Proceedings of the Madras Government, Revenue Department, 21st March 1872.

Read the following papers :—

No. 247. From Lieutenant-Colonel J. MICHAEL, Staff Corps, Madras, to the Secretary to Government, Revenue Department, dated Madras, 28th November 1871.

With reference to Order of Government No. 1,960, dated 17th November 1871, I have the honour to submit a memorandum on the subject of seasoning timber.

MEMORANDUM.

My experience is all in favour of seasoning timber in the log before converting it into scantling.

2. For railway sleepers and small building-timber cut in forests where ripe trees are of small growth, the plan of piling them on end in a pyramid is no doubt a good one, but the trees, which are generally felled in this Presidency, are not such as could be dealt with in this manner ; they are usually of too large a size, and as, for the most part, they will not float when green, it appears to me that their seasoning can be more advantageously effected in the forest than out of it.

3. There is seldom any difficulty, in Southern India at least, in selecting a well-sheltered shady spot in the jungle, on ground with a sufficient slope to ensure drainage on which the logs may be stored in open freely ventilated stacks for two or more years.

4. A few dry logs of inferior wood, or better still, lines of low stone wall should be given as a base on which a stack of logs, six or eight deep, may be laid in cross layers, a foot or more apart, so as to admit of a free circulation of air. All actual contact of wood with wood can be obviated, in the case of squared timber, by the simple expedient of inserting a few stones here and there at the points of contact while the stack is being formed.

5. The stacks should contain a moderate number of logs, so as to admit of their being readily unpiled and turned once or twice in the course of their seasoning, and I need hardly say, they should be kept free from all accumulation of leaves, grass, etc., not only to preserve them from fire but from damp also.

6. The usual objection raised to storing timber in the forest in India is danger from fire, but periodical forest fires are, in reality, not so dangerous to stacked timber as is supposed : it is by no means easy to set fire to a squared or barked log, and, if the vicinity of a depôt be carefully kept clear of underwood, grass, chips, etc., fire need not be feared. Teak, which contains much oil, is more liable to catch fire immediately after being cut than after a few months.

7. In the case of most descriptions of timber, I believe that the best and safest method of seasoning is to girdle the tree two years before it is wanted, and allow it to dry standing. I would however except the Teak tree, which, I think, should always be felled green on account of the great natural heart-shake which runs through it more or less according to the soil on which it grows.

8. On first opening up the Annamallay Teak forest in 1849, I adopted the system of girdling, but after a few years I was forced to abandon it at the instance of the Malabar men (exceedingly skilled axemen), who would not undertake to produce the "split plank," then so largely required by the Bombay Dockyard, from girdled trees, although they were ready to do so from living ones. On going into the question with them they satisfied me that girdling a Teak tree and felling it when dry is an economic mistake.

9. Let any one examine the heart-shake of a split or sawn Teak log, and he will understand that the sudden shock caused by the fall of a dry dead tree must necessarily extend the shake into the sound wood more than in the case of a green tree, which comes to the ground with all the elasticity of its living branches to break its fall.

10. The best season for felling or girdling is at the end of the rains when the tree has thrown out all its new leaves and the sap has ceased to rise.

11. After timber has been seasoned in the log, it will still require further care when it is cut into scantling and plank, to prevent cracking and warping.

12. I believe the best method of effecting this second seasoning is to immerse the newly-sawn planks in fresh water for two or three weeks, and then to stack them in a dry airy situation for a number of months, which must, of course, vary according to climate. I know of no better method of stacking planks than that illustrated in plate B. of Mr. Molesworth's memorandum, namely, leaning on edge, nearly perpendicularly, and an inch or two apart, against a supporting cross pole.

13. I have no practical experience of any of the various modes of artificial seasoning, but, from all that I have read on the subject, I should think that the steaming process would be the least detrimental to timber. I believe it is an ascertained fact that steamed timber is less liable to dry rot than any other.

