Read again G. O., 8th June 1872, No. 903.
Do. „ 28th „ „ „ 996.

Read also the following letters:—

No. 176. From the Officiating Conservator of Forests, to the Officiating Chief Secretary to Government, Revenue Department, dated Ootacamund, 10th July 1872, No. 1,341.

With reference to G. O. (No. 7, Forests) of 8th June 1872, No. 903, I have the honour to report that I visited the Conolly Teak Plantations in company with Mr. MacGregor and Mr. Ferguson.

2. *Early Maturity.*—My first object was to ascertain the cause of death of certain saplings numbering about sixty, in the 1844 and 1845 plantations. Major Beddome had an impression that early maturity in so forcing a climate was the cause, and intended last month to satisfy himself on this head before delivering an opinion as to the advisability of securing more land for prospective planting. I carefully examined the tops of the trees for dead branches but could not find one; it was, therefore, clear that the trees were still growing, indeed their general appearance exhibited every sign of vitality and none of decay.

3. *Natural Teak.*—There were some hundreds of natural teak trees growing in various parts of the plantations; these were carefully examined, and though some of the roots were 150 years old, the heads exhibited no signs of maturity; the tops were y[illegible] The [illegible] of the trees was ascertained as follows:—The annular rings of a felled tree were counted and found to contain 60 rings showing 60 years, but nearly every stump showed signs of having been felled once before, so that 60 years *only* represented the second growth, and judging from the size of the old stem at three feet from the ground where the marks of felling were visible, it was likely that the first felling represented a tree of 80 to 100 rings. From the above it was clear to me that if natural teak could attain an age of 150 years without exhibiting signs of maturity in its head, it was perfectly clear that planted teak could not have died from having attained to an early maturity; and some other cause was to be sought for: fortunately in walking through the 1845 plantation, I observed three dead trees, or two quite dead and one nearly so.

4. *Cause of death.*—On examining the roots of the nearly dead tree, the cause was at once apparent; the roots were white with mycelium perfectly soft, and nearly entirely rotten; on a three foot section of the trunk being examined, the wood was found of a good dark color sound not soft, and the annular rings showing fair growth. It is an extremely difficult question to determine how the fungus got there; the matter has been discussed by foresters in England, and no two are agreed on the subject; that on certain soils and under certain conditions, dead roots of trees infect living roots cannot be denied; some go to the extent of maintaining that all old roots should be grubbed up before planting; the cost of this Mr. Ferguson estimates at 180 Rs. the acre at home: I need scarcely point out that to do this in this country would be simply impossible, nor in my opinion is it needed. We must be prepared for occasional casualties; but 60 trees out of some

24,000 is about a $\frac{1}{4}$ per cent. and not worth considering. Had there been any disease like that of the larch in Scotland, due it is believed to bad seed, it would at once have been apparent. That unhealthy teak seed is to be obtained even in Nellumbore I believe, for there is an immense amount of stunted and ill-treated teak in the vicinity; but I am aware that the greatest pains were taken by sending to Nellikotta and elsewhere to obtain seed from only the finest trees. In fact the general growth of the plantations is against the assumption that bad seed has been used. In reality the only mischief that can be caused is done in the planting by the turning up of the tap root; this if left long is certain to be turned up by the planter; hence a sickly tree. To prevent this accident, the roots are shortened and a vigilant watch kept upon the planters by Mr. Ferguson, but he cannot keep his eye on fifty men, hence accidents do occur; but from the great precautions taken they are rare. Being present at the planting of the new piece of 200 acres I was enabled to judge for myself, and I certainly saw some roots turned up; but that was due to Mr. Ferguson's attention being directed to Mr. MacGregor and myself than to want of general supervision. It was an immense undertaking for one man to plant some 200 acres in ten days; but by the progress made when I saw it there is little doubt but that it will be accomplished. Mr. Ferguson complains bitterly that he has no sooner trained men than the Rajah of Nellumbore's people entice them away; hence his difficulties are ever increasing, instead of decreasing. With the new land at Eddiwamla he will require assistance.

