolia.* |



3. The paper last read above is the Conservator's reply to the references made to him. Mr. Brasier states that he has consulted the District Forest-officers of the Nilgiris, North Malabar, South Coimbatore, South Malabar and South Canara. He considers that the rates quoted by the District Forest-officers of the first-named two forest divisions are either altogether prohibitive or so high as to leave but a small margin of profit, even assuming that the railways would pay as much as they would for creosoted pine sleepers. He is, however, of opinion that from North Malabar *Terminalia tomentosa* can be supplied at a much lower price than that given by the District Forest-officer by a possible reduction in the rates for sawing and carting, and the Board notes that the matter is engaging the Conservator's attention. Leaving, however, these two forest divisions out of account, Mr. Brasier hopes that the estimated quantity of 136,000 sleepers for the Calicut-Cannanore Railway can be met from the remaining three divisions at 37,500 sleepers during the first year and about 50,000 during each of the following two years.

4. As regards the rate, Mr. Brasier proposes to charge Rs. 4–8–0 per smaller sleeper and Rs. 5–8–0 per larger one. He has not named the stations at which he would deliver the supply at the proposed rates except in the case of sleepers from the South Coimbatore division, which it is said will be delivered at Coimbatore, by which is probably meant the Podanúr Railway station. The sleepers from South Malabar will no doubt be delivered at Calicut, and those from South Canara at such port as may be most convenient to the Railway Company. Mr. Brasier states that the rates proposed by him are more in accordance with those suggested by the District Forest-officers of South Malabar and South Canara, whereas the rate of Rs. 3–8–0 quoted by the District Forest-officer, South Coimbatore, is low even for the smaller sleepers, considering that the quality of timber which it is proposed to supply is excellent. The Board considers that Mr. Brasier's rates are reasonable. Apart from the question of the excellence of the timber the Board does not consider that it would be safe to undertake the work at the rates proposed by the District Forest-officer, South Coimbatore. Some of the localities to be worked are isolated and have to be newly opened out, and there may be difficulties with regard to sawyers and carriage involving revised rates as well as the appointment of additional supervising establishments.

5. Mr. Brasier's remarks and conclusions with regard to the quantities that can be supplied from each of the forest divisions of South Coimbatore, South Malabar and South Canara will now be considered. Taking South Coimbatore, the District Forest-officer is of opinion that, given men and money, he could supply 65,000 sleepers the first year and 100,000 the second year. He expects to supply during the first year 15,000 sleepers from the Tekadi leased forests, 25,000 from the Pollachi Upper Anaimalai forests, and 25,000 from the Udumalpet Upper Anaimalai forests. The District Forest-officer's estimate of the proposed supply from the Tekadi forests includes 2,500 teak sleepers. Mr. Brasier rightly thinks that teak would fetch better prices if sold in the log than when converted into sleepers. He would accordingly deduct 2,500 from the number proposed by the District Forest-officer. The balance, viz., 12,500 sleepers, is composed of *Terminalia tomentosa* and *Lagerstrœmia microcarpa* in about the proportion of 9 to 4, respectively, and the Board notes that the Conservator is arranging to ascertain the opinion of the railway authorities as to the quality of this latter wood after test. As regards the supplies from the Pollachi and Udumalpet forests, Mr. Brasier considers that the difficulty of transport largely discounts the sanguine view of the District Forest-officer. The supply from the Pollachi Upper Anaimalai forests is dependent on the completion of the road now in course of construction in connection with the grant of leases for planting in the Anaimalai forest reserve. It seems that it would be possible to make the Prince of Wales Ghaut passable for carts in a very short time, but a large expenditure would have to be incurred on the 4th and 5th miles. Apart from the uncertainty as to whether this Ghaut will eventually be selected as the best line for the cart road to connect the evergreen forests near Sirukunru and Paralai with the plains, Mr. Brasier considers that unless the very large expenditure said to be necessary for this work is regarded as prohibitive, it might be undertaken rather than have no road at all for an indefinite period. In his opinion the Prince of Wales Ghaut road would prove useful and remunerative as

other forests would be tapped by it or by branch cart-tracks from it which the Department could construct. The Board trusts that by the time the railway is in a position to give definite orders for the supply of sleepers, the Superintending Engineer will have decided on the line which the new cart road should take, or if this is not possible, he could frame an estimate showing the probable cost of rendering the Prince of Wales Ghaut fit for cart traffic. Owing to the difficulty of transport from the Pollachi Upper Anaimalais forests as well as from the Udumalpet Upper Anaimalais where the method of transporting the wood by rivers has yet to be tried, Mr. Brasier thinks it wise not to calculate on any supply from these forests during the first year. In the second year a supply would no doubt be obtained from the Pollachi Upper Anaimalais, but when the difficulties of procuring transport and sawyer labour in an entirely new locality are considered, Mr. Brasier doubts whether a supply of 25,000 sleepers could be relied on and thinks that the figures might be taken at 10,000; to procure even this number it would in his opinion be necessary to employ subordinates possessing special tact and interest in the work. In the third year the number might be raised to 17,500, making 30,000 in all from South Coimbatore. The wood of which the sleepers from the Pollachi Upper Anaimalais would be made is not stated, but from other correspondence on the subject there is no doubt that it is *Mesua ferrea* or *speciosa*.

6. In South Malabar, the District Forest-officer estimates a supply of 9,000 sleepers of *Terminalia tomentosa* and 13,000 of *Xylia dolabriformis* during the next twelve months. Taking into account the difficulty of procuring a sufficient number of sawyers during the first year of the work and the possible loss in converting logs into sleepers over and above the percentage calculated, Mr. Brasier relies upon a supply from this division of 15,000 sleepers annually. He adds that this number could be considerably increased if the Railway Company would accept sleepers of *Terminalia paniculata* which could be supplied at rates 20 per cent. cheaper than those given above. It is noted that arrangements are being made to test the usefulness of this wood as a railway sleeper. For reasons similar to those adduced for South Malabar, Mr. Brasier reduces the estimate of the District Forest-officer, South Canara, from 15,000 to 10,000 sleepers.

7. To sum up, the proposals for supply are as follows :—

| — | *Terminalia tomentosa.* | *Xylia dolabriformis.* | *Mesua ferrea or speciosa.* | *Lagerstræmia microcarpa.* | *Hopea parviflora.* |
|---|---|---|---|---|---|
| South Malabar— | | | | | |
| First year .. .. .. .. | 5,000 | 10,000 | .. | .. | .. |
| Second year .. .. .. .. | 5,000 | 10,000 | .. | .. | .. |
| Third year .. .. .. .. | 5,000 | 10,000 | .. | .. | .. |
| South Coimbatore— | | | | | |
| First year .. .. .. .. | 7,500 | .. | .. | 4,500 | .. |
| Second year .. .. .. .. | 7,500 | .. | 10,000 | 4,500 | .. |
| Third year .. .. .. .. | 7,500 | .. | 17,500 | 4,500 | .. |
| South Canara— | | | | | |
| First year .. .. .. .. | 4,000 | 3,000 | .. | 2,000 | 1,000 |
| Second year .. .. .. .. | 4,000 | 3,000 | .. | 2,000 | 1,000 |
| Third year .. .. .. .. | 4,000 | 3,000 | .. | 2,000 | 1,000 |
| Total .. | 49,500 | 39,000 | 27,500 | 19,500 | 3,000 |

| | |
|---|---|
| *Terminalia tomentosa* .. .. .. .. .. .. .. | 49,500 |
| *Xylia dolabriformis* .. .. .. .. .. .. .. | 39,000 |
| *Mesua ferrea* .. .. .. .. .. .. .. | 27,500 |
| *Lagerstræmia microcarpa* .. .. .. .. .. .. | 19,500 |
| *Hopea parviflora* .. .. .. .. .. .. .. | 3,000 |
| Total .. | 138,500 |

From the Consulting Engineer's note recorded in Government Order, No. 841, Ry., dated 21st June 1898, and from Gamble's Manual of Indian Timbers there can be no doubt as to the suitability of *Xylia dolabriformis* and *Mesua ferrea* or *speciosa* for the manufacture of sleepers, and the same may probably be said of *Hopea parviflora* though the Board has no information of any experiment having actually been made. With regard to *Terminalia tomentosa*, definite information can probably be obtained from

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the Northern Bengal State Railway, who are said, by Gamble, to have made experiments on a considerable scale in 1876. *Lagerstræmia microcarpa* does not seem to have been tried for sleepers anywhere but it is a favourite wood for building on the West Coast.

If all the timbers above mentioned be accepted and the road to the Pollachi Upper Anaimalai forests be pushed on with, the Board considers that Government may safely undertake the supply, by the Forest Department, of all the sleepers required for the Calicut-Cannanore Railway, and possibly some, if not all, of those required for the other extensions mentioned by the Consulting Engineer as likely to be taken in hand at an early date, but the result of the first year's working must be awaited before any further definite proposals can be submitted. As has been represented in Board's Proceedings, No. 227, dated 11th June 1898 the completion of the Anaimalai Ghaut road is a matter of prime importance in connection with the provision of railway sleepers, the supply of suitable timber in that locality being practically unlimited.

(True Copies and Extract.)

(Signed) LIONEL DAVIDSON,
Acting Secretary.

To the Secretary to Government, Revenue Department.
" Conservator of Forests, Southern Circle.
" Collector of Coimbatore.
" " of Malabar.
" " of South Canara.
Copy to Collector of the Nilgiris.

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*Read*—the following Proceedings of the Board of Revenue (Land Revenue), Forest No. 427, dated 6th October 1898 :—

Read—letter from H. A. GASS, Esq., Acting Conservator of Forests, Southern Circle, dated 5th September 1898, No. 798.

ABSTRACT.—Submitting remarks on Board's Proceedings, Forest No. 301, dated 21st July 1898, regarding the supply of sleepers for the Calicut-Cannanore Railway.

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Read—G.O., No. 1141, Railway, dated 16th September 1898.

ABSTRACT.—Informing the Board of Revenue of the number of sleepers which are likely to be required annually for renewals on the standard and metre-gauge railways in the Madras Presidency, and requesting it to report what steps it proposes to take for supplying them.

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Resolution—Forest No. 427, dated 6th October 1898.

In the Government Order read above the Board is directed to report as early as possible for the information of Government what steps it is proposed to take in the matter of the direct supply of sleepers to railways in this Presidency.

2. Certain proposals were submitted in Board's Proceedings, No. 301, dated 21st July 1898, but the figures given in the Government Order now read show that there has been a misunderstanding as regards the size of the sleepers required for the Calicut-Cannanore Railway.

3. The letter from the Agent, Madras Railway, forwarded with G.O., No. 544, Railway, dated 7th April 1898, gave quotations for two sizes of sleepers, and the Board assumed that the smaller of these, viz., a sleeper of $3\frac{1}{8}$ cubic feet was that which is required for the Calicut-Cannanore Railway and based its proposals accordingly, but from the enclosure to G.O., No. 1141, Railway, dated 16th September 1898, it would appear that the size required is either that used by the

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South Indian Railway, viz., 6′ 6″ × 9″ × 4½″ or that proposed for the Shoranur-Cochin Railway, viz., 6′ × 8″ × 4½″. The Board will require to have definite information on the point before commencing work.

4. It is observed that the Madras and South Indian Railways pay different prices per sleeper according to the wood of which it is made, and if necessary differential prices can be quoted, after further enquiry, with reference to the wood used and the locality from which it is supplied, but the Board would prefer an all-round rate of Rs. 3-4-0 for a sleeper 6′ 6″ × 9″ × 4½″ which, it is observed, is the rate that has been paid by the South Indian Railway for Irul sleepers. The price per sleeper 6′ × 8″ × 4½″ would be Rs. 2-12-0. Delivery would be made at Podanur from Coimbatore, at Kallai from South Malabar, at Calicut and Tellicherry from North Malabar, while those from South Canara would be delivered at any port in Malabar which might be found convenient for the Railway Company.

5. In its Proceedings of the 21st July 1898, No. 301, paragraph 7, the Board offered to supply all the sleepers required for the Calicut-Cannanore Railway if all the timbers mentioned by it were accepted and the road to the Pollachi Upper Anamalai forest were pushed on with. The present Acting Conservator of Forests, Mr. Gass, in consultation with whom the present Proceedings are written and who is also permanent District Forest-officer, Coimbatore, considers that we do not yet know enough of the Pollachi Upper Anamalai forests to justify us in offering to make any supply from there owing to the long carriage, and the difficulty of converting the prevailing timber, viz., *Mesua ferrea or speciosa;* he also considers that the capabilities of the Lower Anamalai forests have been overestimated. The smaller size of the sleeper required, however, makes it unnecessary for the Board to withdraw its proposal to supply 136,000 sleepers within three years using only the woods which it now appears are already approved by the Madras and South Indian Railways, viz., Karimaradu (*Terminalia tomentosa*), Irul (*Xylia dolabriformis*) and Irumbogam (*Hopea parviflora*). Further information from North Malabar even enables it to raise its offer to 200,000 within three years, and if the smaller sleeper be used the number would be 250,000. This does not include the demand for the Tinnevelly-Quilon Railway. This railway was not mentioned in the former orders of Government and consequently full enquiries have not yet been made as to the capabilities of the Tinnevelly forests. A further communication will be submitted on the point, as well as with regard to experiments which are now being made with other kinds of wood in communication with the officers of the Madras Railway Company.

