PRITCHARD C. H.

2 letters

1920
3rd MAY

POWELL WOOD PROCESS

Last previous Paper.
20219

Submits estimate of cost of installing sleepers treated by the Powell Wood Process. Forwards proofs of of durability of wood so treated

Sir H. Read.

Since I minuted N/17312 there have been discussions with Mr Pritchard, and Sir E. Northey saw him with me when he left these papers yesterday.

Sir E. Northey presses the view expressed in para. 2 of 17312 that the Protectorate cannot afford iron (or steel) sleepers and that, therefore, the only question is whether the Powell process is the best of its kind. On the other point of it Mr Pritchard's figures show a saving in prime cost of £1,125 per mile, i.e. about 10% of the whole cost of construction. By itself this may not be considered sufficient saving to justify a risk. On the other hand,

(i) it goes far to cancel the recent increase in the cost of money.

(ii). As I understood, the £1.2.6 for steel metal sleepers is the price here, so that transport by sea or up the Uganda railway would be an extra saving.

(iii). Any relief to the main line rolling stock is to be welcomed. Up freight this is the fact that the bulk of the ordinary traffic is seawards, so that there should be space

Next subsequent Paper.
23596

(26069—4h) Wt. 28689—35 50,000 11/19, H. St. G. 122/ 41.

W

Mr. Pritchard has found that there is no hope of interesting capital in this venture — as I gather, because both timber and quantity of business are too small in the view. Major Grogan is too much involved in other concerns to have the money to put down, although he is willing to sell timber sleepers. He suggests that the installation should not be on his land but at Nakuru so that other timber concessionaires can also come into the business. This alternative attitude on Major Grogan's part merely means that he does not want to be concerned in the business. So far as Sir E. Northey knows there would be no other timber accessible. Nakuru would be a good site for the first section of the new line, as Major Grogan's sleepers could come down the main line. When the new line reached the Forest there would be unnecessary haulage to & from Nakuru and back again, but I believe that the plant is capable of transportation without undue expense.

Major Grogan also comes into the estimate of cost, which is based on the assumption that he will always sell sleepers at the rate (6/6) at which he now sells *pencil* cedar wood sleepers to the Govt. The sleepers to be Powellized would be yellow-wood, & Major Grogan has at present no economic outlet for this timber.

On the merits of the Process, it has to be remembered that it has never been tried on E.A. timber or tested under E.A. conditions, or anywhere for a longer period than, say, 6 years. Previously page 30 of Mr. Pearson's book (below) states the case as well as any other material we have got: ... & any not: a tendency

As Mr. Pritchard sees no chance of floating a Company or of cutting timber on a royalty basis (as suggested in N/17312) he makes the new suggestion that the Govt. should provide capital for an enterprise which would treat, on a royalty basis, sleepers purchased from outside. His figures are based on the principle that the Govt. should assume a cost equal to ½ that of metal sleepers, which will allow 2/3d per sleeper to be placed to a retention or replacement fund. If the ~~minimum~~ guaranteed life of a sleeper be taken at 5 years, it is obvious that this fund of 25% of the actual cost would very soon be exhausted if a large number of sleepers had to be replaced in the first few years. If however a great proportion reached nearly the 15 years, replacements during the 15 years would be small & the retention fund would be large. Mr. Pritchard shows his confidence in the Process by making a large part of his remuneration depend on the size of the retention fund.

These terms (~~one fifth~~ 5% of the retention money in each year ~~of~~ ... after providing ... for all replacements, & ⅓ of the final balance at the end of 15 years) require scrutiny, but the principle is to the advantage of the Govt. Of course this does not represent the

the whole of ~~the~~ his profit – he would put a large [illegible] (£2240 [illegible]) of the £6000 [illegible] Syndicate for patent rights & the royalty [illegible] of 1s. per sleeper is admittedly liberal. On this [illegible] [illegible] letter [illegible] of 4 May, received after I wrote this minute. He [illegible] to [illegible] that he gave himself away to Sir E. Northey, to [illegible] occasion to explain that the [illegible] per sleeper is 7d more than the royalty on a cubic [illegible] which we stipulated. I do not quite understand the letter [illegible] frank.

As a matter of fact, Sir E. Northey showed a much more "coming on disposition" than I have ever [illegible] to show to [illegible] Pritchard, & said, before him, that the £27,000 could easily be found from the [illegible] [illegible] it seemed best that [illegible] money [illegible] the rights but [illegible] the Process itself (Mr Pritchard [illegible] himself as manager).