(Signed) J. MICHAEL, Lieut.-Colonel, S.C.

No. 248. From the Conservator of Forests, to the Secretary to Government, Revenue Department, Fort St. George, dated Ootacamund, 28th November 1871, No. 700.

In acknowledging the receipt of the Proceedings of Government No. 1,960 of the 17th instant, I have the honour to forward a copy of papers on the seasoning and preservation of timber, published some ten years ago by the late Conductor P. W. Skinner of the Madras Gun Carriage Department, which, I think, might be forwarded to the Government of India.

2. Our department does not work timber up into half wroughts or scantlings, and our timber is always, when possible, seasoned and dried slowly in the natural way in the shade within the forests before it is brought out to the market depôts or offered for sale. Teak and Blackwood are always seasoned inside our forests for two or three years, and sometimes a longer period, before being brought out; and I think, when possible, that Teak cut from trees not previously ringed should always be kept in the log in the shady forest, where it has been felled for a period of two and-a-half to three years. We never now attempt to stack; but the logs are laid parallel a foot or so apart, one end resting on a log placed at right angles with the line. Stacking in our forests is a most dangerous plan, and two fine lots of Teak have been lost in the Annamallays by attempting it. However clear the stack and its immediate neighbourhood may be kept, a high wind (very prevalent in the fire season) may at any moment choke it with large dead teak-leaves, and it may catch fire at any moment during February and March; and fresh unseasoned teak burns so readily from its oily nature that in a very few minutes no man or elephant could approach the stack, and every log would be completely consumed. In our plan the loss cannot be great: if a log catches fire, it is easily put out with earth, or it can be easily drawn away by an elephant. A stack, besides, might at any time be most easily fired intentionally, either from motives of malice or from sheer mischief—a not at all improbable occurrence. The period of seasoning required by our numerous different sorts of jungle-timber varies very much: some of the more open and coarse grained sorts season very rapidly, others take more or less time; and some are much improved by being placed in water,

others again would deteriorate from such a process. We endeavour to season these in the forests for the period necessary, and we generally manage to have a certain stock of well-seasoned logs; but we often are obliged to sell quite unseasoned timber if a sudden great demand arises, as most of these jungle-timbers deteriorate so rapidly after they have once seasoned that we experience very heavy losses if we attempt to keep large stocks on hand. This seasoning may, as a rule, be said to be a reduction of one-fifth of the weight; for instance, Padri (*Stereospermum chlelonoides*) weighs 60 lbs. per cubic foot when fresh cut and 48 lbs. when seasoned; Illepie (*Bassia longifolia*) weighs 75 lbs. per cubic foot when fresh against 60 when seasoned; teak, 60 against 46 or 48.

3. Our department has never attempted any of the artificial methods to hasten seasoning; and wherever I have seen these tried, a certain amount of deterioration has, I think, been the result, and I should never advise any other plan than the gradual and regular process of drying in the shade of the forest.

4. The "Boucherie" process for artificially seasoning timber was given a most thorough and careful trial at very considerable expenditure by the Madras Railway Company at Palghaut some years ago, and I constantly visited the operations. It was eventually proved, by experiments on timber seasoned in the natural way and that seasoned by the artificial process, that in the latter both the strength and durability of the timber were considerably lessened and the premature and unnatural seasoning caused a greater tendency to split on exposure to the sun, etc. The process was clearly proved to be a failure, and was eventually abandoned.

Enclosure No. 1.

Seasoning of Timber.

All timbers after being felled must be seasoned in log for some time; for should a log be cut up into half wroughts in an unseasoned state, the scantlings will more or less warp and crack. The time of seasoning in log varies according to the nature of the wood; those that are hard and compact will take a longer time than those that are open and coarse-grained. Saul takes from four to five years to season; whereas Teak from two to three years. Some English writers recommend that a log after being felled should be immediately dubbed or rough squared, and then stowed off under a dry shelter to season. This process will certainly facilitate the seasoning, and may answer in a climate like England, and it may answer for some of the soft timbers even in India; but some of the harder ones will stand a risk of cracking to such a degree during the process of seasoning, especially when the hot winds prevail, as to incur a great waste when it comes to be cut up.

