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REPORT

FROM THE

SELECT COMMITTEE

ON

EAST INDIA (RAILWAYS);

TOGETHER WITH THE

PROCEEDINGS OF THE COMMITTEE,

MINUTES OF EVIDENCE,

AND

APPENDIX.

Ordered, by The House of Commons, *to be Printed,*
13 *July* 1858.

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Martis, 20° *die Aprilis*, 1858.

Ordered, THAT a Select Committee be appointed to inquire into the causes that have led to the delay that has occurred in the Construction of Railways in India.

Martis, 27° *die Aprilis*, 1858.

Committee nominated of—

Mr. Liddell.
Mr. Crawford.
Mr. Campbell.
Mr. Stephenson.
Mr. Cumming Bruce.
Mr. George Glyn.
Mr. Alexander Hugh Baring.
Mr. Cheetham.
Mr. Kirkman Hodgson.
Mr. Henry Danby Seymour.
Mr. Thomas George Baring.
Sir James Elphinstone.
Colonel Sykes.
Mr. Marjoribanks.
Mr. Henry Austin Bruce.

Ordered, THAT the Committee have power to send for Persons, Papers and Records.

Ordered, THAT Five be the Quorum of the Committee.

Martis, 13° *die Julii*, 1858.

Ordered, THAT the Committee have power to report their Observations, together with the Minutes of Evidence taken before them, to The House.

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REPORT.

THE SELECT COMMITTEE appointed to inquire into the Causes that have led to the Delay that has occurred in the Construction of RAILWAYS in *India*;——HAVE considered the Matters to them referred, and agreed to the following REPORT:

YOUR COMMITTEE have taken evidence from many of the best authorities on the subject, viz., gentlemen connected with the Indian Government at home, officers of high standing and long experience of public works in India, as well as managing directors, secretaries, and engineers belonging to the different railway companies.

There are seven distinct companies at present engaged in constructing lines of railway in India, under the guarantee of the Indian Government, viz.:

1. The East Indian Railway Company engaged to construct a line from Calcutta *viâ* Rajmahal and Allahabad, to Delhi or Meerut, with a branch from Mirzapoor, to meet the East Indian Peninsula line at Jubbulpoor.

2. The Great Indian Peninsula Company, from Bombay in a north-easterly direction to Jubbulpoor, and in a south-easterly direction, *viâ* Poonah and Sholapore, to meet the Madras line in the neighbourhood of Bellary.

3. The Madras Railway Company, from Madras *viâ* Cuddapah to Bellary, to join the line from Bombay, and in a westerly direction to the Malabar coast, at or near Beypoor.

4. The Bombay and Baroda Company, from Bombay *viâ* Surat, to Baroda and Ahmedabad.

5. The Scind and Punjaub Railway Company, from Kurrachee to Kotree on the Indus, and from Moultan to Lahore in the Punjaub, with a connexion by steam navigation between Kotree and Moultan.

6. The Eastern Bengal Company, from Calcutta to Dacca, with a branch to Jessore.

7. The Great Southern of India Company from Salem *viâ* Trichinopoly to Negapatam, and Southward to Madura and Tinnevelly.

The first Indian Railway project was broached in the latter end of 1844, by Mr. MacDonald Stephenson, who submitted to the India House a scheme for a line from Calcutta to the north-west of India, based upon minute information and statistics collected by himself on the spot; and, almost simultaneously, Mr. Chapman submitted a scheme for a railway from Bombay towards the interior; a Company was also formed in 1845 for the construction of a railway from Madras to Arcot.

The delays attendant upon railway construction in India may be classified under four distinct heads:

1. Delays arising from Government supervision at Home and in India.

2. Delays incidental to the execution of extensive and complicated public works under novel circumstances in a distant country.

3. Delays produced by political causes, such as insurrection and mutiny.

4. Delays arising from the natural difficulties which the face of the country presents.

Your Committee will proceed to notice each class of delay in the order thus given, but it is necessary, before doing so, to describe shortly the system of

railway construction pursued in India. (Indian railways are constructed by companies formed in this country, and incorporated by Acts of Parliament. In all their proceedings, operations, and expenditure they are subject to the control of the Government, who engage to grant for 99 years all the land required, free of expense, to the companies, and to guarantee interest, generally at the rate of five per cent. per annum, for the same term, upon the capital employed.

(The following conditions are attached to the guarantee and the granting of the land:)

> The Railway Company have the power of surrendering the works at any time after the line is opened, upon giving six months' notice to the Government, and the East India Company undertake to repay the whole amount that has been expended by the Railway Company.
>
> The East India Company have the power, within six months after the expiration of 25 or 50 years, of purchasing the railway at the mean market value, in London, of the shares during the three previous years. In case the Railway Company fail to complete the line or to work it satisfactorily, the Government is entitled to take possession, and repay within six months the sums expended.
>
> The Railway Company to repay the guaranteed interests from the profits of the railway."

The supervision of the Government over the proceedings of the railway companies is of two distinct kinds, viz., that exercised in the person of the official Director over the Railway Boards in London, and that exercised by consulting engineers in India, to whom is committed the charge of superintending on behalf of Government all railway operations in that country.

Supervision at Home.—The duties of Official Director at the various Railway Boards have hitherto been performed by the same person, and he has, under the terms of the contract, a power of veto over all the proceedings of the Board, but it does not appear that this power has ever been exercised; indeed, until a comparatively recent period, his functions appear to have been confined to giving information to the Court of Directors upon points on which they might require it, and to co-operating in the promotion of the various undertakings; but authority has been lately given to him to sanction all indents (or requisitions) for stores and materials approved by the local Governments in India, and the acceptance of tenders for the supply of the same.

Previous to this important extension of the powers of the Official Director, every indent was submitted for the direct sanction of the Home authorities, by a process thus described by Sir James Melvill, the Official director: "The indent came from the railway authorities in India to the Railway Board in this country; the Railway Board then came to their decision upon it; and if they proposed to comply with it, they sent a resolution to that effect to the Court of Directors; the Court of Directors came to an opinion upon it, and their opinion was submitted for the concurrence of the Board of Control, and when the indent was returned with the opinion of both authorities, the decision was communicated to the Railway Board." Such a system necessarily entailed a very considerable amount of delay and correspondence, and the best results may be anticipated from the judicious changes lately effected in this respect.

The process of forwarding instructions from the Railway Boards to their agents in India also seems to Your Committee to require improvement. Sir James Melvill thus describes it: "The Railway Board prepares a draft of the instructions to its agent in India, and every such draft, without exception, is submitted to the Court of Directors; the Court, expressing an opinion upon it, submit it to the Board of Control, and when both authorities are agreed, the letter is returned to the Railway Board, with an intimation that the Court of Directors offers no objection to it." Considerable delays have not unfrequently resulted from this cause; and though it is, no doubt, important that instructions to their agents in India should go out backed by the whole weight and authority of the approval of the Home Government, Your Committee would confidently expect that the contemplated consolidation of the departments of the India House, and the Board of Control will materially expedite the future transaction

transaction of railway business. Before leaving this branch of the subject, Your Committee would remark that the harmony which has prevailed at the Railway Boards seems to be in no small degree attributable to the judgment and discretion exercised on all occasions by the Official Director, and to the respect shown to his opinion.

Supervision in India.—Under the terms of the contract the Government have an almost unlimited power of control over the acts and operations of the railway companies, the inspection and supervision of the works being in every case delegated to a military engineer, whose duty, as described by Colonel Baker, is, in the first instance, to examine the line of country over which it is proposed to construct a railway, to examine all the designs and estimates, to audit all expenditure, to report upon completed works, and to maintain a real check over all the acts of the railway officers.

Your Committtee hesitate to express any opinion as to the policy of employing military men in the inspection of railway works and the control of civil engineers, but it is quite clear that to ensure cordial co-operation no small amount of forbearance and discretion must be exercised on both sides. Too minute an interference in details, while unnecessary for practical economy, involves constant controversy, lengthy correspondence, and consequent delay, besides engendering irritation and discord where friendly and united action ought to subsist. Your Committee are decidedly of opinion that to ensure the speedy and efficient completion of railways in India the utmost freedom of action ought to be allowed to the efforts of the different companies, consistent with the control necessary to protect from undue expenditure the Indian Exchequer, upon which the payment of the guaranteed interest must for some time remain a heavy charge.

Complaints of too minute an interference on the part of the Government consulting engineer have been strongly urged from the Madras Presidency, for the further details of which Your Committee would refer to the evidence, which complaints appear to be in part well founded; on the other hand, Your Committee cannot think that the proceedings of the chief engineer of the railway company have been wholly free from blame. Directions have been sent out from the Home authorities to the Madras Government to relax the extent of supervision in force there; but it does not appear in evidence that those instructions have as yet taken effect. Your Committee, however, have had no opportunity of hearing an explanation from the Madras Government on the subject.

Other complaints, but in a minor degree, have arisen, both in Bengal and Bombay, though in the latter Presidency the relations between the Government and the Great Indian Peninsula Railway officials appear to have been, for the most part, of a harmonious and satisfactory character.

The delays incidental to the construction of railways in so distant a country as India are of various kinds and degrees of magnitude. The cost and means of obtaining freight must always be regulated, and, in the opinion of many competent authorities, actually limited by the home demand for Indian produce; hence the transport across the sea of the vast mass of dead weight necessary for the construction of thousands of miles of iron way, besides locomotives, iron work for bridges, and other materials, forms a cause of delay second only in importance to the difficulties which impede the conveyance of these materials up the country, where the means of internal communication are in many places very imperfect, where river navigation during the dry season is liable to constant interruption, where boats are scarce, and native boatmen untrustworthy. To these difficulties may be added the want severely felt in many districts, and especially in Bengal, of fuel for lime and brick burning, and of timber suitable for sleepers, large quantities of which are now being supplied from England; the effects of Indian climate upon European constitutions; the frequent failures of contractors, unaccustomed or incompetent to undertake such extensive works; and lastly, the circuitous and lengthy correspondence carried on between the Railway Boards and their agents, on the one hand, and with the various Government departments, both here and in India, on the other; all these appear to Your Committee to form

sources of delay more or less serious, and must be classed among the main impediments to the rapid progress of railway enterprise in India.

Delays from Political Causes have been of frequent occurrence. In Bengal the Santhal rebellion in 1855, is described as having thrown back the works in the Rajmahal district for fully 12 months, and the evil influences resulting from it are not even yet at an end. The Mutiny subsequently suspended railway operations in Upper Bengal and the North-West Provinces from May to December of last year, and its disastrous consequences must be felt for some time to come, although the actual damage done to the works appears to be less than might have been anticipated. Railway operations in the other Presidencies have hitherto been happily free from the disturbing influences of insurrection and war.

Lastly come the delays arising from the natural features of the country, such as the bridging of large rivers, and the surmounting of the ghauts. Mr. Noad in his evidence states, that the whole question of the completion of the East Indian Railway resolves itself into the rapidity with which the enormous number of its heavy bridges and flood arches can be constructed. Along the Ganges Valley line, between Burdwan and the river Soane, a distance of about 400 miles, there are described to be no less than 47,000,000 cubic feet of brickwork, including the substructure of the gigantic bridge over the Soane.

On the Bombay and Baroda line, between Surat and Ahmedabad, three large and rapid rivers, the Taptee, Nerbudda and Mhye, present considerable engineering difficulties, and require costly and extensive bridges; on that important portion of the line between Surat and Bombay, no fewer than 18 rivers have to be crossed, one of which, known as the Bassein Strait, is described to be 1¼ mile in width. On portions of the Madras line also, the bridging works are described to be very heavy; but even the great works thus enumerated appear insignificant in comparison to the stupendous task undertaken by the Great Indian Peninsula Company of carrying their railway across the two mountain passes known as the Thull Ghaut and the Bhor Ghaut, the former on the north-easterly, the latter on the south-easterly portion of this line. On the Thull Ghaut the ascent is 9 miles, the total rise in that distance 972 feet, the steepest gradient, 1 in 37 for a distance of 11 miles 44 chains, and the works include 1,962 lineal yards of tunnelling, and 614 yards of viaduct, at an estimated cost of 49,988 *l.* per mile. On the Bhor Ghaut the steepest gradient is 1 in 67 for a mile and 38 chains, the total distance is 15 miles 68 chains, the total rise in that distance 1,831 feet, the tunnelling is 2,535 yards, and the viaduct 888 yards, the estimated cost being 48,188 *l.* per mile.

With the exception of the ghauts and rivers, however, the general face of the country seems favourable for railway construction, presenting for the most part easy gradients; and the very low price of labour keeps down the cost to an average for the whole country of about 10,000 *l.* per mile, while many of the less expensive lines are being constructed at a cost of 6,000 *l.* per mile.

Upon an impartial review of the early history of Indian railways, there can be no doubt that much valuable time was lost in the preliminary negotiations for the introduction of railway enterprise into India, and also on account of the commercial crisis having arisen while these negotiations were still incomplete; the novelty and magnitude of the undertaking, the remoteness of the scene of operations, and the natural difficulties of climate and country might well have raised doubts and hesitation in the minds of the Indian authorities at home; but Your Committee are decidedly of opinion that had the matter been taken up at first with the earnestness that its importance, both political and commercial deserved, in accordance with the proposal of the Court of Directors in 1846 to the Board of Control, and had the proposals of the originators been met with the same liberality which has since been displayed in the agreements with the different companies, our Indian possessions might ere this have been provided with many hundred miles of rapid internal communication, the value of which would have been felt in the facilities afforded for military concentration, and the more speedy development of their resources. But Your Committee have no means of judging of the considerations by which the Government were actuated in these proceedings. With reference to the actual prosecution of the works,

Your

Your Committee cannot in fairness omit to observe, that, though some cases have been cited in which the Government superintendence has been productive of vexation and annoyance to the railway officials, and has tended to impede that harmonious action between the Government and the companies which is essential for the rapid completion of these great works, no very material delay in the construction of the various lines appears to have resulted therefrom. From the evidence adduced, Your Committee are led to believe that the progress of railroads under construction in India will bear favourable comparison with that of English lines. Willing testimony has been given by many of the railway authorities to the value of Government control to the interests of the companies themselves, when rationally and temperately exercised.

Your Committee have not thought it necessary to enter into any comparison of the respective merits of the contract and departmental systems of construction, the adoption of which must always materially depend on the circumstances of the district; and it appears highly necessary that both systems should have a fair trial before giving any decided preference to either.

In conclusion, Your Committee are of opinion, first, that the Government has acted wisely in committing to private enterprise the execution of these great public works; secondly, that a guaranteed interest on the requisite capital was indispensable to induce the public to invest their money in undertakings of this magnitude and novelty; and thirdly, that, in order to protect the Indian revenue from undue expenditure, Government control over the railway operations is requisite, and even valuable to the interests of the shareholders themselves. At the same time, Your Committee would observe that, under a system complicated in its character, and necessarily somewhat cumbrous in its machinery, a system, moreover, the greatest defect of which is the facility it affords for the evasion of responsibility, a clear and distinct definition of the duties, responsibilities, and extent of jurisdiction of all heads of departments, and those under them, is essentially requisite for its smooth and successful working; always assuming that due care be taken to entrust discretionary power only to men who are to be relied on as competent to distinguish an effective general control from too minute an interference in details. By a judicious adherence to the spirit rather than the letter of the contract, Your Committee feel assured that arrangements may be simplified, united action for one common object secured, and railway enterprise in India may before long assume proportions commensurate with the vast commercial agricultural and mineral resources of that country.

13 *July* 1858.

PROCEEDINGS OF THE COMMITTEE.

Lunæ, 3° *die Maii*, 1858.

MEMBERS PRESENT:

Mr. Liddell.
Mr. Cumming Bruce.
Mr. Crawford.
Mr. A. H. Baring.
Mr. Geo. Glyn.
Mr. Austin Bruce.
Mr. K. Hodgson.
Mr. Stephenson.
Mr. Cheetham.
Mr. T. G. Baring.
Mr. Campbell.

Mr. *Liddell* was called to the chair.

Committee deliberated.

Mr. *Juland Danvers* examined.

[Adjourned till Thursday, at Twelve o'clock

Jovis, 6° *die Maii*, 1858.

MEMBERS PRESENT:

Mr. LIDDELL in the Chair.

Mr. A. H. Baring.
Mr. T. G. Baring.
Mr. C. Bruce.
Mr. H. A. Bruce.
Mr. Campbell.
Mr. Cheetham.
Mr. Crawford.
Mr. G. Glyn.
Mr. K. Hodgson.
Mr. Stephenson.
Sir James Elphinstone.
Mr. H. D. Seymour.
Colonel Sykes.

Mr. *David I. Noad* examined.

[Adjourned to Monday, at Twelve o'clock

Lunæ, 10° *die Maii*, 1858.

MEMBERS PRESENT:

Mr. LIDDELL in the Chair.

Mr. A. H. Baring.
Mr. C. Bruce.
Mr. Cheetham.
Mr. Stephenson.
Mr. H. A. Bruce.
Mr. Crawford.
Mr. D. Seymour.
Colonel Sykes.

Mr. *David Innes Noad*, Mr. *George Sibley*, and Mr. *John Freeman* examined.

[Adjourned to Thursday, at Twelve o'clock

Jovis, 13° *die Maii*, 1858.

MEMBERS PRESENT:

Mr. LIDDELL in the Chair.

Mr. T. G. Baring.	Mr. A. H. Baring.
Mr. Stephenson.	Mr. Crawford.
Mr. H. A. Bruce.	Sir James Elphinstone.
Mr. Cumming Bruce.	Mr. D. Seymour.
Colonel Sykes.	

Mr. *George Sibley* further examined.

Mr. *George B. Bruce* examined.

[Adjourned to Monday, at Twelve o'clock.

Lunæ, 17° *die Maii*, 1858.

MEMBERS PRESENT:

Mr. LIDDELL in the Chair.

Mr. A. H. Baring.	Mr. Cheetham.
Mr. T. G. Baring.	Mr. Stephenson.
Colonel Sykes.	Mr. Cumming Bruce.
Mr. H. A. Bruce.	Mr. Campbell.
Sir J. Elphinstone.	Mr. Glyn.
Mr. Crawford.	

Mr. *G. B. Bruce* further examined.

Colonel *John P. Kennedy* examined.

[Adjourned to Thursday, at Twelve o'clock.

Jovis, 20° *die Maii*, 1858.

MEMBERS PRESENT:

Mr. LIDDELL in the Chair.

Mr. A. H. Baring.	Mr. Cheetham.
Mr. T. G. Baring.	Mr. Crawford.
Colonel Sykes.	Mr. Glyn.
Mr. H. A. Bruce.	Mr. D. Seymour.
Mr. Stephenson.	

Colonel *J. P. Kennedy* further examined.

Colonel *Thomas Townsend Pears* examined.

[Adjourned to Thursday, 3d June, at Twelve o'clock.

Jovis, 3° *die Junii*, 1858.

MEMBERS PRESENT:

Mr. LIDDELL in the Chair.

Mr. T. G. Baring.	Colonel Sykes.
Mr. Cheetham.	Mr. A. H. Baring.
Mr. C. Bruce.	Mr. Campbell.
Mr. Crawford.	Sir J. Elphinstone.
Mr. George Glyn.	

Colonel *Pears* examined.

[Adjourned to Monday, at Twelve o'clock.

Lunæ, 7° die Junii, 1858.

MEMBERS PRESENT:

Mr. LIDDELL in the Chair.

Mr. T. G. Baring.	Mr. Cheetham.
Mr. H. A. Bruce.	Mr. Campbell.
Colonel Sykes.	Mr. A. H. Baring
Mr. Crawford.	Mr. H. D. Seymour.
Mr. C. Bruce.	

Mr. *James Walker* examined.

[Adjourned to Thursday, at Twelve o'clock.

Jovis, 10° *die Junii*, 1858.

MEMBERS PRESENT:

Mr. LIDDELL in the Chair.

Mr. T. G. Baring.	Colonel Sykes.
Mr. Stephenson.	Mr. A. Baring.
Mr. Cheetham.	Mr. Crawford.
Mr. C. Bruce.	Mr. Glyn.
Mr. Campbell.	Mr. D. Seymour.

Mr. *James Walker* further examined.

Mr. *J. B. Bruce* and Mr. *Thomas R. Watt* examined.

[Adjourned to Monday, at Twelve o'clock.

Lunæ, 14° *die Junii*, 1858.

MEMBERS PRESENT:

Mr. LIDDELL in the Chair.

Mr. T. G. Baring.	Mr. Cheetham.
Mr. Crawford.	Mr. A. H. Baring.
Colonel Sykes.	Mr. C. Bruce.
Mr. D. Seymour.	Mr. H. A. Bruce.

Mr. *William Palk Andrew* and Colonel *William Erskine Baker* examined.

[Adjourned to Thursday, at Twelve o'clock.

Jovis, 17° *die Junii*, 1858.

MEMBERS PRESENT:

Mr. LIDDELL in the Chair.

Mr. H. G. Baring.	Mr. D. Seymour.
Mr. Crawford.	Mr. C. Bruce.
Colonel Sykes.	Sir J. Elphinstone.

Colonel *William E. Baker* further examined.

Sir *Macdonald Stephenson* examined.

[Adjourned to Monday, at Twelve o'clock.

Lunæ, 21° *die Junii*, 1858.

MEMBERS PRESENT:

Mr. LIDDELL in the Chair.

Mr. Crawford.	Mr. C. Bruce.
Mr. Cheetham.	Mr. A. H. Baring.
Mr. D. Seymour.	Mr. Campbell.
Mr. H. G. Baring.	Mr. H. A. Bruce.
Colonel Sykes.	Mr. Glyn.

Sir *James Melvill* and Colonel *Peare* examined.

[Adjourned to Thursday, at Twelve o'clock.

Jovis, 24° *die Junii*, 1858.

MEMBERS PRESENT:

Mr. LIDDELL in the Chair.

Mr. H. G. Baring.	Mr. C. Bruce.
Mr. A. H. Baring.	Mr. Crawford.
Colonel Sykes.	Mr. H. Austen Bruce.
Mr. Cheetham.	

Mr. *David J. Noad*, Sir *Macdonald Stephenson*, and Mr. *H. B. Bruce* examined.

[Adjourned to Thursday, 8th July, at Twelve o'clock, to consider Report.

Jovis, 8° *die Julii*, 1858.

MEMBERS PRESENT:

Mr. LIDDELL in the Chair.

Mr. Crawford.	Mr. Hodgson.
Mr. Campbell.	Colonel Sykes.
Mr. A. Bruce.	Mr. G. Glyn.
Mr. D. Seymour.	Mr. A. H. Baring.
Mr. Cheetham.	Sir J. Elphinstone.
Mr. T. G. Baring.	

Draft Report proposed by the Chairman, read 1°, as follows:—

"1. YOUR COMMITTEE were appointed 'to inquire into the causes of the delay which has occurred in the construction of railways in India.' They have taken evidence from many of the best authorities on the subject, viz., gentlemen connected with the Indian Government at home, officers of high standing and long experience of public works in India, as well as secretaries and engineers belonging to the different railway companies, and are agreed upon the following Report:—

"2. There are seven distinct companies at present engaged in constructing lines of railway in India, under the guarantee of the Government:

"1. The East India Railway Company engaged to construct a line from Calcutta *viâ* Rajmahal, Agra, and Delhi to Lahore, with a branch from Mirzapoor to Jubbulpoor.

"2. The Great Indian Peninsular Company, who have undertaken a line from Bombay in a north-easterly direction to Jubbulpoor, to meet the East Indian Branch, and a line in a south-easterly direction *viâ* Poonah and Sholapore to Bellary, there to meet the Madras line.

"3. The Madras Railway Company engaged in constructing a line from Madras to Bellary to join that from Bombay, and a south-west line to the opposite coast, at or near to Beypoor.

"4. The Bombay and Baroda Company undertake a line from Bombay *vid* Surat, to Baroda and Ahmedabad.

"5. The Scinde and Punjaub Railway Company, who are to make a line from Kurrachee to Kotrie on the Indus, and from Moultan to Lahore in the Punjaub.

"6. The Eastern Bengal from Calcutta to Dacca.

"7. The Great Southern of India from Nizapatam to Trichinopoly, with a branch to Sotem.

"3. The first Indian Railway project was broached in the latter end of 1844, by Mr. Macdonald Stephenson, who submitted to the India House a scheme for a line from Calcutta to the north-west of India, based upon minute information and statistics collected by himself on the spot, and almost simultaneously Mr. Chapman submitted a scheme for a railway from Bombay towards the interior.

"4. The *East India Railway* was formed in June 1845, and the engineering staff sent from this country having made the necessary surveys and investigations, the Board, before the end of that year, expressed to the Court their readiness to discuss the terms upon which the work was to be carried on; great difficulties, however, were thrown in the way of any satisfactory settlement of conditions, the terms of the guarantee forming the main subject of discussion, and long negotiations ensued, for a more detailed account of which your Committee would refer to the evidence of Mr. Danvers, Mr. Noad, Sir James Melvill, and Sir Macdonald Stephenson.

"5. At length, in August 1847, a large staff of engineers was sent out, and there seemed a fair prospect of commencing operations during the ensuing cool season, and a call was made on the shareholders with a view to provide the deposit, when, unhappily, the commercial crisis of 1847 intervened, followed by the French revolution of 1848; two events which, for the moment, completely paralysed all commercial operations. Owing to these untoward circumstances, the Railway Company appears to have experienced considerable difficulty in completing the deposits required by the Court, which refused to make any concessions, and threatened to suspend all further negotiations; this resulted in July 1848, in a fresh proposition on the part of the Railway Company, and difficulties were again raised as to the guarantee; and after the loss of much valuable time, these prolonged negotiations terminated in a compromise, which was brought into the form of a contract, and signed in August 1849. Some further time was subsequently lost in correspondence with the Home Authorities in regard to contracts, salaries of engineers, and other matters. And it was not until January 1851, that the Railway Company resumed active operations (the work being limited to an experimental section from Calcutta to Raneegunge).

"6. In February 1855, the whole of the first section out of Calcutta, of 121 miles, was opened for traffic, and during this time arrangements were concluded for the extension of the line to Delhi, a distance of 1,164 miles. These works are in course of construction; and in the present year another 125 miles between Allahabad and Cawnpore will be opened. The other sections will be completed in succession, and the whole may be expected to be open in 1862. The entire length of line sanctioned is about 1,400 miles, including the branch of 300 miles between Mirzapore and Jubbulpoor, recently sanctioned; and the estimated cost is put at 12,381,000 *l.*

"7. *The Great Indian Peninsular Railway* Company was formed in the spring of 1845, under the auspices of Mr. John Chapman, but they did not succeed in obtaining their Act of Parliament until August 1849, when an agreement was entered into between the East India Company and the Railway Company for the construction of an experimental line from Bombay to Callian, a distance of 33 miles. The first sod was turned in October 1850, and the whole length completed in May 1854.

"8. The entire length of line sanctioned, and upon the capital for the construction of which interest at 5 per cent. is guaranteed, is 1,235 miles, of which only 88½ miles are as yet open; 442 miles more are now under construction, to be completed by the end of 1861; 595 miles are about to be let, to be completed by March 1862; and 110 miles are in abeyance; making a total of 1,235 miles, the whole of the companies' undertakings.

"9. *The Madras Line.*—A company was first formed for the construction of a railway at Madras in 1845, but, after two years' unsuccessful application for a guarantee, it was dissolved in 1847. The present company was then formed, and applied, in May of that year, to the Court of Directors for a guarantee, which was at that time altogether declined, the Court replying that, until the result of the experiments already authorised in Bengal and Bombay had been seen, they were not disposed to grant any further guarantee.

"10. The application was renewed in February 1850, but more than two years elapsed before any arrangement was come to, and it was not until May 1852 that the East India Company conceded to the Madras Railway Company 4½ per cent. on 500,000 *l.* for an experimental line, beginning at Madras, and proceeding in a westerly direction. The Act of Incorporation passed in June 1853, and the first sod was turned in July of that year; and in July 1856 the first portion of the line, 65 miles in length, was opened.

"11. In

"11. In September 1853 the railway company agreed to a proposal from the East India Company to extend the line to the West Coast, with branches to Bangalore, and the foot of the Neilgherry Hills; and for that purpose the East India Company agreed to increase the capital on which they would guarantee interest to 4,000,000 *l.* The Act of Parliament was obtained in June 1854, and the extended contract signed in December 1855; a further extension was subsequently proposed by the Court of Directors, and the railway company undertook the execution of a line from Madras, *viâ* Bellary, to a junction with the line coming from Bombay to the southward, and for which another 1,000,000 *l.* was raised in September 1856.

"12. Different rates of interest, varying from 4½ to 4¾ and 5 per cent., were guaranteed on the different amounts of capital thus raised, and considerable dissatisfaction seems to have been produced in the minds of the original shareholders in consequence.

"13. *The Bombay, Baroda, and Central India* scheme was sanctioned by the home Government in April 1855, the surveys having been completed in April 1854, when the Supreme Government of India approved and recommended the main extent of line from Bombay *viâ* Surat and Broach to Ahmedabad, but the home authorities withheld their sanction until November 1857 from that important portion of the line, which is to connect Surat with Bombay, the only real port of shipment for the rich products of Guzerat. The reasons assigned for this long delay are, that, owing to the difficulties presented by the country, doubts were at first entertained as to the practicability of the route, and differences of opinion prevailed among the local engineers; that subsequently reference was made to the Government of India on the subject, and a good deal of discussion arose in India between the Government of Bombay and the Supreme Government thereon. Great objections have also been and are still felt to the existence of two large railway termini in Bombay; the mode of entry thereto is still undetermined, and the arrangements for the use of a common terminus with the Great Indian Peninsular Company yet remain unsettled. For further particulars respecting this line, your Committee would refer to the valuable evidence of Colonel Kennedy, whose views and elaborate calculations upon the whole subject of railway communication for India are deserving of careful consideration.

"14. *The Scinde and Punjaub Railway Company* was formed in December 1854, and the Act of Incorporation obtained in July 1855, but the necessary surveys had been all taken in 1853 (under instructions from the Bombay Government, and on the recommendation of the Scinde Commissioner), by Lieutenant Chapman, an eminent engineer in the Bombay service, and approved by the superintending engineer of the province, the Government having apparently had some intention of making the line themselves. The company commenced their surveys in June 1855, and all were completed by August 1857, during which time 11 different routes were surveyed by direction of the local government. Various schemes and conflicting propositions were mooted and discussed during the absence of Mr. Frere, the Commissioner of Scinde, and Colonel Crawford, the eminent consulting engineer to the Bombay Government, and no small confusion seems to have been created by the consequent change in the local authorities, who had every power to interfere and determine how the works were to be constructed, but no power to compel any deviation from the original points laid down as the termini of the line at Kurrachee and Kotree, a town on the Indus, opposite Hyderabad, because the contract had been executed, and the whole matter investigated on the spot, and approved by the then existing authorities; and after a loss of fully 18 months the identical line, as originally sanctioned, is now in course of construction. The whole distance from 'Kurrachee' to 'Kotree' is 110 miles, and the character of the country favourable. For further information as to the entire scheme of the Scinde and Punjaub Railway, your Committee would refer to the evidence of Mr. Andrew.

"15. There are two other railway schemes for India guaranteed, and undertaken by separate companies, viz., the Eastern Bengal, from Calcutta to Jessore and Dacca, and the Great Southern of India, from Nizapatam to Trinchinopoly, with branches; but although each appears to offer great ultimate commercial advantages, being still in their infancy, your Committee have not thought it necessary to institute any minute inquiries into their history.

"16. The delays which appear to attend railway construction in India may be classified under four distinct heads:

"1. Delays arising from Government supervision at home and in India.

"2. Delays incidental to the execution of extensive and complicated public works in a distant country.

"3. Delays arising from the natural difficulties which the face of the country presents.

"4. Delays produced by political causes, such as mutiny, and those insurrectionary movements which have unhappily of late been too frequent in India.

"17. Your Committee will proceed to notice each class of delay in the order thus given, but it is necessary, before doing so, to describe shortly what the system of railway construction pursued in India is. Indian railways are constructed by companies formed in this country, and incorporated by Acts of Parliament; all their proceedings, operations, and expenditure being subject to the supreme control of the Government, who engage to grant all the land required, free of expense, to the companies, and to guarantee interest, generally at the rate of five per cent. per annum, for 99 years, upon the capital employed.

"18. The following conditions are attached to the guarantee and the granting of the land:

"'The Railway Company have the power of surrendering the works at any time after the line is opened, upon giving six months' notice to the Government, and the East India Company undertake to repay the whole amount that has been expended by the Railway Company.

"'The East India Company have the power, within six months after the expiration of 25 or 50 years, of purchasing the railway at the mean market value, in London, of the shares during the three previous years. In case the Railway Company fail to complete the line or to work it satisfactorily, the Government is entitled to take possession, and repay within six months the sums expended.

"'The Railway Company repay the guaranteed interests from the profits of the railway.'

"19. The supervision of the Government over the proceedings of the railway companies is of two distinct kinds, viz., that exercised in the person of the *ex officio* Director over the Railway Boards in London, and that exercised by the consulting engineer in India, to whom is committed the charge of superintending on behalf of Government all railway operations in that country.

"20. *Supervision at Home.*—The duties of Official Director at all the different Railway Boards are performed by the same person, and he has, under the terms of the contract, a power of veto over all the proceedings of the Board, but it does not appear that this power has ever been exerted; indeed, until a comparatively recent period, his functions appear to have been confined to giving information to the Court of Directors upon points on which they might require it, and his assistance and advice towards the promotion of the various undertakings; but authority has been lately given to him to sanction all indents (or requisitions) for stores and materials which may have been approved by the local governments in India, and the acceptance of tenders for the supply of the same, and to give consent to any purchases that may be originated at the Board without having been indented for from India.

"21. Previous to this important extension of the powers of the official director, each individual indent was submitted to the home authorities, and the process is thus described by Sir James Melvill: 'The indent came from the railway authorities in India to the Railway Board in this country; the Board then came to its decision upon it; and if they proposed to comply with it, they sent a resolution to that effect to the Court of Directors; the court came to an opinion upon it, and their opinion was submitted for the concurrence of the Board of Control, and when the indent was returned with the opinion of both authorities, the decision was communicated to the Railway Board.' Such a system necessarily entailed a very considerable amount of delay and correspondence, and the best results may be anticipated from the judicious changes lately effected in this respect.

"22. The process of forwarding instructions from the Railway Boards to their agents in India also seems to your Committee to require improvement. Sir James Melvill thus describes it: 'The Railway Board prepares a draft of the instructions to its agent in India, and every such draft, without exception, is submitted to the Court of Directors; the Court, expressing an opinion upon it, submit it to the Board of Control, and when both authorities are agreed, the letter is returned to the Railway Board, with an intimation that the Court of Directors offer no objection to it.' Considerable delays have not unfrequently resulted from this cause; and though it is, no doubt, important that instructions to railway agents should go out to India backed by the whole weight and authority of the approval of the Home Government, your Committee would confidently expect that the contemplated consolidation of the departments of the India Board and the Board of Control will materially expedite the future transaction of railway business. Before leaving this branch of the subject, your Committee would remark that the harmony which almost universally prevails at the Railway Boards seems to be in no small degree attributable to the tact and discretion exercised on all occasions by the Official Director.

"23. *Supervision in India.*—Under the terms of the contract the Government have an almost unlimited power of control over the acts and operations of the railway companies, the inspection and supervision of the works being in every case delegated to a military engineer, whose duty, as described by Colonel Baker, is, in the first instance, to examine the line of country over which it is proposed to construct a railway, to examine all the designs and estimates, to audit all expenditure, to report upon completed works, and to maintain a real check over all the acts of the railway officers.

"24. Your Committee hesitate to express any opinion as to the policy of employing military men in the inspection of railway works and the control of civil engineers, but it is quite clear that to ensure cordial co-operation requires the exercise of no small amount of tact and discretion on both sides; too minute an interference in details, while unnecessary for practical economy, involves constant controversy, lengthy correspondence and consequent delay, besides engendering irritation and discord where friendly and united action ought to subsist. And your Committee are decidedly of opinion that to ensure the speedy and efficient completion of railways in India the utmost freedom of action ought to be afforded to the efforts of the different companies, consistent with the control necessary to protect from undue expenditure the Indian Exchequer, upon which the payment of the guaranteed interest must long remain a heavy charge.

"25. Complaints

"25. Complaints of minute interference on the part of the Government consulting engineer have been strongly urged from the Madras Presidency, for the further details of which your Committee would refer to the evidence of Mr. Bruce, Mr. Walker, and Colonel Pears; and directions have been sent out from the home authorities to the Madras to relax the extent of supervision in force there; but it does not appear in evidence that those instructions have as yet taken effect.

"26. Other complaints, but in a minor degree, have arisen, both in Bengal and Bombay, though in the latter Presidency the relations between the Government and the Great Indian Peninsular Railway officials appear to be, for the most part, of a harmonious and satisfactory character.