Personally I am inclined to think that [illegible] take the risk which undoubtedly [illegible], and that [illegible] the matter is one [illegible], & for that reason I [illegible] the C.A. to send [illegible] [illegible] report. Their [illegible] of the Process,

See 9/22[illegible]

[illegible] Engineer [illegible] to be [illegible] for a [illegible] sleepers.

that of the Consulting Engineers, & probably also of the Contractor as well, would be required, & I think our best course will be to send the papers over to the Syndicate for early comment. If Sir M. Cameron would [illegible] Mr Pritchard an interview the matter ~~go~~ could soon be put in train, & disposed of, but in the first place I think Sir M. Cameron would require an indication that, subject to ~~satisfacto~~ the technical advisers being as far as possible satisfied that the Process gives good prospects of a reasonably long life for the

(A) | sleepers ~~in mattery of course~~, the S. of S. is of opinion that it should be adopted.

Mr. Pritchard leaves England at the end of May unless it seems certain that business will be done.

G. C. A. 5.5.20.

With regard to (A) I do not think that the ~~[illegible]~~ S. of S. could give such an indication without advice from his technical advisers. Which sh[d] be furnished as quickly as possible at once

H. J. R.
6/V/20

Sir H. Read.

25-5-20
8-6-20

I attach a copy of a memorandum on Powellized sleepers by our Chief Engineer, and also a letter from Messrs. Rendel Palmer and Tritton to whom I thought it necessary to refer the question

/as

as they are Consulting Engineers for the Uasin-Gishu Railway on which I understand it has been contemplated to use the process.

The result goes to confirm the opinion I expressed last year that the most the Government should do would be to put up a small experimental plant with an indemnity by the Syndicate against loss. This experiment could, however, hardly settle anything in time for the Uasin-Gishu, and if it is desired to use wooden sleepers on that line, or under the 75 lb. rails proposed to be laid in the main line, it would seem better to use creosote rather than to embark on an experiment which, after all, may not justify its cost, which the C Es do not recommend

[illegible signature]

11. 6. 20.

Sir H Read You have brought this to me.

No doubt the S. of S. will follow the advice of his technical advisers, but I think they are a little timorous.

I do not agree with the C. Es' conclusions either as to the life of powellized soft wood sleepers or as to Mr. Pearson's preference for creosote.

(1) The results recorded in pp 30-107 seem [illegible] all (except Assam) to be with soft wood. In each case there [illegible] of 5 to 6 years experiment and the proportion of sleepers removed in that time is 1 in 180, 1 in 340, none, & none, in the different cases. These figures do not point to an average life so low as 7½ years. It is true that bearing plates are required to prevent the rail cutting into the sleeper, but would not this be the case with a creosoted soft wood sleeper?

(2). On p. 94 is a record of some creosoting experiments – on a very small scale & with mixed results as regards white ants; and Mr. Pearson's conclusion (on p. 97) is that India has enough creosoted sleepers to make it possible to judge their value later on.

(3) On p. 109 Mr. Pearson "is strongly in favour .. of giving the Powell process an extensive trial in India", & says that some creosote compounds "still hold their own against almost all other solutions".

Sir E. Northey has said definitely that in his opinion the Protectorate ment, to reduce [illegible] expenditure, have timber sleepers & [illegible] that [illegible]

22

Sir M. Cameron.

Powell Wood Process

Mr. Pritchard in his letter of the 3rd May in C.O. Jacket No. 22224 suggests that the cost of timber sleepers would only be one half the cost of steel sleepers and this statement appears to be accepted in the minute addressed to Sir W. Read on the same papers. With steel at its present price, there can be little doubt that the first cost of the timber sleeper will be less than the first cost of the steel sleeper but it is by no means certain that any economy will result ultimately from the use of timber sleepers. The General Manager in his letter of the 21st January in C.O. Jacket No. 22224 states that for the first 50 miles of the Uganda Railway steel sleepers are liable to corrosion and a rot resisting hard sleeper would be an advantage. On the rest of the line the steel sleepers laid 20 years ago are still in good condition. It can be assumed therefore, that the average life of the steel sleeper is 20 years.

Mr. Pritchard estimates the life of Powellised timber sleepers will be 15 years. Mr. Pritchard's estimate is undoubtedly very optimistic. Both in Ceylon and F.M.S. several varieties of most excellent hard wood have been used for sleepers and the average life never exceeds from 8 to 12 years. It is very difficult to believe that any preservative process, however good, will give to a soft wood the durable qualities of a hard wood. Moreover, it often becomes necessary to remove sleepers which, otherwise sound, have been cut into in the rail seat or whose fastenings work loose and a soft wood timber, although fortified against dry rot and the attacks of ants, is likely to become unsound in this respect. The probable life of a powellised soft wood sleeper is not likely to be more than 7 years and as compared with steel the timber sleeper should not cost more than one third the cost of the steel sleeper.

2. It appears that any expenditure involved in the provision of the necessary plant must be borne by the Government or payment of interest guaranteed thereon. The Deputy Governor in his despatch of the 31.1.20 in C.O. jacket No. 22224 states that "the provision of financial assistance by this Government is neither possible nor desirable".