2. It is, therefore, necessary to leave the bark on the logs for a couple of months after felling, and then rough square them, as round timbers are more liable to crack than squared ones, or which is better, after the log is felled and rough squared, let it season in water for a month or six weeks; and to facilitate the seasoning, it was recommended by the Superintendent, Colonel Maitland, "to split the logs in two," and then throw them into the water to season; afterwards they can be removed to season under cover or in the open air. This process not only prevents the wood from cracking to any great extent and quicken the seasoning, it also imparts a degree of hardness, even to the sap-wood, and renders it impervious to worms. I have known natives in up-countries to fell a tree, and immediately to cut it up into the required scantlings, and throw them in a tank, or imbed them in mud for four or five weeks, and after a couple of weeks' drying, to use them.

3. When logs are laid up to season, they should be stacked in tiers ; the stacks should not be raised unnecessarily high, as it will entail much labour in extracting a log, and much space will have to be taken up if they are low. Every stack should consist of from four to five tiers, according to the size of the logs. The following method is practised at the Gun Carriage Manufactory :— After the logs are numbered, measured, and registered, the highest ground is selected for a site, from which grass and weeds are cleared off and levelled ; then two wooden sleepers, from six to eight inches in depth (and more if the ground is yielding) are laid down at a parallel distance of less than the length of the logs, and the length of the sleepers are a little more than the length of the stack. The first tier is laid at right angles to the sleepers, and every succeeding tier is placed at right angles to the one upon which it rests, and a space of a few inches is allowed between each log to allow a free circulation of air. There should be ample space around each stack for the purpose of taking out any log that may be required, and every log should be accessible for inspection.

4. When logs are sufficiently seasoned and cut into half-wroughts, they cannot be immediately used, as the wood will still retain a portion of moisture that requires to be evaporated ; it should, therefore, be kept up to season for a further period. In cutting the half-wroughts, they should be cut a little larger every way than the required dimensions to provide against shrinkage and cracks ; the amount of excess will depend upon the nature and the state of the wood when cut and the size of scantling : for scantlings that are under six inches, an excess from one-eighth to quarter of an inch in thickness and breadth, and from three to six inches in the length will be sufficient ; for scantlings above that size an excess of half inch will be sufficient in breadth and thickness, and from six to twelve inches in the length.

5. Before the half-wroughts are stowed off to season, the ends should be protected to prevent them from cracking. The practice in the Manufactory is to have the ends plastered with a composition of two parts of cow-dung to one of clay, and when the plaster is perfectly dry, they are stacked up to season. In stacking the half-wroughts, it should be carefully observed that there is sufficient space between each half-wrought and between each tier to allow a free circulation of air. The first is done by placing the half-wroughts from half to one inch apart, and the second by inserting two slips of wood from half to three-fourth inch in thickness between the tiers.

6. The time of seasoning in half-wroughts depends on the nature of the wood and the size of scantling ; some woods season sooner than others. Tredgold observes that a scantling is sufficiently seasoned when it has lost one-fifth of its weight. Duhamel and others, from their experiments, think it is not sufficiently seasoned, especially for joinery, until it has lost one-third of its weight. Teak-wood scantling, from three to six inches in depth, takes from six to twelve months to season, and from one to two years for scantlings up to twelve inches. Saul-wood scantling, under three inches, takes twelve months, and from three to six inches two years, and from six to twelve inches, it takes two to four years to season. As Saul-wood takes a long time to season, to hasten it an experiment was tried by boiling the wood in tannin water ; it proved successful but the time gained did not compensate for the expense and amount of labour it entailed ; moreover, according to Mr. Tredgold, steaming or boiling impairs the two most essential qualities in wood, namely, its strength and elasticity—the two necessary requisites in the construction of Ordnance carriages.