"27. The delays incidental to the construction of railways in so distant a country as India are of various kinds and degrees of magnitude. The cost and means of obtaining freight must always be regulated, and, in the opinion of many competent authorities, actually limited by the home demand for Indian produce; and hence the transport across the sea of the vast mass of dead weight necessary for the construction of thousands of miles of iron way, besides locomotives, iron work for bridges, and other materials, forms an item of delay second only in importance to the difficulties which impede the conveyance of these materials up the country, where the means of internal communication are in many places very imperfect, where river navigation during the dry season is liable to constant interruption, where boats are scarce, and native boatmen careless. To these difficulties may be added the want severely felt in many districts, and especially in Bengal, of fuel for lime and brick burning, and of timber suitable for sleepers, large quantities of which are now being supplied from England; not to mention the effects of Indian climate upon European constitutions, the failures of contractors, unaccustomed or incompetent to undertake such extensive works; and last, though not least, the circuitous and lengthy correspondence carried on between the Railway Boards and their agents, on the one hand, with the various Government departments, both here and in India, on the other; all these appear to your Committee to form sources of delay more or less serious, and must always be classed among the main impediments to railway enterprise in India.

"28. *Delays from Political Causes* have been of frequent occurrence; in Bengal the Santhal rebellion in 1855, is described as having thrown back the works in the Rajmahal district for 12 months, and the evil influences resulting from it are not even yet at an end.

"The Mutiny subsequently suspended railway operations in Upper Bengal and the North-West Provinces from May to December of last year, and its disastrous consequences must be felt for some time to come, although the actual damage done to the works appears to be less than might have been anticipated.

"Railway operations in the other Presidencies have hitherto been happily free from the disturbing influences of insurrection and war.

"29. Lastly come the delays arising from the natural circumstances of the country, such as the bridging of large rivers, and the surmounting of the ghauts. Mr. Noad in his evidence states, that the whole question of the completion of the East India Railway resolves itself into the rapidity with which they can construct the enormous number of heavy bridges and valley arches. Along the Ganges Valley line, between Burdwan and the river Soan, a distance of about 400 miles, there are described to be no less than 47,000,000 cubic feet of brickwork, including the substructure of the gigantic bridge over the Soan.

"30. On the Bombay and Baroda line, between Surat and Ahmedabad, three large and rapid rivers, the Tapter, Nerbudda and Mhye, present considerable engineering difficulties, and require costly and extensive bridges; on that important portion of the line between Surat and Bombay, no fewer than 18 rivers have to be crossed, one of which, known as the Bassein Strait, is described to be 1¼ mile in extent. On portions of the Madras and Great Indian Peninsular lines also, the bridging works are described to be very heavy; but even the great works thus enumerated appear insignificant in comparison to the stupendous task undertaken by the Great Indian Peninsular Company of carrying their railway across the two mountain ranges known as the Thull Ghaut and the Bhor Ghaut, the former on the north-easterly, the latter on the south-easterly portions of the line. On the Thull Ghaut the ascent is nine miles, the total rise in that distance 972 feet, the steepest gradient is one in 97, for a distance of 11 miles 44 chains, and the works include 1,962 lineal yards of tunnelling, and 614 yards of viaduct, at an estimated cost of 49,988 *l.* per mile. On the Bhor Ghaut the steepest gradient is 1 in 67 for a mile and 38 chains, the total distance is 15 miles 68 chains, the total rise in that distance, 1,831 feet, the tunnelling is 2,535 yards, and the viaduct 898 yards, the estimated cost being 48,188 *l.* per mile.

"31. With the exception of the ghauts and rivers, however, the general face of the country seems favourable for railway construction, presenting easy gradients; and the very low price of labour keeps down the cost to an average for the whole country of about 10,000 *l.* a mile, while many of the less expensive lines are being constructed at a cost of 6,000 *l.* per mile.

"32. Upon an impartial review of the early history of Indian railways, there can be no doubt that much valuable time was lost in the preliminary arrangements for railway construction in India; and although the novelty and magnitude of the undertaking, the remoteness of the scene of operations, and the natural difficulties of climate and country might well

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"The Mutiny subsequently suspended railway operations in Upper Bengal and the North-West Provinces from May to December of last year, and its disastrous consequences must be felt for some time to come, although the actual damage done to the works appears to be less than might have been anticipated.

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"31. With the exception of the ghauts and rivers, however, the general face of the country seems favourable for railway construction, presenting easy gradients; and the very low price of labour keeps down the cost to an average for the whole country of about 10,000 *l.* a mile, while many of the less expensive lines are being constructed at a cost of 6,000 *l.* per mile.

"32. Upon an impartial review of the early history of Indian railways, there can be no doubt that much valuable time was lost in the preliminary arrangements for railway construction in India; and although the novelty and magnitude of the undertaking, the remoteness of the scene of operations, and the natural difficulties of climate and country might well

have raised doubts and hesitation in the minds of the Indian authorities at home, your Committee are decidedly of opinion that had they taken the matter up at first with the earnestness that its importance, both commercial and political, deserved; had they met the proposals of the originators with the same liberality they have since displayed in their agreements with the different companies, our Indian possessions might ere this have been provided with many hundreds of miles of rapid internal communication, the value of which would have been felt in the facilities afforded for military concentration and the more speedy development of their wealthy resources. At the same time your Committee cannot in fairness omit to observe, that though several cases have undoubtedly been shown where the Government superintendence has been productive of vexation and annoyance in the minds of the railway officials, and tended to impede that harmonious action between the Government and the companies which is essential for the rapid completion of these great works, no very material delay in the construction of the various lines appears to have resulted therefrom; and testimony has been borne by many of the railway authorities to the value of Government control to the interests of the companies themselves, when rationally and reasonably exercised.

"33. Your Committee have not thought it necessary to enter into any comparison of the respective merits of the contract and departmental systems of construction, the adoption of which must always materially depend on the circumstances of the district; and it appears highly necessary that both systems should have a fair trial before giving any decided preference to either. In Bengal, where the contract system seems to have been introduced somewhat hastily, extensive failures have occurred, and much delay and inconvenience has thereby resulted.

"34. In conclusion, your Committee are of opinion, first, that the Government has acted wisely in committing to private enterprise the execution of these great public works; second, that a guaranteed interest on the requisite capital was indispensable to induce the public to invest their money in undertakings of this magnitude and novelty; and, third, that in order to protect the public revenue from undue expenditure, Government control over the railway operations is not only legitimate, but even valuable to the interests of the shareholders themselves. At the same time your Committee would observe, that under a system complicated in its character, and necessarily somewhat cumbrous in its machinery, a system, moreover, the greatest defect of which is the facility it affords for the evasion of responsibility, a clear and distinct definition of the duties, responsibilities and extent of jurisdiction of all heads of departments and those under them, is essentially requisite for its smooth and successful working; always assuming that due care be taken to entrust discretionary power only to men who are to be relied on as competent to distinguish an essential general control from special and minute interference in minor details.

"35. By a judicious construction of the spirit rather than the letter of the contract, your Committee feel assured that arrangements may be simplified, united action for one common object secured, and railway enterprise in India may before long assume proportions commensurate with the vast commercial, agricultural and mineral resources of that country."

Draft Report proposed by Mr. *Baring*, read 1°, as follows:—

"1. YOUR COMMITTEE were appointed 'to inquire into the causes of the delay which has occurred in the construction of railways in India.' They have taken evidence from many of the best authorities on the subject, viz., gentlemen connected with the Indian Government at home, officers of high standing and long experience of public works in India, as well as secretaries and engineers belonging to the different railway companies, and are agreed upon the following Report:—

"2. The first Indian Railway project was broached in the latter end of 1844, by Mr. Macdonald Stephenson, who submitted a scheme for a line from Calcutta to the north-west of India; and almost simultaneously, Mr. Chapman submitted a scheme for a railway from Bombay towards the interior. A company was also formed in 1845 for the construction of a railway from Madras to Arcot.

"3. The Home Government, while recognising the proposals to be eminently deserving encouragement and co-operation, considered it to be indispensable that before proceeding further the applicability of railway communication to India should be accurately investigated by competent persons on the spot. This inquiry was ordered in the spring of 1845, and the result of it was received from India in the autumn of 1846. Questions then arose as to the terms upon which assistance should be given to the companies, in order to enable them to raise the requisite capital. While these were still undetermined, the commercial crisis of 1847-8 intervened; it was not till 1849 that money could be raised; and in August of that year contracts were entered into with two companies for the construction of experimental lines in the Presidencies of Bengal and Bombay. In 1852, the Home Government consulted the Government of India upon the extension of of these lines, and the adoption of others which had in the meantime been proposed; and the Minute of Lord Dalhousie of April 28, 1853, written after communication with the minor Presidencies, has been the foundation of the subsequent proceedings.

"4. The terms of the contracts between the East India Company and the Railway Companies are, that the Government grant all the land required free of expense, and guarantee interest

terest (generally at the rate of 5 per cent.) for 99 years upon the capital employed. The Companies have the power of surrendering the works at any time after the line is opened, upon giving six months' notice, and the East India Company undertake to repay the whole amount that has been expended. The East India Company have the power, after the expiration of 25 or 50 years, of purchasing the railway at the mean market value of the shares during the three previous years. In case the Companies fail to complete their lines or to work them satisfactorily, the Government is entitled to take possession, and repay within six months the sums expended. The Companies repay the guaranteed interests from the profits of the railway. All their proceedings are made subject to the supreme control of the Government.

" 5. There are seven distinct companies at present engaged in constructing lines of railway in India, under the guarantee of the Government:

" 1. The East India Railway Company has engaged to construct a line from Calcutta *viâ* Rajmahal and Agra, to Delhi, with a branch from Mirzapoor to Jubbulpoor.

" 2. The Great Indian Peninsular Company have undertaken a line from Bombay in a north-easterly direction to Jubbulpoor, to meet the East Indian Branch, and a line in a south-easterly direction *viâ* Poonah and Sholapore to Bellary, there to meet the Madras line.

" 3. The Madras Railway Company are engaged in constructing a line from Madras to the opposite coast, at or near to Beypoor, and also one to Bellary to join that from Bombay.

" 4. The Bombay and Baroda Company undertake a line from Bombay *viâ* Surat, to Baroda and Ahmedabad.

" 5. The Scinde and Punjaub Railway Company are to make a line from Kurrachee to Kotrie on the Indus, and from Moultan to Lahore in the Punjaub.

" 6. The Eastern Bengal from Calcutta to Dacca.

" 7. The Great Southern of India from Nizapatam to Trichinopoly, with a branch to Solem.

" Your Committee have received interesting evidence upon the proceedings of these Companies, with the exception of the two last, which are still in their infancy. Parts of the East Indian,* Great Indian Peninsular,† and Madras Railroads‡ are now open, and it is confidently expected that within the next four years, not less than 3,000 miles of the main trunk lines of railway will be completed, and opened for traffic.

* 121 miles.
† 88½ miles.
‡ 81 miles.

" 6. Your Committee are of opinion, that considerable delay has occurred between the proposals made by the different Railway Companies and the sanction of their lines by the grant of a guarantee; and that, in some cases, a more speedy decision might (as it now appears) have been safely arrived at. But your Committee are not disposed to attach any blame to the Home Government of India for having considered with great deliberation schemes for which the revenues of India are made responsible in case of failure; and the delay between the years 1846 and 1849 is to be mainly attributed to the impossibility of raising funds in consequence of the state of the money market. Your Committee desire to record their opinion, that the East India Company, throughout the proceedings under review, strongly advocated the rapid development of railway enterprise in India.

" 7. Your Committee have investigated, at some length, the complaints which have been made of the manner in which the control of the Government has been exercised over the proceedings of the Railway Companies; and they are not of opinion that any material delay in the construction of the several Lines has resulted therefrom. The conduct of the official Director of the Railway Board, Sir James Melvill, has been eminently calculated to facilitate the transaction of business in this country, and your Committee are glad to find that more extensive powers have recently been given to him. Some misconceptions appear to have arisen in India, both on the part of the Local Governments and of the Railway officials, as to the nature and extent of the supervision; but your Committee believe that these are rapidly being removed by experience, as well as by the orders of the East India Company. Much vexation and annoyance in the minds of the Railway officials at Madras, has been caused by the publication, in India, of reports containing matter of censure against them, but this practice has been discontinued in consequence of orders from home.

" 8. Your Committee are of opinion that, taking into consideration the difficulty of commencing railway undertakings in India, the physical obstacles presented in some parts by the nature of the country, and the delays caused by the Santhal insurrection and the mutiny, the progress hitherto made is satisfactory; that the works (so far as the evidence enables them to judge) have been substantially and economically constructed, and that the result is highly creditable to the railway companies.

" 9. In conclusion, your Committee are of opinion that the Government have acted wisely in committing to private enterprise the execution of these great public works; that a guaranteed interest on the capital was indispensable in order to induce the public to invest their money in undertakings of this magnitude and novelty; that, in order to protect the revenue of India, Government control over the railway operations is indispensable, and that it is also valuable to the interests of the shareholders themselves. At the same time, your Committee would observe that, under a system complicated in its character, and necessarily somewhat

somewhat cumbrous in its machinery, it is essential that the duties, responsibilities, and extent of jurisdiction of all heads of departments, and those under them, should be clearly defined; and they consider that the attention both of the home Government and of the governments of the different presidencies in India, should continue to be directed to the simplification of the supervision to the full extent that is practicable, consistently with the retention of complete control over the expenditure of the railway companies in the construction of their lines."

Motion made, and Question, "That the Report proposed by the Chairman be now read 2°, and considered paragraph by paragraph," put and agreed to.

Paragraph 1, read, amended, and agreed to.

Paragraph 2, read, and amendments made.—Amendment proposed, To leave out the word "Lahore," in line 2, for the purpose of inserting the words "the north west" (Mr. *Baring*), instead thereof.—Amendment, by leave, withdrawn.

Paragraph 2, as amended, agreed to.

Paragraph 3, read.—Amendment proposed, at the end of the paragraph, to add these words: "and a company was also formed, in 1845, for the construction of a railway from Madras to Arcot" (Mr. *Baring*).—Question, "That those words be there added," put and agreed to. Paragraph, as amended, agreed to.

Paragraph 4, read.—Motion made, and question put, "That this paragraph be now considered" (Mr. *Seymour*). The Committee divided.

Ayes, 5.	Noes, 6.
Mr. Crawford.	Mr. T. G. Baring.
Mr. Campbell.	Mr. Hodgson.
Mr. A. Bruce.	Colonel Sykes.
Mr. D. Seymour.	Mr. G. Glyn.
Mr. Cheetham.	Mr. A. H. Baring.
	Sir J. Elphinstone.

Paragraph 4 postponed.

Paragraphs 5 to 15, severally read, and considered.—Motion made, and question proposed, "That the paragraphs from 5 to 15, inclusive, be severally postponed" (Sir *J. Elphinstone*).—Amendment proposed, to leave out from the words "That the" to the end of the question, for the purpose of adding the words, "Committee now proceed with the consideration of the proposed Report," (Mr. *Seymour*) instead thereof.—Question put, "That the words proposed to be left out stand part of the question."—Committee divided:

Ayes, 6.	Noes, 5.
Mr. T. G. Baring.	Mr. Crawford.
Mr. Hodgson.	Mr. Campbell.
Colonel Sykes.	Mr. A. Bruce.
Mr. Glyn.	Mr. Seymour.
Mr. Alexander Baring.	Mr. Cheetham.
Sir J. Elphinstone.	

Main Question put, and agreed to.

Paragraphs 16 to 22, severally read, amended and agreed to.

Paragraph 23, read, and agreed to.

Postponed paragraphs, 4 to 15, inclusive, severally again read.—Question, "That these paragraphs stand part of proposed Report," put, and negatived.

Paragraph 24, read.—Amendment proposed, after the word "co-operation," to insert the words "no small amount of forbearance and discretion must be exercised" (Mr. *Crawford*).—Question, "That those words be there inserted," put, and agreed to.—Paragraph, as amended, agreed to.

Paragraph 25, read, and amended.—Amendment proposed, after the word "Evidence," in line 3, to insert the words, "which complaints appear to be in part well founded" (Mr. *Seymour*).—Question put, "That those words be there inserted." Committee divided:

Ayes, 5.	Noes, 3.
Mr. Crawford.	Mr. T. G. Baring.
Mr. Campbell.	Colonel Sykes.
Mr. A. H. Baring.	Mr. Glyn.
Mr. D. Seymour.	
Mr. Cheetham.	

Amendment proposed, after the word "founded," to insert the words, "on the other hand your Committee cannot think that the proceedings of the chief engineer of the Railway Company has been wholly free from blame" (Mr. *Seymour*.)—Question, "That those words be there added," put, and agreed to.

Amendments made.

Amendment

Amendment proposed, to leave out from the word "those," in l. 5, to the end of the paragraph (Mr. *T. G. Baring*).—Question put, "That the words proposed to be left out stand part of the paragraph." Committee divided:

Ayes, 4.	Noes, 4.
Mr. Crawford.	Mr. T. G. Baring.
Mr. Campbell.	Mr. A. Bruce.
Mr. D. Seymour.	Mr. Glyn.
Mr. Cheetham.	Mr. Alexander Baring.

Whereupon the Chairman declared himself with the Ayes.

Amendment proposed, at the end of the paragraph, to add these words: "Your Committee, however, have had no opportunity of hearing an explanation from the Madras Government on the subject" (Mr. *Baring*.)—Question, "That those words be there added," put, and agreed to.—Question, "That this paragraph, as amended, stand part of proposed Report," put, and agreed to.

Paragraphs, 26, 27, 28, 29, 30, and 31 severally read, amended, and agreed to.

Paragraph 32, read.—Amendment proposed, after the word "Preliminary," to leave out to the word "and," in l. 2, for the purpose of inserting these words: "negotiations for the introduction of railway enterprise into India," (Mr. *Crawford*) instead thereof.—Question, "That the words proposed to be left out stand part of the paragraph," put, and negatived.—Words inserted.

Amendment proposed, at the end of the last Amendment, to insert the words "and also on account of the commercial crisis having arisen while these negotiations were still incomplete" (Mr. *Baring*).—Question put, "That those words be there inserted." Committee divided:

Ayes, 5.	Noes, 2.
Mr. Campbell.	Mr. Crawford.
Mr. T. G. Baring.	Mr. Alexander Baring.
Mr. A. Bruce.	
Mr. Glyn.	
Mr. D. Seymour.	

Amendment proposed, in line 3, to leave out the words "and although" (Mr. *Crawford*).—Question, "That the words proposed to be left out stand part of the paragraph," put, and negatived.

Amendment proposed, after the word "home," in line 5, to insert the words: "But your Committee is decidedly of opinion that had the matter been taken up at first with the earnestness that its importance, both political and commercial, deserved, in accordance with the proposal of the Court of Directors in 1846 to the Board of Control; and had the proposals of the originators been met with the same liberality which has since been displayed in the" (Mr. *Crawford*).—Question put, "That those words be there inserted." Committee divided:

Ayes, 4.	Noes, 3.
Mr. Crawford.	Mr. Campbell.
Mr. A. Bruce.	Mr. T. G. Baring.
Mr. Glyn.	Mr. D. Seymour.
Mr. A. Baring.	

Further Amendments made.

Amendment proposed, after the word "resources," in line 13, to insert the words: "But your Committee have no means of judging of the consideration by which the Government were actuated in these proceedings" (Mr. *Crawford*).—Question, "That those words be there inserted," put, and agreed to.

Amendment proposed, after the word "therefrom," in line 18, to insert the words, "from the evidence adduced your Committee are led to believe that the progress of railroads under construction in India will bear favourable comparison with that of English lines" (Mr. *Alex. Baring*).

Question put, "That those words be there inserted." Committee divided:

Ayes, 4.	Noes, 3.
Mr. Crawford.	Mr. Campbell.
Mr. T. G. Baring.	Mr. A. Bruce.
Mr. Glyn.	Mr. Seymour.
Mr. Alex. Baring.	

Paragraph further amended.

Question, "That this paragraph, as amended, stand part of proposed Report," put and agreed to.

Paragraph 33 read. Amendment proposed, To leave out from the word "either," in line 5, to the end of the paragraph.—Question, "That the words proposed to be left out stand part of the paragraph," put and negatived.—Question, "That this paragraph, as amended, stand part of proposed Report," put and agreed to.

Paragraph 34 read, amended, and agreed to.

Paragraph 35 read, and agreed to.

Question, "That this proposed Report, as amended, be the Report of the Committee to The House," put and agreed to.

Ordered, To report the same, together with the Minutes of Evidence, and an Appendix.

EXPENSES OF WITNESS.

Name of Witness.	Profession or Condition.	From whence Summoned.	Number of Days Absent from Home, under Orders of Committee.	Expenses of Journey to London and back.	Allowance during Absence from Home.	TOTAL Expenses allowed to Witness.
				£. s. d.	£. s. d.	£. s. d.
Colonel Pears - -	- - - - -	Burton-on-Trent -	3	(twice) 5 5 -	3 3 -	8 8 -

MINUTES OF EVIDENCE.

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MINUTES OF EVIDENCE.

Lunæ, 3° *die Maii*, 1858.

MEMBERS PRESENT.

Mr. Liddell.	Mr. Cheetham.
Mr. A. H. Baring.	Mr. Crawford.
Mr. T. G. Baring.	Mr. G. Glyn.
Mr. C. Bruce.	Mr. K. Hodgson.
Mr. H. A. Bruce.	Mr. Stephenson.
Mr. Campbell.	

H. G. LIDDELL, Esq., IN THE CHAIR.

Mr. *Juland Danvers*, called in; and Examined.

Mr. *J. Danvers.*

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1. *Chairman.*] WILL you inform the Committee what office you hold in the India House?—I am Assistant to the Secretary in the India House, and part of my duty is to consider all matters relating to railways in India.

2. I believe you are at the head of that which is termed the "Railway Department"?—We have not actually a railway department. It is a business which has gradually grown into existence, and it has fallen to my lot to take charge of the different proceedings in connection with railways in this country, and of the proceedings of the Government in India. I am also assistant to Sir James Melvill, the ex-officio director, who sits at the Railway Boards on behalf of the East India Company.

3. I understand there is no officially constituted Railway Board?—There is not.

4. May I ask how long you have held your present office?—It is difficult to say exactly, for, as I said before, it has grown into existence; I happened to be selected to assist those who were in the first instance engaged in connection with railway subjects, and I should think that must be something like 10 or 11 years ago. It is a business that has grown gradually, and now it has reached to a formidable extent.

5. Have you been connected in your office at the India House with all railway proceedings from their earliest commencement?—I believe almost from the commencement.

6. What was the period at which the scheme for the construction of a line of railway in India was first broached?—It was formally broached, I think, in the latter end of the year 1844.

7. Will you inform the Committee with whom the plan for constructing a line of railway in India originated, whether it was the idea of the Indian Government or whether it was proposed to them by an independent company in the first instance?—It was proposed in the first instance by Mr. Stephenson, now Sir Macdonald Stephenson. He submitted a scheme for a line from Calcutta to the north-west of India, and almost simultaneously the late Mr. Chapman likewise submitted a scheme for a railway from Bombay towards the interior.

8. Describe shortly to the Committee the process by which a railway scheme is presented in the first instance, and afterwards matured between an independent company and the Government?—A company is formed in this country, and incorporated by an Act of the British Legislature; the promoters submit their

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scheme to the authorities at the East India House, who have almost invariably referred it to the Governments in India, both to the local Government of the Presidency to which it applies, and also to the Supreme Government. They send in their joint reports, and upon their opinions the Court of Directors pass their decision; the concurrence, or otherwise of the Board of Control is obtained, and a final decision is thus arrived at.

9. Was not the idea of the construction of a great trunk line from Calcutta to the north-west first proposed as far back as the year 1841, in official correspondence by the gentleman you have named, the then Mr. Stephenson?—I think not in this country; it is possible that it may have been proposed in India, and he was in India about that time, or a little afterwards.

10. You say that 1844 is the date of the earliest official correspondence with which you are acquainted?—Yes.

11. Could you furnish us with copies of that correspondence if we desire it?—Yes.

12. Will you describe to the Committee the general principles upon which railways in India are constructed and managed?—In a few words I may say they are constructed by companies formed in this country, incorporated by Acts of Parliament, their acts and proceedings being subject to supervision on the part of the Government.

13. I presume you are furnished with copies of the contracts under which the various lines have been constructed?—I am.

14. The period at which the system was established I think you have stated was in the year 1844?—That was the time when the first formal application was made for a specific scheme. The system under which railways are now managed was established when the first contract was made with the first two companies who had their schemes sanctioned, and that was in August 1849.

15. State the ground upon which it was decided to proceed upon the principle so laid down?—The system arose out of circumstances which, perhaps, it will be necessary for me to explain at some length; and if I give a narrative of the manner in which the whole thing was arranged, it might be acceptable to the Committee. In the end of 1844 application was made by Mr. Stephenson and Mr. Chapman, for the support of the East India Company to railway undertakings in Bengal and Bombay respectively. In May 1845 the Court, in a despatch to the Government of India, forwarding these schemes for the consideration of that authority, expressed their opinion, "that wherever railroad communication could be advantageously introduced and maintained, it was eminently deserving of encouragement and co-operation from the Government." An opinion was also expressed in favour of employing British enterprise and capital for the purpose of carrying out the works, and that companies should be encouraged in this country to proceed with the undertakings. A commission of inquiry, consisting of a civil engineer from this country and two engineer officers in India, was appointed to investigate and report upon the subject. Their report was favourable, and the opinion of Government was that the grant of land should be a sufficient inducement for capitalists in this country to subscribe the money for the undertakings. This, however, was not the case. It was soon found that to enable money to be raised in this country, a guarantee of some kind was necessary. There were objections to the principle, and it became a question whether the Government itself should not construct the railroad without the intervention of private companies; so strong, however, was the desire to introduce British capital and enterprise into India, that it was decided to employ those agencies. It then became necessary to decide upon the terms and conditions of the encouragement which should be given. On the 4th November 1846 the Court of Directors, after fully deliberating on the subject, proposed that a guarantee of 4 per cent. per annum should be granted upon 5,000,000*l.* for a period of 99 years, and that this capital should be employed upon two sections, one in the Upper and one in the Lower Provinces of the Bengal Presidency. It was also stipulated, that in consideration of the pecuniary stake which the Government would thus have in the undertaking, as well as for the protection of the shareholders, and the good management of the concerns, a power of supervision and control should be vested in the East India Company. Upon these propositions being submitted for the approval of the Board of Control in December 1846, that authority objected to the terms, and limited the period of the guarantee to

15 years. The Court agreed to try the success of the modified terms, and they were offered to the railway company. In February 1847, a letter was received from the railway company, explaining their objections to certain of the terms, and stating that the limitation of time was an insurmountable obstacle to their obtaining subscribers. The Court then proposed to the Board to revert to their (the Court's) former proposition, but the Board (11th March) declined. On the 17th June 1847, the Court made another attempt to promote the undertaking, but in consequence of the state of the money market they were now obliged to propose a guarantee of 5 per cent. In forwarding this proposition to the Board of Control the Court expressed themselves in the following manner. "The more they consider the subject the more decided is their conviction that it is incumbent on the authorities invested with the Government of India to adopt measures calculated to ensure the early construction of one or more experimental lines. The Court and the Board have already distinctly recognized the expediency of the Government rendering effectual assistance and support to any associations of individuals who may be prepared to embark in the undertaking; and the principle being admitted, it only remains to be determined how and to what extent assistance and support should be afforded by the East India Company, so as to ensure the accomplishment of the object in view, the great importance of which is not and cannot be questioned. The Court continue to think that the first experimental line should, as has already been agreed upon between the Court and the Board, be constructed in Bengal; but they see great reason to apprehend that the terms proposed to the East Indian Railway Company with the modifications and limitations insisted on by the Board, will prove inadequate; and that unless those terms be enlarged, the object will fail of accomplishment." The Court also expressed their intention of proposing the construction of lines in Madras and Bombay, as soon as the principle of support and encouragement had been settled. Having submitted the proposition to the Board of Control, that authority, in reply signified their assent to it, attaching to it conditions to which there was no practical objection. Upon this being arranged, negociations with the railway company were again commenced, and in September an agreement was concluded with the railway company for constructing the two lines of railway above-mentioned, and instructions were sent to the Government of India to select the routes, &c. Unfortunately in October of that year a money crisis occurred, and the railway company were unable to raise enough capital even to pay the deposit of 100,000 *l.*, which it had been settled should be paid into the East India Company's treasury as a guarantee of their stability. After several extensions of the time for making the payment, and a reduction of the amount, the railway company failed altogether to raise the stipulated amount, and the plan was abandoned. In July 1848, another proposition was made by the railway company for constructing a line, which should only require a million of capital, and should be termed an experimental line. This proposition was acceded to by the Court in a letter dated 4th July 1848, upon condition that a sum of 60,000 *l.* was forthwith deposited in the Company's treasury, and that the railway company adduced proof, within four months, of their ability to proceed with this limited undertaking. The sum was paid on the 19th August. The railway company failed, however, to fufil the other conditions, and, on the 24th January 1849, the Court resolved to terminate the negociations, intending to propose that the Government should take the construction of a railway into its own hands. Many members of the Court dissented from this decision, and the Board of Control taking the same view as the dissentients, negociations were again opened, and the railway company submitted such a modification of the previous terms as in their opinion would enable them to raise the capital. (The Court and the Board subsequently agreed to the terms and conditions which should be granted, and in August 1849, the contracts with the East Indian and the Great Indian Peninsula Railway Companies, which formed the basis of those for the whole of the present undertakings, were formally executed. Instructions were then sent out to the Government of India to take immediate steps for fixing the route, providing the land, and establishing such measures as should be desirable for securing the co-operation of the railway companies and the Government officers in the prompt execution of the work.)

16. Do I understand that the first proposition was made officially by Sir Macdonald Stephenson, in the year 1844?—In December 1844.

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17. And that the contract under which the line was to be completed was not signed until August 1849?—Exactly.

18. Can you furnish the Committee with copies of all the material correspondence that occurred, spreading over that period of four years?—I think the papers which I now hold in my hand contain everything that passed after the despatch of the Government of India of 1846 had been received.

19. That is the despatch approving the construction of the line?—Yes, recommending the construction of a line.

20. Does it include the correspondence between the company and the Court of Directors, as well as the correspondence between the Court of Directors and the Board of Control?—It does.

21. Can you state whether any communications were received from India previous to the original proposition to which you have referred, of Sir Macdonald Stephenson, whether from Lord William Bentinck or any one else?—I believe Lord William Bentinck did allude to the subject, but I doubt whether he proposed any specific scheme.

22. Have you ever seen any despatch from Lord William Bentinck on the subject?—It is not within my recollection.

23. Are you aware whether Lord William Bentinck, on his return to England took any prominent part in promoting the construction of railways in India?—I am not aware that he did.

24. Will you give the Committee an idea of the main causes of delay in the first commencement of railway works in India?—I think the cause of delay in commencing arose from differences of opinion between the Court of Directors and the Board of Control, upon the terms that should be granted to the railway companies, and also in a great measure upon the depressed state of the money market in 1847. Those were the chief causes, I think.

25. The Great East Indian was the first company formed, I believe; that was followed up afterwards by the formation of the Madras and Bombay Company, state at what period these two companies were formed?—The East Indian Railway Company's line and the Great Indian Peninsula line (which is the line from Bombay) were sanctioned at the same time, and contracts were entered into for those two simultaneously.

26. What period elapsed between the formation of the Great East Indian Company and the two subsequent lines?—The East Indian and Great Indian Peninsula were sanctioned in 1849; the Madras line was sanctioned in May 1852; the Scinde Railway was sanctioned in January 1855; and the Bombay and Baroda in April 1855; the Eastern Bengal, from Calcutta to Dacca, was sanctioned in August 1847. There is another scheme now under consideration, namely, the Southern of Madras.

27. I believe that has been approved by the Government in India, but has not yet received the sanction of the Board of Directors?—It is at this moment under consideration.

28. You can hereafter furnish the Committee with copies of the contracts entered into between the East India Company and the railway companies. Do the contracts between the East India Company and the different railway companies materially differ in their terms?—No.

29. Will you state shortly the principles upon which those contracts are based?—The Government engage to grant all the land required for the purpose of the railway, free of expense to a railway company, and they also engage to guarantee interest; it has generally been, at the rate of 5 per cent. per annum, for 99 years upon the capital employed in the undertaking.

30. The full rate of 5 per cent. is not guaranteed to all companies, I believe. State those on which 5 per cent. is guaranteed, and those on which 4½ per cent. is guaranteed?—Up to this time, the East Indian Railway Company have had 5 per cent. guaranteed upon all their capital from the commencement; the Madras Company had, as respects half a million, a guarantee of 4½; and 4½ per cent. as respects a million.

31. Was 4½ guaranteed upon the first million expended by the Madras Company?—Upon the first half million.

32. What was it upon the subsequent half million?—Upon the next capital raised by that company it was 5 per cent., and, at a subsequent period to that, it was 4½ per cent., the rate being dependent on the state of the money market; and

and when the Madras Company was first established the money market enabled the shareholders to subscribe their money at 4½ per cent.

33. Are there other lines upon which the lesser guarantee has been given?—Not any.

34. Do I understand that all the other lines have a guarantee of 5 per cent.?—All; these are the conditions attached to the guarantee and the granting of the land: "The Railway Company have the power of surrendering the works, at any time after the line is opened, upon giving six months' notice to the Government, and the East India Company undertake to repay the whole amount that has been expended by the Railway Company. The East India Company have the power, within six months after the expiration of the 25 or 50 years, respectively, of purchasing the railway at the mean market value, in London, of the shares during the three previous years. In case the Railway Company fail to complete the railroad, or to work it satisfactorily, the Government is entitled to take possession, and repay within six months the sums expended. The Railway Company repay the guaranteed interests from the profits of the railway.

35. Do the railways so opened show the mode in which the arrears of the guarantee are repaid to the Government?—As soon as the railway is opened and is working, all the receipts are paid into the Government treasury until the amount advanced for the guarantee has been repaid; but should the railway net receipts exceed the rate of interest, that is, 5 per cent., half the excess of that rate is added to the dividend payable to the shareholders, and half is added to the deposit in the Government Treasury; that is to say, supposing the railway company is working at a profit of 7 per cent., 6 per cent. is paid to the shareholders and 1 per cent. is paid to the Government Treasury, so that the shareholders participate in the profits of the railway.

36. That one per cent. paid into the Government Treasury, goes to recoup the Government?—Yes; when that guarantee is paid off, the whole goes to the shareholders. There is one additional condition which I have not yet mentioned to the Committee:—Should the railway work at a loss, that is, not pay its working expenses, a rateable deduction, corresponding with the amount of expenses uncovered, will be made from the dividend.

37. That is in the event of the railway company not completing its works, or mismanaging its works, when completed?—No. When a railway is opened, if it is found that its working expenses exceed its profits, the shareholders would bear the loss incurred by that deficit; care is taken in the selection of lines to prevent such a contingency happening; and it never has happened.

38. Have not the proprietors the power of surrendering the works under those circumstances; and is not the company bound to take those works at a certain valuation?—Yes; I have mentioned that condition. The railway company have the power of surrendering the works at any time after the line is open.

39. Giving a certain notice to the Government?—Upon giving six months' notice to the Government, or to the East India Company in this country.

40. Describe the mode of carrying out the supervision provided for in India?—The Government, under the contracts, have supreme control over all the proceedings of the railway company. The exercise of that control has somewhat varied with the authorities who exercise it; but generally speaking, the Government appoint an officer, who is an officer of engineers, to act in communication with the railway company's officer, and to exercise the necessary supervision. He is termed the consulting engineer to the Government.

41. Now describe to the Committee the duties of that officer?—His duties are to co-operate with the railway company's officers, to supervise the expenditure, and to submit such large matters as he may think necessary to the Government for its approval.

42. Are all plans, and surveys, and various sections submitted to that officer in the first instance?—They are.

43. For his approval?—For the Government approval; he reports to the Government.

44. He has the power of controlling all matters of expense, and all matters connected with the execution of the works over the line?—As representative of the Government, he has.

45. Will you describe the supervision provided for by the Government over the Railway Boards in this country?—Under the contracts an officer, the *ex officio*

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officio director of the Railway Boards is appointed by the East India Company to sit at each Board. He is invested with certain powers of veto and control; but, generally speaking, the principal proceedings of the railway company are also submitted to the consideration of the Court of Directors and the Board of Control.

46. Does the same individual sit as *ex officio* director at all the Boards?—He does.

47. Is Sir James Melvill the *ex officio* director?—He is.

48. Has he held the office from the commencement?—From the commencement.

49. Describe the extent of authority which he exercises, in his capacity of *ex officio* director, over the proceedings of the Board?—At present the extent of his authority is to concur with the directors of the railway company, in complying with indents from India, and in entering into contracts with parties in this country for materials required to be sent out to India.