3. In our letter to the Colonial Office of the 26th May 1919 we dealt fully with the powellising process and pointed out that a distant Colony like East Africa was not the best place to conduct experiments of this nature. Any process which would have the effect of preserving native timbers from the attacks of insects and from premature decay would undoubtedly prove of great value to the Colonies and for this reason the Government might be prepared to advance the few hundred pounds necessary to instal a plant of an experimental character and this was suggested in our letter of the 26th May, on the condition that the Syndicate indemnified the Government against any loss if their methods of treatment did not prove satisfactory. No good reason appears to have been advanced up to the present, to justify the Government going beyond this proposal.

(Intld.) J.C.
25/5.

Messrs. Rendel Palmer & Tritton to the Crown Agents (Chief Engineer)

12-14, Dartmouth Street,
Westminster, S.W.1.

8th June, 1920.

Dear Sir,

In reply to your letter of the 26th May on the subject of Powellising sleepers for the Uasin-Gishu Railway, we may say that the process has been under our observation for some considerable time and we are of opinion that it is inferior to creosoting as a preservative for sleepers in tropical countries, where white ant attack and fungoid growth are likely to be met with. A further study of the information contained in the report of Mr. Pearson, Economic Botanist of the Indian Forest Department, confirms this view.

2. As to cost, if as seems likely the life of a Powellized soft wood sleeper from the British East African forests is considerably less than the 15 year average life assumed by the Powellizing Syndicate the apparent guarantee becomes illusory and the cost would not be less than the 11s. 3d per sleeper plus the outlay of £27,500 on the Powellizing plant and patent.

3. The cost of a creosoted soft wood sleeper from the British East African forests at the present price of creosote would be roughly as follows. The price of creosote in London in barrels is 360 s. per ton net. The freight to Kilindini is £5 a ton and taking the high rate of impregnation of 1 gallon per cubic foot, the cost of creosote would be about 3s. per sleeper. The total cost would then be :-

Major Grogans price as given by the Powellizing Syndicate	6s. 6d.
Creosote	3s. 0d.
Labour	6d.
	10s. 0d.

to which must be added an outlay of say £12,000 for a creosoting plant erected in British East Africa.

4. We estimate the average life of a steel sleeper at 30 years, of a creosoted soft wood (Podocarpus Elongata or Podocarpus gracilior) at 10 years, and of a Powellized sleeper of these woods at 7½ years.

5. The cost of a steel metre gauge sleeper of ordinary pattern at present prices is 26 shillings, made up as follows - English cost £1.3.0. freight 3 shillings, and we can take the cost of a Powellized or creosoted wooden sleeper as 10 shillings.

6. The length of the Uasin Gishu Railway is about 136 miles and at 2,000 sleepers per mile the number of sleepers required will be, including for sidings, some 300,000 sleepers.

7. In order to provide for sleepering the Uasin Gishu Railway, or for the re-sleepering of a similar length of the Uganda Railway with the 75 lb. rails it is proposed to substitute for the existing 60 lb. rails, it would be necessary to provide in the case of using steel sleepers, 300,000 x 26s. = £390,000.

8. For Powellized sleepers using the above assumption of average life and taking money at 6 per cent, the sum required for sleepering the section in the first instance would be 300,000 x 10s. = £150,000, and the total sum required to be set aside for sleepering the section 30 ÷ 7½ = 4 times would be -

$$150{,}000 + \frac{150{,}000}{1.55} + \frac{150{,}000}{2.4} + \frac{150{,}000}{3.7} + \text{plant } 27500$$

$$= 150{,}000 + 96{,}772 + 62{,}500 + 40{,}541 + 27500$$

$$= £377{,}313.$$

9. For creosoted sleepers similarly the cost of sleepering the section in the first instance would be £150,000 and the total sum required to be set aside for sleepering the sections

$\frac{30}{10}$ = 3 times would be -

$$150{,}000 + \frac{150{,}000}{1.8} + \frac{150{,}000}{3.2} + \text{plant } 12{,}000$$

$$= 150{,}000 + 83{,}333 + 46{,}875 + 12{,}000$$

$$= £292{,}208.$$

10. On the above assumptions there would thus be a saving by the use of creosoted wooden sleepers of £100,000 over the use of steel at present prices or a saving of £85,000 over the use of Powellized sleepers. The creosoted sleepers would be especially suitable for relaying the first 50 miles of the Uganda Railway where corrosion of steel sleepers is reported. The figures are taken on the standard size of metre gauge sleepers for comparison, but for relaying the Uganda Railway a larger sleeper might be adopted.

11. We, therefore, think the provision of a creosoting plant to be erected and worked in British East Africa is worth early consideration. We have little information as to the suitability of the timber for processing, but we understand that the South African Railways are using creosoted Podocarpus elongata sleepers on trial.

12. The papers are returned herewith.

Yours truly,

RENDER, PALMER & TRITTON

(Sgd.) P.P. Gales.