ENCLOSURE No. 2.

On the Preservation of Timber.

ON the preservation of timber its durability greatly depends, and if the surface is left unprotected from the porosity of its nature, it is subject to hygrometical changes, which has an injurious effect in splitting the wood and making it liable to premature decay, especially in a country

Proceedings of the Madras Government, Revenue Department,
21*st March* 1872.

like India, where it has to stand extreme heat and dryness for a greater part of the year, and the heavy rains which are also accompanied with heat, and the heavy fogs which are immediately succeeded by a powerful sun. It cannot be expected that even the best seasoned timber could stand this alteration of moisture and heat without splitting, in many instances followed by symptoms of approaching decay, for "warmth and moisture," observes Mr. Tredgold, "are the most active causes of decay." It has also been observed that naked woods suffer much during the foggy months of January and February, and in the hot months of May, June, and July, even painted woods are not exempt from cracking. To prevent these injurious effects the surface is generally covered by a coat of some medium, so as to fill up the pores and render the wood impervious to moisture, and for works that have to be exposed to the action of the weather, a thick coat of paint or a mixture of pitch and tar has been found sufficient to protect the surface, provided that the wood is well seasoned ; otherwise the confined sap in the wood, having no way of escape, will putrify and hasten its decay.

2. Different methods have been proposed for the preservation of timber. It is said of the Dutch, that for all their out-door works which have to stand the effect of the weather, such as draw-bridges, sluices, and other works, they coat them with a mixture of pitch and tar, upon which are strewn pounded shells, mixed with sea-sand, or the scales of iron from a blacksmith's forge, beaten small and sifted. Mr. Tredgold says that sanded painting, that is, strewing particles of fine sand upon the painting before it is dry, is much more durable than common painting; and another method Mr. Temple recommends in his work on Aquatic Buildings, and which is approved of by Mr. Tredgold. He proposes to subject the timbers to a scorching heat of wood-fire, and while still hot, rubbing it over with a mixture, in a heated state, of linseed oil and tar in equal parts ; this mixture, it is said, will penetrate an inch or more into seasoned wood, and render it hard and durable. A mixture of asphalte, with a small portion of lamp-oil, has also been found a good protection for woods of water works, when they are alternately exposed to moisture and heat. The natives have a practice of charring the ends of such woods, which have to be fixed in a wall, and smearing it with a mixture of tar and oil, which renders them not only durable, but it is also a good preventative against the ravages of white-ants ; they have also a practice of smoking woods by hanging them over a chimney fire for a time, and I have even seen bamboos rendered durable by this process.

3. Kyan's process of saturating timber in a solution of corrosive sublimate is an effectual method of rendering it durable and efficacious against insects ; and an experiment was tried at the Gun Carriage Manufactory on some Europe and country woods which are known to be greedily devoured by white-ants ; these were afterwards exposed in places much infested with them, and after a lapse of a full year they were found to be untouched.

4. Saturating timber in oil has been found effectual against worms and white-ants ; the application of Gurgun balsam or wood-oil is used in India for the protection of building timbers, such as beams and joists ; and a mixture of vegetable wax, with a small portion of nitric acid, in proportion of 25 lbs. of the former to an ounce of the latter was tried at the Arsenal of Fort St. George on woods, and found to secure them from the attack of white-ants. I have also known the application of lamp-oil to render wood exempt from their attacks ; and since worms and insects have an aversion for bitter woods, I think, as an excellent protection against them, to heat the wood, as in Mr. Temple's process, and smear them over with Nim or Margosa oil ; and to render the oil dry, mix it with a small portion of litharge ; it will be cheaper and as effectual as Kyan's or any other process.

5. It is necessary to observe that whatever may be the medium used to protect the surface of woods, unless it is occasionally renewed, it cannot be expected that it will always retain its pristine nature, and answer the purpose for which it is intended, from the materials of the composition themselves being of a more perishable nature than wood.