6. It is also proposed to thoroughly investigate the capabilities of the Pollachi Upper Anamalai forests. A saw-mill and wire ropeway have just been successfully installed in the Lower Anamalais in which a tramway has been in work for years, and if similar arrangements on a larger scale can be made for the exploitation of the more extensive and more fully stocked forests of the Upper Anamalais, the Board sees no reason to doubt that it will be in a position largely to increase its contribution towards meeting the very large demand for sleepers which has arisen in connection with the extension of railway construction in the Presidency.

7. The most important timber in the Upper Anamalai forests being *Mesua ferrea*, the Board would be glad to be informed at the earliest possible date whether sleepers of that wood would be accepted. It does not appear that any of them has been used by the Madras or South Indian Railways, but Gamble, at page 27 of his Manual of Indian Timbers, states that it has been found to answer for sleepers equally well with Pynkadu.

(True Extract.)

(Signed) LIONEL DAVIDSON,
Acting Secretary.

To the Joint Secretary to Government, Public Works Department, Railway Branch.

Copy to the Secretary to Government, Revenue Department.

17 Standing



*Read*—the following G.O., No. 1311, Railway, dated 21st October 1898:—

Read—again G.O., No. 1141, Railway, dated 16th September 1898.

Read—also Proceedings of the Board of Revenue (Land Revenue), Forest No. 427, dated 6th October 1898.

Order—No. 1311, Railway, dated 21st October 1898.

A copy of the Board's Resolution, together with a copy of the description of *Mesua ferrea* given in page 27 of Mr. Gamble's book, will be forwarded to the Madras, South Indian, and East Coast Railways, with an enquiry whether they will be prepared to accept sleepers of the timber for extensions and renewals, and with a request that they will specify the size of sleepers, standard or metre gauge, which they would be prepared to take. It is noted that in the Government of India standard dimensions, the following sizes are recommended: viz., for broad gauge 9′ 6″ × 9″ × 5″, with as a minimum 8′ 11″ × 8″ × 5″, and for metre gauge 6′ 0″ × 7″ × 4½″ with as a minimum 5′ 9″ × 6″ × 4″.

(True Extract.)

(Signed) FRANCIS J. E. SPRING,
Joint Secretary.

To the Agent and Manager, Madras Railway.
„ Agent, South Indian Railway.
„ Manager, East Coast Railway.
„ Secretary, Board of Revenue (Land Revenue).
„ Consulting Engineer for Railways.
„ Revenue Department.

ENCLOSURE.

*Mesua ferrea.*

Vernacular names: *Nagesar*, Bengali; *Nahor*, Assamese; *Nangal*, Tamil; *Naga-kesara*, Telugu.

A large evergreen tree. Heartwood dark red, extremely hard. Pores moderate-sized, often in groups, scanty, often filled with yellow resin. Medullary rays extremely fine, uniform, equidistant, very numerous. Numerious fine, many, concentric lines of light-coloured tissue.

Eastern Bengal from the Monas eastward (though traces of its having formerly been found west of that river occur sometimes in the names of places, *e.g.*, Nageshwarbari, or Naksarbari, a town in the Sikkim Terai on the Nepal frontier), Assam, South India, Ceylon, Burma and the Andamans, often cultivated.

The weight and transverse strengh have been determined by the following experiments—

| | | | Weight. LB. | Value of P. |
|---|---|---|---|---|
| A. Mendis—Ceylon No. 59, with bars 2′ × 1″ × 1″ | ... | found | 72 | 994 |
| Brandis—Burma, No. 18, 1862, | ... ... ... | „ | 69 | ... |
| Bennett—Andamans, No. 4, 1872, | ... ... ... | „ | 70 | 1,053 |
| Smythies—Assam (4 specimens) 1878, | ... ... | „ | 67·5 | ... |
| Smythies—Kanara (1 specimen) | ... ... | „ | 62 | ... |
| Smythies—Burma (6 specimens) | ... ... | „ | 70 | ... |

Several of our specimens, however, reached 74 to 76 lb. per cubic foot in weight. It is very durable. It has been found to answer for sleepers equally well with Pynkado, but the cost of cutting the hard wood, its weight, and the freight from the Tenasserim forests to Calcutta prevent its being much used, as the total cost is scarcely covered by the price (Rs. 5) per broad-gauge sleeper. It is used for building, for bridges, gunstocks and tool handles; but its more general use is prevented by its great hardness, weight and the difficulty of working it. In Ceylon an oil is obtained from the nut, and the tree is often planted for the sake of its handsome flowers.

*Note by the Consulting Engineer for Railways.*

In Assam *Nahor* (Mesua ferrea) is known to be an excellent sleeper timber.

18 Standing

*Order*—No. 772, Revenue, dated 13th December 1898.

Miscellaneous.

Recorded. The Board of Revenue should do all they can to develop the market for railway sleepers.

2. The question of the alignment of the Anamalai ghât road is under the consideration of the Government.

(True Extract.)

(Signed) G. S. FORBES,
Secretary to Government.

To the Board of Revenue (Land Revenue).
„ the Public Works Department (Works).
„ the Public Works Department (Railway).

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RESOLUTION—Forest No. 17, dated 7th January 1899.

Communicated to the Conservator of Forests, Southern Circle, and the Collectors of Coimbatore, Malabar and South Canara whose special attention is drawn to the remarks of Government regarding the development of the market for railway sleepers.

2. The Board understands that trees have been felled in several districts sometime ago in view to the manufacture of railway sleepers, but definite information as to the size of the sleepers required for the proposed new railways is still awaited. The sizes required for annual renewals on the Madras and South Indian Railways are given in Government Order, No. 1141, Railway, dated 16th September 1898.

(True Copies and Extract.)

Leonie C Davidson
Acting Secretary.

To the Conservator of Forests, Southern Circle,
„ Collector of Coimbatore,
„ „ of Malabar,
„ „ of South Canara,
} with a copy of Government Order, No. 1141, Railway, dated 16th September 1898.
„ Secretary to Government, Revenue Department.
„ „ „ Public Works Department, Railway Branch.
Copy to the Collector of the Nilgiris,
„ „ Conservator of Forests, Northern Circle,
} with a copy of Government Order, No. 1141, Railway, dated 16th September 1898.

Exd. M. Munisami.

RAILWAY.

# Government {1899} of Madras.

## PUBLIC WORKS.

*Recd.* } 1899. *Enclosures*
*Regd.* } *Spare copies*

## G.O., No. 53 Ry., 11th January 1899.

## JANUARY.

### Supply of Sleepers

Ordered that the correspondence regarding the — to railways in the Presidency by the Forest Department, be forwarded to the officers concerned for information.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

**Railway.**

Read the following papers :—

Proceedings of the Board of Revenue (Land Revenue), Forest No. 427, dated 6th October 1898.

Read the following papers :—

From—The Conservator of Forests, Southern Circle.
Dated—5th September 1898, No. 798.

Abstract.—Submitting remarks on Board's Proceedings, Forest No. 301, dated 21st July 1898, regarding the supply of sleepers for the Calicut-Cannanore Railway.

G.O., No. 1141 Ry., dated 16th September 1898.

Abstract.—Informing the Board of Revenue of the number of sleepers which are likely to be required annually for renewals on the standard and metre-gauge railways in the Madras Presidency, and requesting it to report what steps it proposes to take for supplying them.

*Resolution*—Forest No. 427, dated 6th October 1898.

In the Government Order read above, the Board is directed to report as early as possible, for the information of Government, what steps it is proposed to take in the matter of the direct supply of sleepers to railways in this Presidency.

2. Certain proposals were submitted in Board's Proceedings, No. 301, dated 21st July 1898, but the figures given in the Government Order now read show that there has been a misunderstanding as regards the size of the sleepers required for the Calicut-Cannanore Railway.

3. The letter from the Agent, Madras Railway, forwarded with G.O., No. 544 Ry., dated 7th April 1898, gave quotations for two sizes of sleepers, and the Board assumed that the smaller of these, viz., a sleeper of $3\frac{1}{8}$ cubic feet, was that which is required for the Calicut-Cannanore Railway and based its proposals accordingly, but from the enclosure to G.O., No. 1141 Ry., dated 16th September 1898, it would appear that the size required is either that used by the South Indian Railway, viz., 6′ 6″ × 9″ × $4\frac{1}{2}$″ or that proposed for the Shoranur-Cochin Railway, viz., 6′ × 8″ × $4\frac{1}{2}$″. The Board will require to have definite information on the point before commencing work.

4. It is observed that the Madras and South Indian Railways pay different prices per sleeper according to the wood of which it is made, and if necessary differential prices can be quoted, after further enquiry, with reference to the wood used and the locality from which it is supplied, but the Board would prefer an all-round rate of Rs. 3-4-0 for a sleeper 6′ 6″ × 9″ × $4\frac{1}{2}$″ which, it is observed, is the rate that has been paid by the South Indian Railway for Irul sleepers. The price per sleeper 6′ × 8″ × $4\frac{1}{2}$″ would be Rs. 2-12-0. Delivery would be made at Podanur from Coimbatore, at Kallai from South Malabar, at Calicut and Tellicherry from North Malabar, while those from South Canara would be delivered at any port in Malabar which might be found convenient for the Railway Company.



5. In its Proceedings of the 21st July 1898, No. 301, paragraph 7, the Board offered to supply all the sleepers required for the Calicut-Cannanore Railway if all the timbers mentioned by it were accepted and the road to the Pollachi Upper Anamalai forest were pushed on with. The present Acting Conservator of Forests, Mr. Gass, in consultation with whom the present Proceedings are written and who is also permanent District Forest-officer, Coimbatore, considers that we do not yet know enough of the Pollachi Upper Anamalai forests to justify us in offering to make any supply from there owing to the long carriage, and the difficulty of converting the prevailing timber, viz., *Mesua ferrea or speciosa;* he also considers that the capabilities of the Lower Anamalai forests have been overestimated. The smaller size of the sleeper required, however, makes it unnecessary for the Board to withdraw its proposal to supply 136,000 sleepers within three years using only the woods which it now appears are already approved by the Madras and South Indian Railways, viz., Karimaradu (*Terminalia tomentosa*), Irul (*Xylia dolabriformis*) and Irumbogam (*Hopea parviflora*). Further information from North Malabar even enables it to raise its offer to 200,000 within three years, and if the smaller sleeper be used the number would be 250,000. This does not include the demand for the Tinnevelly-Quilon Railway. This railway was not mentioned in the former orders of Government, and consequently full enquiries have not yet been made as to the capabilities of the Tinnevelly forests. A further communication will be submitted on the point, as well as with regard to experiments which are now being made with other kinds of wood in communication with the officers of the Madras Railway Company.

6. It is also proposed to thoroughly investigate the capabilities of the Pollachi Upper Anamalai forests. A saw-mill and wire ropeway have just been successfully installed in the Lower Anamalais in which a tramway has been in work for years, and if similar arrangements on a larger scale can be made for the exploitation of the more extensive and more fully stocked forests of the Upper Anamalais, the Board sees no reason to doubt that it will be in a position largely to increase its contribution towards meeting the very large demand for sleepers which has arisen in connection with the extension of railway construction in the Presidency.

7. The most important timber in the Upper Anamalai forests being *Mesua ferrea*, the Board would be glad to be informed at the earliest possible date whether sleepers of that wood would be accepted. It does not appear that any of them has been used by the Madras or South Indian Railways, but Gamble, at page 27 of his Manual of Indian Timbers, states that it has been found to answer for sleepers equally well with Pynkadu.

G.O., No. 772, Revenue, dated 13th December 1898.

Read the following papers :—

Proceedings of the Board of Revenue (Land Revenue), Forest, No. 301, dated 21st July 1898.

Abstract.—Submitting to Government, with Board's remarks, Mr. Brasier's proposals regarding the supply of railway sleepers for the Calicut-Cannanore Railway.

Proceedings of the Board of Revenue (Land Revenue), Forest No. 427, dated 6th October 1898, regarding the supply of sleepers to railways.

G.O., No. 1311 Ry., dated 21st October 1898.

*Order*—No. 772, Revenue, dated 13th December 1898.

Recorded. The Board of Revenue should do all they can to develop the market for railway sleepers.

2. The question of the alignment of the Anamalai ghât road is under the consideration of the Government.

Extract from Mr. Gamble's Book on Indian Trees.

*MESUA FERREA.*

Vernacular names: *Nagesar*, Bengali; *Nahor*, Assamese; *Nangal*, Tamil; *Naga-Kesara*, Telugu.

A large evergreen tree. Heartwood dark red, extremely hard. Pores moderate-sized, often in groups, scanty, often filled with yellow resin. Medullary rays extremely fine, uniform, equidistant, very numerous. Numerious fine, many, concentric lines of light-coloured tissue.

Eastern Bengal from the Monas eastward (though traces of its having formerly been found west of that river occur sometimes in the names of places, *e.g.*, Nageshwarbari, or Naksarbari, a town in the Sikkim Terai on the Nepal frontier), Assam, South India, Ceylon, Burma and the Andamans, often cultivated.