30, Auckland Road,
UPPER NORWOOD, S.E. 19.

Third May 1920.

The Under Secretary of State,
Colonial Office, S.W.

Sir,

As arranged at my interview with Mr. Bottomley last Tuesday, I set out below the facts and figures which I then briefly indicated to him.

I understand that for every 100 miles of track which will be laid, 200,000 sleepers will be required. This will entail a cost of £225,000 if metal sleepers are used, as, from enquiries which I have made, I learn that the present price of each metal sleeper would be £1. 2. 6. This price is likely to appreciate rather than depreciate in the near future.

As shewn below, I shall be in a position to treat wooden sleepers by the Powellizing process which will enable such wooden sleepers to be supplied at half the cost of metal sleepers.

I set out below the figures on which my calculations are based:-

Cost per sleeper of "Powellizing", handling and delivery	1. 6
Royalty to the Powell Syndicate and C. H. Pritchard per sleeper	1. 0
Amount in respect of each sleeper to be retained by the Government (to be dealt with in the manner hereafter suggested)	2. 3
	4. 9

I understand that the price of an untreated sleeper will not exceed 6s/6d, thus making a total of 11s/3d for each sleeper

From the above figures it will be seen that a sum of no less than £112,500 would be saved in respect of every 100 miles of track which are constructed. Further, it would be unnecessary for the Government to find forthwith the much larger sum which would be required if metal sleepers were used.

Would the Government, out of the above sum of £112,500, be prepared to guarantee the payment of interest on the capital (approximately £27,500) which would be utilized in the manner set out below?

	£
Cost of "Powellizing" plant capable of treating 200,000 sleepers per annum ...	11,000
Estimated cost of freight and erection (if undertaken by the Crown Agents and Public Works Department of British East Africa)	7,500
Payment in cash to the Powell Wood Process Syndicate Limited and C. H. Pritchard in respect of the existing patent rights in British East Africa and Uganda of Patent which has nearly 8 years unexpired having been granted for the term of 14 years on the 15th March 1914	6,000
Amount required to pay wages and to purchase raw material	3,000
	£27,500

I am so confident of the value of the process that I am prepared to agree to the Government, out of the sum of 2s/3d which it will retain in respect of each sleeper, taking credit for the sum of 6s/6d in respect of each sleeper which has to be replaced at any time before the first six years from the date when such sleeper is placed upon the track, if it is found to be defective by reason of any fault in the process; 4s/- in respect of each sleeper which for the same reason has to be replaced between the sixth and the end of the twelfth years, and 2s/- for each sleeper which has to be replaced for the like reason between the twelfth and the fifteenth year.

I would suggest that I should be paid five per cent of the sum retained by the Government in any one year after making allowance for any sleepers which have to be replaced in accordance with the last preceding paragraph, as prices of raw material and labour may rise in the near future.

I also suggest that I should receive at the end of the fifteenth year, one-third of any sum in the hands of the Government; the balance to be devoted to the use of the Protectora or as they may decide.

As you are aware, "Yellow wood", grown in British East Africa has for commercial purposes only a very short "life", but if this wood were treated by the Powell process, I am confident th it would have a life of 15 years.

My view on this point will, I think, be amply confirmed by Mr. Eyffe, Conservator of Forests, Uganda; Professor Boulger of the Imperial Institute, London, and Mr. R. Pearson, the Indian Forest Economist.

My proposal is to erect the plant at Nakaro for the purpose of treating wood which would be purchased from persons and firms by the Railway at the current prevailing market prices.

I have seen Major Grogan and discussed the matter fully with him, and I am authorized by him to say that he is willing to assist by every means in his power and is prepared to supply timber to the full extent of his resources at his present contract prices, at least so far as the proposed Plateau Railway is concerned.

In conclusion, I would point out that if my proposals are accepted, other benefits would result. It would be unnecessar to ship metal sleepers to Mombassa and to rail them thence to the construction point. The suggested substitution of wooden fo metal sleepers would thus free shipping-space from England and the rolling-stock of the Uganda Railway.

I must apologise for the length of this communication, but I thought it better to deal fully with the matter.

If there are any points upon which you desire further information, I shall be happy to furnish it and to keep any appointment convenient to you.

Yours faithfully,

O.H. Pritchard

All Communications to be addressed to the Firm and NOT to individuals.

THE POWELL WOOD-PROCESS SYNDICATE, LIMITED.

TELEGRAPHIC ADDRESS:
"POWELLIZED, AVE, LONDON."

CODES:
A B C, 5TH EDITION.
LIEBER'S

TELEPHONE No.:
10012 CENTRAL.

718/719, SALISBURY HOUSE,
LONDON WALL,
LONDON, E.C. 2.

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Replying to yours

In reply please quote K. 62

3rd May 1920.