No. 249. From the Conservator of Forests, to the Secretary to Government, Revenue Department, Fort St. George, dated Ootacamund, 22nd December 1871, No. 744.

In continuation of my letter No. 700 of 28th November last, I have the honour to forward a report from Lieutenant-Colonel Morgan on the process of seasoning timber generally.

Enclosure No. 1.

From Lieutenant-Colonel H. R. MORGAN, Deputy-Conservator of Forests, Ootacamund, to the Conservator of Forests, Ootacamund, dated Mudumallai, 16th December 1871, No. 1,044.

With reference to G. O. No. 1,960 of the 17th instant, I have the honour to offer the following remarks :—

1. The first process for seasoning timber is to fell it between August and February, as at that period the sap is less watery and the quantity at its minimum.

2. I have a decided objection to seasoning logs of Teak by placing them in a vertical position, as by so doing the oil is run out with the sap by means of the longitudinal tubes. When possible, Teak should be seasoned in the shade ; the logs may be raised six inches from the ground to allow of a free current of air all round. Stacking logs does not answer in the forest, for should fire seize a stack its destruction is certain. When a Teak log is sawn up after being seasoned, it is advisable to keep the planks for a short time in the shade placed thus I I I I., each plank parallel with the other, on its edge 2 inches apart. This is a better plan than stacking the planks in the open as shown in plate B., as in the latter plan, the planks are apt to split at the ends.

3. The great object in seasoning Teak is to preserve the oil, for the oil once gone dry rot white-ants and fungus soon destroy it.

4. Teak should never come in contact with lime, as lime draws out the oil. Those parts of the Teak-wood that touch lime should be covered with a coating of coal-tar.

5. It is not better to bark in Spring and fell in Winter as recommended by Mr. Molesworth, paragraph 4. This is the girdling plan by which the oil is lost.

6. No doubt a thin plank is more liable to split than a thick one, the moisture being more rapidly extracted ; the fibres have not time to close, hence rupture takes place.

7. I agree with Mr. Molesworth that there is no certain rule regarding the splitting of woods : all the Eucalypti, which are decidedly dense woods, split easily, that is longitudinally ; Acha (*Hardwickia binata*), 80 lb. the cubic foot, splits transversely.

8. The seasoning of other woods is quite different from the process adopted for Teak. Here I would recommend the lime-bath, whether for planks or beams. A pit should be dug 30 feet long by 6 deep, and say 10 feet wide, fill with water and add three tons of caustic lime ; the planks may be soaked in this solution for three months ; beams a longer time. The theory is that the lime-water forces out the sap, and the lime is deposited in the tubes or cells which renders the timber almost indestructible ; as water can only absorb a certain small percentage of lime, the process of soaking might be repeated two or three times, for instance, a plank might be soaked for a month, then dried in the shade for a month, then replaced in the bath for another month, and so on. I may mention that when engaged in building the Wellington Barracks we had huge vats for weathering our plastering lime. These were 10 feet deep, contained many tons of lime with six feet of water on the top ; into these vats several thousand jungle-planks were thrown, chiefly of Gordonia, Cleyera, and Cassia ; the planks remained some six months in the vats. A good many were used in the works. I floored two rooms with some, and, though ten years have passed, they are now as good as the day they were put down. It was also mentioned in the *Agricultural*

Gazette that larch poles treated to a lime-bath, had their ends buried in the earth for forty years, and when taken up were found to be perfectly sound. I need scarcely point out that if they had not been treated in this manner, they would have rotted in three years. It was also said that the microscope revealed particles of lime in the cells.

General Remarks.—It is a common idea that Teak deficient in oil has been tapped for wood oil ; this is an error ; it has been girdled.

No. 250. Order thereon, 21st March 1872, No. 489.

Forests, No. 11.

Ordered that these reports be forwarded to the Government of India, with reference to their Secretary's letter dated 31st October 1871, No. 52-C. The other reports will be transmitted to them as received.