The weight and transverse strength have been determined by the following experiments:—

| | | | | |
|---|---|---|---|---|
| A. Mendis — | Ceylon No. 59, with bars 2′ × 1″ × 1″ ... ... | weight, 72 | lbs. | P = 994 |
| Brandis — | Burma No. 18, 1862 ... ... ... ... ... | „ 69 | „ | ... |
| Bennett — | Andamans No. 4, 1872 ... ... ... ... ... | „ 70 | „ | P = 1,053 |
| Smythies — | Assam (4 specimens) 1878 ... ... ... | „ 67·5 | „ | ... |
| | Kanara (1 specimen) „ ... ... ... ... | „ 62 | „ | ... |
| | Burma (6 specimens) „ ... ... ... ... | „ 70 | „ | ... |

Several of our specimens, however, reached 74 to 76 lbs. per cubic foot in weight. It is very durable. It has been found to answer for sleepers equally well with Pynkadu, but the cost of cutting the hard wood, its weight, and the freight from the Tenasserim forests to Calcutta prevent its being much used, as the total cost is scarcely covered by the price (Rs. 5) per broad-gauge sleeper. It is used for building, for bridges, gunstocks and tool handles; but its more general use is prevented by its great hardness, weight and the difficulty of working it. In Ceylon an oil is obtained from the nut, and the tree is often planted for the sake of its handsome flowers.

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*Note by the Consulting Engineer for Railways, Madras.*

In Assam *Nahor* (Mesua ferrea) is known to be an excellent sleeper timber.

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Read the following papers:—

G.O., No. 1141 Ry., dated 16th September 1898.

Proceedings of the Board of Revenue (Land Revenue), Forest No. 427, dated 6th October 1898.

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*Order*—No. 1311 Ry., dated 21st October 1898.

A copy of the Board's Resolution, together with a copy of the description of *Mesua Ferrea* given in page 27 of Mr. Gamble's book, will be forwarded to the Madras, South Indian, and East Coast Railways, with an enquiry whether they will be prepared to accept sleepers of the timber for extensions and renewals, and with a request that they will specify the size of sleepers, standard or metre gauge, which they would be prepared to take. It is noted that in the Government of India standard dimensions the following sizes are recommended, viz., for broad gauge 9′ 6″ × 9″ × 5″, with, as a minimum, 8′ 11″ × 8″ × 5″, and for metre gauge 6′ 0″ × 7″ × 4½″ with, as a minimum, 5′ 9″ × 6″ × 4″.



From—The Agent, South Indian Railway.
To—The Consulting Engineer for Railways, Madras.
Dated—Trichinopoly, 17th November 1898, No. 1037.

I have the honour to forward a copy of letter No. C. 3204 A./2362, dated 15th November 1898, from the Chief Engineer and shall be obliged by your letting me know whether Government will be able to provide either in part or in full the number of 225,000 wooden sleepers required for the Madura-Pamban Railway.

2. I strongly support the recommendation that the rails for the line between Madura and Pamban should be of the type advocated by the Chief Engineer and should weigh 56 lbs. to the yard. The line will have to be suitable for a fast passenger service as it will form a link in the express route to Ceylon. The extra weight of rail will, I feel sure, be amply justified by lighter maintenance, longer life, and smoother running.

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Enclosure.

From—The Chief Engineer, South Indian Railway.
To—The Agent, South Indian Railway.
Dated—15th November 1898, No. C. 3204 A./2362.

One of the first actions I shall have to take, on the sanction of the Madura-Pamban Railway being received, will be the arrangement for providing the permanent-way material. The Madura-Pamban line will run through a district practically void of building material except at the termini, and it will be necessary to lay down a service line of railway as early as possible.

The estimate prepared by Mr. Shadbolt provides for 50 lb. rails on cast iron pot sleepers, but this class of road is quite unsuitable for a temporary purpose. I recommend strongly that the 56 lb. flat bottom rail we have in use with our 50 lb. bull-headed rail be adopted for this line and that it be laid on wooden sleepers; taking the length of line to be adopted as the same with the Sivaganga branch as the alignment of Mr. Shadbolt, we shall require 225,000 sleepers. It will be hopeless to expect to be able to get this quantity of sleepers locally, and I shall be obliged by your referring the matter to the Consulting Engineer requesting him to obtain information as to what the Government Forest Department can do.

The hitch in the supply of sleepers to the Bezwada-Madras Railway points to the necessity of an early arrangement. The size of the sleepers required is 6′ 6″ × 9″ × 4½″.

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From—The Consulting Engineer for Railways, Madras.
To—The Secretary, Board of Revenue (Land Revenue—Forests).
Dated—Madras, 19th November 1898, No. 3158.

With reference to Board of Revenue Proceedings, Forest No. 427, dated 6th October 1898, and to Railway Department's Order thereon, No. 1141 Ry., dated 16th September 1898, a copy of which will doubtless have reached the Board through the Revenue Department, I have the honour to inform you that the Agent, South Indian Railway Company, has enquired whether the Forest Department will be able to provide, in part or in full, the 225,000 sleepers required for the Madura-Pamban Railway.

It is expected that funds for that railway will be available in April 1899, and the first thing to be done will be to lay a surface line down from both ends as speedily as possible so that the provision of sleepers is an urgent matter. If not available in the Presidency, the price of them must go elsewhere, as the construction of the through surface line must be pushed forward.

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From—The Agent, South Indian Railway.
To—The Consulting Engineer for Railways, Madras.
Dated—Trichinopoly, 28th November 1898, No. 1072.

With reference to G.O., No. 1311 Ry., dated 21st October 1898, I have the honour to forward copies of the correspondence which has passed between the Chief Engineer and the Acting Conservator of Forests, Southern Circle. The size of sleeper we should require is 6′ 6″ × 9″ × 4½″.

Enclosure No. 1.

From—The Chief Engineer, South Indian Railway.
To—The Agent, South Indian Railway.
Dated—23rd November 1898, No. S/5226-C/2419.

In reply to the query put in G.O., No. 1311 Ry., dated 21st October 1898, I beg to state that I am not prepared to accept *Mesua Ferrea* for sleepers without some further information as regards its suitability and with a view to obtaining the information I addressed the Forest Officer, Coimbatore (copy of this office letter and his reply thereto are herewith enclosed for your information) and judging from the time which Mr. Gass says it will take to furnish me with samples of the timber referred to I do not anticipate being able to depend upon the Forest Department, for the supply of sleepers that we shall require annually either for maintenance or construction for some years to come.

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Enclosure No. 2.

From—The Chief Engineer, South Indian Railway.
To—The Conservator of Forests, Southern Circle.
Dated—3rd November 1898, No. S. 8403.

With reference to Board of Revenue Proceedings, Forest No. 427 of 6th October 1898, copy of which has been forwarded to this office for information.

I shall be glad to know whether you can forward sample sleepers 6′ 6″ × 9″ × 4½″ of the 4 description of timbers mentioned therein, viz.:—

1. Mesua ferrea. | 2. Karimaradu. | 3. Irul. | 4. Irumbogam.

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Enclosure No. 3.

From—The Conservator of Forests, Southern Circle.
To—The Chief Engineer, South Indian Railway.
Dated—Coimbatore, 15th November 1898, No. 1459.

In reply to your letter No. S. 8403, dated 3rd November 1898, I have the honour to inform you that I am issuing the necessary instructions to prepare 10 sleepers of each of the 4 kinds of timber named by you and I am adding two other kinds—*Anogeissus latifolia* (Vekkali), and *Vitex Altissuna* (Maila) both of which I hope may prove to be suitable timbers.

2. It will take some little time to get these sleepers ready and I shall address you again on the subject and state the station at which they will be delivered.

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From—The Consulting Engineer for Railways, Madras.
To—The Agent, South Indian Railway.
Dated—Madras, 3rd December 1898, No. 3320.

I have the honour to acknowledge the receipt of your letter No. 1072, dated the 28th November 1898 and with reference to its enclosures to offer the following remarks, for the information of your Chief Engineer.

2. The Madras Forest Department have not heretofore laid themselves out for doing a sleeper business. Government has not chosen that they should do so; they have been otherwise employed.

3. Lately however Government has been enquiring about the advantages of so organizing and equipping the Forest Department as to enable them to go in for the business of sleeper supply to railways. This explains to you the object of recent enquiries as to number of sleepers required for renewals, species of wood available, &c.



4. When this is explained to your Chief Engineer he will doubtless be able to realize that it is quite unfair to gauge the ability of the Forest Department to supply large number of sleepers, once it is properly organized for the new business, by its capacity in its present state to turn out a few score specimens for trial. The supplying of a few score specimens now by the department, employed as it is at present in surveying and conserving the forests, is probably a far less easy business than will be the supply of some thousands per month later on, if Government should see fit to properly start it on the sleeper supply business.

5. About *Mesua Ferrea*, if your Chief Engineer wants more information than I have already given him he can doubtless get it by addressing the Forest officer, Shillong, Assam. In that province the tree is very highly valued for the thirty or forty main posts forming the supports of planters' bungalows, travellers' bungalows, &c., which are always embedded four or five feet in the ground, frequently in damp ground. Then it is usually considered to have a life, in such a situation, of 20 to 25 years.

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Endt. by the Consulting Engineer for Railways, dated 3rd December 1898, No. 3320/A.

Copy forwarded to the Agent and Manager, Madras Railway for favour of communication to his Chief Engineer.

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From—The Agent and Manager, Madras Railway.
To—The Consulting Engineer for Railways, Madras.
Dated—Madras, 12th December 1898, No. 10661/1194.

With reference to G.O., No. 1311 Ry., dated 21st October 1898, I have the honour to enclose for your information copy of a letter from the Company's Chief Engineer No. E. 485/1642, dated 9th instant and shall be glad if it can be arranged for this Company to be supplied with the sample sleepers referred to in paragraph 3.

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Enclosure.

From—The Chief Engineer, Madras Railway.
To—The Agent and Manager, Madras Railway.
Dated—Madras, 9th December 1898, No. E. 485/1642.

In reply to your endorsement No. 10661 of 22nd October 1898, on G.O., No. 1141 Ry., dated 16th September 1898, in which the Consulting Engineer asks whether this company will be prepared to accept sleepers of *Mesua Ferrea* timber for renewals and for use on the Calicut-Balliapatam extension, and to specify the size of sleepers required for standard or metre-gauge lines. I desire to point out that it is essential that sleepers to be of any practical value must be cut from timber which has been seasoned for at least a year. If therefore sleepers of this timber, when seasoned, can be supplied at more favourable rates than those now obtaining on the West Coast, they might be adopted by this Company for renewals, and on the Calicut-Balliapatam extension.

2. It should be clearly understood that sleepers supplied by the Forest Department be subject to the conditions of ordinary contracts, and should be in accordance with our specification, and be passed by officers of this department, subject to rejection if considered unfit for use, and not up to specification, and that the officers of this department should be sole judges in this respect.

3. I shall be much obliged if the Forest Department will be good enough to send to this office a sample sleeper 10′ × 10″ × 5″ of *Mesua Ferrea*, Karimaradu (*Terminalia tomentosa*) and Irul (*Inga Hylocarpa*) and desire to know if they could also deliver at Podanur 10 bridge sleepers 12′ × 12″ × 7″, 10 crossing sleepers 16′ × 12″ × 6″, and 30 point sleepers 10′ × 10″ × 5″ of Mesua Ferrea for insertion in the line on trial.

4. You can understand that this department cannot pledge itself to take a large supply of sleepers from the Forest Department without first seeing the quality they propose giving and testing this.

5. The following are the particulars as regards the probable quantity and actual dimensions of sleepers which will be required for the undernoted works:—

(1) Annual renewals on Madras Railway—

2,024 sleepers 10′ × 10″ × 5″ for points.
576 do. 12′ × 12″ × 7″ for bridges.
622 do. 16′ × 12″ × 6″ for crossings.

(2) Metre-gauge extension from Calicut to Balliapatam—

134,100 sleepers 6′ × 7″ × 4½″ for main line and sidings.
423 do. 7′ × 7″ × 4½″ } for points and crossings.
302 do. 8′ × 7″ × 4½″ }
302 do. 9′ × 7″ × 4½″ }
362 do. 10′ × 7″ × 4½″ }
121 do. 12′ × 9″ × 6″ }
2,000 do. 10′ × 12″ × 8″ for major bridges.
700 do. 6′ × 8″ × 6″ for minor do.
250 do. 12′ × 7″ × 6″ for level crossings.

(3) Metre-gauge conversion from Mettupalaiyam to Calicut—

3,613 sleepers 12′ × 12″ × 8″.

6. If however the proposed conversion from Mettupalaiyam to Calicut from standard to metre gauge is not carried out and the standard gauge is adopted on Calicut-Balliapatam extension, the probable quantity and the actual dimensions of sleepers required will be as follows:—

(1) Annual renewals on Madras Railway—

2,024 sleepers 10′ × 10″ × 5″ for points and crossings.
576 do. 12′ × 12″ × 7″ for bridges.
622 do. 16′ × 12″ × 6″ for crossings.

(2) Extension from Calicut to Balliapatam standard gauge.

2,132 sleepers 10′ × 10″ × 5″ for points, crossings and bridges.
1,633 do. 10′ × 12″ × 7″ } for bridges.
250 do. 15½′ × 12″ × 7″ }
647 do. 16′ × 12″ × 6″ for crossings.