50. Has he the power of veto over all or any of the proceedings of the Railway Boards?—He has the power of veto over all the proceedings, with the exception, I think, of their communicating with their law officers.

51. Has he the power, provided he acts on behalf of the Government, of sanctioning *in propria personâ*?—Only those proceedings which I have mentioned, under the arrangements made by the authorities.

52. The *ex-officio* director was appointed at the period at which the construction of railways first commenced?—He was.

53. Have any alterations since that period been made in the powers of the *ex-officio* director?—Yes; at first his powers were confined simply to his moral influence, his directions in respect to the conduct of business, and his ability, in consequence of his being a director of all the companies, to assimulate their proceedings, and to require their different arrangements to chime in with one another; subsequently to that, very recently in fact, he has been empowered to comply with indents received from India without reference to the India House.

54. Will you describe to the Committee, first of all, the meaning of the word "indents;" and, secondly, the somewhat lengthy process which an indent undergoes from the time it is drawn in India to the time of the contract being completed in this country?—An "indent" is a requisition for materials required for the purpose of the railway in India.

55. Does it apply to persons as well as to things?—It does; the requisition is made in the first instance by the agent of the railway company in India to the Government through the consulting engineer; the consulting engineer having obtained the sanction of the Government to the requisition being made to the Board of Directors, it is sent to them; the directors receive it, and they are now empowered with the sanction of the *ex-officio* director to comply with it at once, and also to enter into a contract for the purpose of complying with it, without further reference to the authorities.

56. Upon the arrival of that indent in this country, it is laid, I presume, in the first instance before the Railway Board?—Before the Railway Board.

57. From the Railway Board it is transmitted for the sanction of the Court of Directors?—Not now, the *ex-officio* director has power to sanction it forthwith.

58. When was that permission given to the *ex-officio* director?—Within the last month I should say.

59. Previously to that, I understand that the indent had to be referred from the Railway Board to the Court of Directors, and from thence to the Board of Control, and so back again?—Yes.

60. Describe any instances of delay that have occurred in exercising the supervision provided for by the Government of India. Can you state the number of communications which have taken place between the railway companies and the East India House, so as to give the Committee an idea of the delay that has occurred in some instances?—The number of letters that were addressed by the Court of Directors of the East India Company to the railway companies in 1856 was 614.

61. Was that with reference to one particular line?—All the lines; of all the railway companies, there being five in number. In 1857 there were 597 communications from the Court of Directors to the railway companies.

62. Can

62. Can you state the number of communications that passed between the Court of Directors and the Board of Control during that period?—Every one of those, or almost every one, would go from the Court of Directors to the Board of Control; five-sixths of them I should say.

63. Has not that given rise to more than one communication on each occasion between the two branches of the Indian Government?—Occasionally; if they differed upon any matter, of course several communications passed between them.

64. Has it never happened that a difference of opinion in any matters of this kind has arisen between the Court of Directors and the Board of Control?—Not upon these minute questions,

65. You have mentioned six distinct undertakings which have received the sanction of the Government?—There are six guaranteed undertakings, and in addition to these, there is one which has not received the guarantee, but which was started in the hope that the promoters would be able to raise the capital without a guarantee.

66. I believe that goes by the name of the Mutlah line?—The South-Eastern of Bengal from Calcutta to the Mutlah.

67. State the number of companies employed to carry out these six different undertakings?—There are six companies, but the trunk lines are more than six in number; I will describe each company and its object. The East Indian Railway Company engaged to construct a line from Calcutta *viâ* Rajmahl, Agra and Delhi to Lahore, with a branch from Mirzapoor to Jubbulpoor. The Great Indian Peninsula Railway Company undertook to construct a line from Bombay, in a north-easterly direction, to Jubbulpoor, to meet the branch of the East India Railway at Mirzapoor, in a south-easterly direction *viâ* Poonah and Sholapoor to Bellary, where it joined the Madras line. Thirdly, the Bombay and Baroda Railway Company were to construct a line from Bombay *viâ* Surat to Baroda and Ahmedabad. The Madras Railway Company were to construct a line from Madras to Bellary to join that from Bombay, with a south-west line to the opposite coast, at or near to Beypoor. The fifth is the Scinde and Punjaub Railway Company, which runs from Kurrachee to Kotree on the Indus, and from Moultan to Lahore on the Panjaub. The sixth is the Eastern Bengal from Calcutta to Jessore and Dacca. The seventh, which is now under consideration, is the Great Southern of India from Negapatam to Trichinopoly, with branches to Salem and Trichinopoly. The eighth, which is not guaranteed, is the Calcutta and South Eastern from Calcutta to the Mutlah River.

68. In regard to the Scinde line, from Kurrachee to some point on the Indus, have surveys been made for that line?—They have.

69. Do you know whether it is a fact that the local Government have required 11 distinct surveys to be made for that short line?—They were about to have a great number of surveys made, but they were stopped by the Court, which insisted upon the line originally laid down being carried out. It was fully considered at the time, and the Court, which followed the advice of the local Commissioner, Mr. Freer, determined upon adhering to the original project, and that is now being carried out.

70. What was the date of the first proposal for constructing that line?—About January 1855.

71. When was it sanctioned?—In January 1855. The Court of Directors took upon themselves to decide upon that scheme without reference to the local Government.

72. The local Government of Bombay itself, upon its own authority, required that a large number of surveys should be made?—It did.

73. Describe the extent of each of these separate undertakings, and then state to the Committee the estimated cost for the completion of each?—The East India Railway Company have a length of line of 1,400 miles in the course of construction; the Great Indian Peninsula above 1,200 miles; the Madras Company 740 miles; the Scinde Railway Company 120 miles in Scinde and 250 in the Punjaub; the Bombay and Baroda Company 330 miles; and the Eastern of Bengal 300 miles.

74. Can you hand in a table giving that information a little more in detail? Yes.

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[*The Witness handed in a Table, which was as follows*:]

RAILWAY COMPANY.	Total Length of Lines.	Experimental Line.	Periods at which it is estimated that the remaining Works on the Lines will be completed.			
EAST INDIAN:—	*Miles.*					
Calcutta to Delhi . . . say	1,100*	Calcutta to Burdwan, and branch to Raneegunge, 121 miles; commenced 1850, completed 1855.	Burdwan to Rajmahal (130 miles), 210 from Calcutta; Dec. 1859.*	Between Rajmahal and Allahabad, 440 miles; 1860.	Between Allahabad and Cawnpore (1st section N. W. P. division), 126 miles; 60 miles open October 1857; the rest in June 1858.†	Cawnpore to Delhi, 260 mls.; October 1858 (excepting the bridge over the Jumna).‡
Mirzapore to Jubbulpore (*a*)	300					
(*a*) *Note.*—No period yet specified for the completion of the line.						
	1,400					
GREAT INDIAN PENINSULA:—				N. E. LINE.		
Bombay to Callian	33	Bombay to Callian, 33 miles; commenced 1850, completed 1854.	Callian to Bhosawul, 241 miles; October 1859.	Bhosawul to Oomrawuttee, 125 miles; December 1860.	Oomrawuttee to Nagpore, 138 miles; Mar. 1861.	Bhosawul to Jubbulpore; not yet estimated, probably the end of 1861.
Callian to Jubbulpore, with branch to Nagpore, *viâ* Oomrawuttee	818	Sections N.E. to Wassind (16 miles) and S.E. to Campoolie (38 miles) have subsequently been opened. Now open, 87 miles.				
				S. E. LINE.		
Callian to the Krishtna, *viâ* Poonah and Sholapore	357		Campoolie to Poonah, exclusive of the Ghât Incline, 40 miles; May 1858.	Poonah to Sholapore, 165 miles; 64 miles to be open in May 1858; the rest, 1859.	Sholapore to Krishtna; not estimated, probably the end of 1860.	
	1,208					
MADRAS:						
Madras to Beypore	430	Madras to Vellore, 81 miles; commenced 1853, completed to Arcot 1856, and to Vellore in 1857.		Vellore to Vaniembaddy, 125 miles from Madras, April 1858. To Beypore on the Western coast, March 1859.		The line to the Krishtna not yet estimated, probably to Bellary in 1861, and to the Krishtna in 1862.
Madras, *viâ* Cuddapah and Bellary, to the Krishtna, about	310					
	740					
SIND AND PUNJAB:—						
Kurrachee to the Indus, at or near to Kotree	120	Estimated to be completed by October 1859.				
Mooltan to Lahore	250					
BOMBAY, BARODA, and CENTRAL INDIA:—						
Bombay to Surat, Baroda, and Ahmedabad	330	Estimated to be completed from Surat to Baroda in 1858, and to Ahmedabad in 1859. The section between Bombay and Surat not yet estimated.				
EASTERN BENGAL:—	300	From Calcutta to Dacca, with branch to Jessore.				

* Delays have occurred in this district, in consequence of the Sonthal insurrection, and the subsequent disturbances in Bengal.

† Would have been opened by December 1857, but for delays occasioned by the mutiny.

‡ This expectation will hardly be fulfilled now.

75. Have you a return giving the estimated cost of the railways?—The estimated cost of the railways of the East India Company is 12,731,000*l.*; the estimated cost of the Eastern Bengal, 1,000,000*l.*; of the Madras, 6,000,000*l.*; of the Great Indian Peninsular, 11,000,000*l.*; the Scinde and Punjaub, 2,500,000*l.*; the Bombay and Baroda and Central India, 2,000,000*l.*; making altogether a total of 35,231,000*l.*

76. That, I believe, is the Return moved for by Mr. Baillie, and recently furnished to Parliament?—It is.

77. Will you describe the objects which have been principally sought to be attained in the construction of these various lines?—The chief objects are political, military, and commercial.

78. Have they been laid out so as, as far as possible, to combine these three objects?—Almost invariably.

79. Has it not been said that the Government have, in more than one instance, altered the originally proposed direction of a line of railway?—They altered the original direction of the East India Railway; the original scheme would have taken a line direct from Calcutta to Mirzapoor, but the present scheme goes by the valley of the Ganges.

80. Can you state what the object of the Government was in proposing that alteration of the line?—The alteration was strongly recommended by Lord Dalhousie, on the recommendation of the consulting engineer at that time, Colonel Kennedy, the object being to take the line through the most populous and most commercial districts; the direct line might have been the best political and military line, but the other combined all advantages.

81. Is it not in contemplation by the Government further to alter the direction of that line at its north-western extremity?—I have heard that it is so, but we have received no official intimation to that effect at the India House.

82. Have other and important alterations been suggested by the Government on other lines with which you are acquainted?—I believe that no alteration has been suggested on the lines of any other company after they have been once determined upon.

83. Have no alterations been suggested by the Government in the direction of the Madras line?—No alteration has been made; there was a difference of opinion as to the course it should take, but when once determined upon, no alteration was made.

84. Between whom did that difference of opinion exist?—The local Government of Madras and the Government of India did not agree when it was first proposed.

85. Do you know how far that difference of opinion extended?—The question was agitated by the Madras Railway Company and the Madras Government, which thought very strongly upon the subject for some time, and I should say the discussion must have been going on for 12 months.

86. Did the railway company and the Madras Local Government agree *versus* the opinion of the Central Government of Calcutta?—Yes.

87. And that difference of opinion is now settled, I believe?—Yes, the question is settled, but I believe a difference of opinion still exists; it has been settled by the authorities who have the power to fix the line.

88. For the sake of regularity, I will ask you with whom the selection of the line rests?—With the Government, under the contracts.

89. What are the general objects kept in view by the Government in deciding upon the lines?—I have stated that they are political, commercial, and military.

90. Can you state whether any one of these three objects has been at any time sacrificed to the others?—I think not at any time; I do not think that the political object was sacrificed in the case of the East India because it was made a little more circuitous.

91. The Government object, taking it in a military point of view, was combined with the commercial advantages derived from taking the lines through a populous and thriving district?—Quite so.

92. What was the increased difference of distance by the proposed alteration of taking the line by the valley of the Ganges?—Speaking from recollection, I should say it was between 100 and 200 miles.

93. Can you put in copies of any correspondence that took place with regard to the alteration of direction in the Madras line?—I can obtain them and lay them before the Committee on a subsequent occasion.

94. Describe to the Committee the opinion of the Government of India upon

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upon the system of supervision pursued in India?—Their opinion has been favourable to the system, and Lord Dalhousie's opinion was very strong.

95. Was the present system of supervision originally framed by Lord Dalhousie?—No; the system of supervision was framed in this country when the contracts were under discussion.

96. Did Lord Dalhousie propose any alteration or modification in that system of supervision?—None whatever.

97. The Railway Bills, I believe, were obtained in 1848?—They were.

98. Did not Mr. Wilson, the Secretary of the Board of Control at that time, take a very active part in making the requisite arrangements?—It was understood that he was actively concerned in them.

99. In regard to the system of supervision, can you inform the Committee what the directions of the Home authorities were upon that subject to the Government in India?—They are contained in a despatch, dated November 1849, which has been laid before Parliament.

100. What have been the chief impediments to the progress of this undertaking in India when once commenced?—There have been physical impediments, no doubt. With regard to the East India railways, some of the works have been extremely heavy, unexpectedly so, in the lower part of Bengal. The Santal rebellion occurring in the middle of the works, delayed them; and the late mutiny, no doubt, has interrupted them in many parts.

101. Have any engineering difficulties of an unusual character been experienced by the East India Company?—The Great Indian Peninsula Railway Company have had very heavy engineering obstacles to encounter; such as the crossing of the ghauts over the mountains, which run parallel with the coast.

102. Are there not considerable difficulties on the line now sanctioned from Bombay to Surat?—The chief difficulties there are the crossing of the railways, for they will be obliged to provide bridges; but Colonel Kennedy has taken the subject under consideration, and has suggested a plan which he considers likely to remove much difficulty.

103. Have any other impediments than those you have described, arising from manifestly natural causes, existed to impede the progress of railways in India?—I do not think that when once the line has been sanctioned and commenced, that there has really been much delay. It is possible that the system of supervision may in a certain degree have caused delay, but I do not think that practically it has delayed the execution of works in India.

104. Has much difficulty been experienced in the supply of materials for the construction of the line?—That of course is a difficulty, in consequence of the materials having to be sent from this country, but the means of this country are sufficient to meet any demand. The difficulty I think the railways have had to encounter has been the obtaining of freight for the supply of all those materials; that probably will be an impediment to the very rapid progress of works in India.

105. Is there in your opinion any limit to the supply of railway materials for the construction of railways in India?—I should say there is no limit to the supply of materials.

106. As regards the question of freight?—There is a natural limit, I think, to the obtaining of freight; it becomes a question of expense; of course the railway companies might purchase or charter ships to take their materials, but when you get beyond the natural limit which the trade of India prescribes, you must pay for it, and that would enhance the cost of the lines.

107. Can you state, of your own knowledge, what the average cost per ton has been for the conveyance of permanent way and other materials to India?—I am afraid I am unable to do that at this moment; freights have varied very much, and it is a matter entirely in the hands of the railway companies; we have no record at the India House of the manner in which they provide shipping, and I think I must refer you to the railway companies for information on that point.

108. Is the sanction of the Board of Control required for the rate of freight which the railway companies may be compelled to pay?—No, that is left to the directors of the railway company in connexion with the *ex-officio* director.

109. Are you aware of any special correspondence that has taken place between the railway companies and the Court of Directors upon the subject of freights?—Yes; there was a representation made by the East India Railway Company, when an attempt was made to limit the time within which they should construct

construct the line from Calcutta to Delhi. I think the attempt was made to limit the time to five or six years, and the company plainly showed that it was impossible, without deranging the whole trade of India, to provide the freight which would enable them to supply the materials within that time.

110. Can you furnish the Committee with a copy of that correspondence?—I will obtain it.

111. I presume the rate of freight materially depends on the chance of obtaining a return cargo?—Exactly.

112. And consequently, if the home demand for Indian product be lowered, it will raise materially the rate of trade?—Quite so.

113. When you say there is no difficulty in supplying materials from home, can you speak, of your own knowledge, to any difficulty in the supply of materials in India?—There is great difficulty in supylying any materials there.

114. Which materials do you particularly allude to?—The principal materials are iron and wood; and, although it may seem extraordinary, there is great difficulty in supplying even wooden sleepers.

115. Have the Court of Directors taken any steps to increase the supply of iron?—Yes; for some years past they have made great efforts, not only to obtain information with regard to the developement of the iron-producing districts in India, but they have authorised the Governments there to establish works where they can find an opportunity of doing so with profit. They have also published information in this country to induce people to form themselves into companies to work mines, but hitherto without success. A gentleman has recently been sent out with a view to establish works at Kumoan; he is accompanied by men practically versed in mining operations in this country, as well as smelting operations, and great hopes are entertained that he will be able to establish satisfactory ironworks.

116. Are there not large fields of ironstone and works even in the course of construction in the immediate vicinity of that portion of the line which goes to Jubbulpoor?—Mr. Blackwell, one of the gentlemen sent out by the Court of Directors to examine the iron districts, visited the Nerbudda Valley, and he has given an encouraging report of certain localities which he examined there. The Government has been authorised, in consequence of his report, to take measures to establish works; but I believe the great difficulty will be the access to the works; and until the railway is advanced, there is little probability of any extensive manufacture being carried on.

117. Are there any smelting works established in that locality at present?—I believe for many years the natives have been smelting iron in a rough way, and to a small extent.

118. What is the name of the gentleman who is undertaking the opening out of the iron fields at Kumoan?—Mr. Sowerby.

119. Iron exists, I believe, in the Madras Presidency likewise?—It does.

120. Have any representations been made to the Board of Control in reference to working the iron in that Presidency?—I am not aware of any recent application.

121. Is iron extensively manufactured in the Presidency of Madras?—Iron is made there, but it is represented that the iron made is too fine for railway purposes, except for small materials; it is said to be too fine, and too expensive for rails.

122. Has not great difficulty been experienced in the obtaining of fuel for smelting purposes?—Yes; that is a great desideratum.

123. Do you only know of one locality in India in which coal and iron exist together?—At Raneegunge and in the Nerbudda Valley they are found together.

124. Can you state the quantity of iron which is required for every mile of railway?—As they are now constructed, they are all for single lines, except where the traffic is very large, in the neighbourhood of towns.

125. Is it not the case that the railways are all constructed with single lines, but that the large works are constructed so as to be ultimately adapted for double lines?—That is so; all the permanent works, the bridge works, and tunnelling are made for double lines; the simple earthworks are for single lines only.

126. For all the lines of railway, what will be the quantity of the iron required?—It is rather difficult to arrive at a precise and satisfactory conclusion, but I calculate that about 250 tons will be required for every mile; that is, including rails, sidings, stations, an average for the bridges, and for miscellaneous purposes.

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That would make 25,000 tons for every 100 miles, and 1,075,000 tons for the works that have been sanctioned, extending over 4,300 miles.

127. What is the amount of permanent way which has already been sent out from this country?—Up to the year 1854, 77,200 tons had been sent out; in the year 1855, 111,642 tons were sent out; and in the year 1857, 120,103 tons.

128. Does that include the bridges?—It does; the figures I have given, as to the number of tons, appear in an actual return which I have obtained from the railway companies.

129. Does that return include all the manufactured iron shipped for all the railways, and for all purposes, including bridges, and so on?—It does.

130. Has any difficulty been experienced in carrying out these large contracts at home?—I am not aware of any.

131. Mr. *Stephenson.*] You say that all the railways are laid down with a single line?—That has been the rule.

132. Do you know the average weight per yard of the rails?—The average weight would be about 70 lbs.; the lowest, I think, has been 65 lbs., and the highest 84 lbs.

133. For the railway itself, that would give about 100 tons a mile?—About 125 tons.

134. How do you make up the difference between your estimate of 250 tons and 125 tons?—I take into consideration the bridge works, the station buildings, the sidings and locomotives.

135. You include the rolling stock?—The rolling stock.

136. *Chairman.*] Your return has reference merely to the freight, has it not?—Yes, to all the materials sent out from this country, including everything connected with railways.

137. Can you state what has been the average cost per mile of those lines that are now open?—I think the East India line, from Calcutta to Raneegunge, cost 12,000 *l.* a mile for the railway itself; the terminal station is a much more expensive building than would have been required for that line, but it is intended for the whole 1,400 miles. The Great Indian Peninsular to Bombay was also an expensive line, as it had to cross over creeks and rivers; I think that has cost about 12,000 *l.* a mile.

138. Does that include the freight?—Yes. The Madras line has cost under 6,000 *l.* per mile,

139. When the lines have been opened, has any remonstrance been made by the Court of Directors against the amount of Government supervision exercised on those lines?—The Court of Directors have frequently endeavoured to press upon the Governments the desirableness of not extending their supervision to an interference; and with regard to the Madras line, where there was some disposition shown to interfere with the traffic after the line had been opened, the Court of Directors laid down as a principle, that when the line was once opened, the Government were not to interfere with the railway company's officers, beyond concurring with them in laying down rules and principles; they were not to interfere in carrying them out.

140. I believe the Government have the right of regulating the fares and the running of the trains?—I think their power of supervision is unlimited, but it is not to be carried out to that extent.

141. They possess an unlimited power of supervision over the line when it is opened?—They do.

142. Is it your opinion that the alteration of the route suggested by the Government has materially retarded the progress of the works generally on the line?—I think in the case of the Sinde Railway it retarded the commencement of that line in consequence of the doubts entertained by the Bombay Government as to whether the best line had been selected.

143. Do you not think that that alteration of route, taking the line of railway up the valley of the Ganges, materially retarded the works?—I do not think the works had been commenced when the alteration was made.

144. Mr. *Crawford.*] You stated that a negotiation between the railway company and the East India Company had fallen to the ground in 1847, in consequence of their inability to find capital?—Yes.

145. Do you recollect any discussion about that time between the railway company and the East India Company in reference to the question of guarantee?—I do.

—I do. I recollect that an impression prevailed among the railway companies that the guarantee was a guarantee of dividend without any contingency, and that five per cent. was guaranteed to the shareholders.

146. Do you recollect a letter written by Sir James Melvill to the chairman and deputy chairman of the East India Company in July 1847, in which it was stated, "That the Court of Directors had resolved to augment the rate of dividend to be guaranteed by the East India Company to five per cent." ?—Yes, there was such a letter.

147. Do you recollect a letter being written to the East India Company by Mr. Slaughter, the secretary of the Stock Exchange, in the railway department, on the 29th August 1848?—I do.

148. In which a question was raised as to whether the guarantee referred to dividend, or to a mere payment of interest upon the amount of capital?—Yes.

149. Do you recollect a letter written previously to that, on the 5th October 1847, by Sir James Melvill to Lord Wharncliffe, in which it was stated that the Court would guarantee an interest or dividend for 25 years at the rate of 5 per cent.?—There was such a letter.

150. Did not the Court, after stating that they would guarantee a dividend upon certain terms, state that they considered it did not mean dividend, but meant interest?—Yes.

151. And was it in consequence of the effect produced on the public mind, by the Court of Directors considering that they had undertaken to guarantee an interest and not a dividend, when they had spoken of dividend, that the railway company did not succeed in obtaining the money?—I cannot say that that was the cause; I know the result.

152. Was it not immediately subsequent to that change?—The Company had not succeeded in obtaining the money before that; if they understood the word "dividend" in that sense, they still failed. The Court of Directors never intended that the dividend should be 5 per cent. to each shareholder.

153. Supposing the capital of the railway company to be one million sterling, upon the principle of guaranteeing an interest, the guaranteeing party would have no more than 50,000 *l.* to pay, under any circumstances?—No.

154. Assuming the rate of interest to be 5 per cent.?—Yes.

155. Under a guarantee of dividend, the guaranteeing party would have to pay 5 per cent. under any circumstances, notwithstanding there might be a considerable loss in the working of the line?—Just so.

156. Do you recollect whether in the earlier communications that passed between the founders of the East India Railway Company and the East India Company, the question of dividend had not been expressly pressed by them?—I do not recollect it before it was raised at the time just referred to.

157. Do you remember a paper being sent in by the Directors of the East India Railway Company proposing to undertake provisionally the execution of a line of railway from Delhi to Calcutta upon certain terms?—Yes.

158. Do you recollect whether there was a clause in that proposal that the East India Company should guarantee a dividend equal to 5 per cent.?—Yes, still it was misunderstood; there was not a mutual understanding of the term.

159. You say that the whole negotiation proceeded upon a misunderstanding of the word "dividend"?—I apprehend so.

160. Do you remember how that difficulty was got over eventually?—Power was given to the railway company to surrender the works at any time after the line had been opened for six months, so that supposing the railway failed as a commercial undertaking, the shareholders would not suffer.

161. They would have the power in their hands of returning the undertaking to the Government?—Receiving back what they had expended on the line.

162. That is one of the bases of the contract?—It is.

163. With regard to the powers of the *ex-officio* director at the Railway Boards, do you recollect whether there is any express understanding in the first instance between the railway companies and the authorities as to the powers that the *ex-officio* director should exercise?—I can answer only for the Court of Directors, and I think their understanding was that he should act for them at the Boards of the railway company, and that he should be vested with certain powers of control, so as to release them from minute supervision.

164. If he gave his consent at the railway Boards to their proceedings, it

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was intended that the Boards should be at liberty to proceed to act upon their resolution, without the necessity of a confirmation of those proceedings by the East India Company?—It was certainly their intention, and their expressed intention.

165. Do you recollect how it was that the *ex-officio* director had not that power, but was obliged to send in for the confirmation of the Court of Directors the proceedings of each Board?—It was in consequence of the Board of Control and the Court of Directors taking different views of his functions; one thought that he should have that power, and the other thought that he should not.

166. Did that arise upon the appointment of Sir James Melvill?—It did.

167. Was any officer proposed by the Board of Control to represent the governing authorities at the railway Boards in opposition to Sir James Melvill?—I never recollect hearing any name proposed.

168. Was it, in your opinion, jealousy on the part of the Board of Control, inasmuch as if Sir James Melvill had authority to give his consent at the railway Boards, they would not have the power of exercising a supervision in matters brought before the railway Boards?—I cannot say that it was jealousy; the Board differed from the Court as to the functions of the officer; one thought that he ought to have the power of exercising supervision at the Boards of railway companies, and the other, that he ought not, but that he was simply there to expedite business.

169. The practical result of the view taken by the Board of Control has been this, that the *ex-officio* director has sat at the railway Board without authority, by expressing his concurrence in their acts, to give effect to their proceedings without reference to the governing authorities?—He has, with the exception of what I have explained; that is, sanctioning indents from India, and entering into contracts.

170. Is it the practice of the railway Boards to meet once a week?—It is.

171. And Sir James Melvill attends those meetings as the *ex-officio* director, representing the East India Company?—He does.

172. The minutes of those Boards are sent to the East India Company?—They are.

173. Would the East India Company consider the railway Boards justified in acting upon any matter involving principles before those minutes had received the confirmation of the East India Company?—I hardly think that a confirmation of the minutes has the practical effect of sanctioning the proceedings, because it is the habit of the directors to submit, by separate letter, any proposition that they may desire to have sanctioned by the authorities.

174. What do you do with those minutes when you receive them at the India House?—They are submitted to the Court of Directors, and sent down afterwards to the Board of Control.

175. Do they pass before one of the committees?—Yes, the Finance Committee.

176. You take them into your consideration, and report them to the Court of Directors?—They look at the minutes of the company merely as a narrative of their proceedings, and not as asking for sanction to any proceeding, because that is done by a separate letter.

177. The East India Company afterwards send a copy of the minute to the Board of Control?—Yes.

178. In what terms?—A letter to the railway company, acknowledging the receipt of the minutes, goes up to the Board of Control. The letter is sent back, either approved or altered.

179. We are speaking of the minutes?—The minutes are not altered, either by the Court or by the Board; but any alteration can be introduced into the letter which acknowedges the minutes. The Board of Control has the final voice.

180. Where a letter is sent by the railway companies to the East India Company, requesting their sanction for any particular act, such as the purchase of any considerable amount of property, the fixing of a salary, or other matter of principle, what does the East India Company do with such a proposition?—The propositions are submitted to a committee, which sends it, with a report, to the Court of Directors; and the Court of Directors, after approving it, send it to the Board of Control, for its confirmation. When it is confirmed, the letter goes to the railway company, with the necessary authority.

181. So that if it were desired by a railway company to appoint a new officer to whom a salary was to be allotted in India, or if they desire to buy 10,000 tons of rails, they have to get in the first instance, the examination and approval of the Railway Board, of the *ex-officio* director at the Railway Board, of the committee of the Court of Directors, then of the Court of Directors itself, and the Board of Control, before the act desired to be done can be carried into execution?—It would be so as respects the appointment of an officer, and the payment of a salary, but it is not so now as regards the supply of materials.

182. In the first instance it was so?—Until very recently.

183. One of the consequences of Lord Ellenborough's appointment has been to remove some of the difficulties, as I understand?—He sanctioned the proposal.

184. Had the proposition been made before he took office?—It was sent in before the change of Government.

185. Sir James Melvill, I understand, has the power at the present moment of sanctioning the purchase by a railway company of all goods which have been indented for from India, with the consent of the Government in India?—Yes.

186. Has he power to give his consent to the Railway Boards for purchases to be effected without reference to the East India Company?—Yes; if the indent has been sanctioned by the local Governments.

187. In all other matters he has no power of his own to consent at the Board to any act they propose to do?—No.

188. Has the propriety of allowing Sir James Melvill larger powers than he now possesses ever been discussed at the India House?—When he was first appointed to the office, the Court of Directors were anxious that he should have larger powers; but the difficulty in carrying out their view was, the objection of the Board of Control to relinquish any part of their control.

189. What year was that?—The latter part of 1849.

190. Did the Board of Control make any objection to the conferring of enlarged powers upon Sir James Melvill, with reference to his sanctioning the purchasing of goods, and so forth?—No; that sanction was given with their concurrence.

191. In point of fact, this delay which is found to exist in the operations of the Railway Boards is to be laid at the door of the Board of Control, so far as Sir James Melvill's independent power of action is concerned?—The Board certainly objected to his having anything like plenipotentiary powers.

192. And it overruled the Court of Directors, who wished to give him larger powers?—It did.

193. Has the necessity of referring these questions by the Company to the Board of Control been productive of delay?—I really do not think that the construction of the works in India has been much retarded by the process; it is found to be inconvenient and vexatious, but I do not think that the mode of exercising the control has retarded the construction of the railways.

194. Supposing a large quantity of material to be required for use on one of the lines, what would be the course taken to procure that supply, beginning from the want being felt and expressed by the engineer of the railway company?—The engineer of the district would express his want to the agent of the company; he would forward the engineer's requisition, with his observations thereon, to the consulting engineer of the Government; he would obtain the assent of the Government of India or the local Government, for the transmission of the requisition to the Board of Directors in London; they would consider it, and with concurrence of the *ex-officio* Director, the Directors would immediately act upon it.

195. You receive your despatches at the India House under the signature of the secretary to the Government of India in the department of Public Works?—We receive them under the signature of the Governor-general and the members in Council.

196. Do you know whether they are prepared by the consulting engineer of the railway company, or by the secretary to the department of Public Works?—Up to this time those offices have been held by the same person; the consulting engineer to the Government of India was the secretary in the Public Works department.

197. Is he so now?—No, the office has been divided.

198. Who is the consulting engineer to the Government of Bengal?—Major Goodwin.

199. Who

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199. Who is secretary to the department of Public Works? — I believe Captain Yule.

200. In the event of a railway company in India requiring a locomotive, the engineer has to communicate, in the first instance, with the agent to the railway company, the agent to the railway company has to make his wants known to the consulting engineer, and the consulting engineer has to communicate with the secretary to the Government of the department of Public Works, and then a letter is written, under the signature of the Governor-general, to the Court of Directors, and until very recently it had to go through the ordeal I have just mentioned to you?—It had.

201. It had to go through nine or ten separate examinations and separate decisions?—It had; but yet I think delay has been prevented by the railway officers taking time by the forelock, and calculating the time at which they would require those things.

202. You have stated that the objects of the seven or eight lines of railway that were sanctioned in India were of a political, military, and commercial character?—Yes.

203. And that the plan originally proposed by Sir Macdonald Stephenson in a straight direction was varied to the route of the valley of the Ganges by the decision of Lord Dalhousie, upon the recommendation of Colonel Kennedy?—It was.

204. Is that letter amongst the correspondence which has been handed in?—I think it is amongst the papers that have been printed for Parliament.

205. In what year was it written?—It would be about August 1851. This is an extract from the despatch of the Court of Directors, affirming the decision of Lord Dalhousie.

"The grounds upon which he (the consulting engineer) founds his preference are: the smaller engineering difficulties which the Ganges line presents; the greater commercial advantages which it possesses, and the larger amount of profits which it offers.

"He represents the enormous amount of the existing traffic on the Ganges as well as the painful labour, cost, and uncertainty which attend it, and states that the country through which the direct line would pass, and which he describes as 'The Desert Hill District,' would suffer no inconvenience from the withdrawal of its traffic to the Ganges route, by which the produce of the upper district must necessarily pass.

"Our Governor-general has expressed his concurrence in these views, and in his minutes of the 11th April last says, 'I have never doubted from the first that the proper course for any trunk railway from Calcutta to the provinces would be by what is termed the Ganges line." That was before any contract had been made, and therefore the alteration in the route did not delay the execution of the works.

206. Admitting that the decision was wise and proper, in the interest of the public, and in the interest of the railway company, and confining your attention to the result of the change as regards the question of delay, which is what we are directed to inquire into here, do you not think that if the line had been carried on straight from Raneegung to Mirzapoor, the line might have been completed sooner?—I think it is possible, but it must be borne in mind that there was a serious obstacle in the River Soane, which would have to be crossed midway between Raneegunge and Mirzapoor, as well as a range of lofty hills.

207. Looking at the inquiry which this Committee is charged to make, that is, into the cause of the delay, do you not think that if the line had been made from Raneegunge to Mirzapoor, it would have been available for military purposes during the past year?—I do not feel competent to answer that, which is more of an engineering question; it is possible; but it must be recollected that there were very difficult works on the direct line, over hills and so forth.

208. As to the question of progress in India, do you not think that inasmuch as all the expenditure is made under the power and immediate sanction of the Government authorities, the amount of expenditure is not a fair indication of the extent of progress made?—I do not think the progress of the works can be judged of by the lines opened, nor by the expenditure in India.

209. In point of fact, the East India Railway Company, having only 123 miles of railway open at this moment to public traffic, might yet have a great number of miles just on the point of being opened?—Just so.

210. Have

210. Have you any knowledge as to the number of miles they are likely soon to open?—I only know that between Cawnpore and Allahabad it is expected to be opened in a few months, and 60 miles of it are now at work; no doubt that would have been opened much sooner if it had not been for the recent unfortunate occurrences.

211. You have concluded a contract for the construction of a line from Mirzapoor to Jubbulpoor?—We have.

212. How long is that?—Three hundred miles.

213. I believe it is not very difficult of execution?—Not very difficult, but there will be some difficulties.

214. Mr. *Cumming Bruce.*] You have informed us of the nature of the conditions of the contracts by which the Government in India have the power of assuming the conduct of the railways, and you say one of the conditions is, if they think that the work is not carried on satisfactorily by the railway company?—Yes.

215. Who decides whether it is satisfactory or not?—The Government, I believe, has the power of deciding.

216. It leaves the Government the power, at any time, of taking to the railway?—By showing sufficient cause.

217. It rests with the Government to decide whether the work is carried on satisfactorily or not?—Yes, it must be carried on to the satisfaction of the Government.

218. Mr. *Campbell.*] Has the Government itself ever originated any line of railway, or have all the existing lines emanated with the public?—The Government have, in some instances, originated a line.

219. Which line?—Where a certain means of communication has been under consideration, the officer surveying and the Government which has reported upon the surveys, have suspended their decision as to whether it should be a canal or a road, thinking that the authorities at home would sanction a railway; that was the case with the Scinde Railway, and the Eastern Bengal Railway. They did not sanction an expense which would have been incurred for a road or canal, preferring a railway.

220. None of the great trunk lines existing now, originated with the Government?—Lord Dalhousie laid down the whole system of railways; the subject was referred to him, and in a despatch he lays down the whole system, which has since been adopted.

221. He was not in India in 1844, was he?—The scheme was not settled then.

222. *Chairman.*] Do you know any instance in which the Governor-general on his own authority, authorised a railway company to proceed in the construction of a line before it had received the sanction of the home Government?—Lord Dalhousie did, but I believe it was under a mistake; he authorised the Baroda Company, but, as was afterwards explained, by mistake.

223. Mr. *Campbell.*] Has the Government here, in all cases, adopted the lines approved and recommended by the local Government?—I think they have hitherto invariably.

224. In all cases?—In all cases, I think, hitherto.

225. What deviations from originally projected lines have been made, in cases where they have been guaranteed by the Government?—No deviation has been made after a line has been settled, and after a contract has been made.

226. Political and military considerations would, of course, be an element in the judgment formed by the Government, but with the promoters the profit likely to result from a purely commercial line, would be the principal element?—I do not think that the Government has ever selected a line for merely political purposes.