(True Extract.)

(Signed) W. HUDLESTON,
Officiating Chief Secretary.

To the Conservator of Forests.
,, Lieutenant-Colonel J. Michael.
,, the Public Works Department.
,, the Military Department.

Exd. F. R. Bantleman.

REVENUE DEPARTMENT,
FORT ST. GEORGE,
21*st March* 1872.

No. 490.

No. 251.

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
DEPARTMENT OF AGRICULTURE,
REVENUE, AND COMMERCE,
(FORESTS.)

Forests, No. 12.

Lieutenant-Colonel J. Michael.
Major R. H. Beddome.
Lieutenant-Colonel H. R. Morgan.

SIR,—With reference to your letter dated 31st October 1871, No. 52-C., I am directed to forward herewith copies of the reports of the officers named in the margin on the subject of seasoning planks and timber generally. The reports of other officers will be transmitted as received.

I have the honour to be,
Sir,
Your most obedient servant,
(Signed) W. HUDLESTON,
Officiating Chief Secretary.

Exd. F. R. Bantleman.

Office of Conservator of Forests
Cotacamund 28th November
1871.

No. 700.

From

Major R. A. Beddome
Conservator of Forests.

To,

W. Audleston Esqre
Secretary to Government
R. D.

Sir,

In acknowledging the receipt of the Proceedings of Government No. 1960 of the 17th instant, I have the honor to forward a copy of papers on the seasoning and preservation of

of timber published some 10 years
ago by the late Conductor T. W.
Skinner of the Madras Gun
Carriage Department which I
think might be forwarded to
the Government of India.-

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MADRAS

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I have the honor to be,
Sir,
Your Most Obedient Servt.

Robt. Gilder Major
Conservator of Forests

Rec. 1871-72. No. 3855.
Forwarded for Information
&
From
The Conservator of
Forests
To
The Secretary to Govt.
N.W.P.
Dated 25th November
Received 29th "
No. 700
Enclosure No. 2.
dup. ditto.
S.O. No. 489 of 21st Dec. 1872
Submits remarks on
seasoning timber called
Saul in G.O. No. 1960 of 17th
November 1871.

No 6248

Vide C. No 4115 of 1872.

Seasoning of Timber.

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15-13

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When logs are sufficiently season-
-ed and cut into half-wroughts, they cannot be immediately used, as the wood will still retain a portion of moisture that requires to be evaporated; it should therefore be kept up to season for a further period. In cutting the half-wroughts, they should be cut a little larger every way than the required dimensions, to provide against shrinkage and cracks; the amount of excess will depend upon the nature and the state of the wood when cut, and the size of scantling:

for

for scantlings that are under 6 inches, an excess from $\frac{1}{8}$ to $\frac{1}{4}$ of an inch in thickness and breadth, and from 3 to 6 inches in the length will be sufficient; for scantlings above that size an excess of $\frac{1}{2}$ inch will be sufficient in breadth and thickness, and from 6 to 12 inches in the length.

Before the half-wroughts are stowed off to season, the ends should be protected, to prevent them from cracking. The practice in the manufactory is to have the ends plastered with a composition of two parts of cow-dung to one of clay, and when the plaster is

is perfectly dry, they are stacked up to season. In stacking the half-wroughts, it should be carefully observed that there is sufficient space between each half-wrought, and between each tier, to allow a free circulation of air; the first is done by placing the half-wroughts from $\frac{1}{2}$ to 1 inch apart, and the second by inserting two slips of wood, from $\frac{1}{2}$ to $\frac{3}{4}$ inch in thickness, between the tiers.