7. In connection with this subject, I may state that while in charge of the 3rd division, south-west line, and 2nd district I frequently tried to induce Forest officers to supply me with sleepers, without any result and may add that this department would be very pleased if they could obtain from the Forest Department all sleepers required of good quality, cut from sufficiently seasoned timber, sleepers cut from green timber are useless as they crack and warp badly.

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Extract from Indian Engineering, dated 1st October 1898

*The new means for the preservation of timber.*

Letter dated 9th September 1898 from the Manager, Haskin Wood Vulcanizing Co., Ld., 2 Dean's Yard, London, S.W.

Our attention has been called to an article in your issue of 11th June, headed as above, referring at some length to our process. Without encroaching too much upon your space, we might remark, for the benefit of your readers, that our works at Millwall (London) have been in full working order for some time, and that we have treated large quantities of sleepers for various English Railway Companies to their entire satisfaction, and at the present time have several contracts for Haskinized sleepers on hand. A large consignment of Haskinized sleepers and crossings has also been shipped to South America.

Considerable quantities of Haskinized wood paving-blocks have been, and are being, laid in the principal streets of London, and various large provincial towns in all parts of the country, during the past month or two.

The process is much cheaper and far more effective than creosoting, as, besides preserving the timber from decay, it hardens, indurates and strengthens it, and renders the sapwood as serviceable as the heartwood.

Pieces of Haskinized wood that have been sent out to India and placed in white ants' nest have absolutely withstood the ravages of these little destructors, while similar pieces of untreated wood which accompanied them have been thoroughly honeycombed.

The process is also suitable for the preservation of timbers for bridge-work, piling timbers, decking, platforms, etc., and being inodourous may also be used to considerable advantage for indoor work.

We shall be most happy to give any of your correspondents, or readers, any further information they may desire.



From—The Consulting Engineer for Railways, Madras.
To—The Manager, Haskin Wood Vulcanizing Co. (Ld.), 2, Dean's Yard, London, S.W.
Dated—Madras, 18th October 1898, No. 2872.

I beg to enclose for the information of your Directors copies of Madras Government Proceedings, as marginally-noted. From a perusal of these papers you will see that the provision of sleepers of a class suitable for the climatic condition to which they are exposed on the southern Indian railways is a large and difficult problem; and yet there are unlimited quantities of various timbers which, so far as I can judge from what I have read of your process, would, if "Haskinized," be quite suitable. It is scarcely necessary for me to explain to you that to send timber to England to be treated in order to re-ship it to India would, commercially, be quite prohibitive. It suggests itself therefore that your Directors might perhaps see their way to entering into a correspondence having for its object the establishment of works at one or more central places within reach of the larger Southern Indian forests. Whether such works should be managed by the Government Forest Department, direct, under some arrangement for paying you a royalty, or by the Railway Companies, or by your own agency through the medium possibly of one or other of the large Madras firms of mercantile Engineers, would be a matter for consideration and settlement by correspondence. What the State Railways and the Companies' Railways require is a metre gauge sleeper 6′ 6″ × 9″ × 4½″ for less than three rupees, and a broad gauge sleeper 10′ × 10″ × 5″ for less than five rupees, which will live in the road for fourteen to eighteen years.

Nos. 373, 374 Ry., dated 5th March 1898.
No. 715 Ry., dated 12th May 1898.
„ 841 Ry., „ 21st June „
„ 1141 Ry., „ 16th Sept. „

I shall be glad, in my official capacity, to enter into a correspondence with you on the subject, laying your views before the Railway Engineers and before the heads of the Forest Department.

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From—The Secretary, Haskin Wood Vulcanizing Company, Limited.
To—The Consulting Engineer for Railways, Madras.
Dated—2, Dean's Yard, Westminster Abbey, S.W., 25th November 1898.

My Directors have now considered your letter and memoranda of the 17th ultimo, and instruct me to reply as follows.

They think a plant say half the size of that now working at Millwall would probably best meet your requirements, and they estimate the cost of such a plant, delivered f.o.b., Liverpool, will be about £12,000. Such an installation could be fixed at the centres you might consider desirable and each installation should enable you to treat, say, 450 standard size sleepers per day.

Our terms for assenting to your installation of such a plant in India would be the sum of £2,000 paid down so soon as our negociations are completed, and a royalty of 3*d.* per sleeper of ordinary gauge and 2*d.* per sleeper of metre gauge and 1*d.* per cubic foot for any miscellaneous timber that might be treated in the vessels.

Should the Government wish to pay a capital sum down in the first instance in lieu of the proposed royalty this would be a matter for negociation.

It would be stipulated that the apparatus would only be employed for the treatment of material supplied by the Forest Department for the use of the railways or other Government departments, and the company would also specially stipulate that all the machinery should be made and supplied by their sole licensees, Galloways, Limited, Manchester, who have constructed the whole of the machinery at the Millwall works to our entire satisfaction and which machinery can be seen at any time by any representative of the Government.

Enclosed is a short specification of plant half the size of that at Millwall.

ENCLOSURE.

*Specification of Haskinizing plant proposed to be supplied.*

This plant to consist of 2 treating chambers each about 114 feet long by 6′ 6″ diameter to be made of best quality of Siemen's Martin steel plates; the back ends of these vessels to be of a dished shape, and the front ends to be formed of a steel door mounted on substantial hinges with balance weights and arrangement for rapid automatic jointing, the whole being readily operated by one man. The vessels to be fitted inside with an arrangement of pipes for heating, and a set of rails for trolleys upon which the timber to be treated would be carried.

These vessels to be supported by an arrangement of rollers carried in substantial framing to allow of expansion and contraction taking place without putting any strain on the vessels.

100 trolleys as before mentioned, to be formed of wrought iron or steel framing, and each fitted with four wheels suitable for running upon the rails referred to.

1 horizontal non-condensing air compressing engine with air cylinder having a bore of 18″ and a stroke of 2′ 6,″ and with steam cylinder of suitable dimensions; this engine to be complete in every way and of the most substantial design in every detail.

1 Horizontal non-condensing air circulating engine of the proper size and strength.

2 Patent Galloway boilers each 28 feet long by 7 feet diameter, made of best annealed steel plates with complete set of fittings, valves, &c.

The whole of the pipes and valves for actuating the vessels, machinery, &c., as above described including steam, feed, exhaust, and air circulating pipes with feed pump for feeding boilers, air receivers, heaters and coolers as required, all of the best material and workmanship throughout, delivered f.o.b. steamer in Manchester.

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ORDER—No. 53 Ry., dated 11th January 1899.

The papers read above will be communicated to the Board of Revenue, to the Agents, Madras and South Indian Railways, to the Manager, East Coast Railway, and to the Agent and Manager, His Highness the Nizam's Guaranteed State Railway, for information.

In giving effect to the order of Government, No. 772, Revenue, dated 13th December 1898, the Board of Revenue should either correspond direct with the various Railway Administrations or should put the Forest Department in touch with them.

A copy of these Proceedings and of previous Proceedings on the same subject will be communicated by the Consulting Engineer to the Director of Railway Construction.

(True Extract.)

FRANCIS J. E. SPRING,
Joint Secretary.

To the Consulting Engineer for Railways.
" Agent and Manager, Madras Railway.
" " His Highness the Nizam's Guaranteed State Railway.
" Agent, South Indian Railway.
" Manager, East Coast Railway.
" Revenue Department.
" Board of Revenue.
Editors' Table.

Exd. A. Rungasawmy Aiyangar.

P. W. Department, Railway Branch.

~~Revenue~~ (1899) Department.

Railway

CURRENT No. 213

Case sent to the Bd of Revs 9/2/99

Print

JOINT SECRETARY TO GOVT. OF MADRAS RYS. RECEIVED 10 FEB. 1899

From The Secretary to the Commissioners of Land Revenue Board of Revenue

Order

Forest No. 65

Dated 3 February 1899

Received

Registered } 13.2.99

Enclosures

Spare copies

Draft a G.O. reading all previous G.Os on the subject (and noting by reference to a marginal note which of them have been sent to the Railway Companies), and adding that a copy of this Resolution, as well as of the Resolution which preceded it as Circular 197, be sent to the Railway Companies for information. Add that it is the desire of Government that the Railway Companies should make every endeavour to place the Forest officers in possession of sufficient information, well in advance, as not to call them to tender on equal terms with Bazaar or Contractors Supplies. and that Govt. wishes the Railway Companies to understand that it is now their definite policy to endeavour by all practicable means to meet the railway demand, at first to a somewhat limited extent until the forests get opened out. Let letter on more fully. JHL 11/2/99

SUBJECT.

Issuing certain instructions in connection with the supply of sleepers by the Madras Forest department to the different railways in the Presidency

BACK PAPERS.

| G.O. | No. | Department. | Date. |
|---|---|---|---|
| | | | |

FURTHER PAPERS.

| G.O. | No. | Department. | Date. |
|---|---|---|---|
| | | | |



## PROCEEDINGS OF THE BOARD OF REVENUE
(Land Revenue).

Read—again Government Order, No. 772, Revenue, dated 13th December 1898.

*Read*—Government Order, No. 53, Railway, dated 11th January 1899.

Resolution—Forest No. 65, dated 3rd February 1899.

From the papers read above there seems reason to believe that the forests of the Madras Presidency are capable of supplying a considerable proportion of the sleepers required for the Railway extensions now under contemplation as well for annual renewals on the existing lines, and Government has directed that all that is possible shall be done to develop the market for railway sleepers.

2. Conservators or, in cases in which it may be more convenient, District Forest-officers should place themselves in direct communication with the Chief Engineers of the different railways in view to obtaining any information regarding requirements which cannot be found in the orders of Government which have been communicated to them.

3. The Board concurs with the Chief Engineer of the Madras Railway in considering that it must be clearly understood that sleepers supplied by the Forest Department will be subject to the conditions of ordinary contracts and should be in accordance with specification, and subject to rejection if considered unfit for use and not up to specification. It has also no objection to the condition that the officers of the railway concerned shall be sole judges in this respect, if it be understood that rejections by a subordinate officer shall, if necessary, be subject to revision by the head of his department.

4. As District Forest-officers will have difficulty in finding time to devote personal supervision to all the details of operations on a large scale, the Board considers that endeavours should be made to secure the services of trustworthy, and, if possible, experienced contractors who could work under conditions prescribed by the District Forest-officer. The officers of the railway administration may be in a position to assist in this matter.

5. The main object in view is the utilization of local resources, and the consequent retention in the country of large sums of money which must otherwise be sent out of it. To this the Board attaches very great importance and it may be understood that there will be no difficulty in obtaining sanction to any well-considered schemes for expenditure in opening out markets which are at present closed for want of facilities for transport or manufacture.

(True Copy and Extract.)

Lakshmikantam

~~For~~ Acting Secretary.

10 FEB1899

To the Conservator of Forests, Southern Circle.
" " " Northern Circle.
" Collector of Coimbatore.
" " of Malabar.
" " of South Canara.
" " of Tinnevelly.
" Secretary to Government, Revenue Department.
" Joint Secretary to Government, Public Works Department (Railway Branch).

Copy to the Collector of the Nilgiris.

Exd. Md. Pahilwan.

19-P

REVENUE DEPARTMENT.

1899.

# Board of Revenue

(Land Revenue),

**MADRAS.**

*Printed February th.*

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**Proceedings, Forest No. 65, 3rd February 1899.**

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**FEBRUARY.**

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Issuing certain instructions in connection with the supply of sleepers by the Madras Forest Department to the different railways in the Presidency.

The Hon'ble Mr. A. T. Arundel C.S.I.
The Hon'ble Mr. H. M. Winterbotham.

Form No. (2).

Mail early

P.C. Pr 11/3

PUBLIC WORKS DEPARTMENT,

RAILWAY BRANCH.

## PROCEEDINGS OF THE MADRAS GOVERNMENT.

READ the following

1 Quarto

* G.O. No. 373 Rly Quarto dated 5.3.98 S.1.
" 544 Rly Quarto " 7.4.98. S.5. - flag H
" 715 Rly Quarto " 12.5.98 S.9. - flag G
" 841-2 Rly Quarto " 21.6.98 S.14 - flag F
* " 1141 Rly Quarto " 16.8.98 S.18 - flag D
" 772 (Revenue) Quarto " 13.12.98 S.31(a) flag B
* " 53 Rly Quarto " 11.1.99 S.34 flag A
P.W.Rly. Cho 197 dated 8.2.99 from the Board of Revenue
" " 213 dated 13.2.99 "

6 Quarto

[Note - The orders marked with an asterisk have been communicated to Railway administrations]

20 ℔

A copy of the Board of Revenue's Resolution Forest No 17 dated 7th January 1899. and No 65 dated 3rd Feby 1899. will be communicated to Railway administrations for information.

2. It is the desire of Government that the Railway Companies should make every endeavour to place the Forest officers in possession of sufficient information, well in advance, so as to enable them

Ack 20.2.99.

Fd 21.2.99

H Mrs 18.2.99.

RD 22.2.99.