W. C. BOTTOMLEY Esq.,
Colonial Office,
Downing Street, S.W. 1.

Dear Sir,

YOUR REFERENCE, 17312/1920
of the 23rd April.

In reply to paragraph 2 of the above, I enclose herewith proofs that timber treated by the Powell Process does, in fact, resist fungoid attacks.

With regard to rapid seasoning many proofs of this may be seen at the above offices and were actually shown to and examined by Mr. Spiller, of the office of the Crown Agents for the Colonies, by whom this point was doubtless dealt with in his Report upon the Powell Process.

In reply to paragraph 4 I beg to refer you to Colonel Carmichael's letter E/346/9 of the 17th March 1919 and to my reply thereto (Ref. No. J.626) of the 2nd May 1919.

As regards paragraph 6, I submit that the guarantees referred to therein are amply met by the offers contained in the official letter accompanying this.

Yours very truly,

C. H. Pritchard

EXTRACT from REPORT

on

KARRI (UNTREATED) POWELLIZED KARRI AND THE POWELL PROCESS.

furnished by the Officials of the Western Australian State Sawmills to the South African State Railways.

4th May 1915.

"DRY ROT":- There are many causes of Dry Rot advanced but it is supposed to be in a large measure due to the sap contained in the timber.

Under the Process the sap is expelled and is replaced with the saccharine solution, hence one of the causes of "dry rot" is thereby removed. The expelling of the sap is due to its greater specific gravity, as it does not boil until 215 degrees F. or more has been reached.

Besides this the presence of Arsenic would, without doubt, tend to prevent the propagation of any growth of this nature.

The reports from both scientific and practical sources go to prove that the fungus growth of "dry rot" is impossible in Powellized Karri.

I append a copy of a report from Professor D. F. MacKenzie, F.A.I., F.E.I., of the 20th August 1907 as well as a further report bearing date 21st January 1910. According to which Professor MacKenzie endeavoured by all means in his power to induce the growth on Powellized Karri timber but absolutely failed although being highly successful in the untreated species which were attacked very badly.

It is generally admitted that timber used for blocking purposes in streets is a veritable home for "dry rot" and offers special advantages for its growth. Powellized blocks were laid in Westminster in 1904 and in Hull, Islington and Kensington in 1905 and up to the time of the last report there were signs of wear but not of "dry rot".

Powellized blocks have also been used in Sydney and there is not the slightest sign or trace of "dry rot" and the City Engineer, (Mr. Gordon) considers that the ratepayers by using the Powellized blocks have been saved some thousands of pounds.

So far as sleepers are concerned the following are extracts from reports and statements made by Mr. Light, Chief Engineer of existing lines, Western Australian Government Railways:-

"Some years ago a number of processed sleepers, Karri, were placed in the line at East Perth, sandwiched in between sleepers badly affected with "dry rot" and have stood the test well, proving thoroughly resistant to the inroads of the fungus".

"The sleepers in East Perth were put down in about as bad

a place as you could find, practically half in water. So bad is the place that even the rails were eaten away as we wanted to test them in the worst place."

These sleepers were down for 6 years and at the end of that period showed no signs of "dry rot" and were still in a splendid state of preservation, although Jarrah sleepers (untreated) in a similar position had to be renewed every three or four years.

Further, other sleepers (Powellized Karri) were placed in the Great Southern Line:-

These sleepers were placed in a portion of the line where Jarrah sleepers were badly eaten every few years. I asked the Inspector which he considered the worst part of the line and he said at the 24 or 25 mile, where sleepers never lasted more than four years. The first lot had decayed in four years and those with which they were replaced were worn out again in four years. I said to him "we are sending you some Powellized Karri sleepers, and I want you to put them in the worst place". After the expiration of four years an examination showed that the sleepers were absolutely as good as the day they were put in."

In concluding this matter of the "dry rot" there is not a single instance on record where properly Powellized timber has been attacked by "dry rot" and I defy anybody to satisfactorily prove any such assertion.

Professor Warren of the Sydney University would give you valuable information regarding the prevention of "dry rot" growth by the Powell Process.

REPORT BY

Professor D. F. MACKENZIE, F.S.I., F.B.I.

20th August 1907, Liberton.

Dear Sirs,

On the 13th November 1905 you sent me three sections of Karri (Eucalyptus Diversicolor) to test for "dry rot". The sections were marked:-

1. N.175 The timber in its natural condition.
2. A.175 Processed by your treatment.
3. 175 Processed to prevent the ravages of White Ants.

As to the latter I had no means of testing. I think it more satisfactory to you to forward the timbers as they left the test. That will show them in their exact condition.

These sections have been in contact and embedded in active "dry rot" for nine months, and as you can see, the following is the result:-

The Processed section 3. No. 175, though there are spores upon it, is not attacked by the fungi, some of the fungi adhering, but dead.