The time of seasoning in half-wroughts depends on the nature of

of the wood and the size of scant=
=ling, some woods season sooner
than others. Tredgold observes, that
a scantling is sufficiently seasoned,
when it has lost $\frac{1}{5}$ of its weight.-
Duhamel and others, from their
experiments, think it is not suf=
=ficiently seasoned, especially for
joinery until it has lost $\frac{1}{3}$ of its
weight. Teak-wood scantling, from
3 to 6 inches in depth, takes from
six to twelve months to season,

and

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and from one to two years for scant=
=lings up to 12 inches. Saul-wood
scantling, under 3 inches, takes twelve
months, and from 3 to 6 inches two
years, and from 6 to 12 inches it takes
two to four years to season. As Saul-
-wood takes a long time to season,
to hasten it an experiment was
tried by boiling the wood in tan=
=nin water, it proved successful;
but the time gained did not com=
=pensate for the expense and amount

of

of labour it entailed; moreover,
according to Mr. Tredgold, steam=
=ing or boiling impairs the two
most essential qualities in wood,
viz., its strength and elasticity, the
two necessary requisites in the con=
=struction of Ordnance Carriages.

I Atrue Copy I

Rob[illegible] Major
Conservator of Forests

I.

Enclosure

In a letter No 700 of 28th November 1871 from the Conservator to the Secretary to Govt. N.W.P.

19 16

On the preservation of timber.-

On the preservation of timber, its durability greatly depends, and if the surface is left unprotected, as from the porosity of its nature it is subject to hygrometical changes, which has an injurious effect in splitting the wood and making it liable to premature decay, especially in a country like India, where it has to stand extreme heat and dryness for a greater part of the year, and the heavy rains

pains which are also accompanied
with heat, and the heavy fogs
which are immediately succeeded
by a powerful sun; it cannot be
expected that even the best seasoned
timber could stand this alteration
of moisture and heat without split-
-ting, in many instances followed
by symptoms of approaching
decay; for "warmth and moisture",
observes Mr. Tredgold, "are the
most active causes of decay." It has
also

also been observed, that naked woods
suffer much during the foggy months
of January and February; and in
the hot months of May, June and
July, even painted woods are not
exempt from cracking. To prevent
these injurious effects, the surface
is generally covered by a coat of some
medium, so as to fill up the pores
and render the wood impervious to
moisture, and for works that have
to be exposed to the action of the
weather, a thick coat of paint, or
a

a mixture of pitch and tar, has
been found sufficient to protect
the surface, provided that the
wood is well seasoned, otherwise
the confined sap in the wood,
having no way of escape, will
putrify and hasten its decay.-

Different methods have been
proposed for the preservation of
timber; it is said of the Dutch,
that for all their out-door works,
which have to stand the effect

of

of the weather, such as draw-brid-
-ges, sluices, and other works, they
coat them with a mixture of pitch
and tar, upon which are strewn
pounded shells, mixed with sea-
sand, or the scales of iron from a
blacksmith's forge, beaten small
and sifted. Mr. Tredgold says,
that sanded-painting, that is,
strewing particles of fine sand upon
the painting before it is dry, is
much more durable than common

painting

a painting; and another method
b Mr. Temple recommends in his
t work on aquatic buildings, and
u which is approved of by Mr.
t Predgold, he proposes to subject
h the timbers to a scorching heat of
f wood-fire, and while still hot,
p rubbing it over with a mixture,
t in a heated state, of linseed oil
t and tar in equal parts; this mix=
t =ture, it is said, will penetrate an
w inch or more into seasoned wood,
and render it hard and durable.

A

A mixture of asphalte, with a sma
portion of lamp-oil, has also
been found a good protection for
woods of water works, when they
are alternately exposed to moisture
and heat. The natives have a
practice of charring the ends of
such woods, which have to be fixed
in a wall, and smearing it with
a mixture of tar and oil, which
renders them not only durable,
but it is also a good preventative
against the ravages of white-ants;

they

they have also a practice of
smoking woods, by hanging them
over a chimney fire for a time,
and I have even seen bamboos
rendered durable by this process.