Rail Cell 13.2.99

them to tender on equal terms with Burmah, or Australian, or English supplies, ~~if~~ efforts
It is now the definite policy to endeavour by all practicable means to meet the demand for railway sleepers, at first to a somewhat limited extent until the forests get opened out, but later on more fully. A copy of these Proceedings will be furnished to the Govt of India.

FWS

R

Rly. Dept for C.I.

and the circular for approval of Govt

No.

7

Forwarded.

FWS

22/2/99

To The Agent Madras Ry
" S.I.R.
" " H.H. the N.G.S.R.
" Manager E.C.R.
" Board of Revenue
" Revenue Depty to
" Comptroller for Rlys.

2nd para Rec'd 16.3.99

RAILWAY.

# Government {1899} of Madras.

## PUBLIC WORKS.

Through Secretary Board of Revenue to

with previous printed G.O.s on same subject

H.E. and Circ.

A.9H
22.3.99

FWS
16/3/99

Recd. } 1899.
Regd. }

Enclosures

Spare copies 4 17.3.99

AH
23.3.99

**G.O., Nos. 342, 343 Ry., 27th March 1899.**

24-3-99

**MARCH.**

Rec'd Govt
18.3.99.

Rly
24.3.99.

GOVERNMENT OF MADRAS.

## PUBLIC WORKS DEPARTMENT.

### Railway.

Read G.O. No. 373 Ry. dated 5th April 1898. (Committee Railway Administration)
also

Read the following papers :—

From—The Agent and Manager, Madras Railway.
To—The Deputy Consulting Engineer for Railways in Charge.
Dated—Madras, 16th August 1862, No. 556.

I have the honour to acknowledge the receipt of Captain O'Connell's letter No. 1005, dated the 3rd ultimo, requesting me to transmit, for the perusal of Government. all documents which may have been received from the Engineers respecting the relative durability of the several kinds of wood used for sleepers.

2. In reply I have the pleasure to transmit, herewith, an original letter from the Acting Chief Engineer, furnishing a statement of the average life of sleepers made of fourteen descriptions of timber and annexing a copy of a draft report prepared by the late Chief Engineer Mr. Ross upon the working of the forests in the District of Malabar under his superintendence. This draft seems to have been written, consequent on Lieutenant-Col. Johnston's letter, No. 7710, dated the 5th September 1861 (replied to by me on the 16th April and 2nd May 1862). But the sudden decease of Mr. Ross unfortunately prevented the completion of his report.

No. 548, dated 14th August 1862.

3. I shall feel obliged by your returning Mr. Pinson's letter, at your early convenience.

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ENCLOSURES.

From—The Chief Engineer, Madras Railway.
To—The Agent and Manager, Madras Railway.
Dated—Madras, 14th August 1862, No. 548.

I have to acknowledge the receipt of the Acting Consulting Engineer's letter No. 405 of the 3rd July.

I am not at present in a position to forward very extensive information upon the subject referred to, but I think it better (to avoid any further delay) to furnish you with the result of our experience upon the first or Madras division of the south-west line.

The following statement gives the average lives of sleepers of various woods, taken out of the line in a state of decay, and replaced by iron pot sleepers, up to the present date :—

| Distinguishing mark. | Name of wood. | Average life. |
|---|---|---|
| A | Ancha | 4 years, 7 months. |
| F | Kurrah Murdah | 3 „ 10 „ |
| C | Combadrie | 4 „ 2 „ |
| K | Cadookoy | 4 „ 1 „ |
| S | Saul | 4 „ 2 „ |
| E | Dud Eloopay | 3 „ 10 „ |
| Y | Eroovanloo | 2 „ 8 „ |
| V | Vangay | 4 „ 3 „ |
| P | Panlay | 2 „ 10 „ |
| R | Auray | 2 „ 6 „ |
| M | Myladee | 1 „ 5 „ |
| H | Myroothy | 4 „ 3 „ |
| D | Katvoy | 4 „ 4 „ |
| B | Karavalum | 4 „ 2 „ |



I am awaiting returns from the Engineers of the other divisions on the south-west line, to enable me to ascertain the durability of errool which we confidently expect will turn out to be the best description of wood for sleeper purposes.

The creosoted sleepers of Baltic fir, which we have from time to time received from England, are, as a rule, exceedingly durable. We had recently occasion to take some decayed ones out of the line near Sholinghur, which were ascertained to have been in the road for a period of nearly 6½ years. The cost of these sleepers, however, interferes materially with their extensive use in this country.

I append to this letter a copy of a draft report in the hand-writing of the late Chief Engineer on the timber-cutting operations in the Malabar forests. The document will probably be interesting to Government, although not bearing directly upon the subject under reply.

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COPY of Mr. Ross' Draft Reports.

In accordance with the desire of Government, I beg to submit a report about the timber-cutting operations in Malabar. These operations were conducted by myself for four years up to April 1861, since which time they have been conducted by Mr. Wilkinson, the Engineer in charge of districts 13 and 14.

It was found prior to 1857 that contractors could not be induced to bring sleepers in sufficient numbers, to supply the midland districts, and Mr. Heppel accordingly requested me to arrange for cutting timber myself, partly with a view to increase the supply, and partly for the purpose of letting contractors see that we were independent of them. The effect of these operations was to make contractors come forward and offer to supply us with sleepers, while at the same time we were supplying ourselves with a much better description of sleepers than we were able to purchase from contractors.

My first operations were in the jungles at the foot of the Anamalai Hills near Pollachi. The timber there was very fine, consisting principally of pillay murdah (*Terminalia Alata*) kurrah murdah (*Terminalia* ——) and errool (*Inga Xylocarpus*).

The Caders inhabiting these jungles came forward willingly to work for us then, and I had the satisfaction of teaching them, after a short time, the use of the cross-cut saw. The distance over which we had to cart the timber was so great that I was reluctantly obliged to abandon the operations in that jungle. I cannot help thinking that it might be to the interest of Government to connect the valuable forests in the Anamalai Hills by means of a tramway or light railway with the Madras Railway. The amount of timber (teak for the Bombay dockyard) now carried by bandy from Anamalai is very great. This tramway, if made to join the railway at either Palghat or Coimbatore, would run through a very rich country (that about Pollachi being considered very suitable for cotton).

After abandoning the Anamalai jungles, I was allowed by the Conservator of Forests to cut trees in the Chennet Nair forests near Palghat, and in the Walliar jungle, half way between Coimbatore and Palghat. The Walliar jungle has been almost entirely worked out, at least in those portions which are easy of access. The timber of which I found the greatest quantity was vela nagay, which, although stronger than any other, does not last more than four or five years when used as sleepers.

In working this jungle, I was able to bring common carts close up to the place where the trees were felled, and consequently had little use for elephants. In this jungle, I succeeded in getting the Malsens (natives of the jungle) to come forward and work. These tribes are averse to using any implement but the axe. I succeeded with some difficulty in inducing them to use the saw.

In working the Chennet Nair forest near Palghat, I tried to introduce a system. The trees useful for sleepers found in this forest are errool, kurrah murdah, and pillay murdah; there is also a good deal of vengay in one part of the jungle.

In this forest, I had to pay for every tree which was cut down one rupee and a half seigniorage to Government. In this agreement there were certain conditions by which I was prevented from cutting young trees, and which compelled me to cut trees not more than certain height (1′ 6″) above the ground. I was not allowed to cut teak or black wood, and it was understood that I was to do my best to conserve the forest. My system here was to do as much as possible by contract—the tree was cut down, cut into lengths of ten feet and squared, all by contract.

In cutting the tree into lengths of ten feet, the contractors occasionally used the cross-cut saw. After the tree was cut into lengths of ten feet, elephants were brought in to drag out the timber to the nearest jungle road where depots were formed along its line. At these depots the logs were tilted and all underwood cut away from near them. This was done to prevent any damage from fire during the dry season. From these depots, I carted all timbers that could be put into common bandies, the roads were bad, but as a general rule, it is better to do as much work as possible out of the jungle, and for this reason I reduced the logs only sufficiently to

enable me to cart them. In this, as in most jungles, the fever was a great hindrance to our successful working; there are high hills on three sides of it. It is said during the monsoon to be free from fever, but on one occasion I slept there for two nights during the monsoon, the result was that all my servants got fever of a very virulent kind, and one of them unfortunately died of it. With these servants, I took every usual precaution. In working these jungles it was necessary for me occasionally to bring out very large logs (40′ × 1′ 2″ × 1′ 2″) of the heaviest wood (kurrah murdah) for use in the railway.

In doing this, I tried to economise elephant labour. I used in some cases sling carts, the logs were suspended at about two-third of the length underneath the axle, and the elephant was then ordered to pull, the objections to this mode of taking heavy logs out of the jungle are the difficulty which the elephant experiences in taking the load down hill, and the great strength of which it is necessary to make the carts. I also tried a pair of small wheels placed under one end of the log, but this, although it worked well on tolerably smooth ground, was awkward to manage in crossing nullahs. These are difficulties, however, which may be overcome. For elephants in Malabar, we paid at the rate of Rs. 5 per day.

I hoped, at one time, to have been able to do a good deal of the sawing work by steam, and I proposed on first entering this forest, to get a steam engine and sawing apparatus from Home. The contract time has now nearly expired and it would not be worth while getting out a sawing apparatus without knowing whether the lease will be renewed. I would prefer steam to water power, as with steam you are more independent, and fuel would cost nothing.

Government may not think that it is profitable to let the forest to us on the same terms. It is true that the amount paid to the Conservator of Forests has not been much each year; this is because I have always made it a rule to cut not a single tree in excess of what I was able to carry out. I think, however, that this is in reality the most profitable way in which Government can use the forests, because while we take a comparatively small number of trees out of the jungle, we conserve it, and at the same time, do all in our power to avoid injury to the young trees.

My opinion is that in working forests, it would be advisable to try whether a very light tramway could not be used with advantage.

In this forest, I intended to have put up a large charcoal oven for the purpose of converting all waste branches, &c., into charcoal; this oven is now being erected and will, I have no doubt, be of great service, both in economising the timber, and in clearing the ground from waste timber which takes fire during the dry season, and injures so many young trees, and sometimes also, unless precautionary measures have been taken, destroys logs ready for transport. A charcoal oven might, I think, to be put up in most jungles.

The usual time for cutting trees in this and in other jungles is in the middle of the monsoon; this is on account of its being impossible to remain in most of them after the dry weather has set in. It is usual at Home to cost trees only when the sap is down; very few of the trees in this country are deciduous; I doubt therefore whether it is of so much consequence to cut the trees at any particular time of the year. It is, however, of great importance that after the tree is cut down it should undergo a proper seasoning. To effect this, I think that after the tree is cut, it should be squared and hauled away to some situation, when it can be tilted at a considerable angle, where no rank vegetation is allowed to grow about it, and where it can be exposed to a free current of air, but above everything rank vegetation ought not to be allowed to get near it.

It is difficult to estimate the cost of the sleepers which have as yet been turned out from the jungles worked by ourselves, as we have still a large quantity of timber unconverted. The price will not be greater than that which we have to pay contractors, while the character of the sleeper is infinitely superior.

I have gradually lost confidence in every kind of country wood, except errool and vengay. Teak I put out of the question as being too expensive; almost all other description of timber I have seen decay when used as sleepers.

With reference to many of the inferior woods, which are almost useless, I have already asked for an apparatus such as that used by Boncherie to be sent from Home. I am inclined to think that with such an apparatus the worthless timber might be made valuable. It would be difficult or next to impossible to use this apparatus with hard woods as kurrah murdah, but it would be a very great matter if, by the use of the Boncherie process such inferior woods as thanee, eloopay and padrie, &c., could be rendered useful. I do not mean merely for sleepers, but those woods which at present command very little sale, might, under these circumstances, become a source of profit as well to Government as to the Railway Company.

In conclusion, I have to say that although having so many other duties to attend to, I was unable to introduce as many improvements as I would wish in working the forests; still I believe that much could be done to work forests effectually, were pains taken to improve the means of carriage, to improve the roads, and to economise elephant labour and sawing power. These improvements could only be effected with close supervision.

I would especially recommend that the Boncherie process be tried. It is not an expensive process, and the trial would not cost much.



* G.O., No. 373 Ry., dated 5th March 1898.

[* Note.—This G.O. has been communicated to Railway Administrations.]

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From—The Agent and Manager, Madras Railway.
To—The Consulting Engineer for Railways, Madras.
Dated—Madras, 12th March 1898, No. 9294/B. 218.

I have the honour to inform you that, on the 10th ultimo, I enquired of my Board, at the request of the Chief Engineer, at what rate, inclusive of freight, good creosoted pine sleepers 10′ × 10″ × 5″ could be delivered at Madras, and in reply I have to-day received the following telegram:—

Sleeper 10 feet eight and two, 9 feet six and six

which is understood to mean that sleepers 10 feet in length can be delivered at 8*s.* 2*d.*, and those 9 feet in length at 6*s.* 6*d.*

---

Note by the Consulting Engineer for Railways, Madras, dated 25th March 1898.

