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MADRAS RECORD OFFICE.

Government of Madras.

Revenue DEPARTMENT.

G.O. No.	1329	Press ~~Mis.~~
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*Proceedings of the Madras Government, Revenue Department,
1st June 1866.*

No. 82. Read the following Proceedings of the Government of India, Public Works Department, Revenue—Forests, dated Simla, 28th April 1866, Circular No. 3 :—

Supply of timber and fuel in the Punjab.

Read again :—

Despatch from the Government of India, to the Secretary of State for India, dated 11th October 1865, No. 14F.

1. In (our Railway Despatch No. 92, dated 11th October) forwarding copy of the Progress Report of the Delhi Railway for the first half-year of 1865, we have referred to the question raised by the Acting Agent, as to the legality of applying any portion of the capital of the Railway Company to the formation and supervision of plantations for a supply of fuel for working the line when opened. We propose, in this Despatch, to give you a brief outline of the measures discussed and adopted by the Punjab Government within the last two years with this object, as also for the not less important one—the supply of sleepers.

2. The means of increasing the supply of timber in the Punjab has engaged attention in various ways, for many years past, and special allusion is made to the operations undertaken with this object, in the Punjab Revenue Administration Report for the years 1861-62, paragraphs 151—3, and 1862-63, paragraph 113. The formation of plantations on the newly-formed alluvial lands of the rivers was particularly looked to, as a means of speedily and effectively securing an abundant supply of timber without pressing upon the people; but though considerable success had attended the zealous efforts of a few District Officers, the results in the aggregate were small, compared with the increasing magnitude of the object. Thus, in the Jhelum District, in which great attention had been paid to planting these lands, only 100 acres were covered with trees up to 1862. Moreover, though the Sissoo in particular thrives in such soil, the existence of these lands for a sufficient period for trees to grow into timber is precarious, owing to the same cause as their formation.

3. In March 1864, the Financial Commissioner of the Punjab called the special attention of all District Officers to the subject, in view to more decided action in the matter, with reference not only to the increasing demand for timber for building purposes, Railway sleepers, workshops, and such like, but especially to the demand for fuel to supply the Railways. The absolute necessity for yearly and sustained action was enforced by the observed effects of the Railway on the forests near Lahore, of which a very large area had already been cleared to meet the requirements of a Railway, but 32 miles in length and running two trains only daily. It has been alleged that, since the opening of this short line, the price of fuel has doubled, and there is no reason to doubt that at Lahore, as also at Mooltan, where the demand for fuel for the Indus Steamers is considerable, this has been nearly, if not quite, the case within the last ten years. The Financial Commissioner's Circular was, under our orders, communicated to the several Local Governments and Administrations, with the suggestion that the general object in view might further be assisted, if a limited area of land was allowed to be planted with

approved sorts of trees in every village, free of assessment, provided that, when first planted, such land was waste and not paying revenue.

4. As respects fuel, the importance of the issue will be best understood by a consideration of the following particulars:—It is calculated, on the supposition that four trains run each way daily, that the consumption of wood-fuel per annum per mile would be 3,650 maunds. The trees suitable for fuel come to maturity in from ten to seventeen years, according as they are grown on irrigated land or otherwise; and from this, and the quantity of wood obtainable from an acre of plantation, all who have considered the subject agree in thinking that each mile of Railway will require at least 20 acres of plantation for its supply.

5. Again, according to the calculations of the Railway Engineers, corrected by the Government Officers, dry fuel may be grown on plantations at the rate of Rupees 23-4-0 per 100 maunds, or say 4 maunds for the Rupee. The lowest prevailing rate on or near the line, now under construction, would appear to be 3 maunds for the Rupee, and there can be no doubt that the demand of Railway, unless special measures be taken for its supply, would not only cause an enhancement of this rate, but would bring about the complete denudation of the country. For the difference between these rates, wood may be conveyed 25 miles by common road, which, therefore, is the limiting distance from the line at which plantations should be formed, if wood cannot be grown at less cost.