(1) No. N.175 - This section is covered with the fungus which goes I think to prove that the treated wood will resist the diseasem while the wood in its natural condition will yield readily to it.

(2) No. A.175 - Spores and some fungi tissue adhering but dead.

I need hardly mention that the timbers were placed in a most favourable position for attack. All the woods placed along with them were quite "eaten out".

(Sgd) D. F. MACKENZIE, F.S.I.

Liberton, 21st January 1910.

"You will observe two sections of the timber treated by your (Powell) Process are absolutely free from attack, notwithstanding the severity of the test, while the untreated sections are attacked all round. By this test, I am satisfied that this deadly fungus (dry rot) will not attack the tissue of any timber treated by your Process.

K.465

R A C T S from L E T T E R from the Manager of the Western Australian State Sawmills dated the 23rd September 1915 to Messrs. Killick, Nixon & Co., Bombay.

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I am in receipt of your cable reading as follows:-

"Government inquiring to what extent Powellized Karri Sleepers have been used Australia what results".

The Railway Department of this State has its own Powell- works situated at Bunbury and they have been endeavour- o Powellize all sleepers used by them in the roads, both rri and Jarrah. The following return shows what they owellized at their works:-

uary 1911 to December 1911		892 loads (about)				
" 1912 to "	1912	3,688	"	=	75,000	sleepers
" 1913 to "	1913	5,364	"	=	110,000	"
" 1914 to "	1914	6,688	"	=	135,000	"
" 1915 to June	1915	3,264	"	=	75,000	"

At our works we have Powellized for the State Railways be- June last year and June this year about 4,000 loads, equal out 120,000 sleepers, and we have lso supplied the Common- h Government with 500,000 Powellized Karri sleepers. The Mills in the Karri district are now cutting and Powell- g Karri sleepers for the State Railways and we have sent away thing like 100,000 since the end of June and have still or- for over 100,000.

Mr. Light, the Chief Engineer for Existing Lines in this s, points out that comparing Jarrah sleepers which have been in the road the same time as Powellized Karri sleepers, the h sleepers are showing considerably more signs of wear than he case with the Powellized Karri and from all appearances have to be renewed some years earlier than will be the case the Powellized Karri Sleepers.

The majority of the untreated sleepers have been more or attacked by white ants and renewed, whereas the Powellized

sleepers are apparently as good as the day whey were laid.

In the North West of this State in different tram lines running from the jetties to the town sites where Jarrah sleepers have been eaten out very quickly, in fact in a few months by white ants, Powellized Karri sleepers have been down for the same period and up to the present time are totally immune from any attack whatsoever.

We have been informed by the highest authority that Jarrah sleepers for the Trans-Australian Railway stacked in the Kalgoorlie Depot prior to being laid were so seriously attacked by white ants that the stacks had to be moved and the five bottom rows of sleepers treated with a solution of Arsenic and Soda, whereas the Powellized Karri sleepers were not attacked at all.

With respect to "dry rot", Mr. Light has laid Powellized Karri sleepers in portions of his roads where Jarrah sleepers previously had to be renewed every four years, whereas the Powellized Karri sleepers have now been down six years. Mr. Light says they appear to be good enough for another six years.

Mr. Light has frequently stated in public that he desires to use only Powellized sleepers on his railways.

The Government of this State have recently decided to erect large freezing works in Wyndham and although steel was originally specified, from the various experiments that have been made the Government are so convinced that Powellized Karri will resist the attacks of white ants that the whole of the works are being erected of Powellized Karri timber. The completed job is expected to cost about £220,000, so you can well understand it would not be advisable to make any false step in work of this description.

The Australian Federal Government recently appointed Mr. I. H. to investigate the uses to which other countries are putting timber resources. Inquiring on behalf of the Commonwealth of Science and Industry, he visited the United States of Canada, the British Isles, Norway, France and India. As a he has brought back much interesting information, which will less be of practical value to the country through the activities newly instituted bureau.

Mr. Boas, who was lecturer in charge of the chemistry depart- the Perth Technical School, Western Australia, has been sug- as the director of the Forest Products and Research Labora- which the Federal Government proposes to establish in Western lia. He recently returned from his tour, and on January 14th outline of some of the results of his inquiries. He feels than ever, after his investigations abroad, that Australia's ry resources are being shamefully destroyed. This fact, he is due to ignorance of the uses to which the country's great of timber can be put.

The Forests Products and Research Laboratory at Perth will in- gate the utilisation of the millions of tons of annual wood- , the production of power alcohol for motor engines, the best sation of Australian tanning materials, and of minor forest cts, such as gums, resins and fibres; the seasoning and powell- of timber, the kindred questions, the investigation of which countries have proved to be worth many millions of pounds a . The West Australian Government has already granted a site acres adjoining the Perth University, and voted £5,000 to the nwealth for the proposed laboratory. Mr. Boas emphasises the r which would face the work of the bureau should the Bill pro- for the permanent establishment of the Bureau of Science and try fail to pass Parliament, and says that much of the neces- work which it is already doing would perforce be carried on endently by the several State Governments, with much duplica- of work, and with inadequate backing.