*Railway Sleepers in Malabar.*

There will soon be a very heavy demand for 136,000 railway sleepers for the Calicut-Cannanore Railway, 62 miles; and in all probability a demand will also arise very soon for 164,000 sleepers for 74 miles of the Shoranur-Cochin Railway. The demand for Pyngadu (*Xylia dolabriformis*) from Burma is far in excess of the supply, so much so that the Burma firms were quite unable to supply the Bezwada-Madras Railway's requirements, and Deodar (*Cedrus deodara*) sleepers had to be got round from Kurrachi at a very high price, and the opening of the line has consequently been delayed by many months.

I hear that there are large quantities of timber fit for sleepers in the two forest divisions, North and South Malabar, not far from the Calicut-Cannanore Railway, and that not only is "maddi" (*Terminalia tomentosa*) found but also teak and other woods eminently fit for sleepers. I hear also that the Forest Department have machine saws working somewhere not far from Podanur whence Shoranur-Cochin and Podanur-Dindigul sleepers could perhaps be supplied.

But, however excellent and plentiful the timber may be in the forest, it is hopeless to expect to get it out, anything like fast enough or anything like honestly, through the agency of the petty sort of private enterprise that is available. It seems to me that the agency of the Forest Department might be made use of, and that Provincial finances might as well get whatever profit may accrue from the proposed expenditure of perhaps 3 to 5 rupees per sleeper.

Though nominally the work of a Railway Company, the Calicut-Cannanore Railway is really *de facto* a Government work, and it only seems right that all the help which the Forest Department can give should, under the circumstances, be given.

The Company's Agent is already enquiring into the price at which creosoted pine sleepers from Europe can be delivered. But it seems a pity to send to Europe for what we *ought* to be able, so far as I can learn, to obtain from the forests alongside of the railway through the agency of a Government department specially organized for such purposes.

---

*Order*—No. 544 Ry., dated 7th April 1898.

The Board of Revenue will report upon the subject and will advise whether any special steps should be taken or expenditure incurred to enable the Forest Department to meet the probable demand of 136,000 sleepers for the Calicut-Cannanore Railway in the next two years.

Proceedings of the Board of Revenue (Land Revenue).
Dated—7th May 1898, No. 204.

If the Forest Department is to make any special arrangements for the provision of sleepers, it is probable that a considerable initial expenditure will be involved, and the Board would be glad if some estimate could be given of the probable annual demand for sleepers for renewals at different centres, and the kinds of wood approved by the Railway authorities.

The woods which occur to the Board are:—

| | |
|---|---|
| Teak .. ... ... ... ... ... | *Tectona grandis.* |
| Maddi ... ... ... ... ... ... | *Terminalia tomentosa.* |
| Ironwood—Irul ... ... ... ... | *Xylion dolabriformis.* |
| Vengai or Yegi .. ... ... ... | *Pterocarpus marsupium.* |
| Achea or Yepi ... ... ... ... | *Hardwickia binata.* |
| Sâl ... ... ... ... ... ... | *Shorea robusta.* |
| Sôme .. ... ... ... ... ... | *Soymida febrifuga.* |
| Manjakadambai or Rudrajanapa ... | *Adina cordifolia.* |

*Order*—No. 715 Ry., dated 12th May 1898.

The Board will be informed that the quantity of metre gauge sleepers, which would probably be bought from the Forest Department if proper arrangements were made for their supply would, in round numbers, be as follows:—

For the Calicut-Cannanore Railway, 136,000, within say 3 years.
For the Shoranur-Cochin Railway, 164,000 „ „ 3 „

Future requirements for both railways, 10,000 annually to begin with, rising at the end of 10 years to 30,000 and standing thenceforth at that figure. It is hoped that this estimate will enable the Forest Department to make a forecast as to what it would be possible for it to do, in order that the Madras Railway Company may be able to come to such arrangements with them as will allow of the sleepers they require being obtained in the Presidency instead of from England.

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* G.O., Nos. 841-42 Ry., dated 21st June 1898.
* G.O., No. 1141 Ry., dated 16th September 1898.

* [Note.—The orders marked with an asterisk have been communicated to Railway Administrations.]

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Read—the following papers:—

From—the Conservator of Forests, Southern Circle.
To—The Secretary to the Commissioners of Land Revenue.
Dated—Coimbatore, 30th June 1898, Ref. on C. No. 4992.

With reference to the Board's Reference No. 184, dated 23rd April, regarding the supply of sleepers for the Calicut-Cannanore Railway, I have the honour to report having consulted the District Forest-officers, Nilgiris, North Malabar, South Coimbatore, South Malabar and South Canara on the subject. The two former District Forest-officers quote rates which are either altogether prohibitive or are so high as to leave but a small profit even if the sleepers are supplied at the rates which it is stated pine creosoted sleepers could be supplied at. I am, however, not quite satisfied that North Malabar could not supply *Terminalia tomentosa* at reasonable rates, as the rates quoted for sawing and carting by the Acting District Forest-officer appear very high and could possibly be reduced considerably if proper arrangements for procuring sawyers at reasonable rates as well as for carting the sleepers to the nearest Railway Station or water way were made. I therefore propose as soon as the permanent District Forest-officer, Mr. Tireman, returns from leave to ask him to go into the matter of rates thoroughly and report further. In the meantime, North Malabar may be omitted from our calculations.

2. The District Forest-officers, South Coimbatore, South Canara, and South Malabar, report the number of sleepers of each kind of timber they can supply as well



as the lowest rates it would be advisable to accept. I give below a précis of their replies together with my recommendation regarding each proposal made.

Presuming the demand of the Calicut-Cannanore Railway amounting to 136,000 sleepers is spread over three years, this would give an annual demand of 44,000 sleepers to be met by the Department from three Districts or, say, roughly 15,000 sleepers per District if the indent was equally divided among the three. This, of course, is neither necessary nor advisable as the possibility of each district varies. Taking them therefore in the order of greatest possibility, South Coimbatore should supply the greatest number. The District Forest-officer states that given men and money he could supply 65,000 the first year and 100,000 the second, the sources of supply being so far as concerns the first year 15,000 from Tekadi leased forests, 25,000 from Pollachi Upper Anaimalai forests, and a similar number from Udamalpet Upper Anaimalai forests. In the 15,000 sleepers proposed for supply from Tekadi forests 2,500 Teak sleepers are included, which, however it would not pay us to supply as teak in the log will pay us much better than the price we could realize for it when sawn into sleepers. This would leave 12,500 sleepers to be supplied composed of *Terminalia tomentosa* and *Lagerstrœmia microcarpa* in about the proportion of nine to four respectively. It is not certain that the Railway Company would accept the latter kind of wood although it should prove fairly suitable for sleepers. I shall therefore ask the District Forest-officer to send some sample sleepers to the Company for testing and opinion at once.

3. Passing on to the supply proposed from the Pollachi and Udamalpet forests the District Forest-officer's proposals are dependent in each of these cases on methods of transport which have not yet been tried there and in the case of Pollachi Forests which are not yet available. I refer of course to the new road now under construction to connect these forests with the plains and it is evident that without this road the supply of sleepers from the Upper Anaimalai forests could not be undertaken. I therefore put myself in communication with the Superintending Engineer regarding the time it would take to construct a cart-track suitable for our purposes of slow timber traffic down hill and I would specially invite reference to this correspondence as I regard the Superintending Engineer's last letter, dated 22nd June as very hopeful in so much as he states that "it would be *possible* to make the Prince of Wales Ghât passable for carts in a very short time, but it would involve very expensive work on the fourth and fifth miles. It might, however, pay to incur this expense to enable you to take up the contract for sleepers, and accept the risk of the Prince of Wales Ghât not being eventually selected as the best line for the cart-road." I am certainly of opinion that unless the very expensive work spoken of by the Superintending Engineer is prohibitively high it should be undertaken rather than allow an indefinite period to elapse before any road at all is available, and I would point out in this connection that even if this Prince of Wales Ghât road was not chosen as the final road to connect the evergreen forests near Sirukunru and Paralai with the plains, other forests would be tapped by it or by branch cart-tracks from it, which the Department could construct and in this way it could not but prove remunerative and useful to the Department in the long run. I would, therefore, await an expression of opinion on this matter by the Board before replying to the Superintending Engineer. If however that officer could give an approximate figure as to what the cost of the heavy work on the fourth and fifth miles would be in order to make it passable for carts it would help us to come to a conclusion on this point. In the somewhat uncertain time therefore in which we may expect to utilize the new cart-road I think it would be wise not to rely on these Upper Anaimalai Pollachi forests for any supply during the first year, although it might be quite possible to bring down some sleepers towards the end of the official year, provided that arrangements can be made for Travancore or Palghat sawyers who would be required in some numbers for the work. As regards the supply from the Udamalpet Upper Anaimalai forests, the District Forest-officer contemplates utilizing the two rivers connecting the forests with the plains for the purpose of transporting sleepers, but as this means of transport in the locality is new I think it would be advisable not to rely on it for the present. In conclusion, therefore, I do not think that it would be wise to rely on a greater number of sleepers from South Coimbatore during the first year than the 12,500 to be obtained from the Tekadi leased forests, although it is quite possible that this number could be considerably increased from the Pollachi Upper Anaimalai forests, provided the cart-road is made available for slow down-hill timber traffic at an early date. During the second

year I think we could with more certainty rely on the supply being largely increased from this source, although I doubt whether it would be possible to supply such a large number as 25,000 as contemplated by the District Forest-officer when the difficulties of procuring transport and sawyer labour in an entirely new locality are taken into account. I therefore think that 10,000 sleepers would probably be as much as we might expect to supply the second year from these forests and this only provided subordinates possessing tact and interest in their work are employed on the work.

For South Coimbatore, therefore, I am of opinion that it would only be safe to rely on a supply of 12,500 sleepers the first year and 22,500 the second and possibly 30,000 the third.

4. As regards the supply that can be expected from South Malabar, the District Forest-officer of that District reports that he can supply 9,000 *Terminalia tomentosa* sleepers and 13,000 Irul (*Xylia dolabriformis*) during the next twelve months, but taking into consideration possible difficulty in procuring a sufficient number of sawyers during the first year of the work as well as possible loss in converting logs into sleepers over and above the percentage calculated I think it would be safer not to rely upon a greater number than 15,000 sleepers during each year from this District. But it must be pointed out that this number could be considerably increased if the Railway Company would accept sleepers of *Terminalia paniculata* which could moreover be supplied cheaper than either of the two other kinds of timber referred to. This can only be ascertained by sending the Railway Company some sample sleepers to test and examine, which I shall ask the District Forest-officer to do at once.

5. As regards the supply which may be expected from South Canara, the District Forest-officer reports that he can supply the following :—

| | | Rs. |
|---|---|---|
| 1st | Hopea parviflora ... ... ... ... ... ... ... | 6,000 |
| 2nd | Terminalia tomentosa ... ... ... ... ... ... | 4,000 |
| 3rd | Xylia dolabriformis ... ... ... ... ... ... | 3.000 |
| 4th | Lagerstroemia microcarpa ... ... ... ... ... ... | 2,000 |
| | Total ... | 15,000 |

I think however for similar reasons as stated regarding the South Malabar supply that it would be better to reduce this number to 10,000 and that the reduction should as much as possible bear on the Hopea which is such a good wood and so easily disposable in the log that I am doubtful whether it would be justifiable to utilize it in large quantity for sleepers.

6. In conclusion, therefore, so far as numbers are concerned, I am of opinion that we might hope to supply 37,500 sleepers the first year and about 50,000 the second and third, which number would meet the whole demand so far as the Calicut-Cannanore Railway is concerned.

7. The next question relative to the supply is the rate at which we might expect to make it. The District Forest-officer, South Coimbatore, after going into the matter at some length proposes a rate of Rs. 3–8–0 made up of Rs. 1–6–0, actual cash disbursement per sleeper delivered in Coimbatore, Rs. 1–6–0 cost of establishment, elephants, annual lease amount of forests, &c., and As. 11–8 profit and to cover loss by rejection, &c.

I consider this amount rather low even for the smaller sleeper of $3\frac{1}{8}$ cubic feet when taking into consideration the excellent quality of timber we propose to supply, which for Indian underground purposes would probably be superior to creosoted pine sleepers. I therefore think a charge of Rs. 4–8–0 per smaller sleeper and Rs. 5–8–0 per larger one to be more reasonable; these rates moreover are more in accordance with those proposed by the District Forest-officers, South Malabar and South Canara who, however, do not differentiate between the two classes of sleepers when making their proposals on this point. If the Railway Company however would take *Terminalia paniculata* we could supply this wood at 20 per cent. below the above rates.

If the contract is taken up it will be necessary to make immediate arrangements for sawyers in each District. I would, therefore, request that orders may be passed as soon as possible in communication with the Railway Company. In the meantime I shall keep District Forest-officers informed what is being done in the matter.

8. **The enclosure to the Board's Reference is herewith returned.**



Enclosure No. 1.

From—The Conservator of Forests, Southern Circle.
To—The Superintending Engineer, IV Circle, Coimbatore.
Dated—30th May 1898, No. 4098.

I have the honour to enquire when a cart-road is likely to be commenced connecting Paralai with the Plains and when commenced how long (approximately of course) the cutting of it would take so as to admit of timber being brought down.

This information is asked for as it is under contemplation to supply a portion of the quantity of sleepers required by the Calicut-Cannanore Railway during the next three years from the Upper Anaimalai forests if the cart-road can be made use of during this period.