5. *Size and appearance of Plantation.*—As I had last inspected the [illegible] in 1862 when, for the first time, the 1845 plantation was regularly thinned, I was prepared to find them greatly improved nor was I deceived. The 1844 plantation which in 1862 had a weakly drawn up appearance, had quite recovered and had thrown out lateral branches to meet the gaps which had been made by thinning; many of the trees which measured 30 inches in circumference had increased to fifty in the 1845 plantation, the 26 inch trees had increased to 46 inches. I annex a few measurements of the number and size of trees per acre made by Mr. Ferguson. Many of the 1844 trees contained thirty cubic feet of marketable timber, and the 1845 as much as 28 feet. I reckoned that on the best land ten thousand cubic feet per acre might be cut at maturity, and the average would be six thousand cubic feet or six thousand Rupees delivered at Calicut. Mr. Ferguson admits the timber to be inferior to hill teak and I agree with him; nevertheless it is very fine timber and fetches a good price in the market. When we plant, as is done here, for thirty Rupees an acre the first year, and the tree grows so well and so rapidly, with a capability of delivery at Madras by water and rail, Nellumbore will actually be in a position, say 20 years hence, to undersell Burmah timber in the Madras market, or sell the timber at 1-4-0 the cubic foot with a profit to Government.

6. *The Eddiwamla Plantation.*—This we inspected and found the trees to be from ten to twelve years of age of excellent growth and in number about one hundred thousand. Deducting thinnings (and the plantation requires it), there will be about sixty thousand good saplings left; the sale of 40,000 of these will more than pay the cost price, the remaining twenty thousand to stand for timber.

7. *Sites on the new land.*—There are numerous sites on the new land which Mr. MacGregor and Mr. Ferguson could easily select this month as soon as the purchase is finally decided upon.

No. 177. From the Officiating Conservator of Forests, to the Secretary to Government, Revenue Department, dated Ootacamund, 18th July 1872, No. 1,352.

In continuation of my former report on the Conolly Teak Plantation, I have the honour to forward the diagrams showing the position of the trees on an acre of the 1844 and 1845 plantations. I have calculated the cubical contents and find that the 1844 acre contains 3,163 cubic feet in 151 trees and the 1845 plantation 3,060 cubic feet in 155 trees, averaging $20\frac{3}{4}$ cubic feet per tree of 1844 and 19 cubic feet per tree of 1845.

2. It may reasonably be assumed that when the trees are double their present age the acre will contain double the cubical contents or more than 6,000 cubic feet per acre; allowing one hundred trees to be then taken out and fifty left standing for another 60 or 100 years the yield will be in 56 years on 100 trees = about 4,000 cubic feet, in, say, 112 years on 50 trees = about 4,000 cubic feet.

3. It may be observed that the acres selected are average acres.

No. 178. Order thereon, 22nd July 1872, No. 1,098.

Forests, No. 14.

with satisfaction this gratifying report on the progress of the "Conolly" Teak Plantations in Nellumbore. The results that have been attained warrant the expenditure advocated by Mr. MacGregor on their extension. Mr. Ferguson's difficulties in the way of retaining trained Assistants might be obviated by binding them on first engagement to serve for terms of years, and to give notice of intention to leave after the expiration of the term.

2. Colonel Morgan's report will be forwarded for submission to the Government of India in continuation of the Government letter of 8th June 1872.

(True Extract.)

(Signed) W. HUDLESTON,
Secretary to Government.

To the Board of Revenue.
,, the Officiating Conservator of Forests.
,, the Collector of Malabar.

Exd. T. Cartledge.

31-1-13
30-10-15
(61)

No 1341.

Office of Conservator of Forests
Cotacamund 10th July 1872.

No 176 = From

Lieut.t Colonel A. R. Morgan
Offg Conservator of Forests.

To,

The Honorable W. Sudleston
Offg Chief Secretary to Govt
R. D.

Sir,

With reference to G.O. (No 7 Forests) of 8th June 1872, No 903, I have the honor to report that I visited the Conolly Teak plantations in company with Mr Mac Gregor and Mr Ferguson.

Early maturity. 2. My first object was to ascertain the cause of death of certain saplings numbering about sixty, in the 1844 and 1845 plantations. Major Beddome

Beddome had an impression that early maturity in so forcing a climate was the cause, and intended last month to satisfy himself on this head before delivering an opinion as to the advisability of securing more land for prospective planting. I carefully examined the tops of the trees for dead branches but could not find one, it was therefore clear that the trees were still growing — indeed their general appearance exhibited every sign of vitality and none of decay.—

3.— There were some hundreds of Natural Teak.. natural Teak trees growing in various parts of the plantations, these were carefully

carefully examined and though some of the roots were 150 years old, the heads exhibited no signs of maturity, the tops were young and full of sap, in fact still growing.— The age of the trees was ascertained as follows: the annular rings of a felled tree were counted and found to contain 60 rings shewing 60 years, but nearly every stump showed signs of having been felled once before, so that 60 years only represented the second growth, and judging from the size of the old stem at three feet from the ground where the marks of felling were visible, it was likely that the first felling represented a tree

tree of 80 to 100 rings.- From the above it was clear to me that if natural teak could attain an age of 150 years without exhibiting signs of maturity in its head, it was perfectly clear that planted teak could not have died from having attained to an early maturity; and some other cause was to be sought for, fortunately in walking through the 1845 plantation I observed three dead trees, or two quite dead and one nearly so.-