6. Further, for the present at least, the supply of fuel must be considered without reference to the possible use of coal from the fields in Central India or Bengal. Three maunds of dry wood (costing in this case 12 Annas) are equivalent to one maund of Indian coal, and coal can be raised at the pits at 3 Annas a maund. There remain consequently 9 Annas to cover the cost of transport to the point of consumption. As the nearest coal-fields (the Kurhurballee and Nerbudda) likely to be worked, when the Delhi line is opened, are on the lines of other Railway Companies, the cost of carriage cannot, on the experience gained on the East Indian Railway, and with special rates, allowing a profit of 50 per cent., be assumed at less than two-thirds per ton, or one-fifth of a Pie per maund per mile. Thus the greatest distance over which coal, to displace wood at four Annas a maund, can be brought is 540 miles. But the Nerbudda fields are 700 miles, and the Kurhurballee fields, 775 miles from Ghazeabad, the nearest point of the Delhi Railway. Coal is, therefore, on the foregoing suppositions, out of the question, and if wood be obtainable at a lower price, Rupees 12 per 100 maunds, as would appear probable, still more so. The Agent, East Indian Railway Company, it may be added, calculates roughly that he will be able to place coal at Delhi at a cost of Rupees 21 per ton, or Rupees 75 per 100 maunds. At this rate, it is evident that wood will not be displaced till it exceeds Rupees 25 per 100 maunds in cost.

7. Thus, wood-fuel must be arranged for, and the locality in which it should be grown, when considered in connection with the nature of the land to be taken up for plantations, is also limited. For the cost of carriage by land being about 390 maunds, one mile per one Rupee, it would appear, accepting the assumptions of the Deputy Consulting Engineer, Punjab, that the most expensive land that could be taken up for plantations would not involve, when the trees come to matu-

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rity, a higher yearly charge for rent and interest than Rupees 9½ per acre; also that each acre might produce 365 maunds yearly, that the cost of transport over 8 miles would just cover the rent of the land, so that it would be cheaper to have a plantation on first class land in the immediate vicinity of the Railway than on rent-free land, more than 8 miles distant. The result of an experiment on the Baree Doab Canal shews that about twelve times the above weight may be conveyed by water against stream for one Rupee, so that the limiting distance is thus increased to 96 miles. These particulars have an important bearing on proposals to draw supplies from existing forests on the lower ranges of the hills, and from canal plantations where waste or inferior land may be available for plantations.

8. The question of a supply of fuel for the Railways in the Punjab first came under the consideration of the Government of India in June 1863, in connection with the management of the brushwood and grass reserves (Rukhs), and the attention of the Government, North-Western Provinces, was at the same time drawn to the question in respect of the Railway in those Provinces (Proceedings, Governor General, Railway, June 1863, Nos. 1—4). Towards the end of the same year, the necessity of forming the plantations to meet the special wants of the Railway was urged by Major Warrand, Deputy Consulting Engineer, Punjab, and early in 1864, the Railway Company's Officers took the matter up. The Reports and suggestions of these Officers were considered by Drs. Cleghorn and Stewart of the Punjab Forest Department, by the Financial Commissioner, and the Lieutenant-Governor. Subsequently, in September 1864, a very full and complete Report on the supply of fuel for the Punjab Railway, between Umritsur and Mooltan, and for the Indus Steamers, was submitted by Dr. Stewart. Of this we forward herewith a copy, but do not think it necessary to trouble you with the earlier papers alluded to.

9. Dr. Stewart's report was considered by the Punjab Government, together with the views of some of the Canal and Civil Officers, and of the Financial Commissioner, most of which will be found recorded at length in our Proceedings in the Forest Department for the month of January 1865, Nos. 14 to 28, of which we send copies of only two documents, viz., Nos. 27 and 28, as we apprehend that sufficiently detailed information will be gathered from a perusal of them; and of the further papers which accompany, consisting of a Memorandum, dated 29th January 1865, by the Deputy Consulting Engineer, giving a summary of the discussions and accommodations, and a Memorandum, dated 29th March, thereon, by the Honorable the Lieutenant-Governor of the Punjab, containing his conclusions and orders on the subject.