I understand from a communication (copy enclosed) from Mr. Loam, to the District Forest-officer, South Coimbatore, in reply to a similar query as that contained in this letter, that he has no orders to construct a cart-road but only to frame an estimate for one but that he is engaged in cutting a bridlepath to Sirukunru. I would beg to point out that the bridlepaths though very useful bring no direct return to Government, while from the day that a cart-road is opened connecting the forests with the plains some of the timber can be brought down and sold at remunerative rates which I estimate at from 6 annas to 1 rupee net per cubic foot.

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From—The Superintending Engineer, IV Circle.
To—The Conservator of Forests, Southern Circle, Coimbatore.
Dated—7th June 1898, No. 334-M.

In reply to your No. 4098, dated 30th May 1898, I have the honour to inform you that the construction of a metalled cart-road for three and a half miles from the Aliar Crossing will be commenced, I trust, within the next three weeks. The Bridge across the Aliar will, it is hoped, be completed by this time next year.

2. From three and a half miles there are two possible routes to Sirukunru—one by the Prince of Wales Ghât and the water-fall estate and the other by the Villoni Valley. Before deciding which route would be the more favourable for a cart-road estimates have to be prepared, and they ought to be submitted in two months' time.

3. To complete a cart-road to Sirukunru by either route would probably take from three to four years. Government are anxious to have a good cart-road made with the least possible delay.

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From—The Conservator of Forests, Southern Circle.
To—The Superintending Engineer, IV Circle, Coimbatore.
Dated—15th June 1898, Ref. on Cur. No. 4098.

With reference to paragraph 3 of your No. 334, dated 7th June 1898, I have the honour to enquire how long it would take to so far construct the road as to admit of carting of timber from the Forests to the plains, as this would only entail laden carts coming down hill.

It would be quite possible to utilize the road for timber down traffic before being metalled and widened to its full width, as a 10-feet unmetalled road would probably answer our purpose almost as well as a fully-metalled wide road which will be necessary for up-hill traffic.

I would, therefore, ask if it would not be possible to construct a cart-track of this nature in a somewhat shorter period than three or four years.

I ask for this information as I believe it would be almost possible for the Forest Department to recover a large portion of the expenditure on the road out of profits from supply of sleepers to the Calicut-Cannanore and other Railways if the road could be so far constructed at a somewhat earlier date so as to admit of slow timber traffic. The matter being of great importance to the Department with reference to timber sleeper supply contracts which will go elsewhere if not taken up by us is my reason for again troubling you for further information on the subject.

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From—The Superintending Engineer, IV Circle.
To—The Conservator of Forests, Southern Circle, Coimbatore.
Dated—22nd June 1898, No. 363-M.

In reply to your No. 4098, dated 15th June 1898, I have the honour to inform you that it would certainly be possible to get the road ready for carts carrying sleepers down to the plains in a shorter time than three years.

2. As soon as the line for the cart-road has been definitely decided on every endeavour will be made to form a road which will answer your requirements without loss of time, as I fully appreciate the importance of the work.

3. I should be glad to know when you would be ready to begin carting sleepers. It would be *possible* to make the Prince of Wales Ghât passable for carts in a very short time, but it would involve very expensive work in the 4th and 5th miles. It might, however, pay to incur this expense to enable you to take up the contract for sleepers, and accept the risk of the Prince of Wales Ghât not being eventually selected as the best line for the cart-road.

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Enclosure No 2.

From—The Executive Engineer on Special duty.
To—The District Forest-officer, South Coimbatore.
Dated—15th May 1898, No. 240.

With reference to your letter No. 497-Cur. (*b*), dated 9th May 1898, I have the honour to report that I am making a bridlepath to Sirukunru and have orders only to make estimates for a bandy road.

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Endorsement by—The District Forest-officer.
Dated—23rd May 1898, Ref. No. C-497.

Forwarded to the Conservator of Forests for information; this is the reply to my query as to when carts would be able to get through.

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Resolution—Forest No. 301, dated 21st July 1898.

In March last the Consulting Engineer for Railways brought to the notice of Government, in the Public Works Department, Railway Branch, that there was an immediate prospect of a very heavy demand for Railway sleepers in connection with the construction of the line from Calicut to Cannanore and afterwards that from Shoranur to Cochin. He represented that the demand for Pyngadu (*Xylia dolabriformis*) from Burma was far in excess of the supply, and that as large quantities of timber fit for sleepers are said to exist in the North and South Malabar forest Divisions, it would be a pity to ignore the agency of the Forest Department in the matter of this supply and to obtain creosoted pine sleepers from Europe. In its order, No. 544, Railway, dated 7th April 1898, the Government enquired of the Board whether any special steps should be taken, or expenditure incurred, to enable the Forest Department to supply about 136,000 sleepers for the Calicut-Cannanore Railway in the next two years.

2. The card referred the matter to the Conservator of Forests, Southern Circle, for report, but as the undertaking was one which would involve considerable initial expenditure from forest funds, it desired the Railway Branch of the Public Works Department to furnish an estimate of the probable annual demand for sleepers for renewals at different centres and the kinds of wood approved by the railway authorities. The Board at the same time specified the marginally-noted woods which occurred to it as suitable for the purpose and in a separate communication added *Mesua ferrea* or *speciosa*. The Railway Branch replied that the quantity of metre gauge sleepers which would probably be bought from the Forest Department for the Calicut-Cannanore line within, say, three years would amount to 136,000 sleepers, and those for the Shoranur-Cochin line, within the same period, to 164,000, and that the future annual requirements would amount to 10,000 sleepers for both railways, rising eventually to 30,000 sleepers at the end of ten years. The Board forwarded this reply to the Conservator of Forests, Southern Circle, and at the same time requested the Railway Branch to furnish an estimate of the probable demand for renewals in the Madras, South Indian and East Coast Railways. The reply to the latter reference has not yet been received.

| | |
|---|---|
| Teak ... ... | *Tectona grandis.* |
| Maddi ... ... | *Terminalia tomentosa.* |
| Ironwood (Irul) ... | *Xylia dolabriformis.* |
| Vengai or Yegi ... | *Pterocarpus marsupium.* |
| Achca or Yepi ... | *Hardwickia binata.* |
| Sâl ... ... | *Shorea robusta.* |
| Sóme ... ... | *Soymida febrifuga.* |
| Manjakadambi or Rudrajanapa. | *Adina cordifolia.* |



3. The paper last read above is the Conservator's reply to the references made to him. Mr. Brasier states that he has consulted the District Forest-officers of the Nilgiris, North Malabar, South Coimbatore, South Malabar and South Canara. He considers that the rates quoted by the District Forest-officers of the first-named two forest divisions are either altogether prohibitive or so high as to leave but a small margin of profit, even assuming that the railways would pay as much as they would for creosoted pine sleepers. He is, however, of opinion that from North Malabar *Terminalia tomentosa* can be supplied at a much lower price than that given by the District Forest-officer by a possible reduction in the rates for sawing and carting, and the Board notes that the matter is engaging the Conservator's attention. Leaving, however, these two forest divisions out of account, Mr. Brasier hopes that the estimated quantity of 136,000 sleepers for the Calicut-Cannanore Railway can be met from the remaining three divisions at 37,500 sleepers during the first year and about 50,000 during each of the following two years.

4. As regards the rate, Mr. Brasier proposes to charge Rs. 4-8-0 per smaller sleeper and Rs. 5-8-0 per larger one. He has not named the stations at which he would deliver the supply at the proposed rates except in the case of sleepers from the South Coimbatore division, which it is said will be delivered at Coimbatore, by which is probably meant the Podanúr Railway station. The sleepers from South Malabar will no doubt be delivered at Calicut, and those from South Canara at such port as may be most convenient to the Railway Company. Mr. Brasier states that the rates proposed by him are more in accordance with those suggested by the District Forest-officers of South Malabar and South Canara, whereas the rate of Rs. 3-8-0 quoted by the District Forest-officer, South Coimbatore, is low even for the smaller sleepers, considering that the quality of timber which it is proposed to supply is excellent. The Board considers that Mr. Brasier's rates are reasonable. Apart from the question of the excellence of the timber the Board does not consider that it would be safe to undertake the work at the rates proposed by the District Forest-officer, South Coimbatore. Some of the localities to be worked are isolated and have to be newly opened out, and there may be difficulties with regard to sawyers and carriage involving revised rates as well as the appointment of additional supervising establishments.

5. Mr. Brasier's remarks and conclusions with regard to the quantities that can be supplied from each of the forest divisions of South Coimbatore, South Malabar and South Canara will now be considered. Taking South Coimbatore, the District Forest-officer is of opinion that, given men and money, he could supply 65,000 sleepers the first year and 100,000 the second year. He expects to supply during the first year 15,000 sleepers from the Tekadi leased forests, 25,000 from the Pollachi Upper Anaimalai forests, and 25,000 from the Udumalpet Upper Anaimalai forests. The District Forest-officer's estimate of the proposed supply from the Tekadi forests includes 2,500 teak sleepers. Mr. Brasier rightly thinks that teak would fetch better prices if sold in the log than when converted into sleepers. He would accordingly deduct 2,500 from the number proposed by the District Forest-officer. The balance, viz., 12,500 sleepers, is composed of *Terminalia tomentosa* and *Lagerstræmia microcarpa* in about the proportion of 9 to 4, respectively, and the Board notes that the Conservator is arranging to ascertain the opinion of the railway authorities as to the quality of this latter wood after test. As regards the supplies from the Pollachi and Udumalpet forests, Mr. Brasier considers that the difficulty of transport largely discounts the sanguine view of the District Forest-officer. The supply from the Pollachi Upper Anaimalai forests is dependent on the completion of the road now in course of construction in connection with the grant of leases for planting in the Anaimalai forest reserve. It seems that it would be possible to make the Prince of Wales Ghaut passable for carts in a very short time, but a large expenditure would have to be incurred on the 4th and 5th miles. Apart from the uncertainty as to whether this Ghaut will eventually be selected as the best line for the cart road to connect the evergreen forests near Sirukunru and Paralai with the plains, Mr. Brasier considers that unless the very large expenditure said to be necessary for this work is regarded as prohibitive, it might be undertaken rather than have no road at all for an indefinite period. In his opinion the Prince of Wales Ghaut road would prove useful and remunerative as other forests would be tapped by it or by branch cart-tracks from it which the Department could construct. The Board trusts that by the time the railway is in a position

to give definite orders for the supply of sleepers, the Superintending Engineer will have decided on the line which the new cart road should take, or if this is not possible, he could frame an estimate showing the probable cost of rendering the Prince of Wales Ghaut fit for cart traffic. Owing to the difficulty of transport from the Pollachi Upper Anaimalais forests as well as from the Udumalpet Upper Anaimalais where the method of transporting the wood by rivers has yet to be tried, Mr. Brasier thinks it wise not to calculate on any supply from these forests during the first year. In the second year a supply would no doubt be obtained from the Pollachi Upper Anaimalais, but when the difficulties of procuring transport and sawyer labour in an entirely new locality are considered, Mr. Brasier doubts whether a supply of 25,000 sleepers could be relied on and thinks that the figures might be taken at 10,000; to procure even this number it would in his opinion be necessary to employ subordinates possessing special tact and interest in the work. In the third year the number might be raised to 17,500, making 30,000 in all from South Coimbatore. The wood of which the sleepers from the Pollachi Upper Anaimalais would be made is not stated, but from other correspondence on the subject there is no doubt that it is *Mesua ferrea* or *speciosa*.

6. In South Malabar, the District Forest-officer estimates a supply of 9,000 sleepers of *Terminalia tomentosa* and 13,000 of *Xylia dolabriformis* during the next twelve months. Taking into account the difficulty of procuring a sufficient number of sawyers during the first year of the work and the possible loss in converting logs into sleepers over and above the percentage calculated, Mr. Brasier relies upon a supply from this division of 15,000 sleepers annually. He adds that this number could be considerably increased if the Railway Company would accept sleepers of *Terminalia paniculata* which could be supplied at rates 20 per cent. cheaper than those given above. It is noted that arrangements are being made to test the usefulness of this wood as a railway sleeper. For reasons similar to those adduced for South Malabar, Mr. Brasier reduces the estimate of the District Forest-officer, South Canara, from 15,000 to 10,000 sleepers.