While in America, Mr. Boas was particularly impressed by the ield of work of the Forest Products Laboratory at Madison, nsin, which has a research staff of 450. Its investigations g the war had saved the country many millions of dollars, as instanced by its re-designing the boxes used in packing ammuni- and thus saving 25 per cent. cost and 33 per cent. of space. aboratory also discovered a means of seasoning walnut wood for tocks and other munition purposes in a period of weeks instead as many months. Kiln seasoning is now general in America. Gill University, Montreal, he saw highly successful results periments in the utilisation of wood pulp for paper. Canada t last put a stop to the ruinous policy of destroying her ts for the satisfaction of present-day trade, and Australia well take a leaf out of her book. In England he witnessed riments in wood-testing and distillation, and the production od tar and charcoal. One of the objects of the expert's ve abroad was to obtain the services of a highly qualified er chemist". He believes that he has the right man in view, s not in a position to conclude an engagement. Mr. Boas s out that the development of Australia's natural resources e tanning industry is at a very low ebb, when it is necessary e home of the wattle to import thousands of tons of wattle- m South Africa. One object of the proposed laboratory e to find out all the materials necessary to the tanning y which Australia possesses.

He believed that the importation of tanning materials was ...ly due to Australia's ignorance of her own abundant resources. ...eensland, for example, had the mangrove tree, and Western Aus...lia the red gum, which was remarkable as the only tanning ...terial the gathering of which did not kill the tree that bore it. ...rom investigation in Norway he was convinced that Australian tim...ers would be suitable for the production of certain classes of ...per which had never been produced here. Investigations which ...me under his notice in France led him to the same conclusion. At ...ehra Dun, in India, he witnessed positive proof of the efficacy of ...owellizing eucalypt timbers for immunity against white ants and ...y rot. As an example of the value which Governments abroad attach ...o forest products laboratories, Mr. Boas mentioned that the Indian ...ernment had recently decided to spend £500,000 in the extension ...the institution at Dehra Dun.

...pied from:-

Timber Trades Journal

3rd April 1920.

COPY

M.546/9

J.626 2nd May 1919 42

THE CROWN AGENTS FOR THE COLONIES,
4, Millbank,
Westminster, S.W. 1.

Gentlemen,

THE POWELL WOOD PROCESS
for
BRITISH EAST AFRICA.

As promised to Colonel Carmichael at our interview to-day, I have asked Messrs. Boving & Co. Ltd., to lose no time in submitting a Tender for the construction of a Powellizing Plant capable of treating 100,000 metre gauge sleepers per annum.

I understand that Colonel Carmichael feels that provision should be made by me to guard against any possible loss by you or the Protectorate Government in connection with the small experimental plant which is to be erected to test the efficacy of this Process in relation to native timbers. To this I am prepared to accede.

Dealing, for the moment, only with the matter of the supply of railway sleepers, I submit that the following points can be satisfactorily demonstrated within six months of the first operation of the experimental plant:-

A. Rapid Seasoning.

B. Prevention, or at least reduction, of loss of timber by shaking, splitting, warping, etc., while seasoning.

C. Immunity from destruction by dry rot and other fungoid growths.

D. Immunity from the ravages of termites.

E. Wood treated by this Process has no injurious effect upon metals, therefore dog spikes or coach screws will not be found to corrode or to work loose.

F. Increased strength of the timber which can be proved by comparative tests.

Obviously the questions of weathering and the life of treated sleepers cannot be ascertained in the period mentioned and I submit that I should not be subjected to the risk of spending months at Nairobi, only to be faced with the refusal by the Protectorate Engineers to adopt this Process until after the lapse of many years of testing in these directions. I feel that I can reasonably urge the acceptance of the indisputable evidence afforded by the already lengthy tests conducted by competent and unbiassed Government Officials in India, Burma and Australia, where climatic conditions, to the best of my belief, are more trying than in the Protectorate.

Assuming that the experimental plant is erected at Nairobi and that the various Departmental Engineers and the Chief Conservator of Forests are satisfied that the Powell Wood Process should be adopted in the Protectorate, I am instructed by the Board of the Syndicate to make the following alternative proposals regarding the manner in which the right to use the Process may be acquired and the terms attached thereto:-

1. The Syndicate will dispose of its Patent Rights to the Protectorate Government in return for a cash payment of £6,000 and a Royalty of 2d per cubic foot of timber treated. This Royalty to be payable on a minimum output

of 200,000 cubic feet (approximately the equivalent of 100,000 sleepers) per annum for the life of the Patents, which the Syndicate will surrender.