10. The general conclusions are, that the different sources on which the supply must depend are—

- (1.) The outer ranges of the Himalayas and the Sewaliks.
- (2.) Canal plantations.
- (3.) Railway ditto.
- (4.) The Rukhs (preserves).

11. The first of these must be resorted to until artificial plantations have been formed, and have come to maturity, the supply being arranged for in both the

Punjab and North-Western Provinces, through either the Forest Department or District Officers, as may be found most suitable. It would seem that fuel may be delivered from the Eastern Sewaliks at various points on the line of the Delhi Railway lying to their south, at Rupees 12 per 100 maunds. But it is calculated that, from the Punjab Sewaliks, it will not be possible to deliver fuel at a cheaper rate than Rupees 25 per 100 maunds on the line of Railway, the wood being taken from the jungles within 7 miles of the river, and the quantity of fuel to be got from this source appears to be insufficient to furnish a large, continuous, and permanent supply for the Railway.

12. The second source must be created or further developed by the Canal Officers, with the advice and co-operation generally of the Forest Department. Much has already been done in the way of sowing on the Baree Doab Canal, and steps have been initiated on other Canals.

13. This source of supply was contemplated from the first; for, shortly after the annexation of the Punjab, Lieutenant-Colonel (now Sir Robert) Napier wrote as follows, in a Report on the Baree Doab Canal Project of 1850:—

“The execution of the Canal will afford a most favorable opportunity to aid in accomplishing the desire of the Most Noble the Governor General to increase the cultivation of trees in the Punjab,” and he estimates that no less than 12,696 acres might be planted along the Canal and its branches, besides 5,000 acres in 50 detached plantations.

14. The Government of India and the Court of Directors approved of plantations being thus formed; but, though much has been done, the intention has not been carried out for want of funds, and no separate plantations whatever have been formed. In July last year, when the importance of the subject was fully realized in the Punjab, orders were issued to sow as much land as possible on the Canal banks, so as to save the season, and the result of very great exertions on the part of the Executive Officers was that, along 144 miles of Canal, both banks were sown with *kechur* seed over an area of 2,760 acres.

15. We may here remark that the expediency of placing the Canal plantations of both the North-Western Provinces and Punjab under the general supervision of the Forest Department, has been under our consideration; and we are now in possession of Reports from both those Governments in favor of the measure. The Punjab Government has, in fact, already carried out the arrangement, and the North-Western Government has ordered it from the 1st May 1866.

16. The third source of supply is from plantations on the line of Railway. These, it is obvious, should be made as near fuelling stations as practicable, as not only likely to be economical both in management and carriage, but as saving the Railway from an unremunerative traffic.

17. Of these three sources, the first will also be available permanently, as well as in the outset, reducing in consequence the area of plantation to be formed whether on Canals or the Railway. But it is obvious, from what it is stated of the expense of carriage in paragraph 7 above, that those tracts in the hills can only be drawn from which are conveniently situated for the water carriage either of the canals or large rivers.

18. It has accordingly been proposed, and apparently judiciously, that, for the Delhi Railway, between Umritsur and Loodiana, the supply shall be drawn chiefly from the Baree Doab Canal Plantations, one other plantation only of 600 acres being formed by the Forest Department near Jullundur in the Sarangwāl Bir, already the property of Government, and other supplies being brought down the large rivers crossed by the line in this section, so far as this can be economically done. For the section onwards from Loodiana to Umballa, plantations will be formed on the line of Railway at the cost of the Company, if not objected to, and for the remainder, from Umballa to Delhi, the supply will be drawn from the Sewaliks, and the plantations existing and to be increased on the Ganges, the Eastern and the Western Jumna Canals, dépôts being formed at the five points where the Railway crosses these Canals.

19. The fourth source is the Rukhs. These are adjacent to the line of the Punjab Railway between Umritsur, Lahore, and Mooltan; and with the additions from the first source, the outer Himalayan Forests must be looked to for the supply of this Railway.