227. In the case of the Eastern Bengal line, the plan originally proposed by the company showed estimated profits to the amount of 10 or 12 per cent., but by the modification introduced by Government for military and political purposes those profits were reduced to something like 5 per cent.?—The alteration was made entirely upon the recommendation of the railway company's engineer, and with the wish of the railway company; the Government adopted the opinion of the railway company's engineer.

228. When divergencies occur in the route of a line of railway for political and military purposes, Government has benefited while the shareholders have suffered?—I do not think that has ever been the case.

229. Does not the interference by Government impede progress?—I think that

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supervision must, to a certain extent, impede the transaction of business, but I do not think that it has prevented the prosecution of the works with vigour; it is a necessity, in fact, of the guarantee.

230. Are Government stores and troops carried at a lower rate than the general public?—They are carried under the contract at the lowest rate.

231. Whatever class they travel by?—Yes; it is a provision of the contract "that the said railway company will at all times during the said determinable term, convey on the said railway the Government mails and post-bags, and the guards and other servants of the post-office in charge thereof free of charge, and when they are on duty all officers and persons in the administration of the post-office also free of charge; and will also convey on the said railway when they are on duty the troops, both horse and foot, as well those of Her Majesty as those of the East India Company, and all other persons to whom the provisions of the Mutiny Acts for the time being in force for the Queen's forces, and for the East India Company's forces respectively, shall be applicable; and all artisans on the business of the East India Company, the officers and persons in a similar station of life to be entitled to travel in first-class carriages at second-class fares, and the troops and European artisans in second-class carriages at the lowest fares, and all other persons at the lowest fares."

232. What steps have Government taken with reference to the supply of timber?—They have authorised commissions and inquiries to be made, and considerable efforts have been made, but hitherto it has been found cheaper to obtain sleepers from this country.

233. Mr. *H. A. Bruce.*] You said that before the East India Railway Company proceeded with the execution of their lines of railway they were incorporated by Act of Parliament?—Yes.

234. They had to proceed in precisely the same way as an English railway company is bound to do?—I meant to say that the common practice has been for the railway company to be incorporated. In some instances they have not obtained their Act; in those cases they waited until they saw a fair prospect of the scheme being sanctioned.

235. They must apply before they proceed with their line?—In some instances the promoters have applied, and they have waited until the report of the Government of India had been received before they took further steps to form the company. The sanction of the East India Company was not given until the company was incorporated by Act of Parliament.

236. You have stated that the consulting engineer gives his opinion as to a new line of railway being carried in the first instance, and afterwards as to the quantity of materials used upon the line?—The materials being all sent from this country are passed by the consulting engineer to the railway company.

237. Do I understand that the consulting engineer in India has nothing to do with the choice of materials?—Any indent that passes through his hands is subject to his observations.

238. The consulting engineer would have to decide as to the advisability of confirming the request made by the engineer of the railway?—He offers no opinion upon the materials, but he gives his opinion as to whether the application shall be made.

239. He does not enter into the question whether a rail shall weigh 65 lbs. or 70 lbs.?—No, that is settled in this country.

240. By whom is it settled on the part of the Indian Company in this country?—By the *ex-officio* director who exercises his control at the Boards of the railway companies, and who is guided by the opinion of the consulting engineer.

241. Have you ever known any difference of opinion between the railway companies and the East India Company, as to the quality or character of the rails, or as to the sort of engines to be used on the line?—No.

242. Have you never known delays arise from discussions of this sort?—No.

243. Have all the delays with which you are acquainted, setting aside the questions upon the guarantee, arisen from proposed deviations from the original line, or from a dispute as between the railway companies and the East India Company, as to what would be the best line for the general interests of India?—Delays occurred, no doubt, in the commencement of the Madras Trunk Line, and also of the Scinde line, in consequence of the difference of opinion regarding the route.

244. Can you suggest any other causes of delay than those which arose from the selection

selection of the route?—Delays, of course, arose from the natural impediments of the country, and from the necessity of sending materials from this country.

245. Apart from the physical impediments of the country, have you known no delays arise from the objections taken by the East India Company to the course proposed by the engineer, or by the authorities of the railway companies? —On the Madras line there was an instance, in which a delay of some few months was occasioned in consequence of the consulting engineer of the Government objecting to the original line being carried out.

246. Has the East India Company ever objected to the kind of permanent way or bridge recommended by the engineer of any railway company?—Yes; I think in one instance the plan of permanent way recommended by the engineer of one of the companies was objected to because it was only experimental, and it was thought inexpedient to attempt any experiments in India. It was Adams' Girder Rail, and it was found that it had not been adopted on any of the lines in this country.

247. Up to this time have the railway companies, so far as you are aware, kept within their estimated costs?—I think the East India Company has a little exceeded the estimate; I think the estimate was about 10,000 *l.* a mile, and I believe it has cost more; but it is difficult to judge of that line, because it has been made double, and it was also necessary to provide a terminal station for the whole 1,400 miles, although the part opened is only 100 miles.

248. *Mr. T. G. Baring.*] I suppose you have paid considerable attention to the progress of all these lines of railway?—Yes.

249. Putting aside any delay which may have occurred before the actual line had been determined upon, in each case do you consider that the progress of the works, after they have been once decided upon, has been satisfactory?—I do, speaking generally.

250. Would you say that any delay has occurred since the selection of the lines?—I do not think, after a line has been once sanctioned, that its construction has been impeded beyond what one would expect, recollecting that the materials come from this country, and that the physical difficulties of the country are sometimes considerable.

251. Do you consider that the necessity which there was, in consequence of the guarantee, for the Government supervising the expenditure, has been productive of delay?—I think not, in the course of constructing a line.

252. When you say, "not in the course of construction," at what time do you think it would occasion delay?—I think there has been delay in commencing the works in the first instance, but that was not in consequence of the guarantee system being adopted. I do not think that that system need necessarily entail delay by any means.

253. *Mr. Cheetham.*] Was there not some delay in obtaining the guarantee of the East India Company for these several lines?—There was a good deal of discussion in the first instance about the system of introducing railways into India altogether.

254. You have been asked by an Honourable Member about the estimated return of one of the lines having been reduced from 12 to 5 or 7 per cent., in consequence of a change in its course?—I have no knowledge of the calculation that the Honourable Member mentions. My answer is, that the alteration was made entirely in consequence of the recommendation of the Railway Company's engineer, and at the Railway Company's wish.

255. It was not the fault of the East India Company?—No.

256. Speaking of this particular line, can you tell me whether its object is more especially political and military or commercial?—I should say all three combined; I do not think that one is sacrificed to the other.

257. I see in clause 10 that there is a provision made for the *ex-officio* director on behalf of the company; has any material difference of opinion arisen between that gentleman and other directors of the company upon any points which would lead to delay?—I think none whatever; I think they have always acted with the greatest cordiality, and in unison of feeling.

258. Has there been any material delay after the sanction of the line by the company, and before the line was commenced in India?—There has been delay in the case of the Scinde Railway. After the scheme was sanctioned, there was a difference of opinion in India as to which route it should take, and in consequence of that it was necessary to have further surveys.

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259. That is not so with the other lines, so far as you know?—No.

260. Are you aware what the results have been since the opening of the various lines, and whether any demand has been made upon the guarantee of the company or otherwise?—Not at all; the lines have, from the commencement, more than paid their working expenses, and after a short time those lines that have been opened have worked at a profit; in two instances, the East Indian and the Great Indian Peninsula, their profits have exceeded the rate of guaranteed interest.

261. Is it your opinion that, in any application now made to the East Indian Company for a guarantee, they ought not to feel as timid as to the results as they formerly were?—I think that any well selected line is sure to pay, and I do not think that either the shareholders or the Government authorities need apprehend loss.

262. If the Board of Control are under the impression that the workings of the lines has not resulted in a profit, are they mistaken?—I do not think that they can be under that impression, for they have the whole results before them.

263. Mr. *C. Bruce.*] A question was asked you just now which seemed to intimate an opinion that Government attached more importance to one object than another. Do you consider that the commercial element has been as much considered as any other?—I think so.

264. You think that no prominence has been given to the political and military over the commercial element?—No; in one or two cases a railway has been sanctioned for purely commercial purposes.

265. Mr. *Cheetham.*] What railway do you speak of?—Of course political considerations must be involved in any trunk line of communication in a country like India; but I think that in selecting the Madras railway, from Madras south-west to the coast, the real object was to develope the resources of that district, and to make a commercial line.

266. Mr. *C. Bruce.*] Was not the deviation from the original plan, which involved an extension of about 300 miles, mainly influenced by a desire to promote the internal commerce of the country?—Yes.

267. Mr. *Cheetham.*] Is your reply to my question, in reference to the whole of the lines, this: that assuming that there is an impression amongst commercial classes that these lines were devised mainly for military purposes, and not for commercial purposes, such an impression is erroneous?—It is. The line to Nagpore has been sanctioned soley for the purpose of opening up the commercial districts.

268. Does not that line pass through a large cotton field?—It does.

269. The same remark would not apply to the line going northward to Calcutta?—That is a political line as well as a commercial line.

270. You would not say that the commercial element there is as important to the Government as the two others?—Government are of course very much interested in the facilities for conveying troops and so on, but the great object in selecting it was to make it a commercial line.

271. Mr. *Crawford.*] Could you select any line more commercial in its character than the one in question from Calcutta?—Certainly not.

272. *Chairman.*] You stated just now that, in your opinion, delays occurred in the arrangement of the schemes at home, but that there was no delay in the construction of the lines. I wish to know whether the elaborate description you have given us of the stages through which the indent passes does not itself develope a most productive source of delay?—Not so much as might be expected, because the officers understanding the system that is pursued, have allowed a sufficient time to elapse.

273. Are you not aware that very great delays have occurred in consequence of the Government interference with the mode of providing materials for the construction of the lines in India?—I am not aware of it.

274. There appears to exist in your mind an idea, I dare say well founded, that the facilities of sending out materials to India may be limited by the demands of trade for Indian products?—Yes.

275. I presume an important item in the calculation of the freight is the expectation of a return cargo?—Yes.

276. Supposing that the demands of this country for Indian productions are limited, that would necessarily limit the number of ships that would come charged with these materials?—Exactly.

277. And

277. And it would involve you at home in the necessity of either purchasing or chartering ships to convey materials?—Yes.

278. Which would of course depend upon the demand for shipping at the moment?—Yes.

279. Practically you think that there is a limit to the amount of permanent way and materials for railway construction to be sent out to India?—I do.

280. I should like to know whether it has actually yet occurred within your experience?—I cannot say that it has; but it would have occurred if the East India Railway Company had not taken the proper precaution of declining to enter into an engagement which would have involved them in this difficulty; they were called upon to make a line within a time, which would have been impossible unless they had bought or chartered vessels.

281. Would these considerations materially interfere with the power of any railway company completing a line within a certain time?—Yes, I should say they would.

282. That is your decided opinion?—Yes. In connection with this I may perhaps mention the amount of materials sent out to India within the last three years; in the year 1855 enough was sent out to construct 446 miles of railway; in 1856 enough was sent out to construct 507 miles; and, in 1857, enough was sent out to construct 492 miles.

283. I presume that all the vessels so engaged had return cargoes?—I presume so.

284. Mr. *Crawford.*] Practically speaking, the construction of railways in India has not been retarded by the want of permanent way?—No.

285. Has it not been the object with the Government of India to insure a perfect uniformity, as far as possible, in the construction of all the railways?—Yes.

286. Including uniformity of gauge?—Yes.

287. And uniformity in the construction of the rolling stock?—Yes.

288. So that there may be no difficulty in the communication between the several lines?—Yes.

289. Were not these points referred to a committee of engineers in this country?—Yes; every precaution was taken to prevent a difference of gauge, or any other inconvenience.

290. Do you recollect any instance in which the recorded proceedings of the East India Company have been returned, with the dissent of the *ex-officio* director?—Not one.

291. Mr. *H. A. Bruce.*] Have you found any rise in the price of freight in consequence of sending out materials to India?—No, I think no attempt has been made to force freights.

292. Has there been any difficulty in obtaining shipping for sending out the whole amount of rails required for the construction of railways?—No, I do not think the companies have ever been obliged to charter or to purchase ships.

293. They have never been driven to any peculiar mode of obtaining freight?—No.

294. Mr. *Hodgson.*] Has there not been a considerable rise in freight for dead weight?—Not that I am aware of.

295. *Chairman.*] In regard to the profits realised upon lines already opened, can you state whether those profits have, on most occasions, come up to the original estimate of what they would be?—The estimates have been so various by those who were anxious to promote the scheme, they have been perhaps rather exaggerated; and many have, on the other hand, thought that the railways would not pay their own expenses; but I think they have exceeded expectations.

296. Is it your opinion that no line of railway now open gives an adequate idea of what the ultimate amount of profit may be expected to be?—Yes, I think it does not.

297. Do you form that opinion from the fact that none of the experimental lines actually run into what may be termed producing districts?—I do.

298. With the exception of Raneegung, which is a mineral producing district?—None of them, I think, show the commercial capabilities of the work.

299. Mr. *Hodgson.*] I believe there is no line open entirely?—There is not.

300. So that it is impossible to form an opinion of what the traffic by them will be?—Just so.

301. *Chairman.*] Speaking generally, I understand you are clear in your opinion that the amount of profit realised has fully answered fair expectations?—Yes.

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302. With respect to the Bombay and Baroda Line, I believe that a very great delay took place in the sanction given to that portion of the line from Bombay to Surat?—Yes.

303. Is it not the fact that three years before it obtained the sanction of the Home Government that portion of the line had been approved by the local Government?—I think it must have been nearly three years, but the delay arose from two causes; a railway company in the first instance proposed to commence from Surat and not from Bombay; when the scheme came to be considered by the Government of India, Lord Dalhousie recommended that it should commence from Bombay; when it came home there were differences of opinion as to whether a better route might not be selected between Surat and Bombay, and the authorities decided, in the first instance, that the railway company should commence its works from Surat; the railway company made repeated representations in favour of that extended project, and the Government of Bombay, to whom it was referred, likewise recommended it, and at last it was sanctioned, and is now in the course of construction.

304. Do I understand you to say that the project of extending the original line from Surat to Bombay was initiated by Lord Dalhousie, and not by the Company?—I think when it was placed before Lord Dalhousie they had altered it, and proposed that it should commence from Bombay, and his opinion was in favour of it.

305. Can you state whether there was not a considerable opposition offered by the Board of Control to the construction of that line from Bombay to Surat?—The Board of Control certainly objected to the extension.

306. Do you know the grounds of that objection?—That the route was not fixed upon for connecting it with the line then in the course of construction from Bombay; there was a great objection to two lines going into the Island of Bombay, and it was suggested that this line from Surat might join the other line higher up by the side of the Ghauts.

307. Was the sanction to that part of the line obtained eventually by the Company's showing that, whereas they were conducting a line into a profitable district, and taking the goods of that district to a place where there was no port, it was essential that they should have the power of shipping their goods to a port?—Yes.

308. That was the reason that induced the Government to sanction the scheme?—Yes.

309. Did not those reasons exist as strongly when the scheme was first introduced as they did three years afterwards?—Yes, of course, they did; but there was the question then raised as to whether it could not be made to join the existing line by an easier and cheaper route than that by the coast.

310. They may have contemplated a branch line from Surat to join the Great Indian Peninsular?—Yes.

311. I believe that scheme was under discussion for some time?—Yes.

312. Were there great difficulties in carrying the line over this country?—It was so objectionable that the Government immediately reported against it.

313. Mr. *Crawford.*] So far as you are aware, have any of the engineering officers employed in supervising the construction of railways in India had any experience in civil engineering, and particularly in the construction of railways?—I believe they have had great experience in civil engineering and in constructing works similar to railways; for instance, bridges over which trunk roads are taken, canals, and in fact every work connected with civil engineering.

314. Are you aware whether any of them have, during their residence in England, devoted their time to the construction of railways?—Yes.

315. Some of them who have returned to India?—Some of them.

316. In point of fact, then, they are not altogether devoid of what you would call railway experience?—Certainly not; and the Indian experience which they have acquired has been found of great service.

317. *Chairman.*] Have you heard that some difficulties arose in India, in consequence of the natives not understanding thoroughly what the nature of a contract is, and what its duties are?—I have not heard it.

318. Has much difficulty, to your knowledge, been experienced in making contracts with native contractors?—Not with native contractors. There have been great difficulties with English contractors. In one or two cases, in which natives have had contracts, they have been successful.

Mr. J. Danvers.

3 May 1858.

319. Have you heard of no instance in which a native contractor, finding that he had not the money, or from some other reason, has thrown up the contract, unable to perform it?—I do not recollect the case of a native contractor doing so. I know of several instances in which that has been done by English contractors.

320. Is it not the fact that nearly all the contractors in the Great East India Line have thrown up their contracts?—Yes, with but two exceptions, I believe.

321. Were any of those contractors native contractors?—I believe not.

Jovis, 6° die Maii, 1858.

MEMBERS PRESENT:

The Hon. H. G. Liddell.	Mr. Crawford.
Mr. A. H. Baring.	Sir J. Elphinstone.
Mr. T. G. Baring.	Mr. G. Glyn.
Mr. C. Bruce.	Mr. K. Hodgson.
Mr. H. A. Bruce.	Mr. H. D. Seymour.
Mr. Campbell.	Mr. Stephenson.
Mr. Cheetham.	Colonel Sykes.

THE HON. H. G. LIDDELL, IN THE CHAIR.

Mr. *David Innes Noad*, called in; and Examined.

Mr. D. I. Noad.

6 May 1858.

322. *Chairman.*] WILL you describe to the Committee the position that you occupy in the East India Railway Company?—I am Secretary of the East Indian Railway Company, and have been so ever since its formation.

323. Will you state the date of the formation of the East India Railway Company?—It was formed in June 1845.

324. Describe shortly its origin and objects?—The objects of the founders of the Company were the carrying out what they conceived to be a great national undertaking. When Mr. Stephenson returned to England in 1849, he placed himself in communication with the late Sir George Larpent, Mr. B. Colvin, and Mr. Charles Freshfield, and others; and those gentlemen having carefully examined the immense mass of information upon the subject which he had brought home, became gradually impressed with the conviction which Mr. Stephenson had long entertained, that railways in India had become a great political, social, and commercial necessity, and finding that there was no disposition on the part of the Government in India to undertake their introduction, and that even if the disposition had existed there was no effective machinery for the purpose, they began to consider how the object could be best attained. The question was very completely ventilated, and a great many schemes were suggested and discussed, and it was ultimately considered that the best means for carrying out the object would be the establishment of a joint stock association to act in close identity with the Government of India. The founders had no sooner come to this conclusion than they sought an interview with the Chairs of the East India Company, and they explained that they were prepared to enter upon the undertaking, provided they were assured of the cordial co-operation of the Government, and provided the Government were prepared to afford them a guaranteed return upon the outlay of the capital necessary for the purpose. The question was never viewed as a commercial speculation, nor was the proposed company ever considered in the light of a mere railway company. At that interview with the Chairs, which involved the requirement on the part of the railway company of such a rate of dividend upon the capital as the East India Company themselves would have had to pay had they raised the capital for the like purpose, they received such assurances as led them to have little doubt of a satisfactory conclusion being arrived at, and they immediately proceeded to form the company in June 1845.

325. Those communications, which you have just described, were the first communications which the company, with which you are connected, had with the Court of Directors?—Yes.

326. What was the amount of capital?—The company has power to raise by shares 20 millions, and it has power to borrow an additional three millions.

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6 May 1858.

327. What are the Acts of Parliament under which the Great East Indian Railway Company is constituted?—The company was formed in June 1845 under a deed of settlement registered in accordance with the provisions of what is called the Joint-Stock Companies Registration Act, the 7 & 8 Vict. c. 110, and on the 1st of August 1849, they obtained an Act of incorporation, which limited the liability of the shareholders to the amount of their subscriptions, and which enacted the original deed of settlement as the constitution of the company.

328. Are you under the provisions of the Companies Clauses Act?—Only to this extent, that we have the benefit of one particular clause in that Act, and that is the clause referring to the enforcement of the payment of calls, the forfeiture of shares, and the consolidation of shares into stock. We are subject to no other clause in that Act.

329. How much capital has been already subscribed?—£. 8,700,000.

330. Will you give a succinct account to the Committee of the correspondence that took place between your company and the Court from June 1845 up to February 1849?—I am afraid I shall have to trouble the Committee with a great many dates; for the dates form an important element in the consideration of the question. The company announced its formation in a letter to the Court in June 1845; on the 20th July Mr. Simms, the Government engineer, appointed, under a minute of the Court of the 7th May, went to India; and, by the same ship, we despatched Sir Maedonald Stephenson, then Mr. Stephenson, and a staff of engineers to assist him in the necessary preliminary investigations. In November 1845 we heard from Mr. Stephenson that Mr. Simms had quite satisfied himself of the practicability of constructing railways, and also had decided in favour of the line which this company had proposed should, in the first instance, be commenced upon. In November 1845 accordingly, we wrote to the Court to say that we were anxious to discuss the terms upon which the work was to be carried on; and, in December 1845, we received a reply from the Court declining to enter into any correspondence pending the receipt of a report on the subject from the Government of India, which had not then come to hand. Mr. Stephenson returned to England in June 1846. We immediately communicated the circumstance to the Court, and again expressed our anxiety to enter upon a discussion of the terms upon which the undertaking should be carried out. On the 5th July 1846, having heard nothing from the Court, we proposed distinct terms upon which we should be prepared to undertake the work, but between that date and February 1847, we received no communication of any kind whatever from the Court. In February 1847, a paper was handed to the chairman of the railway company, which contained a series of terms and conditions upon which the Court were prepared to afford encouragement to companies established for the purpose of making railways in India, and in that paper they proposed to give a guarantee of four per cent. upon three millions of money to be expended upon two sections of the great line to Delhi, which guarantee was to last for a period of 15 years. On the 3d February we wrote to the Court pointing out the altogether insufficient nature of these terms, and in the following March the Court declined to make any alteration. This letter from the Court led to our having one or more personal interviews with the Chairs of the East India Company, and at length on the 5th July 1847, they consented to raise the rate of guaranteed interest from four to five per cent., and we then suggested that they should also extend the duration of the guarantee to 25 years.

331. Was the guarantee that they then offered in the shape of interest or dividend?—Guaranteed dividends, as we understood. We suggested that they should extend the duration of the guarantee to 25 years, which they consented to do on the condition that we deposited, within three months from that date, the sum of 100,000*l.* as an earnest of our *bonâ fides*.

332. In the early part of your evidence you said that a period of several months elapsed between July 1846 and February 1847, during which time you received no answer to your communications to the Court. Did you call the attention of the Court to your letter during that period?—Not by my written communications. When we got this last concession, which was the increasing the duration of the guarantee to 25 years, we concluded that the Court had assented to the terms we had always stated to be necessary to our object, and that they had agreed to give us that which we had asked for from the beginning, a guaranteed return upon our capital; and in that belief we sent out in August 1847 a very large staff of engineers, so that we might avail ourselves of the ensuing cold season to commence operations. We immediately made a call upon

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our shareholders, with a view to provide the deposit. Unfortunately, however, no sooner was the call made than the commercial crisis of 1847 intervened, the intensity of which, particularly as it affected Indian interests, many of the Members of the Committee will recollect, and we were under the necessity of applying to the Court for an extension of the period within which to make the deposit. We applied, I think, to extend the time to the 31st March, which the Court agreed to. We then took the most active measures possible, by forfeiting the shares, and by an attempt to sell those that were forfeited, in order to complete the deposit by the stipulated time, and we had every prospect of success, when, on the 24th February 1848, the French Revolution broke out, which for the moment completely paralysed all commercial operations. Under these circumstances we found it necessary to apply to the Court for a further extension of time for making the deposit, which we did the 15th March, and we received a letter on the 21st March from the Court, positively declining to make any concession whatever. We remonstrated very strongly in a letter dated 23d March, and the Court agreed, in a letter dated 30th March, to extend the period for making the deposit until the 1st May. We called our shareholders together on the 18th April, made a call on the 22d April, and wrote a letter to the Court, intimating our expectation that we should be able to complete the deposit on the 1st May, or within a few days afterwards, when to our surprise, on the 1st May, we received a letter, dated 29th April, stating that unless the deposit were punctually paid on that, the 1st day of May, the whole negotiation would be abandoned, and the agreement with the Company considered null and void.

333. Were any grounds stated in that letter by the Court for making that statement?—None whatever; it was a dry reply, to the effect that as we had failed in our undertaking they withdrew from any negotiation with us. We remonstrated very strongly in a second letter on the 29th May, and we then asked that they should accord terms more consistent with the state of the times, and we proposed to limit the undertaking to the construction of one section of the line. The Court again positively refused, in a letter dated 3d June, to make any concession. This reply raised some very grave doubts in the minds of the members of the railway board as to the *bona fides* of the East India Company in their intention to assist the undertaking at all, and for the moment we did not take any further steps to make the deposit. Although the commercial crisis of 1847 and the French Revolution of 1848 were, no doubt, the immediate active causes of our failure to make the deposit, yet the real cause of failure, and the real cause of a great many of the subsequent embarrassments, are to be traced to the loss of time between 1845, when the East India Company sent out their commission, and for which, in my opinion, there was not the slightest necessity, and February 1847. In 1844 and 1845, there is no doubt whatever that we could have raised all the capital that we required for this railway at 3½ per cent., and there is equally no doubt that in July 1846, when we proposed distinct terms, we could have raised all the capital we required at 5 per cent., but the Court deferred their decision, as I have already stated, until February 1847, and it was in February 1847 that the first indication of anything like an uncomfortable feeling in the money market first made its appearance; after the receipt of the letter of the 3d June we came to the conclusion that the Board had positively determined to afford no assistance in helping us out of the dilemma in which they had placed us, and we heard also that the policy of the Court had undergone a change as to the agency to be employed in the construction of the railway, and that they contemplated the construction themselves; we thought that we ought not to stand in the way of a great public work, and it was on the 17th June, I think, that we offered to hand over the whole of our plans, surveys, and sections, and to place the services of our staff at the disposal of the East India Company. This letter ended in our being asked to an interview with the Chairs of the East India Company, at which it was explained that there was no change whatever in the policy of the Court, and they expressed their readiness to receive another proposition from the railway company. We lost no time in making that proposition; and on the 4th July we suggested that the first work should be limited to a line which should cost about a million sterling. This the Court agreed to upon the 4th or 5th July, upon condition that we made a deposit of 60,000*l.* forthwith, and that we withdrew a Bill which we had introduced into Parliament, which had passed the House of Commons, and had been read a second time in the House of Lords. I need scarcely say that we were very much astonished at this latter

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demand, because the whole of the provisions of the Bill had been previously approved by the solicitors of the East India Company, and we therefore remonstrated strongly against the withdrawal of that Bill. The Court persisted, we again remonstrated, but it was insisted upon, and the Bill was withdrawn accordingly. We went on with our operations however, and were making a fair progress, when, on the 1st September 1848, in a correspondence with third parties quite unconnected with railway companies, the Court repudiated our view of the meaning of the term "guaranteed dividend." The effect of that may be well imagined. The public had been induced to subscribe their capital upon what was now stated to be a false representation, and I need scarcely say that every one connected with Indian railways felt the matter very acutely. We laid the whole of the correspondence before the public. The public undoubtedly took our view of the question, and a great deal of pressure being brought to bear, both upon the East India Company and upon the Government, it was suggested to us, about the beginning of 1849, whether some terms could not be devised by which the differences which had arisen between the two bodies might be reconciled.

334. The objection, raised by the Court, resulted in fact in a compromise?—Exactly.

335. You say that was about the commencement of the year 1849?—Yes.

336. Describe to the Committee the principle of that compromise?—The first terms agreed upon by the Court in our view of the case, were an absolute guaranteed dividend of 5 per cent. for a period of 25 years.

337. Have you with you any correspondence bearing upon this subject?—There was no correspondence of importance between July 1848, and the beginning of 1849; what passed was principally in verbal communications.

338. Conducted in interviews with the Chairs?—Yes, and with the authorities of the Board of Control. The terms upon which we had been proceeding, as we understood them, were an absolute guaranteed dividend of 5 per cent. for 25 years; and under these terms, if we failed in the performance of our obligations, I think the East India Company would have been entitled to have possessed themselves of all that we had done without payment; I think, in fact, we should have sacrificed the whole of the capital which we had laid out.

339. What was the amount that you had laid out at that time?—It was nothing very serious at that moment, perhaps 100,000 *l.*, but the power of forfeiture would, of course, have extended over the entire duration of the lease of 99 years. It was explained to us that the East India Compay never did, in fact, mean to guarantee the dividend, but that they only intended to guarantee interest upon the aggregate amount of capital paid into their treasury, and expended under their sanction, and that it was never suggested to them that they should guarantee to each individual shareholder, interest or dividend upon the amount of his subscription; we were told, in other words, in fact, that it was useless to prolong the discussion upon the question, that the East India Company were not likely to give way, but that they were ready to come to such terms as would meet the difficulty. Considering that under the first terms we should lose our capital if we failed in our undertaking, that appeared to us to be a starting point upon which we could make a compromise, and we then said that we were prepared to accept their view of the case, provided, in the event of any failure on our part, from one circumstance or another, we were, in all events and under all circumstances, guaranteed the return of our capital; that in fact was the real principle of the compromise between us, and instead of having a guarantee of 5 per cent. dividend for 25 years, we accepted the guaranteed interest for 99 years, with the provision that at all times and under all circumstances our capital should be guaranteed to us.

340. Mr. *Danby Seymour.*] Five per cent. upon the capital paid up?—Yes, the rate of guaranteed interest was to be 5 per cent.

341. *Chairman.*] Did these proceedings continue between February 1849 and August of the same year?—In February 1849, I think, Mr. James Wilson, the then secretary of the Board of Control, first suggested something like the terms upon which we proceeded, and we were occupied the whole of that interval between February and August 1849 in bringing those terms into the form of a contract.

342. When was that contract signed?—That contract was signed, I think, on the 19th of August 1849.

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343. Are you aware whether there was any particular pressure brought to bear upon the Board of Control at that period, in order to facilitate and expedite those proceedings?—Yes, the press took up the matter very warmly indeed; and in February 1849, a very important deputation from Manchester waited upon the President of the Board of Control, and pressed the subject very closely upon his attention; and I have no doubt that the terms which were accorded subsequently were the result, in a great measure, of that deputation.

344. I think the then secretary of the Board of Control, Mr. James Wilson, took a very active part, and a very useful part, in arranging the various difficulties which existed?—Very much so; in fact, I think the railway interests are mainly indebted to Mr. James Wilson for the terms upon which their present contracts are based.

345. In order to complete this first part of our inquiry, will you state what proceedings took place after the signing of the contract, which I think was about August 1849, up to the date of commencing the works, which I believe took place at the end of 1850?—The contract was no sooner signed, than the Board entered into a communication with Mr. Thomas Jackson, the contractor, with a view to obtain from him a tender for the construction of the entire works. Mr. Jackson furnished us with a tender immediately. We submitted it to the Court of Directors, with a strong expression of opinion that it should be accepted, but we received no reply upon the subject until the 31st of October 1849.

346. When did you submit it?—In August 1849; of course, we lost those three months; and as the organisation of the entire staff depends entirely upon whether you are going to construct works yourself, or whether you are going to employ contractors to construct them, one being actual operation, and the other mere supervision, the railway company could do nothing whatever until the question of Mr. Jackson's tender was decided. We were then in correspondence with the Court, from November until March 1850, as to the salaries which we were to pay to the engineers, the extent of the staff, &c.; and these matters were finally settled about March. We despatched our staff to India about the 20th of March.

347. Mr. *H. A. Bruce.*] What was the length of line included in that arrangement?—About 120 miles, from Calcutta to Raneegunge.

348. Mr. *Crawford.*] You have referred to the preliminary expenses that were incurred; what was the whole amount expended?—We had spent about 80,000 *l.*

349. What was the sum allowed by the East India Company to the railway company out of that expenditure, to form a part of the guaranteed capital of the company?—£. 33,600.

350. The difference between those two sums has been so far lost to the railway company?—It was not lost to the existing corporation, but it was lost to the parties who subscribed to it, but did not continue in the undertaking.

351. In what manner was that 80,000 *l.* expended?—It was chiefly in surveys, and a considerable portion of it in compromising with the engineering staff we had sent out in August 1847; which was a precaution we took when we found ourselves in difficulty about money matters.

352. How many times had you sent an engineering staff to India, in the expectation that you would be in a position to commence your works, before you actually sent out a staff under the contract with the East India Company?—Once.

353. The expenditure of sending out the staff, and the expense of compromising with them after you had engaged them, formed a part of the expenditure for which you have received no return in the guaranteed capital?—That is so. I should perhaps mention, that the principle upon which the company was formed was this: we took a very small deposit from the public, and the understanding with them was that if, when we came to a contract, they chose to go forward with the works they might, but if they chose to retire from the undertaking they would do so, forfeiting the 5 *s.* per share which they had paid, and it was the 5 *s.* per share so forfeited which enabled us to pay the difference between the sums spent and the sums admitted.

354. I suppose considerable expenses were incurred with reference to the Bill which passed the House of Commons, but which was withdrawn from the House of Lords at the dictation of the East India Company?—Yes; I am not prepared to state the precise figures.

355. That forms a part of the preliminary expenditure of the company?—Yes.

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356. I think that Mr. Jackson, the gentleman with whom you stated the company was in treaty for the purpose of executing the experimental line under the contract, had previously gone to India, and had made himself acquainted, either by himself or by his agents, with the facts upon which his contract would have been based?—One of his brothers had been to India with that view.

357. As I understand, that was the reason the railway company communicated with Mr. Jackson in preference to any other individual?—Yes.

358. Because they supposed that he possessed tolerable information upon the facts they were proposing to deal with?—Yes; and so far as they could ascertain, he was the only English contractor disposed to enter upon railway works in India.

359. The East India Company, in your opinion, prevented the railway company from entering into that contract with Mr. Jackson?—Yes.

360. Are you aware of any ground which the East India Company had for putting their veto upon that contract?—I am not.

361. Do you recollect the price at which Mr. Jackson would have undertaken that contract?—It was between 8,000*l.* and 9,000*l.* per mile.

362. Do you think, as regards the question of delay in the early construction of the works, that the process of construction was impeded by that contract not being entered into?—I do not think that if Mr. Jackson's tender had been accepted the works which were contemplated in that tender would have been completed very much sooner than they really were.

363. Have you any correspondence that will throw light upon that subject?—I shall be happy to provide the Committee with it, but I have not got it with me. If I remember rightly, the letter declining the contract was in very general terms; that the Court considered it on the whole undesirable to accept the tender.

364. The railway company was then left to prosecute its works in India upon such information as might be obtained as to the best mode of proceeding?—Yes.

365. Colonel *Sykes.*] In the first place, what was the current rate of interest of money at the date of the first proposal, and at the date of the first guarantee?—I should rather reserve myself upon these points, but I think the current rate of interest was about 3½ per cent. in 1844 and 1845.

366. What rate of interest was guaranteed to the company in 1844 and 1845?—Nothing in 1844 and 1845.

367. Ultimately?—The guaranteed rate of interest offered in the first instance was 4 per cent.

368. What was the amount of your guarantee?—Five per cent.

369. That guarantee having been given, you were called upon, by a certain day, to make a deposit of money according to your agreement?—Yes.

370. Did you do so?—No.

371. The delay, therefore, was not with the East India Company, but with you, in having failed to make the deposit?—I think our failure to make the deposit arose from the withholding of terms by the East India Company until February 1847.

372. The failure of the completion of the agreement to make the required deposit was in 1847; then in March 1848 you made a second application for a delay of the completion of your agreement to make the deposit?—Yes.

373. Therefore in both cases, as I understand, it was a failure in the fulfilment of your agreement to complete the deposit, and not any act of the East India Company which occasioned the delay?—I do not admit that.

374. Upon what grounds did your company suppose that the Court ever contemplated taking into their own hands the construction of railways in India?—It was mere rumour or hearsay at the time.

375. You have no foundation for it, in fact?—No; nothing but very general rumour.

376. You speak of a Bill having passed the House of Commons, and being read a second time in the House of Lords; what were the provisions of that Bill?—So far as I remember, it was simply a Bill to incorporate the company, and to confer limited liability, an immunity from risk enjoyed by all shareholders in other railway companies; and also to reduce the nominal value of the shares from 50*l.* to 20*l.* I think those were the main provisions of that Bill.

377. Did you ever ask the East India Company for a guarantee to individuals of the interest upon their subscriptions?—We never made the proposition in those terms,

terms, but what we always asked and sought for, was a guaranteed return upon our outlay, whatever it was; and moreover in some other correspondence we applied to the East India Company to know in what form they would hand us over the amount of the guaranteed dividend, when they told us they would pass it to our credit in the ordinary form, but that they could not themselves undertake the distribution of the amount of it amongst the respective shareholders, which is conclusive to my mind that we had not made ourselves misunderstood as to the meaning of the terms "guaranteed dividend."