4.- On examining the roots of the nearly dead trees, the cause was at once apparent; the roots were white with mycelium perfectly soft, and nearly entirely rotten, on

Cause of death

on a three foot section of the trunk being examined, the wood was found of a good dark color sound not soft, and the annular rings shewing fair growth.- It is an extremely difficult question to determine how the fungus got there, the matter has been discussed by foresters in England and no two are agreed on the subject; that on certain soils and under certain conditions, dead roots of trees infect living roots cannot be denied, some go to the extent of maintaining that all old roots should be grubbed up before planting; the cost of this Mr. Ferguson estimates at 180 Rs. the acre at home, I need scarcely point out, that

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be simply impossible nor in my
opinion is it needed. We must be
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but 60 trees out of some 24.000 is about
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It was an immense undertaking for
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Size and ap=
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7.— There are numerous sites on the new land which Mr. Mac Gregor and Mr. Ferguson could easily select this month as soon as the purchase is finally decided upon.— Sites on the new lands

I have the honor to be,
Sir
Your Most Obed.t Serv.t
J. McMorran
Lt. Colonel
Offg. Conservator of Forests

Office of Conservator of Forests
Cotacamund 18th July 1872

No. 1352.

No. 177

From

Lt.e Colonel H. R. Morgan

Offg. Conservator of Forests

To,

The Honorable W. Hudleston

Secretary to Government

R.D.

Sir,

In continuation of my former report on the Co=-nolly Teak plantation, I have the honor to forward the dia=-grams shewing the position of the trees on an acre of the 1844, & 1845 plantations.- I have calculated the cubical contents

Revenue 1872-73 July
Forest Department
Letter Despatch
From
The Offg Conservator of Forests.
To,
The Offg Chief Secty
to Government
Dated 10th July 1872
Received 16th July 1872
No. 1344.
Enclosure No. 1. Wood
Subject
Report upon the
Conolly teak plantation
at Nellumbore with re=-
ference to G.O. (Rev Consults)
of 8th June 1872 No. 903.-
& G.O. No. 1098- 22nd July 1872

No 176

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plantation 3060 cubic feet
in 155 trees averaging 20¾
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2.— It may reasonably be
assumed that when the trees
are double their present age
the acre will contain double
the cubical contents or more
than 6000 cubic feet per acre;—
allowing one hundred trees
to

to be then taken out, and
fifty left standing for a-
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yield will be in 56 years
on 100 trees = about 4000 ft.
say 112 years on 50 trees = a-
bout 4000 cubic feet.—

3.— It may be observed that
the acres selected are averag
acres.—

I have the honor to be,
Sir,
Your Most Obed.t Serv.t
W Murray
Dp. Conservator of Forests
Offg.

~~Revenue~~ Forest 1872-73. 10 Sept

No 2385

Forest Department

From

The Offg Conservator of Forests.

To,

The Secretary to Govt.

R. D.

Dated 18th } July 1872.
Received 18 }

No. 1352.