20. The Rukhs on which there has been hitherto any great drains except for construction purposes, are those in the Umritsur, Lahore, and Mooltan Districts. In those of the Umritsur District, Dr. Stewart calculated that there was not more than a supply for the Railway for 1½ years; while in the Lahore District, excluding the demands of the City of Lahore, with its 100,000 inhabitants and the wants of the rural population, the supply might meet the requirements of the Railway only for six or seven years. The Googaria District is richly stocked, and fuel may be delivered on the line of Railway at about Rupees 12 per 100 maunds. This supply would, however, be drawn upon by both the Lahore and Mooltan Districts, in the latter of which there is only a supply for steamers and rail for four years.

21. In the aggregate, it is estimated that the full requirements of the Punjab Railway, with three trains daily, are 670,000 maunds, and for the Indus Steamers 430,000 maunds, in all 1,100,000 maunds annually; whereas the total supply from the Rukhs is not estimated at more than 3,278,000 maunds, or about three years' supply. The inadequacy of this source is manifest, the least period in which the re-production of the timber can be counted on being ten years.

22. The absolute necessity for taking immediate measures for the timely re-production of timber in the Rukhs having thus been brought under the notice of the Punjab Government, no time was lost in giving effect to the various suggestions made by Dr. Stewart and the Financial Commissioner. These will be found in Enclosures Nos. 2 and 3; and consist chiefly of an improved management, the formation of strict preserves, and planting.

23. From the Progress Report of Public Works in the Punjab for the year 1864-65, it appears that considerable attention was given to the formation of new plantations and nurseries during the year, particularly with a view to the creation of fuel preserves for the Railway. Nearly 900,000 trees were planted out, in avenues or groves, along the road sides, at encamping grounds, and elsewhere, partly with the aid of Zemindars.

24. The sources of the supply of sleepers for the Delhi Line have also received much consideration. Most of the timber will probably be drawn from the forests of the Chumba, Bussahir, and Tehree Rajahs, from whom leases have been obtained. It is estimated that about 200 tons of timber will be required for the sleepers of each mile of Railway, but under the contract one-half of the length is to be laid with iron-bowl sleepers. For the other half, about 30,000 tons of timber will be required in the next four years.

25. There seems no reason to apprehend that, by adopting Fir impregnated with chloride of zinc, there will be any difficulty in meeting this demand. For, it is calculated, that within that term, 23,000 tons may be drawn from the forests of the Chenab, Ravee, Beas and Sutlej, independently of the large supply which may be obtained from those of the Jumna and Ganges. The sets of Burnettizing apparatus got out by the Railway Company have been taken over by the Contractors, and will be erected in convenient localities. A Memorandum by Dr. Brandis, Inspector General of Forests, giving a summary of the information regarding the supply of sleepers, is enclosed.

Read also:—

Despatch from the Secretary of State for India, to the Government of India, dated 28th February 1866, No. 8.

1. I have had under my consideration in Council the Despatch from your Excellency in Council, numbered 14, Revenue—Forests, and dated 11th of October last, in which you have given me a brief outline of the measures discussed and adopted during the last two years by the Punjab Government, in order to economize and increase the supplies of timber and firewood, which there, as in other parts of India, have been much diminished, whilst the demand has increased in as great, if not in a greater, proportion.

2. You likewise refer me to a Despatch of the same date in the Railway Department, in which you announce that you have authorized the formation of plantations on the line of Railway between Loodiana and Umballa at the charge of the Railway Company.

3. Your Despatch now under reply contains, both in itself and in the documents you have forwarded with it, much interesting matter on the subject, and important particulars and calculations, as well as to the demand, as to the means of meeting it in the most economical way. The sum of this information proves, beyond doubt, the absolute necessity for the immediate adoption of measures for keeping up the supply at present, and providing for it in future.

4. Independently of the demand for timber for sleepers and other purposes of construction, it is evident that wood is the only fuel that can be relied upon for a long time to come, the nearest coal being far too distant to cover the cost of carriage.