Should the Protectorate Government not desire to avail itself of the above offer, then a Company may be formed for the purpose of Processing timber supplied by the Protectorate Government for specific purposes. It is manifestly impossible to fix the price to be charged per cubic foot for this service until cost of material, fuel and wages in British East Africa are definitely known.

Should any other alternatives suggest themselves to you I would be glad to give them careful consideration.

Yours faithfully,

E, 348/9

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ALL COMMUNICATIONS
TO BE ADDRESSED TO THE
CROWN AGENTS FOR THE COLONIES,
THE ABOVE REFERENCE AND THE
DATE OF THIS LETTER BEING QUOTED.

TELEGRAMS, "CROWN, LONDON"
TELEPHONE 7750 VICTORIA

4, MILLBANK,
WESTMINSTER,
LONDON, S.W.

17th March, 1919.

Sir,

Your letter of the 4th February to Major H. C. Thornton regarding the Powell Wood Process, has been referred by the Colonial Office to us, and we have been requested by the Secretary of State to discuss with you the possibility of the adoption of the process for the treatment of native timbers in East Africa for use as railway sleepers, and to consider the cost of the plant as small as is compatible with economic working, for experimental purposes.

We shall be glad to discuss this matter with you at our office at an early date, if you will kindly let us know when it will be convenient for you to see us here.

Yours faithfully,

Lieut. Colonel.

For Crown Agents for the Colonies.

C. H. Pritchard Esq.,
29, Port Street,
Taunton.

30, Auckland Road,
UPPER NORWOOD
S.E.19.
Fourth May 1920.

W.C.Bottomley Esq.,
Colonial Office
DOWNING STREET S.W.1.

Dear Mr. Bottomley,

It was very disconcerting to find myself plunged into a discussion with Sir Edward Northey before I had an opportunity of an informal discussion with you.

You will remember that before very long Sir Edward remarked that he thought that the Protectorate might acquire the Powell Wood Process for its own use. I pointed out to him that I had always urged the adoption of this course.

I wish, however, to point out in regard to the Royalty question that the offer conveyed to the Crown Agents in my letter of the 2nd May 1919 to accept 2d. per cubic foot was based on the belief that the Standard B.E.A. Sleeper had a cubic content of 2½ feet.

I now find that the real cubic content is practically 1⅔ cubic feet. The difference is that, instead of a Royalty of 5d. per Sleeper, we should receive only 3⅓d.

As my share of the Royalty is, to all intents and purposes, only 1/8th thereof, it will be seen that, if our remuneration apart from the cash payment) is to be only 3⅓d per cubic foot, my share

W.C. Bottomley Esq.

will be exceedingly small.

Realising that this would be so, the Powell Wood Process had given me written permission to accept commission from a third party--in this instance the Protectorate Government.

I, therefore, beg to suggest that the Royalty terms be 2d. per cubic foot to the Powell Wood Process Syndicate and 1½d. per cubic feet to myself. In the case of Sleepers, this will give us the 5d. per Sleeper on which we have always based our calcu-lations.

These Royalties, at first sight, may appear high, but, as they would only be payable during the remaining life of the exist-ing Patent Rights, which, from the time of first production, would be only about seven years, I submit that that is not so.

On that basis, we should, in all, receive in Royalties, something considerably less than the actual saving on 200,000 Sleepers.

Yours very truly,

Cst Pritchard

P
E.A.P.
22226

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19

Sent 11.35 am
18 June '20
Rec.

DRAFT. Code Telegram

Governor
Nairobi
Secret
35221
Jobstown
18 June

MINUTE.

Mr.
Mr.
Mr.
Mr. Grindle.
Sir H. Lambert.
Sir H. Read. 16/6
Sir G. Fiddes.
Col. Amery.
Lord Milner.

In connection with Uasin Gishu railway 100 miles of 75 lb. rails recently purchased. Probably advisable to substitute these for existing 50 lb. rails on first 100 miles of main line transferring latter to branch. Question of sleepers has now to be considered. Taking length of branch at 136 miles and allowing 2000 sleepers per mile also taking into account average life of steel sleeper creosoted soft wood sleeper, Powellized soft wood sleeper, the present value of cost of sleepering with these three types estimated by Consulting Engineers at £390,000, £292,000, £377,000 respectively. If sufficiency of suitable timber available appears desirable to adopt creosoted sleeper, and, if you agree, indent for necessary creosoting plant should be sent home as soon as possible. Estimated cost of

C.O. 533/254

of plant £12,000. Consulting Engineers suggest that creosoted sleepers should be used for first 50 mile of Uganda Railway where corrosion of steel sleepers is reported, in which case latter could be transferred to branch. Powellizing process appears to possess advantages over creosoting as green timber can be used, also may be less inflammable when laid, and cost of treatment is less.

If you recommend creosoted sleepers request that you will consider advisability of also making small scale experiment with Powellizing process. Cost of plant in this case estimated at say £5,000.