378. Practically, has there not been a payment of 5 per cent. upon the subscribed capital?—Yes, and I think the terms under which we are now acting practically give us what we originally asked for, and that they are much better terms.

379. Previous to your expending 80,000 *l.* in preliminary expenses, had you obtained the sanction of the Court of Directors?—No.

380. It was a loss, you say, of 5 *s.* per share only?—Yes.

381. And out of that 5 *s.* per share belonging to persons who could not pay up their subscription, you were to pay the loss, which otherwise would have fallen on the company?—Yes.

382. That is, the difference between 33,000 *l.* and 80,000 *l.*?—Yes.

383. Mr. *Campbell.*] With reference to the construction of railways, was it not a matter of public notoriety in the City, assuming a credible form, that the East India Company were about to undertake the construction of railways in India?—It reached us as a rumour at the time.

384. You have alluded to the commercial crisis in 1847, and the French Revolution of 1848, as being impediments in your way?—Yes.

385. Would that commercial panic of 1847, or the French Revolution of February 1848, have exercised any considerable influence upon your proceeding but for the previous delay of the East India Company in fixing the terms?—I should say, certainly not.

386. You also alluded to the fact of your being able, at a period anterior to the fixing of the contracts with you, to have raised the money at 3½ per cent. if the East India Company had guaranteed the dividend as you suggested; if that had been done, do you believe that you could have obtained the money?—In 1844 and 1845, I have no doubt of it.

387. Then, of course, a vast saving would have been effected?—Yes.

388. Did that arise from the delay on the part of the East India Company?—I think so.

389. Mr. *C. Bruce.*] I think you stated that to the delay which occurred between your original proposal to the Company and the agreement now existing, you attribute very much the difficulty which you afterwards experienced in raising money?—I trace the whole of it to that circumstance.

390. Do you consider it reasonable that the East India Company should have at once accepted your proposal without making those inquiries in India which were necessary to enable them to judge whether it was objectionable or not?—Yes; I think that we were in a position, and that we did in fact, in 1844 and 1845, submit to the Court as much information as they subsequently acquired by their own Commission, that Commission, in truth, merely confirming the information which Mr. Stephenson had previously obtained.

391. You think that the East India Company, acting as a governing body, and a responsible body, would have been justified in receiving private information tendered to them by parties proposing such a scheme?—I think they would, because I do not think they could have investigated that information without being satisfied of the accuracy of it.

392. Mr. *Cheetham.*] I did not hear when you first applied to the Court of Directors?—At the end of 1844.

393. When did you commence your survey in India?—About September 1845.

394. At the time you made your first application to the Court you had taken no surveys?—We had made a great many preliminary observations, and had sent agents through the whole of the country, and had collected information, I think, from every officer of any station in the service of the East India Company upon every question which could affect the subject.

395. Was the company in a position to come to any decision upon your proposition without the completion of your surveys?—Just as much as they were in

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February 1847, when the surveys upon which the line is being constructed were not made.

396. What time elapsed between your first application to the Court and their consent to your scheme?—We received no assent to our scheme until February 1847.

397. Then the East India Company had been occupied in 1845 and 1846 in their inquiries in India as to this proposal of yours?—Yes.

398. Two years had been occupied by them?—Yes.

399. Do you consider that so much time was necessary?—I consider it was quite unnecessary.

400. To that delay on their part you attribute, as I understand, the difficulties that beset you afterwards as regards pecuniary matters?—I do.

401. Mr. *A. H. Baring.*] How long did the Government of India take to consider the practicability of making these railways in India?—Mr. Simms, the Government engineer, went out in July 1845; our engineer, Mr. Stephenson, returned in June 1846, and we then understood that the Government of India had come to a decision upon the subject; but I am not acquainted with the fact whether they had or not. All I know is, that our proposition of July 1846 received no attention until February 1847.

402. Mr. *T. G. Baring.*] You said, I think, that you thought the East India Company had sufficient information given to them by the railway company in 1844, without referring to India?—Yes.

403. Can you tell me what specific information you refer to?—The information I refer to specifically was a very large mass of statistics obtained by Sir Macdonald Stephenson—then Mr. Stephenson—prior to his returning to England in 1844, and which was made public; I cannot say whether his statistics were published officially or not, but they were ultimately handed to the Court of Directors; they were public documents.

404. Would they be sent by the Chairman of the East India Railway Company, and would they be papers containing the prospectus of the railway company?—It was information obtained quite in anticipation of the publication of the prospectus.

405. Do you think that the East India Company could have investigated the accuracy of these reports in England?—I think there was really very little need of investigation as to the practicability of making railways in India. I do not think that any one acquainted at all with India could have doubted the practicability of constructing railways there. That was one of the points of reference. The only point upon which I think there was any necessity for information was as to the best line to be commenced upon; that, probably, it was desirable to consult the Government of India about; but that need not have stopped our making our financial arrangements. In February 1847, the direction of the line was an open question, but we nevertheless proceeded to make our financial arrangements in concert with the East India Company.

406. The whole subject of the communications between you and the East India Company was with respect to a guarantee?—That was the main point.

407. To enable you to raise your money by borrowing the amount?—Yes; I should say that the Company was never formed with the intention of making any particular railway or railways in India, but it was formed with the object of making any or all the railways which the interest of India might require to be made.

408. Where does the guarantee come from?—The guarantee is supposed to come out of the funds of the East India Company; but I presume, whilst we have a large amount of our capital lying idle in their hands, it is, in fact, paid out of that capital. I am only giving you my supposition. I presume that, having the money, they would in all probability make use of it.

409. Speaking generally, is not the guarantee a charge upon the revenues of India?—Yes.

410. I suppose you would consider it the duty of the East India Company to inquire whether that charge would be properly made before they agreed to give such a guarantee?—Certainly, if they conceived there could be a doubt about the desirability of making railways in India, they would be right in making inquiries, but I do not think that it was at all necessary to refer the matter to India.

411. Have you seen a despatch written by the East India Company to the Governor-General in 1845, and which has been laid before Parliament?—I think

think probably that is the minute to which I have been referring throughout, in which they raise certain questions for the decision and advice of the Government of India.

412. You disagree, so far as I understand, with what the Court of Directors state in that despatch?—I think the whole question might have been settled without any such despatch.

413. You think that the information they had was sufficient to enable them to form an opinion, and that the direction of the line might be settled after the financial arrangements had been made?—Yes.

414. Mr. *H. A. Bruce.*] You stated that the object of the East India Company was to make all railways that might be required in India?—Yes.

415. Was that the scheme first proposed to the East India Company?—Yes.

416. Did the guarantee you asked for extend to all possible lines that you might make, or to one specific line of railway?—The guarantee we asked for was understood at the time to extend merely to the work we proposed to commence upon.

417. Was that work defined during the negociations which took place between 1844 and 1847?—In 1844 and 1845 we suggested that the best line to commence upon would be a line from Calcutta to Delhi and Lahore, with a branch to Rajamahal, on the Ganges; and the result of the commission sent out by the East India Company was, to confirm the view which had been taken in that respect, limiting the first operations to the construction of two sections of that line, one in the Lower and one in the Upper Provinces.

418. The guarantee they gave you referred simply to the capital which was to be laid out in the formation of these two selected lines?—These two selected sections.

419. And had no reference to the whole line which now goes under the name of the East India Railway?—At that time it was confined to the two sections.

420. Now, can you say whether the causes of your inability to make the deposits on both occasions were well known to the Court of Directors?—They were perfectly well known.

421. As I understand, it was known to them that the reason why you did not fulfil your engagement was on account of the general financial disturbance?—The causes of our failure were clearly pointed out to them in our letter of the 23d March 1857.

422. I suppose it occurred to you that the alacrity with which they declined to extend the period for receiving the deposits showed rather an inclination on their part to throw you over?—We undoutedly thought so.

423. Mr. *Stephenson.*] Did the information brought home by Sir Macdonald Stephenson comprise any plans or sections for the proposed line?—No, it did not; but it comprised a flying level of the whole country.

424. With no specific plans upon which an accurate estimate could be based?—No.

425. When did such plans reach this country?—A section of the direct line to Mirzapore came home in the early part of 1847, I think, but the complete plans and sections of the line we are now constructing have never been sent to this country; they have been settled with the local Government.

426. Have you no plans or sections of your line in this country?—The consulting engineers have some plans and sections, but I believe there are no complete plans and sections of the entire line.

427. *Chairman.*] Can you state to the Committee the average amount of money belonging to your company which remains on deposit in the East India Company's treasury?—I cannot tell the average amount, but at the end of last December there was a balance of something like 700,000 *l.*

428. Is that the maximum that has ever been in their hands?—I think not; I think at times it has exceeded a million.

429. So that you are quite justified in the opinion you gave just now, that in point of fact the guarantee is ordinarily paid out of the shareholders' money?—That certainly is the course I should adopt, if I were in the position of the East India Company.

430. Mr. *T. G. Baring.*] Supposing the railway company to fail, who would pay the costs of the failure?—Supposing the railway altogether to fail, the East India Company would be bound to repay the railway the capital expended.

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431. How would they get the money?—That is a question I have not considered.

432. Would it not come out of the taxation of India?—Probably.

433. Colonel *Sykes.*] Is it not the fact that there are constantly occurring demands upon the Company for supplies sent out to India, and that it is absolutely necessary for the Company to retain in their hands a balance to meet these demands?—I do not at all quarrel with the fact of the balance existing. I think that a balance in the hands of the East India Company is absolutely necessary; but what I say is, that that balance is never so affected as to prevent the East India Company paying out of it the guaranteed interest.

434. *Chairman.*] You consider that, in effect, the East India Company stands in the position of a banker to the railway company?—Precisely.

435. And that, in the ordinary course of banking, it is quite open to them to make use of the balance in their hands for the period during which it is in their hands?—I should think they would be quite justified in doing so.

436. Sir *James Elphinstone.*] Was there any probability, in the ordinary course of affairs, of a line constructed in the way proposed turning out a failure?—I think not.

437. Mr. *Hodgson.*] Although the East India Company may take the amount of interest from the deposits which they have in their hands, still they will have to account to your contractors, or your Board, for the whole of the deposit?—Ultimately.

438. And therefore they will, in reality, have paid the interest upon the works during the progress of them?—They will have paid the interest upon the whole of the capital; but I must say they will have made no advance out of our own funds until the whole, or nearly the whole of our capital has been expended. So long as we have a balance in their hands, so long, I presume, they will make use of that for payment of the guaranteed interest.

439. Ultimately they will find that they have paid interest upon the capital during the construction of the works?—We shall be their debtors, subject to certain contingencies for the amount of the interest they have paid.

440. Mr. *Cheetham.*] Will they not, in the meantime, have been receiving interest upon your balance?—I should think so, in all probability.

441. You do not suppose that they would allow your balance to remain idle?—No; but I should say they can only lay it out for short intervals, because at any moment large demands may be made upon them.

442. Mr. *T. G. Baring.*] It would be part of the general cash balance in the Indian Treasury?—I should think so.

443. Mr. *Crawford.*] Do you believe that the East India Company are generally lenders of money in the market?—Yes.

444. *Chairman.*] I presume you can furnish us with an account showing the exact amount of interest that the East India Company have paid upon the capital deposited?—I can tell you exactly; they paid, by way of interest upon the capital deposited by the railway company up to 31st December last, the sum of 1,045,740*l.* 14*s.* 5*d.*, and they have received from the railway company towards the payments of that interest 171,083*l.* 5*s.* 9*d.* out of the profits of the line already opened.

445. Mr. *Cheetham.*] What proportion of profits do you give up to the East India Company?—We give up the whole of the profits until the entire line is completed; and, as soon as it is completed, they take one-half of the surplus profit beyond the guaranteed interest, until their advances are reimbursed; as soon as that is effected we take the whole of the profits.

446. So far as the opening of the line has proved, there is no liability on the part of the East India Company?—Had our line been limited to the experimental section of 121 miles, we should at this moment have been receiving something beyond five per cent., and the East India Company would have had to provide no interest.

447. *Chairman.*] Do the East India Company claim interest upon their advances for the payment of interest?—The contract provides that the East India Company is to receive interest upon the advances of money by them for the payment of interest; of course it becomes a question what these advances may be fairly considered to be.

448. Mr. *Crawford.*] The East India Company have in the meantime a large balance belonging to the East India Railway Company?—Yes.

449. Colonel

449. Colonel *Sykes.*] Has any interest been paid to the East India Company on the ground of advances?—No, it is merely a matter of account.

450. Mr. *Crawford.*] And the East India Railway Company has paid the sum of 170,000 *l.* to the East India Company towards the reimbursement of those advances?—Yes. I should explain the question of interest between us and the East India Company: the East India Company's guarantee is five per cent. upon our capital; and they are to be repaid those advances or payments provided only that the line earns more than five per cent; if it never earns more than five per cent. the interest paid by the East India Company will be a contribution on their part to the success of the undertaking.

451. Colonel *Sykes.*] It will be a loss?—It will be a pecuniary loss, in a certain sense.

452. Mr. *Crawford.*] Do you suppose that the establishment of a line, although it may not pay five per cent., will necessarily be a loss to the East India Company?—No, I think they will reap political advantages by the construction of the line, which will more than compensate for anything they may be out of pocket.

453. Mr. *C. Bruce.*] You think that the pecuniary loss is compensated to the Company by the advantages in other respects?—Yes.

454. *Chairman.*] Have the Company the power of conveying troops and military stores over the line free?—They have not the liberty of conveying them free, but they have an advantage over the public in that respect.

455. Mr. *H. A. Bruce.*] Are they not also landlords of a large portion of the land traversed by this line?—I believe so.

456. Mr. *Crawford.*] Although there may be an apparent loss in figures sustained by the Company, they yet have received, in one form or another, benefits either in the shape of increase to their revenue, or in the shape of charges, which will much more than compensate any apparent loss?—I think there can be no doubt about that.

457. Mr. *Cheetham.*] Supposing the East India Company to be losers by the amount of the deficiency in the interest, you say you consider that that would be a contribution to the establishment of the railway company?—It might be considered a contribution to the establishment of the railway.

458. Is it your opinion that this proposed line will develope the resources of India?—Undoubtedly.

459. Considering that they are the landlords of India, do you consider that that is a duty they ought to perform?—I should not consider their duty limited to the development of the resources of India.

460. That, at all events, you think they ought to have done?—Yes.

461. Colonel *Sykes.*] With regard to the ownership of the land through which the line runs, has or has not the land been contributed by the East India Company gratuitously to the railway company during the term of their lease?—Yes.

462. Free of expense?—Free of expense.

463. *Chairman.*] Starting now with the construction of the works, allow me to ask you the precise date of the turning of the first sod upon your line of railway?—Our staff went out in March 1850; the direction of the line was decided upon by the Government of India in August 1850; we obtained possession of the first 25 miles of land in January 1851.

464. Out of Calcutta?—Out of Calcutta, I think.

465. Mr. *H. A. Bruce.*] What do you mean, when you say that the direction of the line was decided upon?—The selection of the route was left to the Government of India. I was stating that we obtained possession of the first 25 miles of land in January 1851, and we were put into possession of the whole land over the 121 miles in March 1852. We opened 37½ miles in August and September 1854; we completed the whole 121 miles in December 1854, and we opened the whole for public traffic in February 1855.

466. From Calcutta to Raneegunge?—Yes.

467. *Chairman.*] In addition to the opening of that 121 miles, will you inform the Committee what further progress has been made over the whole extent of line?—During the construction of the 121 miles, we concluded arrangements with the East India Company for the construction of the line to Delhi, a distance of 1,164 miles, with a view to its further extension to Lahore. The contract was finally settled in August 1854, and we obtained possession of some amount of land in February 1855. Of that line we opened, or were to have opened, 75 miles in the upper provinces last March.

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468. Between Cawnpore and Allahabad?—Between Cawnpore and Allahabad; and we shall complete a further 50 miles in the same direction in June; that will be the section from Allahabad to Cawnpore; and in the lower provinces we shall open from 21 to 23 miles about the same time. The number of miles opened cannot be taken as any indication of the rate of progress. In my opinion we may open, probably, in the next two years, 500 miles of railway, but it would be as incorrect to say that we had opened them in two years, as it is now to measure the rate of progress by the mileage opened.

469. In reference to this part of the inquiry, allow me to ask what was the precise period at which the alteration in the original direction of the line was proposed by the Government. We understand that the original surveys took the line in a direct course from Calcutta to Mirzapoor?—Yes.

470. Can you tell the Committee when the Government suggested the alteration which has ended in bringing the line round by the valley of the Ganges, *viâ* Patna, and so to Mirzapoor?—I cannot speak positively to the date, but I think it must have been about September or October 1851; I think you will find that the report of Colonel Kennedy, upon which I believe the change was made, is dated January 1851.

471. Do you attribute any portion of the delay that may have occurred in the construction of the line to that alteration?—I do not admit that there has been any delay in the construction of the line. I think that some part of the time occupied in constructing the line is attributable to the alteration in the route, as I think the physical difficulties on the line *viâ* the Ganges are much greater than those we should have encountered on the direct line.

472. You mean to say, that had the railway company been allowed to construct the line according to their original plan, it might have been expected that the direct line to Mirzapoor would have been completed by this time?—I do not go so far as to say that it would have been completed by this time, but I think that a much longer length of line would have been brought into public use before this.

473. Do you think that the commercial and other reasons which induced the Government to propose that alteration were sufficiently important to justify that change in the direction of the line?—My own individual opinion is that they were not; but it is an individual opinion which, I believe, is not coincided in by the railway company.

474. Would it not have been necessary, for the purpose of opening out the resources of that large extent of country, to have constructed branch lines, running off the main line in the direction of Patna?—Ultimately I think it might have been necessary.

475. Can you state what may be considered the measure of time for the completion of the whole line?—I think that whole question resolves itself into the rapidity with which we can construct the enormous number of heavy bridges and flood arches along the Ganges Valley Line.

476. Can you give the Committee any idea of the amount of brickwork necessary for the construction of those bridges?—Between the junction at Burdwan and the River Soane, a distance, I think, of about 400 miles, there cannot be less than 47,000,000 of cubic feet of brickwork.

477. Does that include the gigantic work over the Soane?—That includes, I think, the substructure of the bridge over the Soane.

478. What is the actual length of line, and the probable objects of the line already sanctioned?—The length of line (excluding the line recently sanctioned) to Delhi or Meerut, will be about 1,164 miles.

479. That line which you have excluded, I imagine, is the line recently sanctioned to Jubbulpoor?—Exactly.

480. Can you state the quantity of permanent way materials that have been sent out for the purposes of this line?—The total weight of permanent way materials and bridges for the line is 223,887 tons, which would give a weight per mile of about 193 tons; that is exclusive of sleepers.

481. Does that include the bridging works?—That does not include the superstructures of any of the large bridges.

482. Mr. *Stephenson.*] Does it include the rolling stock?—No; merely permanent way material.

483. *Chairman.*] What has been the cost of that mass of permanent way?—The total cost has been 1,885,671 *l.*

484. Mr.

484. Mr. *H. A. Bruce.*] Is that the cost of the articles?—The actual cost of the materials themselves, without reference to the conveyance of them.

485. *Chairman.*] Will you give us the cost per mile?—The cost per mile, exclusive of freight between this country and India, would be about 1,620*l.*

486. Can you give us the quantity of materials actually shipped?—We have actually shipped of dead weight 202,637 tons, and of what we call measurement, which would include locomotives and rolling stock, 46,779 tons, or in other words, about 220,000 tons of dead weight.

487. Can you give the Committee the rates of freight and insurance paid upon those materials?—The average rate of freight upon dead weight has been 1*l.* 0*s.* 11¾*d.* per ton; upon measurement, including the cutting of about 30 ships, 1 *l.* 17 *s.*, the average of weight and measurement being 24 *s.* per ton; the insurance has been 5 *s.* 0¾*d.* per ton.

488. Can you state the amount of shipping employed for the conveyance of this dead weight?—We began shipping in 1852 to a small extent, and also in 1853, but our principal shipments have been from 1854 up to 1857, and during that time we employed 659 ships. The total number of vessels engaged in the trade between 1852 and 1857 was 1,407, of a burden of 1,057,839 tons; it is generally assumed that about one-third of the measurement tonnage of a ship is available for dead weight, and, that, during these six years, would give us a tonnage of 352,603 tons.

489. I presume considerable difficulty has been experienced in the conveyance of this mass of dead weight up the country?—That has actually been one of the greatest difficulties we have had to contend with.

490. Describe to the Committee, from your own knowledge, what the arrangements have been for the conveyance of these materials?—I think our agents in India have availed themselves of almost every possible means for the conveyance of those materials up the country. A great mass of the materials have gone up the river to Allahabad, and we have entered at various times into contracts of one description and another, but the whole of them have ultimately broken down, and the Board are now considering what are the most efficient means they can adopt for conducting the transport with anything like success.

491. Have you contemplated the employment of any vessels or steamers of your own for the purpose of transporting these materials?—I think originally Mr. Stephenson made some proposition to the Government of India, although I am not very clear upon the point. I think when he went to India, or early in 1851, he made some proposition to the Government to build steamers of a light draught of water for this purpose, but it was not authorised. I have an impression on my mind that that is the fact, but I am not quite positive.

492. Describe to the Committee what your present arrangements are for the construction of your works?—Nearly the whole of the works from Calcutta to Allahabad, or rather from within 45 miles of the junction at Burdwan, were formerly let out to contractors. With the exception of two contracts, at the present moment every contract has failed, and we are now constructing the whole of the works by our own officers.

493. These contracts were not, I believe, entered into with native contractors?—No, but with Europeans settled in India.

494. Can you state the number of different contracts entered into for the construction of works between Calcutta and Allahabad?—The first 46 miles beyond the junction at Burdwan are now, and have always been in the hands of the company; the next 133 miles were in the hands of a firm of the name of Nelson & Co.; the next 156 or 157 miles were divided into two contracts between the firms of Macintosh & Co. and Ward & Co.; and the next 84 miles, in the Soane district, were in the hands of a firm of the name of Burns & Co.; the next 50 miles were in the same hands; the following 95 miles were in the hands of Messrs. Hunt & Co.; and the section from Allahabad to Cawnpore was in the hands of Messrs. Norris & Co. The failures that have taken place have reference to the contracts of Messrs. Nelson & Co., Macintosh & Co., and Ward & Co.

495. Which are the firms that have not failed?—Messrs. Burn & Co., Hunt & Co., and Norris & Co.'s contracts are the only ones that have not broken down.

496. Were any of these contracts offered in the first instance to English contractors in this country?—No.

497. Why not?—The Board's instructions were, that as soon as the surveys were completed, the plans and sections should be sent to this country in order

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that we might publicly advertise for tenders in this country; but instead of our receiving that information, we received these several contracts, which had been entered into without reference to the Board, but with the direct sanction of Lord Dalhousie and the local Government.

498. Mr. *Crawford.*] Can you state generally the dimensions and character of the bridges you have to cross between Calcutta and Allahabad?—The two main bridges, of course, are over the Soane and the Jumna. The Soane bridge is probably three-quarters of a mile in length. The length of the Jumna bridge I cannot tell you, for we have not any surveys.

499. What is the principle of the Soane bridge?—The substructure is made of brick and the superstructure of iron. There was some difficulty in procuring the assent of the local Government of India to the construction of the superstructure of that bridge of iron.

500. Was it not the intention of the engineers of the company in India, under the control of the Government authorities, to construct this large bridge over the Soane entirely of brick?—Yes.

501. By arches?—By brick arches.

502. Why was the idea abandoned?—The idea was abandoned because we positively prohibited it. We were not at all satisfied that bricks could be obtained in such quantities as would lead to the possibility of the bridge being constructed for the next 10 years; and we accordingly wrote to our engineer in India to request that the plans of the bridge might be altered. They were altered, after some discussion and controversy with the officers of the Government, and the iron superstructure decided upon, and shipped.

503. The iron superstructure has been forwarded?—It has.

504. Where was it put together?—At Armstrong's works, in Newcastle.

505. Whose design was it?—Those of the late Mr. Rendel.

506. Is any difficulty apprehended in putting together the superstructure of the bridge in India, after the piers have been built up?—Not the slightest.

507. Is any difficulty expected in the formation of those piers in India for the Soane bridge?—I think, when they have succeeded in making one set of wells, they will have no difficulty with the remainder. They will come to the foundation in about 30 feet.

508. Mr. *C. Bruce.*] What is the foundation?—Clay.

509. Mr. *Crawford.*] In your opinion, what will be the cost of that bridge when completed?—I can scarcely say.

510. What is the contract price of the superstructure?—£. 67,000 or 68,000 *l.*

511. With regard to the other bridges which you have referred to as causing some difficulty on the main line shortly after leaving Burdwan, can you give any general description of the character of those bridges?—The two bridges over the Mo and the Adjie are large bridges; I think one of them is three times the width of the Thames at London Bridge; that bridge is entirely constructed of brick.

512. That is a part of the work under the immediate superintendence of the company's officers?—Yes.

513. What is the name of the gentleman who is employed?—Mr. Sibley.

514. *Chairman.*] I presume the immense magnitude of these bridging works is to be accounted for by the immense sweep of the floods?—During inundations.

515. Mr. *Crawford.*] The course of the line from the Burdwan Junction towards Rajmahal is over a very difficult country?—As the country is much affected by floods.

516. The company, as I understand, has experienced considerable difficulty in obtaining a sufficient quantity of material in the form of brick?—Great difficulty in procuring sufficient quantities of brick within the time they were required.

517. Have the company taken steps to overcome that difficulty?—Mr. Rendel, one of the consulting engineers, has been sent out to see how far it will be possible to apply iron more extensively than was contemplated in making bridges.

518. You anticipate no difficulty, as I understand, in overcoming those difficulties eventually?—None, provided we are allowed anything like freedom of action in the construction of the work.

519. Is any part of the line below Allahabad in a condition to receive its permanent way yet?—No.

520. I think I understood you to say that one of the great difficulties the company

pany experiences at the present moment is in the forwarding of its permanent way up the country?—Yes.

521. May not that difficulty constitute, in point of fact, the key to the period when the line will be opened?—In the upper provinces, I think it will, but in the lower provinces it is a question of brickwork.

522. Mr. *C. Bruce.*] You have stated that the Company gave you the land upon which the line is made; have you any idea of the value of that land?—No, I have not.

523. Colonel *Sykes.*] When the diversion from the direct line to Mirzapoor was made, what were the reasons assigned for the alteration; were they commercial rather than political and military?—I think so; it was assumed that it would be a much easier line of construction, and likely to give a much larger profit. I should say that our own engineer concurred in the propriety of the alteration. I think it took place principally at the recommendation of Colonel Kennedy; he gave some very weighty reasons for the alteration, but I think his principal reason was an impression which he seemed to have that no railway with a less ruling gradient than 1 in 2,000 could by possibility be worked at a profit. I think that really was one of the main grounds of his advocacy of this particular line.

524. It was not, then, from political or military reasons?—I think not.

525. Do you think, consequently, that it will be very advantageous to the company to go by Raneegunge?—My own individual opinion is that it will be less so.

526. Are you aware of the width of the Soane during the time of the inundations?—I should think about three-quarters of a mile.

527. Is it not more than that?—I do not think it is more than that where we propose crossing.

528. Will you not require the substratum of your bridge to be commensurate with the extent of the inundation?—There will be, undoubtedly, an enormous length of flood arching at either end of the approaches, in addition to the piers on which the actual superstructure of the bridge will be placed.

529. You will require a substructure of arches for two miles and a quarter, the extent of the inundations during the monsoon, with reference to a bridge for which you would only require three-quarters of a mile?—I do not think that there will be anything like two miles of flood arching, but it will be considerable.

530. Mr. *Crawford.*] Was not the site of the Soane bridge altered, having regard to the fact that there were high banks on each side?—I cannot speak positively to that.

531. Colonel *Sykes.*] I understand that you will have to descend 30 feet before you come to the substratum of clay?—Yes.

532. Do you consider that the delays which have occurred in consequence of the failure of European contractors have been injurious to the progress of the railway?—Yes.

533. Mr. *Campbell.*] From your knowledge of railways generally, and East India railways in particular, do you consider that the lines of railway have been established more with reference to the established march of commerce than with regard to the general population of the country?—I think the choice of direction has been very fairly made, and that all three objects are attained by the lines that have been laid out.

534. Mr. *Cheetham.*] What is the increased distance caused by the altering of the original scheme?—From 120 to 130 miles.

535. Part of that deviation has led to increased difficulties in the route, has it not?—I think so; I think all the difficulties that we have met with from the heavily inundated nature of the country we should have avoided in the direct line; but no doubt we should have had other difficulties. We should have had steeper gradients, and consequently heavier cuttings; but I do not think we should anything equally difficult of construction as that which occurs by the line *vid* the Ganges.

536. You come there, do you not, in direct competition with steam navigation?—I should scarcely call it competition; I think one will assist the other.

537. You do not expect that the river navigation will prove any detriment to your line?—No.

538. What is the state of the country as regards population on the direct route to Mirzapore; is it populous?—The line, right away to the Ganges, taps a large

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number of towns and villages, which it would not have accommodated if the line had been made direct.

539. What is the nature of the country on the direct line as regards agricultural produce?—I think the lines are very much the same in that respect.

540. You have added 120 miles to the line in order to go through a larger population?—And to avoid gradients which were considered to be impracticable; but the effect of going a greater distance will not be felt until the line is open from Delhi or Meerut to Benares, because the whole of the traffic coming to, or going from, that district will have to pass unnecessarily over 120 miles of railway; that is my principal objection to the circuitous route.

541. Have the Government, in a military and political point of view, great advantages in the existing line over the direct route?—I think the Government would have derived greater advantages by taking the direct line.

542. You are not aware whether Colonel Kennedy was influenced by military and political reasons for suggesting the longer route?—No; I think his views were rather commercial and engineering than anything else.

543. You stated that your opinion was, that the commercial advantages of this change of route were not sufficient to counterbalance the disadvantages?—I think so.

544. Looking at it in a commercial point of view, you think that corresponding advantages are not gained by that route?—I think not.

545. And you have 120 miles extra over which to carry your produce?—Yes.

546. You have stated the average cost of freight from this country is 24 *s.* per ton?—Yes.

547. You say that there is an extra cost of 20 *s.* per ton arising from the deviation in your line?—I say that the additional mileage will involve an additional cost of about 20 *s.* per ton to the public.

548. Which deviation was made at the suggestion of the East India Company?—Yes; but I am bound to add, that it was finally concurred in by our engineer. I am not quite clear that I do not stand alone in the opinions I entertain upon this subject.

549. Mr. *Hodgson.*] When you say that this line will occasion an increase of 20 *s.* per ton in the expense, do you take into consideration the economy which will result from working the easier gradients on this line?—I do not think, practically, that we shall work at any greater expense on the present line than we should have done if we had made the direct line.

550. You say that the gradients are much easier on the present line?—They are, undoubtedly.

551. Is it not a necessary consequence that the working will be more economical?—That depends, I think, upon circumstances.

552. Is it not so, as a general rule?—As a general rule, we have no difficulty in this country in working gradients of 1 in 300, or less than that.

553. In your opinion, the improvement of the gradients will not compensate for the greater distance you have to travel?—I think not; because I think that while we adopt a line made to get better gradients, we add to the capital cost of the line.

554. You have informed us that most of the contractors have failed; do you know whether there is any particular reason for that?—I think the real cause was, that they embarked in undertakings quite beyond their means. They really knew little or nothing about railway construction, and they could scarcely tell what they were embarking upon; altogether the contracts were ill advised.

555. You consider that there were no extraordinary circumstances to explain the failures?—I think probably, in the case of the Rajamahal district, where the parties were considerably affected by the Sontal rebellion, there might be some reason for their being obliged to give up their contracts.

556. In your opinion, did the company sustain any great disadvantage from the contracts being let in India without having first submitted them to competition in England?—I do not think that they were taken on terms that were too high, but I think that no terms can be satisfactory which bring about a failure; because it would have been far better for us to have commenced the work in the first instance than to have to take up the work from other people. That is an important consideration in India, because we have great difficulty in inducing one set of workmen to take up work which has been left by others.

557. You think that that difficulty would have been avoided if you had had an opportunity

opportunity of offering the contracts for public competition in England?—Assuming that those who took the contracts would perform them satisfactorily.

558. Mr. *H. A. Bruce.*] I presume that under any circumstances you would have continued the line to Raneegunge?—We should have gone right through.

559. Would you have made the line to Burdwan if you had at the first decided upon the Ganges line?—Yes, we should; we should have made it as a branch, to accommodate the large coal fields.

560. You have stated that the alteration in the route has led to your making 120 miles of additional line?—Yes.

561. I presume that, if you had adhered to the original and direct Mirzapoor line, it would have been part of your plan, by branches, to connect your line with the great towns?—It was part of the scheme to make branches to Rajamahal and to Patna.

562 Do you recollect what the worst gradients on the direct line were?—I think there was a gradient of 1 in 65 for a distance of, perhaps, 10 miles out of 1,000.

563. Do you recollect what was the highest point above the level of the sea?—I do not.

564. You say that one item of cost in the formation of the Ganges line was the number of large rivers to be crossed?—Yes.

595. Is it not a fact that the Soane, at the point at which the direct Mirzapoor line would have crossed it, is much broader than the point at which the new line crosses it?—It is broader.

566. In the proportion of three-fourths of a mile to two miles and a quarter?—I think not.

567. Is it not so stated in Colonel Kennedy's report?—It may be.

568. Can you explain how it is that the distance, as I understand, from Calcutta to Delhi by the direct road being 880 miles, the length of the railway is 1,164 miles, although the increase of distance by the Ganges line is only 120 miles?—The distance from Calcutta to Benares is 566 miles.

569. By the railway?—By the railway; and the distance by the direct road is 430 miles; the difference exists between Benares and Calcutta.

570. Can you account for the immense difference of distance between the railway to Delhi and the road to Delhi, a difference of 300 miles?—I cannot at this moment; it may arise from deviations to take in particular towns.

571. Mr. *Stephenson.*] And which places the river does not accommodate?—Which places probably the river does not accommodate.

572. Mr. *H. A. Bruce.*] According to your opinion, the line by the Ganges sacrifices the upper districts to the lower districts?—Yes.

573. Have you calculated what the relative cost of conveyingma terials is, as between England and Calcutta on the one hand, and from Calcutta into the interior on the other?—I do not think we have conveyed any materials up to Allahabad at a less cost than from 25 *s.* to 40 *s.* per ton; and the cost between England and India has been 24 *s.* As regards rails, the cost of conveyance between England and India was 1 *l.* 0 *s.* 11 *d.* only.

574. Mr. *Stephenson.*] Were all your contracts made in India?—All of them: we had no opportunity of passing any opinion upon them here.

575. As I understand, neither the plans, nor the schedule of prices, nor the conditions of the contracts, came under the observations of the Board in this country?—They did not come under their observation until it was too late.

576. What do you mean by that?—The works were commenced upon before we received copies of the contracts.

577. Are you continuing to let contracts on the same plan?—No; we are constructing the works ourselves, with the exception of those contracts that have not broken down.

578. You have no contracts in prospect?—No, we have no contracts in prospect on the main line.

579. From the experience you have had on the contract system conducted on your line, would you recommend any other course, supposing you had to begin the work again?—Yes, I undoubtedly should. I should first of all have our own surveys and our own estimates, and I should take care that those plans and sections were sent to this country. I should then, of course, lay the plans and sections open, and should advertise for tenders in this country. In accepting or

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rejecting tenders, I should look at the prices as compared with our own estimates.

580. You say you would have plans and sections made by your own engineers, and sent to this country?—Yes.

581. Who made the sections and plans of the original contract?—Mr. Turnbull.

582. He was your own engineer, was he not?—He was, and is still.

583. So far as the preparation of the plans and the conditions of the contract is concerned, they would be the same as they were originally?—The conditions of the contract might be modified a little.

584. The modification you would suggest would be merely in sending the plans and sections here, and in advertising for tenders?—Yes, that was the mode of procedure.

585. Mr. *Crawford.*] Did you not take that course in reference to the Jubbulpoor line?—Yes.

586. Mr. *Stephenson.*] I suppose you are aware that other Indian railway companies have adopted the plans you are now suggesting?—Yes.

587. Is not that the case with the Bombay line, for instance?—Yes.

588. With regard to the extra 120 miles that you have spoken of, you say there are steep gradients of 1 in 65, for a distance of two or three miles?—Yes, for perhaps 10 miles.

589. Do you know what would be the ruling gradient upon that line?—I think it might be constructed with a ruling gradient of 1 in 300; the Government will not allow a worse gradient than 1 in 500. In one case of a cutting through the Seetapahar Hills, between Rajmahal and Colgong, they made a concession, and allowed a gradient of 1 in 200, and we saved something like half of the earthwork in consequence.