5. It is calculated that the requirements of the Railway and steam-boats will amount to 1,100,000 maunds of firewood annually, and that the supply in the preserves of grass and brushwood, termed rukhs, is only sufficient for about three

years' consumption, while ten years is reckoned to be the lowest period in which re-production can take place.

6. The measures reported in your Despatch, by which it is proposed to supply future deficiencies, consist chiefly of improved management, the formation of strict reserves and planting. I approve your proceedings, and am gratified to learn that the measures seem to you sufficient; and likewise, that, having considered the quantity of timber required for sleepers for the Delhi Line, you do not apprehend that there will be any difficulty in obtaining it, within the requisite time, from the forests, the leasing of which from the Rajahs of Chumba, Bussahir, and Tehree, has been recently approved.

7. The nearer parts of the Forests of Gurhwal, regarding which arrangements have lately been made, are also looked to, to send contributions to this part of India.

8. The wants of the Railway and of the steam-boats plying on the river, are those principally dwelt upon in this Despatch, although allusion is made to the wants of the population of the city and district of Lahore. I trust I need hardly remind your Excellency in Council that, although every facility should be given to the Railway and steamers, they can have no exclusive right to any supplies from the Forest Department, and that the market must be considered equally open to the rest of the community of the province as to them, and provisions for their wants must be as much considered.

9. It must be remembered that a similar increase of demand is arising all over India, and that the difficulty of adequate supply is especially felt in the neighbouring Province of Sindh. I acknowledge, with much satisfaction, the exertions that have been made of late years throughout Her Majesty's Indian Territories, but the utmost care, watchfulness, and exertions on the part of the Forest and Revenue Officers, will still be necessary to prevent a very serious deficiency.

10. I feel no doubt that your Excellency in Council, and the Governors and Lieutenant-Governors of the other Presidencies and Provinces of India will give those Officers the utmost possible support in the performance of their duty of dealing out and husbanding the resources of the present forests, and of forming new reserves, and will give them the means of making their establishments efficient for that purpose.

11. This will be the more necessary, as you will learn from Sir Charles Wood's Despatch of the 12th instant, No. 10, in the Railway Department, that he has not been able to accede to your proposal for allowing the investment of the Guaranteed Capital of the Railway Company in forming the plantations proposed by you. One of the sources of supply on which you depended is, therefore, cut off, and, as there is no doubt as to the demand continuing, it will be necessary that your Government should make greater exertions to provide the means of meeting it. I need scarcely add that I shall gladly sanction any well-considered outlay with the object of increasing the means, either by working the forests now existing, or by forming new plantations, of enabling the Forest Departments of India to meet the

demands for timber and fuel which the wants of the population and of the Railway and Steam-boat Companies are certain to make on them.

ORDER.—Ordered, that a copy of the Despatch from Secretary of State, be forwarded to the Government of Punjab, in the Public Works Department, Railway Branch, together with copy of the Despatch to which it is a reply, in continuation of Public Works Department letter No. 494 F, dated 5th October 1865.

Governments of Madras, Bombay, Bengal, North-Western Provinces, Panjab, and Straits Settlements, Chief Commissioners of Oudh, Central Provinces, and British Burmah, Commissioners of Mysore and Coorg, and Resident at Hyderabad.

Ordered also, that a copy be forwarded to the Local Governments and Administrations noted on the margin, with reference to paragraph 10 of the Despatch from the Secretary of State.

Also, that it be explained to the Secretary of State that the concluding paragraph is based on a misapprehension; the plantations referred to having been allowed to be made by the Railway Company out of *Revenue*, not out of *Capital*.

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

No. 83.

ORDER THEREON, 1st June 1866, No. 1,329.

Forests, No. 5.

Communicated to the Board of Revenue and the Conservator of Forests, for their information.

(True Extract.)

(Signed) J. GROSE,
Under Secretary to Government.

To the Board of Revenue.
,, the Conservator of Forests.

W-1329

*Communicated to the B.R.
of Revenue and the Conservator of
Forests for their information.*

*to be copied to the B.R. of Revenue and the
Conservator of Forests*

1st June 1866