7. To sum up, the proposals for supply are as follows:—

| — | *Terminalia tomentosa.* | *Xylia dolabriformis.* | *Mesua ferrea or speciosa.* | *Lagerstræmia microcarpa.* | *Hopea parviflora.* |
|---|---|---|---|---|---|
| South Malabar— | | | | | |
| First year .. .. .. .. | 5,000 | 10,000 | .. | .. | .. |
| Second year .. .. .. .. | 5,000 | 10,000 | .. | .. | .. |
| Third year .. .. .. .. | 5,000 | 10,000 | .. | .. | .. |
| South Coimbatore— | | | | | |
| First year .. .. .. .. | 7,500 | .. | .. | 4,500 | .. |
| Second year .. .. .. .. | 7,500 | .. | 10,000 | 4,500 | .. |
| Third year .. .. .. .. | 7,500 | .. | 17,500 | 4,500 | .. |
| South Canara— | | | | | |
| First year .. .. .. .. | 4,000 | 3,000 | .. | 2,000 | 1,000 |
| Second year .. .. .. .. | 4,000 | 3,000 | .. | 2,000 | 1,000 |
| Third year .. .. .. .. | 4,000 | 3,000 | .. | 2,000 | 1,000 |
| Total .. | 49,500 | 39,000 | 27,500 | 19,500 | 3,000 |

| | |
|---|---|
| *Terminalia tomentosa* .. .. .. .. .. .. .. .. | 49,500 |
| *Xylia dolabriformis* .. .. .. .. .. .. .. .. | 39,000 |
| *Mesua ferrea* .. .. .. .. .. .. .. .. | 27,500 |
| *Lagerstræmia microcarpa* .. .. .. .. .. .. .. | 19,500 |
| *Hopea parviflora* .. .. .. .. .. .. .. .. | 3,000 |
| Total .. | 138,500 |

From the Consulting Engineer's note recorded in Government Order, No. 841 Ry., dated 21st June 1898, and from Gamble's Manual of Indian Timbers there can be no doubt as to the suitability of *Xylia dolabriformis* and *Mesua ferrea* or *speciosa* for the manufacture of sleepers, and the same may probably be said of *Hopea parviflora* though the Board has no information of any experiment having actually been made. With regard to *Terminalia tomentosa*, definite information can probably be obtained from the Northern Bengal State Railway, who are said, by Gamble, to have made experiments on a considerable scale in 1876. *Lagerstræmia microcarpa* does not seem to have been tried for sleepers anywhere but it is a favourite wood for building on the West Coast.



If all the timbers above mentioned be accepted and the road to the Pollachi Upper Anaimalai forests be pushed on with, the Board considers that Government may safely undertake the supply, by the Forest Department, of all the sleepers required for the Calicut-Cannanore Railway, and possibly some, if not all, of those required for the other extensions mentioned by the Consulting Engineer as likely to be taken in hand at an early date, but the result of the first year's working must be awaited before any further definite proposals can be submitted. As has been represented in Board's Proceedings, No. 227, dated 11th June 1898 the completion of the Anaimalai Ghaut road is a matter of prime importance in connection with the provision of railway sleepers, the supply of suitable timber in that locality being practically unlimited.

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G.O., No. 1141, Railway, dated 16th September 1898.

Abstract.—Informing the Board of Revenue of the number of sleepers which are likely to be required annually for renewals on the standard and metre-gauge railways in the Madras Presidency, and requesting it to report what steps it proposes to take for supplying them.

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Resolution—Forest No. 427, dated 6th October 1898.

In the Government Order read above the Board is directed to report as early as possible for the information of Government what steps it is proposed to take in the matter of the direct supply of sleepers to railways in this Presidency.

2. Certain proposals were submitted in Board's Proceedings, No. 301, dated 21st July 1898, but the figures given in the Government Order now read show that there has been a misunderstanding as regards the size of the sleepers required for the Calicut-Cannanore Railway.

3. The letter from the Agent, Madras Railway, forwarded with G.O., No. 544, Railway, dated 7th April 1898, gave quotations for two sizes of sleepers, and the Board assumed that the smaller of these, viz., a sleeper of $3\frac{1}{8}$ cubic feet was that which is required for the Calicut-Cannanore Railway and based its proposals accordingly, but from the enclosure to G.O., No. 1141, Railway, dated 16th September 1898, it would appear that the size required is either that used by the South Indian Railway, viz., 6′ 6″ × 9″ × $4\frac{1}{2}$″ or that proposed for the Shoranur-Cochin Railway, viz., 6′ × 8″ × $4\frac{1}{2}$″. The Board will require to have definite information on the point before commencing work.

4. It is observed that the Madras and South Indian Railways pay different prices per sleeper according to the wood of which it is made, and if necessary differential prices can be quoted, after further enquiry, with reference to the wood used and the locality from which it is supplied, but the Board would prefer an all-round rate of Rs. 3–4–0 for a sleeper 6′ 6″ × 9″ × $4\frac{1}{2}$″ which, it is observed, is the rate that has been paid by the South Indian Railway for Irul sleepers. The price per sleeper 6′ × 8″ × $4\frac{1}{2}$″ would be Rs. 2–12–0. Delivery would be made at Podanur from Coimbatore, at Kallai from South Malabar, at Calicut and Tellicherry from North Malabar, while those from South Canara would be delivered at any port in Malabar which might be found convenient for the Railway Company.

5. In its Proceedings of the 21st July 1898, No. 301, paragraph 7, the Board offered to supply all the sleepers required for the Calicut-Cannanore Railway if all the timbers mentioned by it were accepted and the road to the Pollachi Upper Anamalai forest were pushed on with. The present Acting Conservator of Forests, Mr. Gass, in consultation with whom the present Proceedings are written and who is also permanent District Forest-officer, Coimbatore, considers that we do not yet know enough of the Pollachi Upper Anamalai forests to justify us in offering to make any supply from there owing to the long carriage, and the difficulty of converting the prevailing timber, viz., *Mesua ferrea or speciosa;* he also considers that the capabilities of the Lower Anamalai forests have been overestimated. The smaller size of the sleeper required, however, makes it unnecessary for the Board to withdraw its

proposal to supply 136,000 sleepers within three years using only the woods which it now appears are already approved by the Madras and South Indian Railways, viz., Karimaradu (*Terminalia tomentosa*), Irul (*Xylia dolabriformis*) and Irumbogam (*Hopea parviflora*). Further information from North Malabar even enables it to raise its offer to 200,000 within three years, and if the smaller sleeper be used the number would be 250,000. This does not include the demand for the Tinnevelly-Quilon Railway. This railway was not mentioned in the former orders of Government and consequently full enquiries have not yet been made as to the capabilities of the Tinnevelly forests. A further communication will be submitted on the point, as well as with regard to experiments which are now being made with other kinds of wood in communication with the officers of the Madras Railway Company.

6. It is also proposed to thoroughly investigate the capabilities of the Pollachi Upper Anamalai forests. A saw-mill and wire ropeway have just been successfully installed in the Lower Anamalais in which a tramway has been in work for years, and if similar arrangements on a larger scale can be made for the exploitation of the more extensive and more fully stocked forests of the Upper Anamalais, the Board sees no reason to doubt that it will be in a position largely to increase its contribution towards meeting the very large demand for sleepers which has arisen in connection with the extension of railway construction in the Presidency.

7. The most important timber in the Upper Anamalai forests being *Mesua ferrea*, the Board would be glad to be informed at the earliest possible date whether sleepers of that wood would be accepted. It does not appear that any of them has been used by the Madras or South Indian Railways, but Gamble, at page 27 of his Manual of Indian Timbers, states that it has been found to answer for sleepers equally well with Pynkadu.

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Order—No. 1311, Railway, dated 21st October 1898.

A copy of the Board's Resolution, together with a copy of the description of *Mesua ferrea* given in page 27 of Mr. Gamble's book, will be forwarded to the Madras, South Indian, and East Coast Railways, with an enquiry whether they will be prepared to accept sleepers of the timber for extensions and renewals, and with a request that they will specify the size of sleepers, standard or metre gauge, which they would be prepared to take. It is noted that in the Government of India standard dimensions, the following sizes are recommended: viz., for broad gauge 9′ 6″ × 9″ × 5″, with as a minimum 8′ 11″ × 8″ × 5″, and for metre gauge 6′ 0″ × 7″ × 4½″ with as a minimum 5′ 9″ × 6″ × 4″.

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Enclosure.

*Mesua ferrea.*

Vernacular names: *Nagesar*, Bengali; *Nahor*, Assamese; *Nangal*, Tamil; *Naga-kesara*, Telugu.

A large evergreen tree. Heartwood dark red, extremely hard. Pores moderate-sized, often in groups, scanty, often filled with yellow resin. Medullary rays extremely fine, uniform, equidistant, very numerous. Numerious fine, many, concentric lines of light-coloured tissue.

Eastern Bengal from the Monas eastward (though traces of its having formerly been found west of that river occur sometimes in the names of places, *e.g.*, Nageshwarbari, or Naksarbari, a town in the Sikkim Perai on the Nepal frontier). Assam, South India, Ceylon, Burma and the Andamans, often cultivated.

The weight and transverse strength have been determined by the following experiments—

| | | | Weight. LB. | Value of P. |
|---|---|---|---|---|
| A. Mendis—Ceylon No. 59, with bars 2′ × 1″ × 1″ | ... | found | 72 | 994 |
| Brandis—Burma, No. 18, 1862, | ... ... ... | ,, | 69 | ... |
| Bennett—Andamans, No. 4, 1872, | ... ... ... | ,, | 70 | 1,053 |
| Smythies { Assam (4 specimens) 1878, | ... ... | ,, | 67·5 | ... |
| { Kanara (1 specimen) ,, | ... ... | ,, | 62 | ... |
| { Burma (6 specimens) ,, | ... ... | ,, | 70 | ... |



Several of our specimens, however, reached 74 to 76 lb. per cubic foot in weight. It is very durable. It has been found to answer for sleepers equally well with Pynkado, but the cost of cutting the hard wood, its weight, and the freight from the Tenasserim forests to Calcutta prevent its being much used, as the total cost is scarcely covered by the price (Rs. 5) per broad-gauge sleeper. It is used for building, for bridges, gunstocks and tool handles; but its more general use is prevented by its great hardness, weight and the difficulty of working it. In Ceylon an oil is obtained from the nut, and the tree is often planted for the sake of its handsome flowers.

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*Note by the Consulting Engineer for Railways.*

In Assam *Nahor* (Mesua ferrea) is known to be an excellent sleeper timber.

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Order—No. 772, Revenue, dated 13th December 1898.

Recorded. The Board of Revenue should do all they can to develop the market for railway sleepers.

2. The question of the alignment of the Anamalai ghât road is under the consideration of the Government.

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Resolution of the Board of Revenue, dated 7th January 1899, Forest No. 17.

Communicated to the Conservator of Forests, Southern Circle, and the Collectors of Coimbatore, Malabar and South Canara whose special attention is drawn to the remarks of Government regarding the development of the market for railway sleepers.

The Board understands that trees were felled in several districts some time ago in view to the manufacture of railway sleepers, but definite information as to the size of the sleepers required for the proposed new railways is still awaited. The sizes required for annual renewals on the Madras and South Indian Railways are given in Government Order, No. 1141, Railway, dated 16th September 1898.

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Read—G.O., No. 53 Ry., dated 11th January 1899.

[This order has been communicated to Railway Administration.]

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Resolution of the Board of Revenue, dated 3rd February 1899, Forest No. 65.

From the papers read above there seems reason to believe that the forests of the Madras Presidency are capable of supplying a considerable proportion of the sleepers required for the Railway extensions now under contemplation as well for annual renewals on the existing lines, and Government has directed that all that is possible shall be done to develop the market for railway sleepers.

2. Conservators or, in cases in which it may be more convenient, District Forest-officers, should place themselves in direct communication with the Chief Engineers of the different railways in view to obtaining any information regarding requirements which cannot be found in the orders of Government which have been communicated to them.

3. The Board concurs with the Chief Engineer of the Madras Railway in considering that it must be clearly understood that sleepers supplied by the Forest Department will be subject to the conditions of ordinary contracts and should be in accordance with specification, and subject to rejection if considered unfit for use and not up to specification. It has also no objection to the condition that the officers of the railway concerned shall be sole judges in this respect, if it be understood that rejections by a subordinate officer shall, if necessary, be subject to revision by the head of his department.

4. As District Forest-officers will have difficulty in finding time to devote personal supervision to all the details of operations on a large scale, the Board considers that endeavours should be made to secure the services of trustworthy, and, if possible, experienced contractors who could work under conditions prescribed by the District Forest-officer. The officers of the railway administration may be in a position to assist in this matter.

5. The main object in view is the utilization of local resources, and the consequent retention in the country of large sums of money which must otherwise be sent out of it. To this the Board attaches very great importance and it may be understood that there will be no difficulty in obtaining sanction to any well-considered schemes for expenditure in opening out markets which are at present closed for want of facilities for transport or manufacture.

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ORDER—No. 342 Ry., dated 27th March 1899.

A copy of the Board of Revenue's Resolutions, Forest Nos. 17, dated 7th January 1899, and 65, dated 3rd February 1899, will be communicated to railway administrations for information.

2. It is the desire of Government that the Railway Companies should make every endeavour to place the Forest-officers in possession of sufficient information, well in advance, so as to enable them to tender on equal terms with Burma, or Australian or English supplies. It is now the definite policy of Government to endeavour by all practicable means to meet the demand for railway sleepers, at first to a somewhat limited extent until the forests get opened out, but later on more fully.

3. A copy of these Proceedings will be forwarded to the Government of India.

[Here enter No. 343 Ry., dated 27th March 1899.]

(True Extract.)

FRANCIS J. E. SPRING,
Joint Secretary.

To the Agent, Madras Railway.
" Agent, South Indian Railway.
" Agent, His Highness the Nizam's Guaranteed State Railway.
" Manger, East Coast Railway.
" Board of Revenue.
" Revenue Department.
" Consulting Engineer for Railways.

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ENDORSEMENT—No. 343 Ry., dated 27th March 1899.

Forwarded.

(By order.)

Joint Secretary.

Exd. T. K. Narayana Aiyangar.