590. Mr. *C. Bruce.*] You were asked about branches, which, had the direct line been constructed, it might have been necessary to make; I believe the connexion of the main line with the Ganges, commercially speaking, would be highly advantageous to Patna as a large place?—Yes.

591. What length of line must have been made between Burdwan and Rajmahal?—I think from Burdwan to Rajmahal it is about 128 miles.

592-3. What is the distance from the upper crossing of the Soane at Patna?—I do not know.

594. In point of fact, by the change of line and the distance necessary for the development of that country from Burdwan to Rajmahal, 180 miles have been saved, and from the crossing of the Soane probably about one-half that distance, that is to say, 250 miles have been saved by the addition of 120 miles to the direct line?—Except that, I think ultimately the direct line will still be made.

595. You were asked about the nature of the country through which these two lines pass; did I understand you to say that the two routes were very similar in their character?—The nature of the country in the direct line is more hilly and wild, and to some extent jungly.

596. And uncultivated?—To some extent.

597. Is it a very populous country?—No.

598. I believe the new line goes through a cultivated and populous country?—Yes.

599. The line originally proposed would have gone through a wild and uncultivated, and I believe in many parts of it an uninhabited country?—I do not know whether it is uninhabited. No doubt, as a commercial line, the circuitous line at first sight appears to show the greatest advantages, but I do not think that it possesses them.

600. Mr. *Cheetham.*] Have not Rajamahal and Patna already communication with Calcutta by railway?—Yes.

601. And the other places have not?—They have what is called the present Government-road, but they have no other means of communication. Perhaps I may give the Committee some idea of the difficulty of transport along that road, when I tell them that at this moment they are asking 15 rupees for the conveyance of one rail from Calcutta to Allahabad.

602. Of course the direct line, if made, would have been completed much earlier to Mirzapoor than the existing line?—I think so.

603. Colonel *Sykes.*] Do we understand you to say that the Government would not sanction a steeper gradient than 1 in 500?—They have hitherto refused.

604. What

604. What is your authority for that statement?—Our correspondence from India and the evidence of our engineer.

605. You are not speaking of correspondence with the Court?—No; we have never raised the question with the Court.

606. The direct line runs through a less populous and more jungly district than the circuitous line; does not the circuitous line embrace a greater number of commercial *entrepôts* than the direct line?—Yes.

607. Mr. *Crawford.*] Your notion is, that a line to Mirzapoor could have been constructed already, upon what may be termed the telescopic principle?—Yes; instead of having to meet the enormous expense and the enormous difficulties in the transport of materials along the river, I think that had the line taken the direct course we should have opened a much longer length of line for public use by this time than we have done.

608. Mr. *Stephenson.*] Supposing you make the first 50 miles of railway, you must necessarily, in the construction of those 50 miles, convey a very large portion of the materials over bad roads?—We had the existing trunk road, which is a good road.

609. Then when you finished this 50 miles, you bring your rails to the end of these 50 miles?—Yes.

610. And then you must repeat your operation as regards the next 50 miles, you would not necessarily, as suggested, make the railway on telescope principles?—The railway would not convey the whole of the materials for the next succeeding length of line.

611. You would only be able to avail yourselves of these 50 miles of railway when it was constructed. You began with the next 50 miles as you would with any 50 miles of railway in any part of the world?—Yes.

612. Would not that be simply conveying by common roads all the materials for these 50 miles?—For the second 50 miles; but every succeeding 50 miles completed would save so much transit along the common road. Conveyance by road does insure you some protection against loss, whereas losses are constantly occurring on the river. No sooner does a boat arrive at any particular village where the boatmen have friends, than they simply abandon the boat and materials, and there the materials lie perhaps for months during the whole of the rainy season, until the next dry season, when we have to re-collect them at great expense; it is scarcely possible to estimate the cost of conveying those heavy materials by the Ganges.

613. Mr. *C. Bruce.*] Is there any insuperable difficulty in your adapting the principle, so far as it goes, as you go on, to the construction of the present line?—I do not think there would have been any difficulty; I think there has been a great mistake made in commencing operations over so great a length of line at one moment.

614. *Chairman.*] Before we proceed to another branch of the question, allow me to ask you, was there any opinion prevalent in India that the works might have been executed in a much shorter time than actually was the case?—I gather from the fact that Lord Dalhousie, or the Government of India, actually sanctioned contracts under which the whole 1,164 miles were to be made in two years, that therefore they considered that it was much easier to make railways in India than we have found it at home. That is one of the points of objection we have always entertained to the contracts entered into in India. It was, in fact, impossible to have delivered the materials in India in time to ensure the completion of the works in two years, and subsequent events have showed us that if we had delivered the materials it was impossible to have forwarded them up the line.

615. Mr. *C. Bruce.*] You have adverted to the beneficial effect of the pressure by the press upon the Government. May not the same pressure have led to the exercise of that control, the disadvantages of which you have pointed out?—I do not think that it had any effect at the time.

616. Mr. *D. Seymour.*] Have you ever in this country been refused permission to make a gradient less than 1 in 500?—Not in this country.

617. I believe a general order about the gradients was made three or four years ago?—Yes.

618. Under the recommendation of Lord Dalhousie and Colonel Kennedy, as consulting engineer?—Yes.

619. Are you not aware that that was altered by the Government of this country?—I was not aware of that fact. I am aware that the local Government

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has never, with the exception of the particular cutting I have referred to, allowed us to construct a gradient less than that which I have stated.

620. You are not aware that as soon as the Home Government heard of it, they said it was inexpedient?—I was not aware of the fact; I am glad to hear it.

621. Was there not a report from your engineer, saying that at the present rate of progress, the East India Railway Company, as far as Rajmahal, could not be opened for 17 years?—Some time since, in consequence of a large loss of bricks by some unexpected floods in the Rajmahal district, our engineer wrote home to tell us what the probable rate of progress would be in making the bricks, and we deduced from that information that it would occupy from six to seven years to complete the line from Burdwan to Rajmahal; and that, if the same difficulties existed in what we call the Keul and Hullohur districts, the necessary flood arches within those districts could not be completed for 15 years. We assumed that from the rate of progress they were making on the Rajmahal district.

622 How was it that you had no brickmakers out there?—We have been making bricks at a tolerably satisfactory rate of progress, though not nearly quick enough for our purposes. Our engineers designed the work in brick because they were given to understand that brick would be the cheapest material; they could have but little knowledge of the local resources of the country, and we confess it was a great disappointment to us that the Government officers, who ought to have possessed that local knowledge, did not communicate it to us.

623. Mr. *Crawford.*] I gather from what you have said about the limited experience of railway engineers as compared with those in the Government departments, you are of opinion that if the Government engineers sanction any course of proceeding a considerable amount of responsibility would devolve upon them?—I think so; I think that if the supervision exercised by the Government is to be of any service it is to be in such matters as this.

624. When did you commence your works upon the Rajmahal district?—Somewhere about June 1853.

625. In fact, the experience of your engineers only dates from 1853 as regards the manufacture of bricks in that district?—I do not know that I should limit it to that date, because they have been in India since 1850; I confess I do not altogether acquit our engineers of blame: they should have reported the probable scarcity of bricks before.

626. Colonel *Sykes.*] Have your works been interrupted by the recent disorders?—They have been entirely stopped. We suffered severely from the Santhal insurrection; I should think it threw us back in our operations for some 12 months, and in fact the evil influences resulting from that are not yet at an end. By the recent disasters our works were stopped from May to December.

627. Mr. *Stephenson.*] In speaking of the Soan bridge, and the delay caused by the alteration, you said it would be completed by a certain time provided you were not interfered with?—I was speaking then of the bridges and the flood arches on the line between Burdwan and Rajmahal. What I said, or meant to say, was, that I believe there would be no difficulty in completing that line at an early period, provided our engineers were allowed something like freedom of action in the construction of the works, and if they were not circumscribed and limited in their proceedings by the Government engineers.

628. What is the nature of the control or interference which the Government engineers have the power of exercising?—They have the power of exercising a control upon the minutest points, and whilst they exercise that control as agreeably as it is possible to exercise it, they undoubtedly avail themselves of their power to the fullest extent.

629. From the reports that you have had from your engineers, you believed that that produces delay, and is of great prejudice to the Company?—I think the effect is decidedly prejudicial.

630. Mr. *T. G. Baring.*] Has it produced delay?—I think it has, but not to such an amount as to be of any great importance.

631. *Chairman.*] I pass now to another branch of the enquiry, and I wish you to give the Committee some information as to the extent of your European staff in India at this moment?—We have 111 engineers, 48 inspectors, and 97 Europeans in our locomotive and traffic departments.

632. I wish to ask your opinion as to the advantage or otherwise of the Government supervision, and its general effect in India?—Looking at the relations

tions which exist between the two bodies, I think it is reasonable that the Government should possess the right of supervision, and moreover, I think the supervision would be highly advantageous to the railway company if exercised rationally. I think it is carried to too minute a point in India; I think our engineers are unnecessarily interfered with. I think they are called upon from morning till night for papers, returns, explanations and documents, which materially retard the progress of their operations, and moreover it creates a kind of depression, and a certain want of energy which is unsatisfactory. I think that is the great evil of the supervision as exercised. I am bound to say that, had it not been for the extreme desire on the part of the Government officers to carry the work forward, and their extreme courtesy and gentlemanly bearing throughout these proceedings, I consider that the thing must have been brought to a dead lock before this. The extent to which I think the supervision should go, is this; that a principle should be agreed upon; any given work should be estimated for, and the estimates having been once agreed upon, the actual construction and carrying out of the works should be left entirely to our officers.

633. In the event of the sections and plans being submitted to Government approval in the first instance, I presume you would have no objection to an audit of the accounts from time to time, in order to check any extravagant expenditure, provided you were left free without any interference to obtain stock and materials?—I think such an audit would be highly desirable, in fact, I should ask for such an audit as that, because none of us are any the worse for a little checking.

634. You are of opinion, as I understand, that the Government might by adopting that course, ensure all the necessary protection against extravagant expenditure on the part of the company, whilst at the same time you could carry out your works with much greater expedition than you can at present?—Yes; we have been at immense pains to collect together, perhaps one of the best staffs of engineers possible; but I do feel that the whole or nearly the whole of their practical experience is frittered away under the existing system of supervision, and that we might have had a very much lower class of men altogether.

635. I presume you have been in communication continually with your engineers; can you inform the Committee whether they have felt a certain amount of soreness and irritation in consequence of being superintended by gentlemen for whom they have the greatest respect as gentlemen, but whom they do not consider qualified to superintend the works which they were constructing, from the want of the necessary education for that purpose?—That is so. Every one of our engineers who has been sent out, arrives in India with the belief (whether it be so or not is not for me to say), that his practical experience is far greater than that of the man to whom he has to submit his plans, and he really has, rightly or wrongly, no confidence whatever in the decision arrived at by the engineers of the Government, who are military engineers. I think that most of the irritation which undoubtedly has existed, and still exists, would have been avoided, had the supervision been entrusted to the hands of a civil engineer.

636. Might not a military engineer complain of having a civil engineer placed over him when engaged in the construction of military works, with as much justice as a civil engineer now has, in finding a military engineer placed over him when he is constructing tunnels, earth works, and matters of that sort?—I think so.

637. Can you tell the Committee whether there has been any refusal on the part of the Government to sanction an increase of the working staff in India, upon the requisition of the chief engineer?—Yes, owing to the failure of our contractors in India, a considerable amount of work devolved upon us, and Mr. Turnbull stated it was necessary that his staff should be increased by an addition of 25 per cent. The Government refused positively to allow that addition, and the question was submitted to the home authorities; but whilst the Government stated Mr. Turnbull's demand to be excessive, they did not state what, in their own opinion, would be reasonable, so that when it came here we were in some difficulty as to the settlement of the question.

638. What were the grounds upon which the Government supported their objection?—Simply that they did not think the amount of engineering supervision which he considered necessary was absolutely necessary to the due execution of the works.

639. Can you state what has been done in consequence of that objection on the Government, and how the matter stands now?—When the question was referred

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home we placed the matter before the Court of Directors, and we suggested, that, pending the information we required from the Government of India, as to their views, we should commence at all events by adding 10 per cent., upon our own responsibility, which the Court acquiesced in, and the additional men were sent out. We referred the matter back to India last August, and, until very recently, the Government and Mr. Turnbull were not in accord as to the right number, and we have heard nothing more of it. Just at this moment I happen to have a letter which is very pertinent to the question, and which is addressed by Mr. Turnbull to our agent at Calcutta, under date 21st January 1858; it is with reference to an additional amount of assistance which he required in the Rajmahal district; he says, "I forward an indent, No. 612, for six additional assistants at 300 rupees each, for the middle Rajmahal district; I am not aware whether the indents for establishment have been filled up; but from Mr. Vigor's silence on the subject, I presume that such is the case. I lose no time, however that may be, in asking for more assistance on that division of the railway, 25 miles in length, under Mr. Vaux; it is on this part that the difficulty exists which will prevent the railway from being opened to Rajmahal. The district is, as I mentioned in a former letter, very sickly, and it is highly desirable, indeed it is absolutely necessary, unless we allow the works to stand still, that we should have extra hands to take the place of those who fall sick or die. Mr. Vaux's best man, Adams, I deeply regret to find is very dangerously ill; Crispin and Low are laid up with jungle fever, and Lefroy and Downward are sickly and not good for much. The enclosed extract of a letter from Mr. Vaux, dated the 18th instant, gives a clear account of how matters stand on the division; it is a lamentable and most unbusiness like condition in which we are placed, that we cannot meet such emergencies at once. I assure you the work languishes in consequence of the necessity we are in of making so much correspondence and applications for so simple a matter as an extra hand or two; Mr. Vaux has been, as I have been, for years in the service of contractors at home, and I can state as a fact, that men in such positions have full power to engage and to discharge as many assistants as they consider necessary for the purpose; the circumstance of a man being placed in charge of a work implies, to my thinking, that he is capable of judging what aids are necessary in foremen and clerks; for myself, I hope you will not think it irrelevant if I mention that I was the contractor's sole manager and engineer on the great dock works at Birkenhead, unquestionably one of the greatest and most important public works in England. The arranging and settling the number and pay of my own foremen, gaugers, clerks, &c., as a matter of course, fell on my shoulders, and with it the responsibility thereof. You may be well assured that sluggishness and slothfulness were not tolerated there, nor were there more hands appointed than the work required. A superfluity of overlookers being, as it is well known, almost as bad as a deficiency of them. Here, I am not aware that I have the power of appointing a man on 20 rupees a month, without formal representation of the why and wherefore. Doubtless there may be found places on the railway, and I could name several long lengths of easy work, where the delays for requisitions for necessary things are little or almost unappreciable; but in such places as the Rajmahal middle division, in the Hallohur Division, and also in the Ghogah Valley, between Bhaugulpore and Colgong, contingencies arise, and will arise, which must be met boldly and promptly, without reference to any authorities except those on the spot. At present, we have Mr. Cockburn's operations at the Hallohur almost paralyzed, because he has no leave to put up bungalows for his people about him, who are huddled in a tent and a ruinous mat bungalow, the indent for the bungalows having been disallowed pending a return of the whole required over nearly 300 miles, which it is next to impracticable to make for some time to come, with any accuracy. I could continue instances to the same purpose throughout the works; the above, however, will suffice to show you, in connexion with former letters, how we are situated, and the wearisome delays under which we suffer; and will also prove that responsibility as to time, in completing any part of the railway, cannot rest with any of the railway company's engineers."

640. Have many letters similar to that been received from engineers in India?—Yes; there are several letters of the same kind.

641. Which have been received lately?—Not lately; this is the last letter of the kind.

642. Can

642. Can you furnish us with copies of any other letters, of a similar import to that which you have just read, received from engineers in India upon the subject of Government interference, within the last two years?—I can do so.

643. Did you, on the receipt of that letter, make any representation to the Board of Directors on the subject?—It was arranged at our Board, at which it was read, that a copy of it should be sent, as a matter of record, to the Board of Directors; but, since the receipt of it, we hear that the assistance asked for has been conceded; in the meantime, we shall send it to the Court, that they may see how matters are actually conducted.

644. Mr. *Stephenson.*] The Court, as I understand, has not assented to the assistance which Mr. Turnbull originally applied for?—They have not; Mr. Turnbull asked for a certain amount of assistance; the Government of India said it was excessive, without saying what it ought to be; but the Court concurred with us in adding 10 per cent.

645. Mr. *H. A. Bruce.*] When Mr. Turnbull applied for authority to build bungalows to shelter his contractors and workmen, the answer you say was, "Send us a report of how many will be required over the whole district"?—Over 300 miles before they would give authority to build one.

646. Mr. *T. G. Baring.*] Did the railway company bring their complaint before the East India Company?—These complaints have been received by the last mail, or the one preceding.

647. I thought you said you had sent a copy of that letter to the East India Company?—We intend to do so.

648. Then you have not represented those circumstances to the East India Company?—Only so far as the fact may have been communicated through the *ex officio* director who sits at our board.

649. Mr. *Crawford.*] The letter you have read is addressed by Mr. Turnbull, the chief engineer, to the Company's agent at Calcutta?—Yes.

650. And it is forwarded by the agent at Calcutta to the Board in this country, for their information?—Yes.

651. What is the ordinary practice with regard to the transmission of letters, and copies of letters and reports from India to this country?—Every month we receive copies of all important correspondence which takes place between our agent in India and the Government officers.

652. Those are submitted to the perusal of the members of the Board?—Weekly.

653. And considered separately?—Such parts of them as are considered necessary, are taken into consideration.

654. Sufficient time has not elapsed, I presume, for the consideration of that letter?—No.

655. How long has it been in your possession?—I cannot tell without referring; I think it came here the mail before last.

656. Sir James Melvill, as *ex officio* director sitting at the Board, is cognizant of all these matters of complaint or representations on the part of the agent at Calcutta to the Board here?—Sir James Melvill knows precisely all that we know on the subject.

657. Mr. *Danby Seymour.*] He saw the letter?—He saw the letter.

658. Mr. *Crawford.*] The Board, as I understand, has been in the habit of communicating all these matters to Sir James Melvill, with the full knowledge that he made representations upon them to his superiors?—Under the impression that he did so.

659. It is also the practice of the Board, I understand you to say, to make specific representations to the India House by way of letter, upon matters requiring immediate and serious attention?—Yes.

660. Mr. *Danby Seymour.*] Mr. Turnbull's report upon the state of the railway, received some time ago in this country, was not, I believe, considered satisfactory by the authorities?—Not with reference to the brick-work.

661. Or as to the general delay in the completion of the line to Rajmahal?—Certainly not.

662. The sudden demand for an addition of 25 per cent. to the number of agents was rather a large one to come at once, was it not?—If you were to read Mr. Turnbull's explanation, I do not think you would consider the demand at all excessive.

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663. How was it that the demand was not made years ago?—Because the work had not fallen into our hands.

664. Your people must have known whether the contractors were able to perform their contracts or not; I suppose they did not fail all at once?—They did not fail all at once; but it is much easier to get into a contract than to get out of one, and there were very difficult negotiations going forward with contractors, which, as it happened, were all brought to a point almost simultaneously.

665. Do you not think you ought to have been better acquainted with the state of things than you were?—Upon the question of the brick-work, I think we ought to have been better informed, and we have written to say so.

666. Ought you not to have been better informed also upon the subject of earthworks?—No; I think we knew all we wanted to know.

667. I think something has been said about a refusal to sanction estimates for the erection of bungalows for the engineers?—That is mentioned in the letter that I have read.

668. Are you not aware that the estimates for bungalows for engineers have appeared excessive to the authorities on many occasions?—They may have appeared excessive to the authorities, but it does not follow that therefore they were excessive.

669. Are you not aware that on many railways in this country there was an enormous outlay for stations and otherwise, which is not allowed now?—I think railways are constructed with much greater economy than they were.

670. Do you not think that the Government ought to exercise proper supervision, when the engagements are at a distance from this country, when of course supervision is more difficult?—Yes; but I think that supervision should be carried out by persons competent to form an opinion.

671. Those who guarantee the money must ultimately have the judgment, must they not, as to what is excessive and what is not; they must have a check upon the expenditure?—Hence, their responsibility, I think.

672. Is it not the case that the railway company is constantly wishing for an increased expenditure, which has been as constantly refused, to a certain extent?—The railway company has been under the necessity of applying, from first to last, for an increased expenditure, because the expenditure sanctioned by the Government has never been sufficient for the purposes of the company; there has been a system of cheese-paring, which is most prejudicial to the carrying out and execution of the works.

673. *Chairman.*] With reference to the failure of the contractors, have you any reason for supposing that the almost simultaneous failure of such a large number of contractors arose from apprehension arising in their minds caused by the state of the country?—I think that has been an element; but I think the real cause is found in the fact, that they never were competent to carry on the works they undertook.

674. Previously to your entering into these important contracts with the contractors, had you taken all the necessary steps to ascertain their competency to fulfil their engagements?—Those steps ought, no doubt, to have been taken by our agents in India.

675. Were the names of those contractors furnished to you by the Government authorities in India?—I cannot say.

676. How could we obtain that information?—If Sir Macdonald Stephenson were examined, he would probably be able to give you information upon that point.

677. Were these contracts, when first made with these parties, made with the sanction of the Government authorities?—Distinctly.

678. Mr. *Stephenson.*] With reference to the increase necessary in the engineering staff, after the contracts had been transferred to your hands, would a fair per-centage of the superintendence which had been employed by the contractor himself in carrying on his works, have been a reasonable addition to the former engineering staff for carrying on the works?—I understand the question to be, whether, supposing we had adopted the contractor's staff, that would not have given us all the assistance we required; my reply to that is, that one of our greatest causes of complaint against the contractors has been throughout the want of a sufficient number of European superintendents.

679. You think the contractors themselves had an insufficient amount of superintendence?—No doubt.

680. And therefore if you had made an estimate of the amount of superintendence employed by the contractors that would have fallen short of the number which the engineers ought to have added to their establishment?—It would.

681. *Chairman.*] As the Government authorities undertook to control and supervise the proceedings, do you not consider that it was part of their duty to satisfy themselves of the capability and character of the contractors to perform their engagement?—Seeing how the supervision is carried out, I think that in all matters relating to these contracts, relating to any matters whatever in India, the Government must be jointly responsible with the agents. I think, in fact, that the only use to be derived from supervision is a check upon our agents, and if the Government assent, as a matter of course, to their proceedings, they must be held jointly responsible. We find they do not hesitate to exercise supervision upon trivial matters which had better be left alone.

682. Mr. *Danby Seymour.*] Do you mean that the Government is to bear half the loss if a contractor fails?—No; I do not mean that they should be pecuniarily liable.

683. *Chairman.*] I understand you are not at liberty to enter into contracts with any persons resident out there, without the sanction of the Government?—No.

684. Mr. *Danby Seymour.*] When the Government refused to sanction an increase of 25 per cent. to the number of agents, I believe they gave you leave to send out Mr. Rendel to ascertain how matters stood out there?—The Court never refused to sanction the additional 25 per cent. It was the Government of India which refused; but they omitted to say what they would sanction. We discussed the question at our Board, and the Court at once agreed to add 10 per cent.

685. Did they not authorise you to send out Mr. Rendel?—Not in reference to the question of staff; his mission was chiefly upon the question of bricks.

686. The question of bricks seems to me to be mixed up with the whole construction of the railway, which was delayed in an unsatisfactory manner; do you not think that the refusal of the Government of India to sanction that 25 per cent. was equivalent to saying that they did not approve of the manner in which the works were going on?—I do not take that view of it.

687. Was not the mission of Mr. Rendel to report how the railway was going on?—No; his mission was to act in consultation with Mr. Turnbull and the Government officers, and to devise some means of doing away with the necessity of using such vast quantities of bricks. I hear from private information, that our engineer, Mr. Turnbull, has been long anxious to employ a much larger amount of iron in the construction of the works than was agreeable to the Government officers, and we thought that if Mr. Rendel went out with the latest experience from this country, he could convince the Government officers there that the use of iron to a much greater extent than they wished, would be of advantage, and would save a great deal of time.

688. When you found that your officers ought to have kept you better informed, what step did you take?—We wrote out, complaining of the delay which had taken place in making their representation to us.

689. Is that all that you did?—That is all that we did.

690. Did you write more than one letter?—We wrote two letters, I think.

691. And you took no further steps?—We took no further steps, that I remember.

692. When did you write those letters?—It must be some three or four months ago.

693. Not more than that?—No, I think not.

694. The reports which were considered unsatisfactory came home last year, did they not?—They came home, I think, towards the latter end of the year.

695. And you did not write your letters until three months ago?—I am not quite clear as to the dates when those letters went; they were detained at the India House, I think, between one and two months.

696. When you have works conducted at such a distance as that, you must make your authority well felt from here, must you not?—I think so.

697. And if your letters are disregarded, you must take rasher steps?—That depends on the circumstances of the case.

698. Mr. *Crawford.*] The sending of Mr. Rendel to India was a spontaneous act on the part of the Board, was it not?—Yes.

699. They suggested that step, and enforced it by letter upon the consideration of the Court?—Yes.

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700. Has it not been the practice of the authorities in India in all instances to recommend the use of brick in their constructions?—Yes.

701. Has it appeared to you that that use of bricks has been rather forced than otherwise?—Yes; I think it has.

702. With regard to the supervision in India, supposing the railway authorities in India are in want of an increase to their establishment, as has been already discussed, or of a supply of railway materials, or if they see occasion to raise the salary of any of their officers in India, which they cannot do without the consent of the Board in England, what is the step taken to procure the carrying out of their wishes by the Board in this country?—The chief engineer first sends an indent for whatever he may require, to our agent in Calcutta; the agent sends it to the consulting engineer to the Government; the consulting engineer to the Government sends it to the Secretary of Government in the Public Works Department; it is then submitted to the council, and it is ultimately decided on by the council, and comes back to us through the same channels. If it is a question of supply from England, it goes to the Board; and the Board, until very recently, had to send it to the Court; the Court kept it perhaps from 10 days to 30 days, and it then came back to the Board and was acted upon.

703. The railway authorities have no power to increase the salary of any officer in India, without the sanction of the Board here?—No.

704. Before the sanction of the Board is given here, it is necessary that their recommendation to increase the salary should be concurred in by the Government of India?—Yes.

705. In the same way, I believe, nothing whatever can be sent out to India, upon the requisition of the railway authorities in India, without the written assent and concurrence of the Governor-General of India in Council?—No.

706. Mr. *D. Seymour.*] When you say that the Railway Board has no authority to increase the salary of any officers, are you aware that that same regulation exists with the Governor-General in Council, and that none of the Governments in India have any power to increase the salary of any officer out there, without the consent of the home authorities?—I was not aware of that.

707. And that that rule was agreed upon in consequence of the great increase of expenditure when the Government out there had the power of increasing the salaries?—That was with reference to the Government of India.

708. Mr. *H. A. Bruce.*] Do you think that all the regulations as to the increase of salaries in the Government of India should be transferred to the management of the railway company?—Quite the contrary.

709. Mr. *T. G. Baring.*] You admit the necessity of Government supervision, but you object to the minute details?—I object to the mode in which it is carried on; I think the supervision is most desirable, and ought to be most advantageous.

710. Can you give the Committee a case of the same kind as that you have referred to, in which answers have been given by the Government engineer?—No doubt I shall be able to provide you with some such instances.

711. The statement of Mr. Turnbull is his own view of the subject; but I should like to have a case in which we could see the views of the Government engineer?—This statement of Mr. Turnbull is a statement of fact, as to the bungalows; he points out the inconvenience to the Government, and no view of the Government engineer could do away with the inconvenience that must be obvious, namely, that a man is to be kept out of his house until the Government know how many houses are wanted over an area of 300 miles.

712. Might it not make a difference in the opinion to be formed on that matter, if we first ascertain the view of the Government in requiring that return?—I do not think it would make any difference in the question of fact; I have no doubt the reason of the return being called for, was to see what expense we proposed to enter upon in completing these bungalows over the 300 miles. Government were doubtless anxious to see what the whole establishment would cost before sanctioning any part of it.

713. Can you bring before us a case in which appear answers given by the Government officers to the objections of your engineer?—I will do so.

714. You say that every one of your engineers arrives in India with the belief that his practical knowledge is superior to that of the military engineers?—I have no doubt of it.

715. Are you aware of the services in which Government engineers in India are

are employed?—No. Allow me to say, I do not assert the superiority of our engineers over the engineers of the Government in India, but I say the engineers themselves entertain that belief.

716. Do you consider that your engineers go to India with a knowledge of the country and the climate?—No, I do not; I think they are wanting in that.

717. Would not the Government engineers possibly render them great assistance upon these points?—I think they ought to do so.

718. You think they would be capable of rendering assistance with regard to local peculiarities?—I think they ought to be capable.

719. As I understand, you do not know whether they are or are not?—I have no means of giving an opinion.

720. Are you aware that military engineers in India are employed in civil engineering?—I know they are in some cases.

721. Then the comparison which an engineer may make between himself and a military engineer may not be a correct one?—Not to its full extent.

722. Mr. *Crawford.*] Is there not a vast difference between railway engineering and ordinary civil engineering?—I do not think there is anything so difficult in railway construction that any civil engineer should hesitate to undertake it.

723. Mr. *D. Seymour.*] Are you an engineer yourself?—No.

724. Mr. *T. G. Baring.*] Have you ever heard of any bridges of great magnitude made by military engineers in India?—No doubt; but I have heard doubts expressed whether they will bear a railway train.

725. You have heard that military engineers of the Government of India have been employed in carrying out civil works?—No doubt they have.

726. Mr. *H. A. Bruce.*] You say that differences of opinion sometimes arise between civil engineers and Government engineers?—Yes.

727. Have you known many cases in which the Government officers have been persuaded to reconsider their opinions and to withdraw their objections?—I can scarcely call to mind any one case.

728. Has there been much delay in consequence of that clashing of opinion?—I do not think there has been any practical delay.

729. With reference to the increase of expenditure, I gather from a question put to you by an Honourable Member that many applications have been made by the railway company for authority to increase their expenditure, but that that has been refused, or diminished?—Some applications which have been made to the Court have been modified.

730. Have you ever heard of a railway in England which has been constructed without an increase over the original estimates?—No.

731. Taking into consideration the nature of India, its great rivers, its marshy soil, and its hot climate, is it not probable that the actual expenditure would in many cases vary from the original estimate, even to a greater extent than it would in England?—I think it very possible; but so far as the East India Railway Company is concerned, I have no doubt of the line being constructed within the estimate.

732. On the whole?—On the whole, very much within the estimate.

733. Has any delay in the construction of the railway arisen from the refusal of the Government to sanction the application for increased expenditure?—I think it probable that delay will have been caused by the refusal of the Government to sanction Mr. Turnbull's last indent for assistance.

734. Can you state whether the Government engineers appointed to supervise the proceedings of the East India Railway have had any experience in constructing railways?—I am not aware that they have, but I cannot say that they have not.

735. Looking to the fact that the Government have power under the terms of the contract to sanction every contract, ought not the Government, in your opinion, to satisfy themselves in all cases of the power of the contractors in India to fulfil their engagements before giving them sanction?—I think you could scarcely expect the Government to do that.

736. Mr. *Danby Seymour.*] You say you think the supervisions are too minute?—Yes.

737. What system would you propose instead of that minute supervision?—I think you will find that I have already given my opinion upon that point.

738. Would you have works constructed then up to a certain point?—I would have the estimate for every particular work agreed upon between our officers and the officers of the Government; and then I would have the construction of the works themselves in the hands of the railway officers.

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739. But subject to the inspection afterwards by some officer appointed by the Government?—When finished.

740. By whom shall that inspection be conducted?—That inspection should be conducted, no doubt, by officers appointed by the Government.

741. Would it be satisfactory to the railway company that the inspecting officer should be a military engineer?—The railway company, as a company, has never objected to the appointment of a military engineer.

Lunæ, 10° *die Maii*, 1858.

MEMBERS PRESENT.

Hon. H. G. Liddell.	Mr. H. A. Bruce.
Mr. Crawford.	Mr. Stephenson.
Mr. Cheetham.	Mr. Danby Seymour.
Mr. A. H. Baring.	Colonel Sykes.
Mr. Cumming Bruce.	

HON. H. G. LIDDELL, IN THE CHAIR.

Mr. *David Innes Noad*, called in; and further Examined.

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742. *Chairman.*] ON your last examination you were asked some questions with reference to the difficulty you had met with in procuring bricks, and the Committee inquired particularly when you first received any intimation from your engineer on the subject. Can you state more precisely the date of your engineer's report, and when you received it?—Mr. Turnbull's report is dated the 3d of July 1857; it arrived here about the 18th of August 1857, and it was referred to the consulting engineers of the company on the 20th of August; we received their report on the 5th of September, and we sent that report to the Court on the 9th of September, making certain suggestions, and urging an immediate reply; we received the reply on the 22d of October, agreeing to our suggestions, and suggesting that an explanation should be required from our engineer as to the cause of his representations on the subject being so long delayed; a draft letter was submitted to our Board on that subject on the 3d of November, and was ultimately approved by the Court on the 18th of December; when I say it was approved, it was approved generally; but an alteration was suggested, and the letter was sent out on the 22d of December.

743. What did you do on the subject?—We proposed to the Court in our letter the propriety of considering the question whether we could not substitute iron in the superstructure of some of these bridges, with very great advantage, in order to save time; that view the Court acquiesced in, and agreed to it, as I say, in the letter dated 22d of October. This letter suggested that we should require an explanation from our engineer of the delay that had occurred in representing the difficulties that existed.

744. I understand that you received the ultimate reply from the Court on the 18th of December?—The whole question was before the Court in one shape or another nearly the entire interval between the 9th of September and the 18th of December.

745. What was the effect of the ultimate reply of the Court on that question? What did you do?—We wrote out immediately to our engineer, or rather to our agent, requesting an explanation of the delay which had taken place in representing the circumstances; the Court suggested an alteration in that letter, which implied to our minds a censure, which we did not consider fair to our officers pending the receipt of the explanation which we had written for, and although, to save time, we sent the letter out by the mail of the 22d of December, we wrote to the Court in January, stating that the letter did not correctly represent the sentiments of the Board on the subject. In the meantime, Mr. Meadows Rendel proceeded to India to consult with Mr. Turnbull as to the best way of meeting the difficulty by the use of iron girders, a certain number of which were put in hand at once, and some of them have since been shipped.

746. Do you consider that the delay of which you have just spoken was necessary?—No; I think that the question should have been finally disposed of upon receipt of the report of our consulting engineer, dated 5th of September.

747. Instead

747. Instead of which a period of very nearly four months elapsed before the question was finally settled?—Yes, before the question was finally disposed of.

748. To revert to the supervision in India, which we went into at some length the other day; you were asked to produce to the Committee copies of any important correspondence between your officers and the Government which had been completed, in order that the Committee might see the grounds upon which the Government acted. Have you any correspondence with you which will show that?—I have sent for some papers, which I will hand in.

749. Mr. *Crawford.*] How is the Company represented in India?—By an agent appointed by the Board in London.

750. Does he exercise a superintendence over the whole of the Company's affairs in India?—Over the whole generally.

751. Will you describe in general terms what his duties are?—He represents in fact the Board, and has almost absolute power to decide upon every question submitted to him.

752. I suppose he makes a practice of referring all matters of important principle to this country?—There are certain points in the course of his management which he considers it necessary to reserve himself upon, and in those cases he refers to the Board.

753. Do you not think his duties will be exceedingly heavy when you enter upon the construction of the Jubbulpore line?—Undoubtedly; too much so.

754. Have the company any plan in view for relieving him of the charge of duties so heavy as those?—I think the company have an idea of proposing that there should be a second agent in the upper provinces.

755. The company in this country does not correspond directly, does it, with its officers in India?—No; all correspondence goes through the agent of the company at Calcutta.

756. Name the agent?—Mr. Palmer.

757. It is to Mr. Palmer, as the agent of the company, that all references are made by the chief engineer in each division of the company's works in India?—Yes.

758. How many divisions have you?—We shall shortly have three, but at present we have two, the upper and the lower provinces; Mr. Turnbull being the engineer in the lower provinces, and Mr. Purser in the upper provinces.

759. What is the line of demarcation between the upper and the lower provinces?—The river Kurumnassa.

760. And both those officers, Mr. Turnbull in the lower provinces, and Mr. Purser in the upper provinces, correspond with Mr. Palmer upon the affairs of the company which require Mr. Palmer's superintendence?—Yes.

761. And any communications which the engineers have to make to the company in this country pass through Mr. Palmer in the first instance?—Yes.