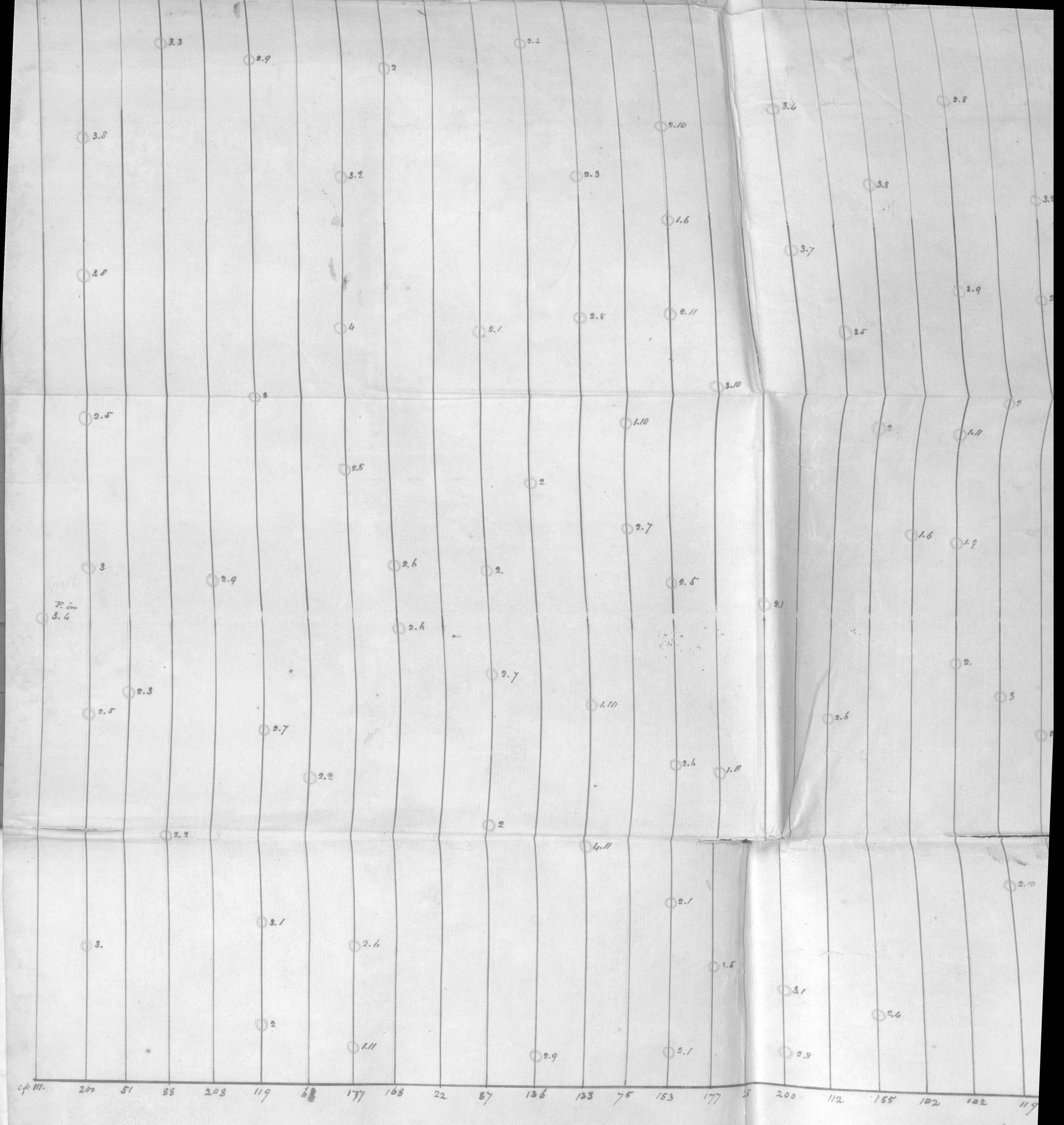
Enclosures No 2.

Subject

Forwards diagrams of trees on an acre of the 1846 & 1845 plantations at Nellumbur Teak forests.—

C. D. No 1098- 22 July 72

No 127


3.3
2.9
2
2.2
3.4
2.8
3.8
2.10
3.2
2.3
3.8
1.6
3.7
3.8
3.9
4
2.1
2.8
2.11
3.5
3.10
3
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2.7
1.6
1.9
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2.6
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1.10
2.5
2.6
2.7
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2.6
1.11
2
4.11
2.2
2.10
2.1
3.1
3.
2.6
3.5
3.1
2
2.4
1.11
2.9
2.1
2.8
cf. 111.
200
51
88
208
119
177
168
22
57
136
133
75
153
177
25
200
112
155
102
102
119
Ground

Plan of Levels taken for a Railway from Manchester to Leeds.

Manchester Terminus.

Scale 8 Feet to an inch

Elevation 1845. Gallatin.

50 Feet

F. in 3.7

F. in 2.7

F 2

F 2

F 2

2.4 3 2.2 2.7 2.8 1.4 4.3 3.3 1.7

3.4 2.9 2.10 2.8 2.3

1.11 3.10 2.6 1.10 1.8

3.11 2.8 2.10

2.1 2.9 2.8

3.2

2. 2.9 2.4 2.6

2.8 4. 3. 2.2 2.11 3.8 2 3.1

3.5 2.9 2.

3.3 4 3.8

1.11 2.11

2.3 3.6 1.9 2.9 2

2.4 3.3 2.9 3

2.1 3 2.8

4 4 4.

2.3 2.2

2.3 1.10

3.3 2.2

2.9 2 3.4 2.8

50 Feet
Feet an inch

133 . 196 . 200 . 87 . 133 . 177 . 222 . 119 . 111 . 133 . 187 . 102 . 62 . 138 . 84 . 133 . 88 . 155 . 112 . 85 . 133 . 25 . 186 .