Kyan's process of saturating
timber in a solution of corrosive
sublimate, is an effectual method
of rendering it durable and effi=
=cacious against insects; and an
experiment was tried at the Gun
Carriage Manufactory on some
Europe and country woods, which
are

are known to be greedily devoured
by white-ants; these were afterwards
exposed in places much infested
with them, and after a lapse of
a full year they were found to be
untouched.

Saturating timber in oil has
been found effectual against
worms and white-ants; the ap=
=plication of Gurgun balsam,
or wood-oil, is used in India for
the protection of building timbers,
such as beams and joists; and a
mixture

mixture of vegetable wax, with
a small portion of nitric acid, in
proportion of 25 lbs, of the former
to an ounce of the latter, was tried
at the Arsenal of Fort Saint
George on woods and found to
secure them from the attack of
white-ants. I have also known
the application of lamp-oil
= to render wood exempt from their
attacks; and since worms and
insects have an aversion for bitter
woods, I think, as an excellent =
protection

25 21

protection against them, to heat
the wood, as in Mr. Temples process,
and smear them over with Nim
or Margosa oil; and to render the
oil dry, mix it with a small =
portion of litharge; it will be
cheaper and as effectual as Ky=
=an's or any other process.-

It is necessary to observe that
whatever may be the medium =
used to protect the surface of woods,
unless it is occasionally renewed,
it cannot be expected that it will
always

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always retain its pristine nature,
and answer the purpose for which
it is intended, from the materials
of the composition themselves
being of a more perishable nature
than wood.-

(A true Copy)

Lt Colonel Major
Conservator of Forests.

II.

Enclosure

In a letter No. 700 dated 28th Nov. from the Conservator to the Secretary to Govt. R.D.

Office of Conservr. of Forests

No. 744. Cotacamund 22nd December 1871.

From

Major R. A. Beddome

Conservator of Forests.

To,

W. Hudleston Esqre.

Secretary to Government

R. D.

Sir,

In continuation of my letter No. 700 of 28th. November last, I have the honor to forward a report from Lieutenant Colonel Morgan on the process of seasoning timber generally.-

I have the honor to

Revenue Department.

No. 489.

PROCEEDINGS of the MADRAS GOVERNMENT.

Under date the 21st March 1872.

Read the following letters

From Lt Col. J. Michael
Submitting a Memorandum
on the subject of seasoning timber.
— dated 28th November 1871.

From the Conservator of Forests
Submitting remarks on seasoning
timber, called for in G.O. No. 1960.
17th November 1871.
— " 28th Nov. 1871, No. 700.

From the Conservator of Forests.
Submitting a report from Lt Col.
Morgan on the process of seasoning
timber generally.
— " 22nd Dec. 1871, No. 744.

Ordered that these
reports be forwarded to
the Govt of India with
reference to their Secretary's
letter dated 31st October
1871, No. 52C. The
other

(Rev (1871) 489
No 4115

1871-72
Forest Department.

From

To The Conservator of Forests.

The Secretary to Govt
R.D.

Dated 22nd December 1871.
Despatched

No. 744.
Enclosure. No. 1
Subject.

Submits a report from
Lt Colonel Morgan, on the
process of seasoning timber
generally.

No 249

other reports will be

transmitted to them

as received.

13 – Conservator of Forests – dispt 22 March 1872

1 – 2d Col. J. Michael

21 – Public Works Dept.

5 – Military Dept.

7 copies
dep. 22 March 72

Revenue Department.
21st March 72.

No. 490.

To

THE SECRETARY TO THE GOVERNMENT OF INDIA.

Dept of Agri; Rev; & Commerce.
(Forests)

Sir,

With reference to your letter dated 31st Oct. 1871, No. 52, C, I am directed to forward herewith Copies of the reports of the Officers named in the margin on the subject of seasoning planks and timber generally. The reports of other officers will be transmitted as received.

I have the honor to be
Sir
Your most obedient
Servant

Lieut Col. J. Michael.
Major A. H. Beddome.
Lieut. H. R. Morgan.

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No 2571

To Govt of Cuba

De Leon