762. And are forwarded by him to the Board here?—Yes.

763. The Board, as I understand, replies to those officers through Mr. Palmer?—Yes.

764. Have you had any instance brought to your notice by the agents of what might be considered to be undue interference, or the excessive exercise of authority, on the part of the consulting engineer to the Government in India, in reference to the railway matters under his charge?—We have recently received a letter from Mr. Palmer, complaining that in a particular instance he could not enter into negotiations for the purchase of a quantity of timber without giving so much detailed information as would have prevented his carrying the negotiations into effect. I have a copy of that letter, which, with the permission of the Committee, I will read. We first have a memorandum by the deputy consulting engineer of the Government, Captain Crommelin, dated 3d of February, which appears to be made on some indent to the Government by Mr. Palmer, and it is to this effect:—"The undersigned would prefer submitting indent, No. A 334, dated 2d instant, to Government in a more complete form. He requests, therefore, that some explanation may be furnished of the purposes for which the timber is required. The tender of the contractor should also be furnished, in which should be specified the terms of delivery, and the general particulars regarding size, nature, and quality of the timber." Mr. Palmer replies, in a letter, dated 9th of February,—"I have the honour to acknowledge your memorandum, No. 177, of February 3d, requesting that some explanation may be furnished of the purposes for which indent, No. A 334, has been submitted for the purchase of timber, and calling for the contractor's tender, in which I am informed that the terms of delivery, and the general particulars regarding the size,

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nature, and quality of the timber should be specified. If it be the wish of the Supreme Government that these details and particulars should all be furnished, of course such an arrangement must in future be carried out. That the Government are entitled to be furnished with such details, I do not of course question, but I submit that no such system was ever contemplated by the East India Company when the contract was made, and I am fully aware that the railway company never anticipated so obstructive a system of carrying on the works. It is to be supposed that the officers appointed by the company are fully capable of conducting their business without such minute supervision, and I submit that the practice now adopted is conducive to no end save that of giving additional trouble to the consulting engineer, and obstructing the operations of the company. In the present instance I am informed by the storekeeper that he will shortly require a supply of timber which may be appropriated to carriage building, or to any other purpose that may be required, and I take the opportunity of a Rangoon timber merchant's presence in Calcutta to endeavour to make arrangements for a supply at lower prices than it can be procured at in the market when suddenly required; but I need hardly point out to you that if the entertainment of a contractor, with a view to the reduction of prices, as has hitherto been done under indents S. B., S. H., T. B., and numberless others, is now to involve a correspondence which must be submitted first to myself, then to the deputy consulting engineer, then to the Secretary of Government, and by him to the Supreme Council, it will be better to abandon all hope of reducing the expenses by such means, and to indent only on emergencies, when the materials must be purchased in the market at any price. I submit that it is sufficient for the consulting engineer to know that the timber, of whatever it may be, is required for a legitimate railway purpose, and that the Company are paying a fair price, the details being left to the discretion of the agent, who is accountable to the company for all his acts. I should add that when a contract has been made, and the materials are in course of delivery, or the deliveries completed, not one single payment can be made without the previous audit of Government, by which means the main object of the Government control is secured, both to the shareholders and the East India Company. I have therefore the honour to request that my views in this respect may be laid before the Government of India for their consideration, whether, with a view to expediting the works, as well in the engineering as in the agent's office, a certain amount of responsibility might not judiciously be left to the railway company's officers, whose experience in railway affairs, it may be assumed, are at least equal to those trifling details." I hear since that the Government, upon that representation, sanctioned the purchase of the timber.

765. Is the instance you have stated a solitary instance of what you conceive to be the undue interference by the Government in minute matters?—I do not know that it is a solitary instance; but while Sir Macdonald Stevenson was agent to the company he scarcely ever sent over matters of this kind to England; he disposed of them on the spot. In case of obstructions, he did not trouble the Board with the particulars, but disposed of them himself; Mr. Palmer appears to be taking a different course, and is furnishing the Board with all these instances.

766. Can you state an instance of minute interference on the part of the Government with the proceedings of the engineers in other departments?—Not from my own knowledge.

767. What is the nature of the establishment subordinate to each chief engineer in his division?—There is a district engineer, a resident engineer, and two assistant engineers, with a given number of inspectors, according to the length of the line under the charge of the district engineer.

768. That is in each district?—In each district; each district engineer has charge of so many miles, and a certain number of assistants in the shape of residents, sub-assistants, and inspectors, varying with the length of the district.

769. Are they European?—European.

770. Selected and sent out from this country?—Yes.

771. By whom?—By the consulting engineers of the company, Messrs. Rendel.

772. Who select them upon testimonials as to their fitness and efficiency?—Upon testimonials and personal inquiries.

773. Is the establishment of engineers in India fixed with reference only to the amount of work to be done, or have you any surplus number of engineers, so as to be able to fill up casual vacancies?—In my opinion, we have never had a sufficient number of engineers.

774. Do you think that any delay has arisen from that circumstance?—I believe great inconvenience has arisen from it.

775. What is the principle that you go upon in the selection of your engineers in this country; do you send out men of enlarged experience in England to take highly responsible positions in India, or do you send out young men to rise through the ranks of the service; in fact, is there a general system of promotion in your engineering service, or do you supply men from this country as they are required for particular purposes?—Originally we sent out a given number of men; some with larger experience than others, and some with less, and having once a complete staff within the limits which were then considered desirable, we have since appointed none but the youngest men, so that in fact there should be a complete system of promotion throughout the whole service; and our instructions to our agent in India are never to send home for assistance when he can get it on the spot, and when he finds it in the staff which he has under his care.

776. You mean, if he can find gentlemen of engineering experience in want of employment in India?—If for instance he should want a district engineer, he is recommended to take a district engineer out of the rank of resident engineers, or if he want a resident engineer, he should take him out of the rank of assistant engineers, and so on.

777. By promotion?—By promotion.

778. Under whose care are the works of the Soane Bridge?—Under the care of Mr. Power.

779. Was he sent out specially for that purpose?—Exclusively for that purpose.

780. And was he selected with reference purely to his ascertained experience in England in the construction of such works as that?—Yes.

781. Generally speaking, has the railway company cause to be satisfied with the selection that has been made of their engineering officers?—I think they have great reason to be satisfied; in fact I do not know a single instance in which they have not.

782. That is, that in the number of officers sent out to India you have not any cause to complain of inefficiency of delinquency?—I cannot call to mind a single case at this moment.

783. Do you think, so far as your information goes, that the Government is equally satisfied with them?—I think so, decidedly.

784. Mr. *H. A. Bruce.*] You say that inconvenience arises from the inadequacy of the staff; must not something more than inconvenience arise; must there not be delay and also great risk from insufficient inspection?—I think, as circumstances have turned out, no actual delay of importance has arisen, because something has always intervened which really rendered an increase of the staff at the moment unnecessary. Of this I will give an instance; Mr. Turnbull indents for an increase of staff in November, and the matter is not ultimately settled until the following May, I think; no doubt there might have been delay in the works in consequence, and probably there was up to May; but it so happened that immediately after that the great mutiny occurred, so that had the staff been in existence, their services would have been useless.

785. Did the mutiny greatly interfere with the progress of the line between Burdwan and Rajmahal?—It interfered less upon that than on any other, but it did undoubtedly interfere with the district.

786. Is Mr. Turnbull the only engineer who has complained of an insufficient staff?—Mr. Purser in the upper provinces has complained also, but we have not the correspondence completed.

787. Have his complaints been frequent?—I cannot say that they have; one instance of importance has been brought to our notice.

788. As I understand, the necessary result of inadequate inspection must be that either the duty must be slurred, or the work must be interrupted until a proper inspection can be made?—Exactly.

789. I understand you to say that in all matters in which the consulting engineer can act upon his own authority every proper facility is given in expediting the business in India?—I think there is every desire to expedite the business, but I scarcely know of any instance in which the consulting engineer can act upon his own responsibility.

790. That is, that in some cases he is obliged to refer to this country for authority how to proceed?—I think in most cases he has to refer to the Secretary of

Mr. *D. I. Noad.* State in the Department of Public Works, and ultimately to the Supreme Council.

10 May 1858. 791. That is in India?—In India.

792. Has he not frequently to refer also to this country?—The Government of India frequently refer to this country.

793. In the class of cases to which we have adverted of an increased number of officers, I understand from your answers that he has no power himself to increase the number of officers, because that involves payment, and that it was necessary to refer to this country in order to get the necessary payment sanctioned?—It would be necessary; the course would be that the consulting engineer would recommend a particular course to the Government of India, and the Government of India would refer it to the Court of Directors in this country.

794. No increase, as I understand, however trivial, can take place in the staff without the matter going through the whole of the departments in India, and the whole of the departments in England?—That is so, in the principal appointments in the staff.

795. *Chairman,*] Have you found any difficulty in procuring labour in India in consequence of the mutiny?—I cannot speak of the effects of the late mutiny, but we had great difficulty in procuring labour in the Rajmahal districts in consequence of the Sonthal insurrection.

796. You are not able to speak, of your own knowledge, of the circumstances which have occurred over other parts of the line?—We resumed work on the main line in December last, and I have not heard since that there has been any difficulty in procuring labour.

797. I wish to know whether you have any information upon the point as to whether Government competition, in the employment of labour upon the public works, operates prejudicially to the railway interest in their employment of labour?—Since the mutiny it has affected the rates which we are paying for labour, but I do not know that there has been any difficulty in procuring labour.

798. Mr. *Danby Seymour.*] Have you in your district any of those tribes, men, women and children, who do nothing but work, and who take small contracts on railways?—I do not know that we have any women or children upon the works.

799. Do you not think that to raise the wages in India would be a good thing for the population?—Undoubtedly, the population who receive the increased rate of pay must benefit by it.

800. Do you not think that the quality of labour would be increased by their being better paid?—I do not think that.

801. Do you think that the small pay they received until within the last year or two was sufficient for them to live upon?—I think they were perfectly satisfied with the railway rates.

802. Do you not think that they were under-fed, and therefore they were not such strong men as they would otherwise be, owing to the low rates of payment received by them?—I do not think that that has been the case on our railway.

803. Do you not think that the population of India generally is very much under-fed?—I think they are in a very degraded state, generally speaking.

804. Are you aware what they live upon?—Not of my own knowledge.

805. Are you not aware that when contractors have undertaken foreign railways, the first thing they have done has been to increase the rates of pay, finding that they get far more work out of their workmen in consequence?—I do not know that.

806. Mr. *Cumming Bruce.*] Do you know whether the wages paid by the railway companies in India are equal to or in excess of those usually paid in the country?—I think they are rather higher.

807. Mr. *Cheetham.*] What is the rate per day that you pay them?—I think about 2½ *d.* or 3 *d.* per day.

808. Do you know of your own knowledge what was the current rate in your district before your railway commenced?—I do not know what the current rate was; but I know it was less, because I know we have succeeded in collecting labour where others have failed.

809. I presume that although the current rate which you pay is so much less than in this country, you are obliged to have an increased number of workmen to do the same amount of work?—I think that three natives, or at all events four, would do as much work as a European navvy.

810. Does your reply to my question assume a comparison between European labour

labour in India or in this country?—In this country; what I mean is, that for something like 10 *d.* we get in India what we should have to pay for in this country from 3 *s.* to 3 *s.* 6 *d.*

811. *Chairman.*] In consequence of that Government competition to which we have already referred, have any applications been made to the Government by the railway authorities to sanction increased rates of pay?—I believe not in reference to that competition. I should mention that there has recently been passed in India what is called an Impressment Act, under which, for the purposes of constructing barracks and other public buildings, I presume connected with the mutiny, the Government can impress labour. That Act has called forth some remonstrance from our agent, and I believe the Government have as far as possible remedied the inconvenience which was likely to arise from that Act; I believe they do not allow it to apply to labour employed on railway works.

812. They have excluded that class of labour from the operation of the Act?—Yes.

813. Mr. *Cheetham.*] Were they obliged to resort to impressment because they paid less than you?—I do not know that that was the cause.

814. Do you know what rate of wages the Government pay?—I do not.

815. Would not impressment imply that there was a scarcity of labour in that district?—Yes, or an indisposition to work under the Government.

816. *Chairman.*] Have you any correspondence which has passed about the difficulties which have arisen in consequence of the passing of the Impressment Act?—I can furnish the Committee with what we have upon the subject.

817. Mr. *Danby Seymour.*] I believe the Government have always had impressed labour, have they not, until recently?—I do not know; I know they used to impress carts into their service, to our serious inconvenience, but they have recently given that up, and they have a much greater supply of means of transport than they ever had before.

818. *Chairman.*] That was considered necessary for the conveyance of troops up the country?—Yes.

819. Mr. *Danby Seymour.*] From the Punjaub down to Cape Comorin, has it not been customary to impress labour for making roads and other purposes?—I do not know that.

820. Mr. *Cheetham.*] Is it within your knowledge that since the impressment was abandoned they have had a much larger supply?—Since the impressment of carts was done away with, they have had, I understand, a better supply.

821. *Chairman.*] Would not the fact of the Impressment Act having been passed by the Legislature show that the Government had not the right without obtaining a special Act to impress labour?—I should imagine that they had not the right without the Act.

822. Mr. *Crawford.*] Is there not a provision in that Act that it is only to take effect in particular districts to be specified?—Yes.

823. Is it not a general Act?—It only applies where the districts are specially named.

824. Without any alterations of the terms and conditions of the contracts entered into between the East India Company and the railway companies as to defining and fixing the limits of the general and local supervision, distinguishing the essential general control from the special and minute interference with minor details, and imposing at the same time upon your officers, and upon the Government officers, their respective degrees of jurisdiction, do you not think that railway works might be carried on with much greater rapidity, and even with greater efficiency than they are at present?—I think with greater rapidity, certainly.

825. I will now ask you a question or two upon the subject of Government supervision in this country with reference to the railway Boards. What was the understanding of the railway companies originally as to the mode in which the Government supervision would be carried out in this country?—When we assented to that particular condition, and the terms and conditions upon which our contract was based, we were clearly under the belief that the Government would appoint an *ex-officio* director to sit at our Board, who would have absolute power to determine there and then all questions submitted to the Board.

826. Who should not only have the power of veto, but, if I may use the phrase, the power of promotion at the same time?—Every power.

827. Have you been disappointed in that expectation?—Altogether; instead of that being the case, every proceeding of the Board, every proposition, in fact,

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until very recently, had to be submitted to the Court of Directors, and we could not act until we received their sanction.

828. Within a comparatively recent period, as I understand, larger powers of sanction have undoubtedly been given to the *ex-officio* director?—That is so.

829. State precisely the extent of increased powers of sanction which Sir James Melvill has lately obtained?—That change has taken place within the last two years. Prior to July 1855 we had to refer every tender for any description of materials to the Court before we could accept it; but in July 1855 the Court gave the *ex-officio* director the power of deciding upon all tenders for materials the purchase of which had been previously sanctioned, and also of entering into contracts. Before entering into contracts up to that time, and indeed until March 1858, we had to submit all indents from India, whether for men or for materials, even when they had received the sanction of the Government of India, for the sanction of the Court of Directors. In March 1858 the powers of the *ex-officio* director were so enlarged as to enable him to sanction indents for materials so approved by the Government of India. These are the only two modifications which have been made.

830. Can you specify any distinct cases of delay which have occurred in consequence of the *ex-officio* director not having the power of sanctioning the proceedings of the railway company?—I do not know that I can mention a distinct case of injury, but we have had very few decisions communicated by the Court under a month. I should say the average time occupied in the settlement of all important questions has been a month.

831. Has it occasionally been considerably beyond that?—Yes.

832. Can you state the maximum time taken to settle a question of that description?—I can state a very recent case in which an important question was under consideration.

833. Do you refer to the Jubbulpore contract?—I do.

834. Did that contract involve a large expenditure of money?—An expenditure of something like 2,000,000 *l.* of money.

835. What was the time taken to decide that question?—The first communication received from the East India Company on that subject was the 2d of May 1856.

836. Mr. *Cumming Bruce.*] When was any communication sent by you?—A letter was sent to us by the East India Company, enclosing a copy of a letter from the Great India Peninsula Railway Company on the subject, and asking for the views of the East Indian Railway Board. That was on the 2d of May; we sent in our views on the 5th of June; and on the 16th of October we received a letter from the Court, inquiring whether we were prepared to undertake the line to Jubbulpore, which was about the half of the junction line.

837. *Chairman.*] When you say the half junction line, to what points do you refer?—Mirazapore, and the point of junction with the Bombay line.

838. Jubbulpore is about the half-way point between those two?—The question arose as to who should make the junction line between the two railways, and it was upon that, I think, that the Court asked our views. We were under the impression that we ought to have made that line as far as Asseerghur. I believe the matter was then referred to the Government of India, and the Government of India recommended that we should make the line as far as Jubbulpore, and that the Great India Peninsula Company should make it as far as Jubbulpore on the other side; and on the 16th of October 1856 we had a letter from the Court, asking whether we were prepared to undertake the execution of the line to Jubbulpore, and on what terms. On the 11th of November 1856, after having submitted the matter to our shareholders at a general meeting, which we were obliged to do, we intimated our readiness to undertake it, upon the same terms generally as the main line; that was on the 11th of November 1856; and on the 5th of September 1857, we received the draft of the contract from the Court, which was ultimately agreed to, with some modifications, in March 1858.

839. How far, in your opinion, is the system of Government supervision, as carried on through the medium of the *ex-officio* director, still imperfect?—I think the *ex-officio* director should possess, upon matters of every description, absolute power to decide at our Boards upon the course to be taken; I should add, I do not think that on the part of the railway company we should ever have assented to the supervision at all, unless we had believed that that was to be the form in which it would be carried out.

840. From the experience you have had of the ability of the individual who sits at the Board, are you not of opinion that he is perfectly competent to have that amount of power placed in his hands?—There cannot be a doubt of it.

841. Mr. *Crawford.*] In point of fact, it should, in your opinion, be a matter of confidence between him and those whom he represents?—Undoubtedly.

842. Upon what understanding was it that you supposed, in the first instance, he would come to the Board with larger powers than he was found to possess?—As far as the railway company was concerned, we never discussed the terms of the contract in any other view of the case. I think it is quite clear that the Court of Directors entertained the same view upon the subject as we did.

843. With whom did you discuss the matter?—With Mr. James Wilson.

844. What led to the railway company discussing with Mr. James Wilson the terms of the contract?—I do not know how it arose; but it appeared that we were more likely to come to a settlement upon the terms by direct personal communication with an officer of the Board of Control than in a written correspondence with the Court.

845. Did not that arise out of the fact that Mr. James Wilson suggested the means by which the railway company and the East India Company were relieved from the difficulty in which they were placed upon the question of dividend?—I think so.

846. The negotiation thereupon fell into his hands?—I think so.

847. By whom was the negotiation conducted on the part of the railway company?—By the late Mr. Aglionby, Mr. Freshfield, and myself.

848. You understood in your communications with Mr. James Wilson that the *ex-officio* director was to be invested with larger powers then he was found to possess?—We never discussed it in any other view than that; it was never supposed by us that it was in contemplation, or could be in contemplation, to adopt any other course.

849. Was it from the terms of the contract itself that you derived the opinion that his powers would be larger?—No; it was prior to the contract itself. We always considered that the particular clause in the contract referring to this question was what the lawyers would call specially pleaded.

850. Will you describe, in general terms, the manner in which the business of the railway company is conducted in this country; that is to say, how the authority of the *ex-officio* director is exercised?—The *ex-officio* director, with the exception of those cases in which the modification has taken place, really exercises no authority beyond his moral influence, or the influence of any other director.

851. He merely sits at the Board, and takes part in the business which other members of the Board would do?—Precisely.

852. All the payments of the railway company are made, I presume, under the authority of the Board?—Every payment.

853. Can you make any payment without the sanction of the East India Company?—No.

854. It is not in the power of the railway company to pay money without the East India Company becoming aware of the fact?—No.

855. Strictly speaking, I think the *ex-officio* director is a consenting party to all payments that are made?—He is, and so is the Court subsequently.

856. Do you apply to the Court for money for special purposes?—We apply regularly every week for money for all purposes, specifying what each particular sum is intended for, and under what contract it is to be paid.

857. *Chairman.*] Then in fact there is practically an audit of your payments every week?—There is.

858. Mr. *Cheetham.*] These payments, I presume, have to be made out of the treasury of the Company?—We apply every week for a given sum of money, specifying the purpose for which it is required; that sum is handed over to us by warrant, and we make the individual payments.

859. Mr. *Crawford.*] You receive a warrant transferring a sum to your credit at your banker's?—Yes.

860. And you make your payments by passing cheques against your account at the banker's?—Yes.

861. These cheques, I suppose, are all signed at the Board?—Every cheque.

862. *Chairman.*] Does not that, in fact, constitute a complete power of control over the whole of your expenditure?—Without the slightest doubt.

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863. Mr. *Cumming Bruce.*] The Chairman asked you to state some particular case in which the system, as at present carried on, was productive of delay, and you stated a case in which the consideration of a minute appeared to have occupied from the 2d of May until the 5th of June, after you had sent in certain proposals to the directors; and you say that you consider that was an unnecessary delay. Can you show how long the proposal had been under the consideration of your own Board of Directors before you forwarded it?—Supposing indents were received by the mail to-day from India, for 1,000 tons of coal, or any other material, they would be submitted to our Board to-morrow, and would go before the Court to-morrow afternoon, when the probabilities are that we should have an answer in a month; that has been the system until quite lately.

864. Mr. *Crawford.*] Have you any return by you of the dates on which you have made applications upon various matters to the Court of Directors by letter, and the dates also on which you have received replies thereto?—I have a return of that nature, but it is a very lengthy affair.

865. Does it comprise every communication that has been made to the Court of Directors from the commencement of your proceedings as a Board?—I think it comprises nearly the whole of them.

866. State the result of it?—The result would be such as I have stated, that there is an average of about a month.

867. With respect to the proceedings of the Railway Company, what time elapses from the day you send in the minutes of the Board to the East India Company, for their information, before you receive back an expression of opinion on the part of the Court with reference to the minutes?—The form in which the letter comes is that the proceedings recorded do not appear to call for any remark.

868. Mr. *Cumming Bruce.*] With regard to the month's delay of which you have spoken, I should like to know whether you can state that any practical real grievance or prejudicial delay has been occasioned by the time taken to consider these matters?—I think it has been more by good luck than good management that that has not been the case; I do not know that I could mention any injury that we have received, but it is very possible to conceive it; for instance, markets fluctuate very much in a month, and the effect of a month's delay in the purchase of materials might be very serious.

869. Mr. *Crawford.*] Would you consider yourself justified in proceeding upon any resolution of the Board on the minutes until you receive from the Court their approval of those minutes?—Strictly speaking, under the terms of the contract, probably we ought not, but we do.

870. You probably raise the question by a separate letter?—Upon any important subject we should do so.

871. Mr. *H. A. Bruce.*] You stated that, in your opinion, the delay would be very much prevented, and the proceedings of the railway company very much simplified, if the *ex-officio* director had the power of deciding upon the questions submitted at the Board?—Yes.

872. He representing there the East India Company, and, I presume, the Board of Control?—I think so, clearly.

873. Is it your opinion that he should decide without referring to those two Boards?—Generally; he doubtless would reserve himself upon points that he thought too important for his own decision.

874. Have either the East India Company or the Board of Control any consulting engineer in this country to whom they refer questions connected with your railway?—I do not think they have.

875. Are you of opinion that if they had some authorised officer corresponding to the officer of that name who represents the Government in India, much of the delay would be prevented?—No; I do not think that that would be a desirable arrangement.

876. Who in this country has the control and choice of the materials of which you make your engines, and so on?—Our consulting engineers.

877. Does the East India Company or the Board of Control ever interfere?—They never have interfered with us.

878. *Chairman.*] To whom are the plans, sections, and specifications referred in this country?—They never have been referred; all the contracts for works have been entered into in India.

879. Mr. *H. A. Bruce.*] The contracts for materials are entered into in this country, and, so far as I understand from you, no sort of criticism or control is exercised

exercised by either the Board of Control or the East India Company?—The purchase being once sanctioned and the tender accepted, the matter is left entirely in the hands of the railway company.

880. Mr. *Danby Seymour.*] When was the office of *ex-officio* director established?—In August 1849.

881. What was the salary attached to it?—We pay no salary.

882. And you are not aware what the salary is?—No.

883. You are not aware whether the Board of Control have thought that some person ought to be appointed to that office who could give his whole time to it?—I do not know at all the course that the discussion took.

884. Sir James Melvill was, I believe, the Secretary of the East India Company in all its departments at that time?—He was.

885. That I believe was a very onerous office?—I should think so.

886. He has resigned, I believe, within the last two months?—Yes.

887. Since that time his powers have been increased as *ex-officio* director, and more latitude has been given to him?—In one instance.

888. Generally he has the power of sanctioning what he had not before?—He has only one additional power; he had some additional power conferred upon him lately, but the principal modification was in July 1855; the last alteration was important, certainly, because it saves the necessity of referring indents to the Court of Directors. This last alteration was made since the change of Government.

889. And since he gave up his appointment of secretary?—I do not know exactly when he gave up his appointment.

890. Are you not aware that he gave it up about two months ago?—I think about that time; the alterations in his powers took place about the 25th of March.

891. Was not that about the time that he gave up his office of secretary?—It would be about, I think, the middle of February that he resigned.

892. When you say that in important matters there is an average delay of about one month, I suppose that in ordinary matters the delay is much less than a month?—I think the average is about a month.

893. I am speaking merely of the minutes?—Yes.

894. They never arrive in less than a month?—Very seldom; sometimes a few days under, and sometimes a few days over

895. Who is your consulting engineer?—Messrs. Rendel.

896. You do not think it expedient to have another consulting engineer, do you?—No.

897. On the part of the Government?—No.

898. You think it would create unnecessary delay?—I think so.

899. Mr. *Crawford.*] Who is the consulting engineer to the Great Indian Peninsula Railway Company?—Mr. Robert Stephenson.

900. Mr. *Danby Seymour.*] Which do you think is the best way of constructing railways, to advertise for large contractors in this country or in India, or to do the work by your own engineers out there?—We have never tried the plan of advertising in this country for contracts, but I think it would be desirable to make the experiment.

901. Have you ever advertised for contractors in this country?—No.

902. I believe other companies have done so?—The Great India Peninsula Company have done so, I think.

903. Did you ever apply to a large English contractor to undertake the construction of your railway?—Yes, we did, as far back as 1849.

904. What was the objection of your contractor to undertaking it?—In a particular case, independently of the case I referred to in my evidence the other day, that of Mr. Jackson, whose tender we were not allowed to accept, Mr. Brassey, who is a large contractor, sent out a confidential agent to investigate the question. I think he sent out a Mr. Ballard. I believe when he became aware of the way in which the supervision on the part of the Government was to be exercised, he dissuaded Mr. Brassey from entering into any such contract, or entertaining the subject at all.

905. Do I understand you to say that the discretion of the *ex-officio* director might be still more increased?—Undoubtedly; I think he ought to have absolute powers.

906. With regard to such a question as the contract of the Jubbulpore line, involving an outlay of 2,000,000*l.* of money, and being guaranteed by the Goverument,

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ment, do you not think that the Government ought to have a voice?—I think that is probably one of the very questions upon which he would reserve himself, it being a matter of so much magnitude.

907. There ought to be some limit placed upon his powers, ought there not?—I would rather leave that limit in his own hands.

908. You acknowledge that the Government, having guaranteed so large a sum, is bound to watch over the expenditure of that money?—Through the *ex-officio* director, I think it is desirable they should.

909. And desirable also for the sake of the railway company?—Yes.

910. *Chairman.*] It is a question, as I understand, on the one hand, of the discretion of the person entrusted with these duties; and on the other, of the confidence of the East India Company, who employ him, in his capabilities to fulfil that office?—Exactly.

911. Mr. *Danby Seymour.*] If the system that you advert to were adopted, do you think that English contractors might be induced to undertake these Indian works?—I have been last speaking of the system in England; contractors would be more or less affected by the mode in which the supervision is carried out in India.

912. Mr. *Crawford.*] There is no objection, I believe, on the part of the railway company to the supervision of the East India Company?—On the contrary, if exercised so as not to impede business.

913. Do not the shareholders look upon it as a guarantee for the proper conduct of the railway directors?—I think so.

914. And it is esteemed accordingly by the shareholders and by the company?—Yes.

915. And the railway company has not the least desire to be released from that control?—Certainly not.

916. Mr. *Danby Seymour.*] Have you not put in a claim for the continuation of the railway up to Lahore and Peshawur?—Up to Lahore we undoubtedly consider part and parcel of the system of the East Indian Railway.

917. I believe you have already 1,400 miles?—We shall have with the Jubbulpore line.

918. If you have the farther contract of the line up to Lahore, do you think that you can give adequate supervision to it in that country?—I see no difficulty in the matter whatever.

919. You do not think with so large an undertaking it would be impossible to conduct it so economically?—I think we should conduct it more economically.

920. It is difficult, is it not, to control so large a body of servants at such a distance?—We have had no great difficulty up to the present time.

921. You do not think that in India the expenditure is larger than if a Board of Directors sat in that country?—I am quite satisfied it is not.

922. Mr. *A. H. Baring.*] How long did the East India Company take to consider the line from Mirzapore to Jubbulpore; did they consider it previous to the 2d May?—I think they took from the 5th of June 1856 until September 1857, or rather I should say from November 1856, because the Court could not act until we had intimated our readiness to make the line, which we did on 11th of November 1856, and they occupied from November 1856 until the 5th of September 1857 before they sent us the draft contract.

923. Mr. *Cheetham.*] Supposing a tender be submitted to your Railway Board for a contract for the supply of any material, have you power at once to decide and give the order?—We have now.

924. Previous to the increase of the powers of the *ex-officio* director you had not?—No.

925. Is it your opinion, in the absence of that power, that the delay which arises is at times prejudicial to the interest of the company?—I cannot say that we have received any absolute prejudice from the delay; I think it fortunate that we have not.

926. It might under certain states of the market?—I think it might have been very serious.

927. You have had no occasion within the last two years to submit any new projected lines to the East India Company?—We have not submitted any new projected lines.

928. And you cannot say whether, within the last two months, the Board of Control have appointed a Railway Board to report upon all matters brought before them?—I am not aware of that.

929. Mr.

929. Mr. *H. A. Bruce.*] Have you, in the conduct of your railway, ever had questions long in dispute between you and the Board of Control or the East India Company?—Yes, we have.

930. I mean with reference to works to be executed?—I cannot call to mind any particular instance. I think the question of the brick and iron structures was one of the longest; I am under the impression that there was rather a long correspondence in reference to the construction of the Soane Bridge, which it was originally intended to construct of brick, but the Board altered the design, and insisted upon making the superstruction of iron.

931. With those two exceptions, the class of cases which have caused the communication between you and those two bodies have not been engineering questions?—No, I think not.

932. Mr. *Stephenson.*] With regard to delay not having taken place on engineering questions, allow me to ask you whether some delay did not take place in altering the original line to that along the valley of the Ganges?—I do not think that any delay took place in that case; the Court of Directors under the contract have absolute power to determine where the line is to be; the experimental line, as it was called, for the greater length was common to both lines, either the one *viâ* the Ganges or the direct line, and during the construction of the experimental line the route of the main line was determined upon.

933. Is the system pursued by your company different to that pursued by other Indian companies?—I think it is in some cases.

934. For example, your consulting engineer in this country has never, I believe, had an opportunity of bringing his experience to bear upon any of the designs to be executed on the line?—Except on certain bridge structures.

935. In other respects he is not your consulting engineer?—I should say that the permanent way and rolling stock have all been designed in this country, and the chief engineers in India correspond with them when they think necessary.

936. The great contracts have been designed and carried on there without reference to this country?—Yes.

937. Your are aware, I suppose, that that is not the general system?—And it was not altogether the system that we intended to adopt.

938. *Chairman.*] Will you give to the Committee some information as to the working of that part of the line which is open; whether it is satisfactory or otherwise to the railway company?—The results are highly satisfactory.

939. What are the rates of profit that have been made by that line?—It is difficult to define what the precise cost of the line has been, because it is so mixed up with the works of the great line; but taking the cost at about 10,000 *l.* a mile, the present profits would give a return of about 6⅝ per cent.

940. How much interest has been paid by the East India Company upon that portion of the line?—The earnings of the line now are more than equal to the payment of the interest guaranteed by the East India Company upon that particular line.

941. Leaving nearly two per cent. profit?—Two per cent. profit.

942. How much net revenue upon that portion of the line now opened has been paid to the East India Company?—£.170,000.

943. Has the whole of that sum gone to recompense them for the interest previously paid?—It has gone as a rate in aid towards the aggregate sum which they have to pay on the whole capital.

944. Have you any table showing the rate of freight for passengers and goods upon the Raneegung portion of the line?—For the first class it is 2*d.* per mile, for the second class, 1*d.* per mile, and for the third class about three-eighths of a penny per mile. The goods are divided into five classes, varying from 1*d.* to 6*d.* per ton per mile.

945. Can you hand in a paper containing a return of the traffic, and of the rate of fares generally?—Yes; I can furnish such a table to the Committee.

946. Will you inform the Committee what description of fuel you use, the cost and the amount of consumption?—We are using now nothing but Indian coal without coking it.

947. Do you find that the use of raw coal fouls the furnaces of the engines?—We have not experienced any great difficulty that I am aware of.

948. What is the cost and consumption of the fuel upon that portion of the line which is already opened?—The average consumption is about 32 lbs. per train per mile, and the cost about 2½*d.*

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949. How many trains are you running daily each way upon that portion of the line which is open?—I do not know.

950. Can you state the amount of traffic in goods and passengers on the line that has been opened?—From June 1855 to December 1855 we carried 617,281 passengers, and 20,020 tons of goods; in all 1856 we carried 897,442 passengers and 77,705 tons of goods; in all 1857 we carried 1,070,907 passengers, and 134,105 tons of goods.

951. Mr. *H. A. Bruce.*] Do these goods include coals?—Yes.

952. *Chairman.*] Have you made a comparison between the actual returns of traffic and the estimated returns upon which you based your original calculations?—The returns upon the existing line are very much in excess of our estimate of what they would be.

953. Mr. *Cheetham.*] Does that excess apply to the goods as well as to the passengers?—To both.

954. *Chairman.*] Have you any objection to put in the last revenue account of the company?—Not the slightest.

955. What is the number of locomotive engines you have sent out to India?—One hundred and twenty-two.

956. At an average cost of how much?—I should think from 2,500 *l.* to 2,800 *l.* each.

957. Mr. *H. A. Bruce.*] Is that the cost in this country?—In this country.

958. Mr. *C. Bruce.*] What is the cost of each engine upon its arrival in India?—Our first engine cost us a very large sum of money to send out; but the cost now, I should think, would be about 40 *s.* per ton upon the measurement, and each engine would probably measure from 70 to 80 tons. It would weigh about 35 tons.

959. That would be about 160 *l.* added to the cost of the engine?—Yes.

960. Do you send out any extras with the engines?—We send out a considerable quantity of duplicate parts.

961. Is that included in the cost you have stated?—I think it would be covered by that.

962. Mr. *H. A. Bruce.*] You say you use coal as the fuel on your line?—Yes.

963. Is that the line from Raneegung?—Yes.

964. Are the coal mines worked for other purposes than for those of the railway?—Yes.

965. Does your company carry a considerable quantity of coals to Calcutta for other purposes than those of the railway?—A very large quantity.

966. *Chairman.*] Was not the branch from Burdwan to Raneegung made originally with a view to the coal traffic?—Exactly.

967. Mr. *Danby Seymour.*] Have you ever made a proposition to the Government to undertake iron works?—We have not.

968. Or coal works?—No.

969. Do you think it would be a good thing for the railway company to have iron works of their own?—I think it would be a very mistaken policy indeed.

970. *Chairman.*] From whom do you purchase your fuel; in whose hands are the works at Raneegung?—The greater part of the coal pits at present worked are in the hands of a company called the Bengal Coal Company.

971. Is that an English or a native company?—It is a local company.

972. Mr. *C. Bruce.*] Can you say whether the seams of coal are numerous?—I do not think that the workings have been carried to any great depth at present.

973. Have you any separate return of the quantity of coal carried?—Yes; the great increase in the traffic between 1856 and 1857 was in the quantity of coal carried.

974. Do you think there is any chance of the coal being exhausted?—On the contrary, we hear of new seams being opened every day.

975. Mr. *D. Seymour.*] You must, of course, have large establishments?—At the terminal stations.

976. And when you have the 1,400 miles of railway opened that must be on a large scale?—We must have several large locomotive and repairing establishments, no doubt.

977. Would you have more than one?—Yes, more than one.

978. Would it not be advisable to open large establishments where the iron is worked, and could you not make the iron yourselves?—That would depend upon whether

whether the line went through those districts; we could not place our establishments at one spot and have our line in another.

979. Could you not at one establishment make your iron, and convey it from there to other parts?—I think it would be a great mistake in a railway company to undertake the manufacture of iron.

980. Would it not be less expensive than bringing it from England?—I doubt that very much.

981. Do you not think that, year after year, you could manufacture the iron cheaper in India?—I do not think that the railway company could make it cheaper.

982. Are you aware that some other companies have made such proposals to the Government?—I heard of it accidentally the other day.

983. Mr. *Crawford.*] I think you stated the other day that the amount of freight for iron was 24*s.* per ton?—Yes.

984. Are you of opinion that that is much less than the probable additional cost of manufacturing iron for yourselves in India, comparing the cost of the iron so made with the cost of iron made here?—I doubt whether you could produce the iron in India, in a shape for railway purposes, at the same cost as you produce it here.

985. The only additional cost of an iron rail as delivered to you here is, the expense of freight, insurance and management?—No doubt; the cost of freight is added to the price of the material, and I doubt whether you could produce rails at the same cost in India.

986. Supposing the cost of rails to be 8*l.* per ton here, and you could not produce them in India for less than 10*l.* per ton, as I understand, it would be cheaper for you to send out your rails at 24*s.* per ton than to make them yourselves in India?—There would be a direct saving of course.

987. Mr. *D. Seymour.*] When the manufacture of iron in India was first commenced, it would cost a great deal more than it probably would when the manufacture of it became more extensive?—One would hope that as the manufacture increased, the cost would decrease.

988. Is not that generally the case when a manufacture is introduced for the first time?—It is generally.

989. Do you not then look forward to the time when you may be able to procure your rails in India?—I do not, at all events for a long time.

990. You think that you will always be obliged to come to England for your rolling stock and rails?—I think for many years to come.

991. If iron works were established in India, it would be a very great advantage, would it not?—If they were successful, and could produce the iron at the same price for which we can obtain it here, no doubt it would be advantageous.

992. For the production of iron in India you have the ore, the labour and the fuel?—I am not clear that we have fuel always accessible; we have the ore, no doubt.

993. Have you seen the reports of Colonel Drummond upon the iron mines in Kumaon?—Yes.

994. He speaks of vast tracts of forest?—Yes.

995. Which he says would supply fuel for a long period?—It does not follow that they could always be available for the purpose.

996. Is it not the fact that at Porto Novo you have both iron and coal?—I believe there is little doubt of the existence of both iron and coal in the greater part of India.

997. I believe that in Jubbulpore you have both coal and iron together on the line of railway?—I believe both coal and iron may be found together in the valley of the Nerbudda.

998. Do you consider that it is impossible to produce iron for railway purposes in India?—I think for many years it would be impossible to manufacture it at anything like the price for which we can buy it here.

999. Mr. *H. A. Bruce.*] As I understand, you consider that railway companies are not the proper parties to undertake it?—Unquestionably.

1000. Mr. *C. Bruce.*] Can you inform the Committee whether the quality of iron alluded to has been found to be of very superior quality?—I do not know the quality of the iron to which Mr. Seymour refers, but I know that the quality of the iron obtained in the Madras Presidency is of a very valuable character; and in point of fact that it more nearly approaches steel.

1001. Mr. *Stephenson.*] Will your return of the traffic contain, as a separate item, the amount of coal you are now conveying?—Yes.

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1002. Do you know how much you charge per ton per mile for the conveyance of coal?—A little over three farthings.

1003. Mr. *Cheetham.*] Have you had the subject of branch lines under your consideration at all?—No, we have not; we have rather set our faces against branch lines.

1004. Have you ever considered the advantage to your company of simple tram branch lines?—I have not; but I think that anything which facilitates the communication between distant parts and our line must be of advantage.

1005. You say that your line is a single line, and that the bridges are constructed for a double line?—The earthworks and the main bridges.

1006. What is the estimated cost per mile?—About 9,600 *l.* per mile, including the rolling stock.

1007. Simple tram lines on the line of railway would of course be made at much less cash than that?—Undoubtedly.

1008. Supposing you go through districts of large agricultural produce, you have not considered whether it is advisable to make such lines?—We have not.

1009. *Chairman.*] When you speak of the main bridging works, have you any bridges at all which are not constructed with a view to the line becoming double?—Yes, the Soane Bridge; the superstructure of that is only at present for a single line.

1010. Is that with the sanction of the Government?—It is.

1011. Is any of the coal which you bring to Calcutta intended for the use of steamers?—For the use of the port, and also of the public.

1012. Are you aware whether the steamers use it?—They do to a certain extent, I think; but I do not know that it is a good steam coal.

1013. Can you say to what use the coal is applied in Calcutta?—It is used chiefly, I believe, in factories, engineering works, and Government works.

1014. *Chairman.*] You made the remark the other day, that you did not altogether acquit your engineer of blame upon the subject of the manufacture of bricks; do you consider that any blame attached to the Government engineer in that matter?—I think that when Mr. Turnbull originally designed those brick structures, which it now appears will take longer to construct than is desirable, he was probably not very well acquainted with the local resources of the country; and it may be, that he was influenced in his designs by the recommendation of the Government engineer. I do not know that it is the fact, but it may turn out to be so. I certainly should have been better pleased if Mr. Turnbull had sooner represented the difficulties there seem to be in procuring bricks as fast as they are wanted. Of course that view may be modified by his explanation. This is a case in which the value of the Government supervision might undoubtedly have been brought to bear, and as it is impossible to conceive that the officers of the Government, who had been so long occupied in great public works in India, could be uninformed of the producing power of the country, I can only attribute their passing these designs without suggesting the difficulty that has arisen either to a want of consideration, or to the circumstance that they never sufficiently appreciated the magnitude of the operations connected with so great a work.

1015. Do you go the length of saying, that your engineer did not receive that assistance from the Government officers to which you think he was entitled?—I think that when Mr. Turnbull proposed these designs, the superior local information which the Government officers ought to have possessed should have enabled them to say at once, that while undoubtedly brick structures were the cheapest that could be adopted, it was simply impossible to get the bricks required within the time within which the works ought to be completed. I think also, that the same amount of local information should have prevented their sanctioning the entering into contracts which involved the construction of 1,100 miles of railways in India in two years.

1016. Mr. *D. Seymour.*] Do you mean to say that you cannot make any amount of bricks in Bengal?—There is no difficulty in making bricks; but we find that the maximum annual make upon any given 50 miles, is about 800,000 cubic feet, and the difficulty is in getting the vast quantity we require in the time we want them.

1017. Are you aware that various indigo planters in Bengal have proposed to construct their roads of brick, in consequence of the unlimited supply?—I do not attach much importance to that, when I know that we cannot get the bricks we want.

1018. The Government engineers thought, like other people in India, that the supply was unlimited?—I think their great experience in public works previously should have kept them better informed.

1019. Have you thoroughly investigated the question, so as to know whether the opinion of your engineer is correct?—No; I cannot say but that when we receive the explanations we have written for, his view as to the number of bricks to be produced may not be modified.

1020. These contracts were entered into five years ago?—Yes.

1021. As I understand, it is only in the fifth year that your engineer writes to you tell you to that he cannot procure bricks; at the time when the bricks ought to have been used and your line completed to Rajmahal?—Yes.

1022. Do you not think that in four years he might, year by year, have seen the deficiency?—I certainly think he might.

1023. Do you not think it is an extraordinary thing that he should first be bringing this to your notice in the fifth year?—I think it is; but as the Government engineers passed Mr. Turnbull's designs, it is only lately that he may have enquired particularly into the matter.

1024. Do you not think that the local officers may still think that bricks by proper means may be procured in a sufficient quantity?—So may Mr. Turnbull.

1025. Colonel *Sykes.*] Do you understand that it arises from the want of labour?—From the want of the necessary description of labour, and I believe the difficulty of getting local supplies of fuel.

1026. Are you aware of the amount of brickwork necessary along the line of the Ganges canal, and what are the means adopted to insure a supply of bricks on that line?—I do not.

1027. Supposing the same energy and the same ability to be manifested in procuring bricks for the line of railway to Rajmahal as was the case along the line of the Ganges, do you not suppose that the difficulty might be overcome?—I do not think there is any want of ability or any want of energy in that respect.

1028. They have succeeded, have they not, in the North Western Provinces, in procuring an adequate supply of bricks?—I know nothing of the construction of that canal.

1029. Mr. *Cumming Bruce.*] Speaking of the Valley of the Soan, you say that the clay was about 30 feet below the surface?—Below the sand.

1030. And to get at the clay necessary for making bricks, you must make an excavation of 30 feet?—We should not take the clay from the bed of the river for the purpose of making bricks.

1031. At what distance from the operations you are carrying on could you get at the beds of clay more easily?—We have no difficulty in finding clay, our difficulty is in finding labour and fuel; there is no question of our ability to procure all the bricks we require ultimately, but the difficulty is to procure all the bricks we require within as short a space of time as we wish.

1032. Mr. *Crawford.*] Was not the line of railway between Burdwan and Rajmahal, as to which your difficulty in getting bricks applies, originally let upon contract?—Yes, with the exception of about 45 miles.

1033. May it not be supposed, then, that the engineers of the railway relied upon the contractors for a supply of bricks?—Undoubtedly they did, as long as the contracts remained in existence.

1034. And that the railway engineers, in point of fact, relied upon the information which they had a right to suppose the contractors had possessed themselves of before they entered into contracts?—I think, nevertheless, that the engineers of the company ought to have inquired for themselves into that fact.

1035. Sir *James Elphinstone.*] Are the bricks made by machinery?—They have hitherto been mostly made by hand.

1036. You have not had in use any of the brick-making machines?—We are sending out a large number of them now.

1037. The bricks made by the natives are not, I believe, very well burnt?—Yes, we have very fine bricks. With proper supervision you get very good bricks.

1038. Mr. *Crawford.*] Has a survey of the Jubbulpoor line been made with a view to determining its probable cost?—Yes.

1039. When describing the course of events between 1845 and 1849, you referred to two letters, dated the 23d of March and the 29th of May, sent by the Board of the railway company; have you copies of those letters?—Yes. That of the 23d of March is in these terms:—

Mr. *D. I. Noad.*

10 May 1858.

East India Railway Company,
London, 23 March 1848.

Sir,

I AM desired by the Board of Directors of the East India Railway Company to acknowledge the receipt of your letter of the 21st instant, in which you intimate that the Court of Directors of the East India Company feel themselves under the necessity of adhering to the conditions contained in the latter paragraph of the letter addressed to this Company by their desire, on the 10th November last, and accordingly that unless the required deposit of 100,000 *l.* be made on or before the 31st instant, their agreement with this company will be considered null and void.

In replying to that letter it is necessary to take a short review of the circumstances which have given rise to the communications between the Court of Directors and this Company, which had their commencement as early as the year 1844.

At that period the promoters of this undertaking (who were the originators of the scheme of introducing railways into India), took up the subject, entirely on public grounds, and declined to enter on any measures towards the formation of a company for carrying out the object, until the principle of Government and pecuniary support had been recognised by your Honourable Court.

That point was decided after much deliberation, and communicated in your letter of the 8th May 1845, in which you stated that the Court of Directors had deemed it necessary for the safe and satisfactory prosecution of railroads in India, that the general subject should, in the first instance, be referred for investigation and report to the Government of India, and that the Court were about to dispatch an eminent engineer to proceed to Calcutta, to act under the directions of the Government in the investigation.

On the result of this communication the promoters of this company, who had taken much pains in investigating the subject, and entertained great confidence in the information obtained, felt justified in proceeding to form an experimental company for the purpose of sending an agent to Calcutta with a view to co-operate with the Government of India in determining the question whether the railway system was practicable in India, and to decide on the line most suitable for the purpose.

Accordingly a company was formed in London in June 1845. Mr. Stephenson, the managing director, accompanied by three surveyors, was dispatched to India in the same steamer with the engineer deputed by the Court of Directors, and Mr. Stephenson returned from Calcutta in May 1846, after making a survey of 900 miles of railway from Calcutta to Delhi.

The result of Mr. Stephenson's investigations and survey, as confirmed afterwards by the Report of the Commissioners appointed by the local Government of India, was the conclusion arrived at by all parties that the railroad system was perfectly adaptable to India; that the line on which the experiment ought to be tried was that proposed by this company from Calcutta to Delhi; and that the execution of the undertaking ought to be committed to a company formed for the purpose.

These conclusions having been thus arrived at, the Board of Directors felt authorised in submitting to your Honourable Court, in June 1846, proposals containing the terms on which they were willing to undertake the construction of the railway from Calcutta to Delhi, among the most important of which was a guarantee of interest on the capital to be expended.

To these proposals no definite answer was received until the month of February 1847, when a paper containing the terms on which your Honourable Court was prepared to give support to the scheme was communicated to the Board, among which terms was the free gift of the land for 99 years, and a guarantee of 4 per cent. interest, limited to 15 years, on an expenditure of three millions.

At the time when this communication was received the monetary affairs of the country, which had become much deranged in the interval since the formation of the company, did not admit of raising a capital for undertaking so great a work with the deferred prospect of return incident to a railroad in India at the rate of interest guaranteed, and your Court therefore were induced to offer an extension of the rate of interest to 5 per cent., and of the term from 15 to 25 years, and this extension was communicated to the Board of Directors in a letter from you, bearing date the 21st July last.

In that letter you stated that the concession thus offered must be considered as final, and required that instructions for commencing the preliminary arrangements should be dispatched by the railway company to Bengal, at the earliest practicable period, and that the railway company should pay into the East India Company's treasury a sum of 100,000 *l.* on account of the proposed undertaking within three months from that date.

On receipt of this letter, the Board of Directors lost no time in convening a meeting of their proprietary, which took place on the 5th August 1847, at which it was resolved, notwithstanding the unfavourable aspect of the times, to make a call on the proprietary to meet the necessary expenses, and enable the company to make the required deposit; and by the steamer of the 20th September, the Board once more dispatched Mr. Stephenson to Calcutta with a large staff of engineers, in order to be prepared to give effect to the desire of the Court to proceed actively with the preliminary arrangements for the construction of the line.

From that period down to the month of February last, the commercial world, as you are aware, has been under the influence of a crisis of monetary difficulty unexampled in modern times, and particularly affecting this company in many respects, in consequence of which

which the Board of Directors were under the necessity of applying to the Court to extend the time of payment of the agreed deposit, which they did, until 31st March instant.

In the meantime, notwithstanding all the difficulties of the times, shareholders to the extent of five millions of capital executed the company's deed of settlement, and the call was paid on a large portion of the shares.

The remaining shareholders omitted to pay their calls, and, in consequence, at the annual general meeting of the proprietors, held on the 19th February last (the proceedings at which have been communicated to you), it was determined to forfeit all the shares in the company on which the call was not paid, and to issue them to the proprietors willing to take them, and to the public, at the price of the call.

In this measure the Board of Directors felt full confidence at the time, and they had reason to believe it would have been entirely successful, and that the necessary money would have been subscribed by the 31st instant, but for the circumstance that, within five days after the meeting, an extraordinary train of events took place in France, extending subsequently throughout all Europe, and yet undeveloped, which has for the time paralysed all undertakings, both of a public and private character, requiring immediate application of money.

The Board of Directors have felt it necessary to lay before you this short statement of facts in order to satisfy your Honourable Court, not only that their whole energies have been devoted with good faith and singleness of purpose to the early accomplishment of the great work they have in hand, but also that the delay asked for, the payment of the proposed monetary deposit, is rendered expedient by circumstances, in respect of which no censure can attach to them, and which are amply sufficient to justify such a request.

The Board of Directors confidently represent to the Court that there is no public company which has not equally felt the combined pressure of commercial and political events, and does not require alike forbearance and encouragement in carrying out its engagements and operations.

They would also, as far as they may be permitted to do so, without indelicacy, refer to their own company as embracing amongst its constituency all the elements adapted to the object, including the principal interests connected with Indian commerce, and would confidently ask whether any company existing, or to be formed hereafter for a like purpose, could effect more than they have done, and are willing to undertake under existing circumstances.

The company has already received a capital exceeding 100,000 *l.*, of which upwards of 40,000 *l.* have been expended in the operation already referred to, leaving more than 50,000 *l.* still in the hands of the company ready to be applied to the objects of the undertaking.

In making this communication, I am directed by the Board of Directors to add that while their application to the Court of Directors had reference more especially to the condition which required a deposit of 100,000 *l.* on the 31st March, it was based also on grounds more widely affecting the substantial merits and objects of the measure.

It had been reported to them, by the last mail, that one of their committee was on his way to England, in possession of information valuable alike to the Court of Directors and the company, as equally interested in this great undertaking, and which might have an important bearing on it.

It was also known that the late Governor-General of India might shortly be expected in England; and the Board of Directors assumed that it would not be thought unreasonable that both the Court of Directors and this Board should have the opportunity of communicating with these officers in the existing state of their mutual relations.

If the Court of Directors, on consideration, should still be of opinion that these opportunities should not be afforded to the company, and should feel it necessary, notwithstanding the representations made to them, to enforce the stipulation for payment of 100,000 *l.*, on the 31st instant, the Board desire me to add that they will adopt every measure with that view; and if, in order to that object, it should be necessary to call their shareholders together, they will rely on the slight extension of time necessary for that purpose (under the terms of their deed) being conceded to them; but they would still submit to the Court the propriety, under existing circumstances, of complying with a request which the Board of Directors have made, with a view to the interests of a measure, in which the Court of Directors and themselves are alike interested, but the risk and responsibility of which, under very trying circumstances, rest entirely with the Board of Directors of the railway company.

I am, &c.

J. C. Melvill, Esq. (signed) *D. I. Noad.*

And this is a copy of the letter of the Secretary, the 29th of May:

East India Railway Company,

Sir, 8, Broad-street Buildings, 29 May 1848.

I am instructed by the Board of Directors of the East India Railway Company to acknowledge the receipt of your letter of the 29th ultimo (received the 1st May), written in reply to my communication of the 20th April, in which I intimated the possibility that the Board of Directors might not, under existing circumstances, be in a position to make the deposit of 100,000 *l.* with your Honourable Court until a few days after the 1st of May, and

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requested indulgence to that extent. In your letter you state that no extension of time beyond the 1st of May will be granted; and that, in the event of failure to make the payment on that day, the agreement with the railway company will be null and void; and further, that the Court cannot consent to any modification of the rate of interest which they have agreed to allow, or of the period for which the guarantee was proposed.

The Board of Directors feel that the determination thus communicated, at a time of peculiar difficulty, when the position of this company, as of all enterprises of a similar nature, required the greatest forbearance and encouragement, is less liberal and considerate than they were prepared to expect from the Court of Directors.

The promoters of this undertaking have never disguised from the Court or themselves the views they entertained of the necessity of support and co-operation from the Government of India; and they would never have proceeded so far with the undertaking, but for the encouragement contained in the minute of your Honourable Court, dated the 7th May 1845, and your letter of the 8th May 1845, and the policy announced that railroads in India should be constructed and managed as they are in this country, by means of private enterprise and capital.

Having been led by these inducements to form a company on this basis, and incurred great expense in extending to the necessary point the investigations conducive to this object, the Board of Directors, in July 1846, proposed to your Honourable Court the terms on which they were prepared to undertake the construction of the line selected by your Honourable Court, and the Board of Directors feel warranted in stating, that had the terms they asked at that time been conceded (even subject to some modification) they would have had no difficulty in raising the capital required.

Unfortunately, the Board of Directors received no reply to this communication until the latter end of January 1847, when the long and unprecedented train of pecuniary embarrassments had commenced, which have since abated only in favour of political disturbances, even more disastrous to such undertakings.

The terms then offered by the Court were not such as, under the discouraging circumstances of the times, admitted of a capital being raised on a scale to justify their acceptance, and the Board of Directors were in communication with your Honourable Court from February to July 1847, with a view to obtain more favourable concessions. The ultimatum of the Court of Directors was received at the later period, and the Board then saw ground for hoping that the guarantee offered of 5 per cent. for 25 years, though less than the terms they had felt it right to propose, might have formed a sufficient inducement to their proprietary to undertake the outlay fixed by your Honourable Court at three millions, and when those terms were offered, the Board of Directors immediately acted on the requisition contained in your letter of the 21st July 1847, by forthwith engaging and sending out an increased staff to India, a step entailing great expense upon the Company, but evidencing their zeal and sincerity.

These measures were taken under an expectation that the times would improve, but this has not been the case, and hence the Directors found it necessary to apply for a further extension of time for payment of the 100,000 *l.* which your Honourable Court required as a preliminary to the contract.

Under all ordinary circumstances, the interval which has elapsed would have been sufficient for the purpose of raising the money, but during this time such was the state of commercial embarrassment at home, that, as your Honourable Court cannot fail to be aware, Her Majesty's Government found it necessary to introduce a Bill into the Legislature, giving English railway companies a considerable period to complete their engagements; and when these difficulties appeared to be subsiding a revolution appeared on the Continent, baffling, in its consequences, all calculations, and destroying for the time the disposition of capitalists to enter upon any engagement, nor was such a difficulty peculiar even to enterprises of this nature, for the experience of your Honourable Court will sufficiently prove, that, for the ordinary remittances to India, money on extraordinarily advantageous terms was only to be obtained to a very limited extent.

In this state of things it was scarcely to be expected that the Board of Directors would find themselves in a position to make a deposit of 100,000 *l.* by the 1st of May, which depended on a call which they were not in a position to make until the 22d of April. Nor was it to be hoped that terms which had not been sufficient under less unfavourable auspices, would prove to be so at a moment of increased and universal difficulty.

Nevertheless the Board, on being made acquainted with your decision, convened a meeting of shareholders, made a call, obtained a large portion of the money necessary, and might have been in a position, but for your letter, to make the deposit within the short further period of indulgence asked. Such a communication, made at such a time, was calculated to discourage the disposition, and paralyse the exertions of the company, and induce a want of confidence in the intentions of the directors most injurious to the undertaking.

The Board of Directors would now submit to you, that if the Honourable Court is still desirous that the railway should be commenced, they are prepared to recommend their shareholders to undertake it on terms commensurate with the cautious spirit of the times,—with the present rate of interest for similar enterprises, and with the rate which the Government has offered to colonial railways, in preference to recalling their staff, and awaiting the return of more settled times before entering upon the works. As, however, they have an establishment retained at great expense, and part actually at Calcutta; and as they conceive the delay to be very injurious to the cause, they would take leave to suggest to

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the Honourable Court, that a guarantee, increased as to amount or duration, should be allowed to the company, on an expenditure limited, if they please, to the outlay necessary for a single section of the line, from Calcutta to Delhi; which, after consultation with the proprietary, the Board of Directors would in that case be prepared at once to undertake, and on account of which they would be ready at once to deposit a sum of 50,000 *l.* with the Court of Directors.

I am desired by the Board of Directors to add, that if the Honourable Court should be of opinion that it will tend to give confidence to the enterprise, either here or in India, they would be willing that the Court of Directors, as in the case of the Bank of Bengal, should provide one-third, or a portion to be agreed on, of the capital necessary, and have a right of nominating a proportionate number of Directors, so as to give to the Government of India an interest alike in the profits and management of the undertaking.

I have, &c.

J. C. Melvill, Esq., &c. &c. (signed *D. I. Noad*, Secretary.

1040. Can you state the probable cost per mile of the Jubbulpore line?—About 7,800 *l.* per mile, exclusive of the rolling stock.

Mr. *George Sibley*, called in; and Examined.

Mr. *G. Sibley.*

1041. *Chairman.*] I BELIEVE you are a Civil Engineer?—I am.

1042. Have you been employed upon certain portions of the East India Railway?—I have.

1043. Upon what portion of the line?—I was first of all on the Chandernagore District, which is now open, and subsequently to that on the South Beerbhoom District.

1044. You have been employed, I believe, in a subordinate capacity; you have not acted as chief?—As district engineer.

1045. I believe you were under Mr. Turnbull?—I was.

1046. Over what period does your experience of railway construction in India extend?—Since the autumn of 1851, up to two months ago, when I arrived here.

1047. You have been engaged in India about five years?—Between six and seven.

1048. You can speak, I believe, from personal experience, to the mode in which the supervision of the Government is carried on?—I can.

1049. I presume you have been repeatedly brought into contact with the Government engineer?—I have.

1050. Do you think that the system of supervision, as carried on by the Government engineer, is susceptible of improvement?—Undoubtedly so.

1051. Can you state to the Committee any special case of inconvenience which you have felt in consequence of the exercise of Government supervision?—I can; the system is not a very regular one, it varies considerably; on the portion of the line where I was last engaged we did not suffer much from the superintendence with regard to the powers of sanction required for the execution of the works: that we did without indent, but for all plant required we were obliged to submit indents, and they went through the usual circumlocutory course. I may mention what occurred shortly after our works were started; in November 1853 we indented for six agricultural engines for the purpose of pumping, and we obtained them in August 1855, after a period of 21 months; that affects the course of proceeding in India, and also the course of proceeding here.

1052. Have you had any experience of the line since it was constructed?—No; I have not had charge of it; with regard to the superintendence it affected our staff, because we had not the power of putting on one man without previous sanction.

1053. Is it not the case that the class of skilled labour requisite for railway work is not obtainable in India?—It is not obtainable in India as skilled labour; you have to educate it.

1054. Had you a sufficient staff, so that in case of your engineers being taken ill, you had the means of supplying their places?—We had not; we were always under-manned.

1055. Do you know of inconvenience arising from that course?—I know of cases of inconvenience arising, and men invaliding in consequence of overwork.

1056. Mr. *Crawford.*] You have had the responsible charge of constructing some portion of the work of the East Indian Railway?—I have.

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1057. Describe the portion?—The portion of which I have at present charge extends from the junction near Burdwan to over the River Mor.

1058. What is the distance in miles?—Forty-five miles.

1059. What is the general character of the works?—The works are decidedly heavy.

1060. In what respect?—They are heavy in respect of earthwork, owing to the gradients we are restricted to, and they are heavy in respect to the river, crossings. We cross the drainage of the country at right angles.

1061. What is the ruling gradient in that part of the line which you have under your charge?—It is now 1 in 500.

1062. Was it at any time to have been a better gradient than that?—Better, in the shape of being flatter; at the time the section was sanctioned, we were restricted to a gradient of 1 in 1,000, and it was only after considerable discussion, and repeatedly bringing the matter before the Government, that we got them to consent to an alteration; our works were commenced with a gradient of 1 in 1,000, and we had to alter them.

1063. Are you able to state any practical results of the change?—I have no figures with me.

1064. Speaking generally, the works would have been heavier with a gradient of 1 in 1,000 and 1 in 500?—Very much so.

1065. You spoke of two bridges over the Rivers Hadjai and Mor; what is the character of those bridges?—The bridge over the Hadjai has a waterway of 1,600 feet, with flood openings, on the one side of 400, and on the other of 260 feet.

1066. What is the number of arches?—Thirty-two.

1067. And the span?—Fifty feet.

1068. I believe it was proposed that the bridge should be built of brick?—Entirely.

1069. How far had the bridge advanced when you left India?—The foundations of 18 out of 32 arches and piers were in, and the earthwork was excavated for the whole of the remainder.

1070. What are the dimensions of the other bridge over the Mor?—That has 1,200 feet of waterway.

1071. What height is it above the water level?—The elevation of the rail above the high flood level is 20 feet.

1072. Had you much difficulty in procuring bricks necessary for the construction of the works, so far as they had proceeded when you left?—We have not been delayed in consequence of a deficiency of bricks in either of those works; in fact, at the Mor Bridge we have eight millions of bricks collected.

1073. What would be the whole number of bricks required for those two bridges?—Allowing for waste, there would require to be provided at the Hadjai 36 millions, and at the Mor 23 millions.

1074. Do you find the natives handy workmen?—Very much so.

1075. How do you secure an efficient superintendency over the construction of the bridge?—At each bridge we have an assistant engineer, and under him are inspectors; in one case we have three and in the other two, of whom one especially looks after the excavation of the foundations, and the other the brickwork.

1076. *Chairman.*] Are they Europeans?—They are Europeans.

1077. Have you any native skilled workmen at all employed?—Yes.

1078. But not as inspectors?—Yes; we let the brickwork of each small bridge, which is executed at so much per hundred cubic feet, and separately at each bridge we put over a native inspector.

1079. Are all your inspectors native inspectors?—Of the small single works they are. The establishment which we asked for and did not get sanctioned was a district engineer for some 90 miles, and that under him should be three resident engineers, each with a length of 30 miles, and that under each of those there should be three assistant engineers with a length of 10 miles each; and that when the work was executed by contract, each assistant engineer should have two European inspectors, and that where we were executing works without the intervention of contractors, he should have, in addition, two clerks of the works to collect materials, prepare bricks, lime, &c.

1080. *Chairman.*] You say that was the staff you proposed, and which you did not get sanctioned?—The Government objected to it as being, as they said, in excess; it was brought forward on, I think, the 18th November 1856, and is still an open question. It was replied to on the 20th January 1857, as being in excess, but the Government did not state what would be sufficient.

1081. The

1081. The application originally was in the shape of indent for an increase to the staff?—For an increase to the staff.

1082. To that application you have as yet received no positive answer?—We have received a positive refusal, but without stating what number they considered sufficient.

1083. Mr. *Crawford.*] You have had experience in India in the construction of works under contract?—I have.

1084. Which do you think is the best system, to execute the works by contract, or by the company doing the work themselves?—Our first contracts answered very fairly on the whole, and I think that arose from their being more limited in their extent than those that were afterwards entered into.

1085. You think that the contract system in Bengal has broken down by contractors taking too large an extent under their management?—I think that has been the chief cause; the contracts as originally let averaged from 10 to 20 miles, and they were carried out more or less satisfactorily; the contracts afterwards made averaged from 80 to 120 miles.

1086. Have you been over the line from the district under your jurisdiction to the River Mor, towards Rajmahal?—I have been over that line as far as Sigreegullee.

1017. I understand that considerable saving has been effected in the earthworks on the line between Rajmahal and Colgong in consequence of the alteration of the ruling gradient from 1 in 500 to 1 in 200?—Yes, it was only altered in one instance. In going over the line we saw that great improvement might be made in that particular case, and we brought it before Government, and finally obtained their assent.

1088. What is the saving on the excavation of the earthworks in consequence of the reduction of the gradient?—The saving in that particular cutting was a reduction from thirteen millions to six millions.

1089. Have you been further on the line towards Mirzapore?—I have been up the trunk-road between Allahabad and Cawnpore.

1090. You have not been upon the line between Colgong and Allahabad?—I have not.

1091. Having been up the great trunk-road by the side of which the railway would have gone if the original line had been made, are you able to form an opinion as to the propriety of the decision of the Government in changing the course of the line?—I am; although I have not travelled along the line between Colgong and Benares, I have seen the whole of the sections, and having seen the country between Burdwan and Colgong, and also that between Raneegung and Benares, I am decidedly of opinion that the line of the direct route might have been constructed in a very much less time and at less cost than that by the valley route.

1092. Have you any recollection at this moment of the altitude the line has to surmount in overcoming the water shed between the River Damoodah and the River Soan?—There has never been any very accurate section of that line taken, but I believe the summit is put down at about 1,030 feet.

1093. What is the character of the passage over the Soan, where the trunk road crosses it?—It is very wide there; but at a distance of about 20 miles further up the River Soan than where it crosses, both banks are of rock.

1094. What is the width of the river where it crosses?—Two and a quarter miles.

1095. You have not been on that part of the River Soan which it is proposed to cross by this bridge?—I have not.

1096. You formed your opinion, as I understand, as to the advisability of the direct route over the circuitous route, upon general personal knowledge of the facts of the case?—Simply so, and upon a general inspection of the country.

1097. Do you confine your preference of the direct route over the other to the mere engineering question?—No; I think that, as regards the facilities it will afford for traffic, the country will be much better served by the direct line carried to Benares, and a branch such as we are constructing from near Burdwan to Rajmahal; that would have given the same total length as along where we are now making the valley line.

1098. When you speak of traffic do you mean traffic beyond Mirzapore?—I mean the whole traffic; the traffic beyond Mirzapore would have saved some 120 miles, and the whole of the traffic of the Ganges Valley from Purneah and Tirhook would have been brought to Rajmahal, and then brought down the line,

Mr. G. Sibley. thus saving the circuitous route by Sunderbunds, which forms the chief objection to the present river traffic.

10 May 1858. 1099. Without pledging yourself very strictly to the opinion, do you think that the original direct line, if it had been carried out, would have been in operation in the present year?—I believe it might have been, with the exception of the crossing of the Soane, and perhaps one or two other large rivers.

1100. Are you able to give the Committee any information upon the interference with the progress of railway construction caused by the demand made on the part of the Government for labour and for carriage?—I do not think that the demand on the part of the Government for labour has interfered with railway construction, but the impressment of carriages has interfered with it to an enormous extent.

1101. Do you think that the works under your superintendence were impeded by the impressment of carriages?—I am perfectly sure of it; we have been making representations to the Government on the subject for the last three years.

1102. At what point was that impressment particularly felt?—Over the whole district.

1103. Was it an impressment of vehicles of all descriptions, and of animal power?—There is but one description, the common hackery.

1104. Colonel *Sykes*.] Were they in your employ?—They were.

1105. Mr. *Crawford*.] Was there an impressment also of animal power?—Yes.

1106. Consisting of bullocks?—Yes.

1107. Can you describe the effect produced upon the native mind by that system of impressment?—The evil is not to be measured by the number of carts seized, but by the fact that its becoming known that one or two carts have been seized is quite sufficient to induce the whole of the natives to abscond; the wheels are taken off, and are buried in tanks, and the bullocks are driven away to the jungles; that will be produced by a single act of impressment, and for a fortnight after the regiment has left the locality not a single cart will be seen.

1108. Is not the mind of a native particularly susceptible to an impression of that kind; it is given to panic, is it not?—Largely; so much so, that when the late Act for impressment was passed, although it had not been put in force against Calcutta, the European firms there found that large numbers of their artificers and labourers were absconding, and, in consequence of that the Government of Bengal issued a notification in the "Gazette," which, if you will allow me, I will read. It is dated 5th February, and is in these terms: "It having been brought to the notice of the Government that some apprehension prevails in Calcutta among labourers and artisans lest they should be made subject to impressment, under the Act 6 of 1858, and that some of the European firms at the Presidency have been put to serious inconvenience by the desertion of their workmen, it is hereby notified that the Act in question has not been extended to Calcutta or its vicinity, and is not in force there, and the Government at present sees no probability of its being necessary to extend it."

1109. In point of fact it was the reaction upon the native mind which rendered the proclamation necessary?—At that time they were not aware of its having been proclaimed in other districts, but they were aware of the Act having passed.

1110. Were you in India when the Act passed?—I was not.

1111. Are you able to give any information as to the consequence upon the railway interest, as to the prices and supplies generally, caused by the extreme amount of information required by the Government when applications are made to them to confirm contracts and purchases?—As regards my own works such a previous sanction was not required, but I know of instances in the execution of other contracts. One case in particular is a characteristic one. In finishing the work of what we call section B, a portion of which is now open, and where the contractor had failed, a supply of lime was required, and an indent was sent in the usual course, asking for liberty to purchase a small amount of lime at, say 50 rupees. In the ordinary course of things this came back in a fortnight with a sanction to purchase; but in the meantime the market had risen, and lime was then at 55 rupees; a further indent was sent, and this came back after a similar period, when lime had again risen owing to a report that the lime boats had sunk in the river, and lime was then at 60 rupees; a third indent went through a similar course, but by the time it returned the report of the sinking of the boats was confirmed, and no lime was to be had in the market.

1112. Is that an extreme case?—It is not an extreme case.

1113. As I understand, it may be taken as a sample of the consequences produced by the exact and minute satisfaction required by the Government upon all these points?—It may be taken as a case of what may happen even where there is no neglect on the part of the Government officers.

1114. Do you think that the minuteness of reference and explanation required on all points by the Government is productive of any effect on the minds of the engineering officers employed?—It doubtless has; it produces that certain depression in the tone of energy that the absence of responsibility will always produce.

1115. In point of fact, an engineer so employed, and subjected to such exactions, feels that he has no responsibility?—He feels that the responsibility is divided between himself and the Government officer.

1116. *Chairman.*] Does it not go a little beyond even what you have described, and do you not feel, as a thoroughly educated civil engineer, that it is a certain amount of reflection upon your talents and experience?—It very much depends upon the men who may be appointed on the part of the Government; so far as my experience goes, I have been exceedingly fortunate in having good men, but we have no security that they may not be changed to-morrow, and that we may not get men altogether without experience; in fact, mere military engineers.

1117. In that case, you would feel it a great hardship to be controlled by a man inferior in point of capability to yourself?—No doubt.

1118. Mr. *Crawford.*] In your district you had rather more latitude and discretion, had you not, than would have been afforded under other circumstances?—I had; the district of which I had charge was ordered to be executed in that manner rather as an experiment.

1119. Do you think that as an experiment it has been successful?—I think it has.

1120. Upon general principles?—Upon general principles; I think we had every reason to be satisfied, both with regard to the manner in which it has been worked, and with regard to the cost, as far as we can at present ascertain, and also as to the time.

1121. Have you at all considered the result in profit and loss upon the view of pushing on works at an increased expenditure?—I have, and I believe that on that subject very exaggerated notions prevail. Taking, for example, the extreme case of completing the work in four years as compared with eight years, supposing the expenditure to be evenly distributed over the whole period, and the amount to be spent in each year to be raised at the beginning of each year. In the first case, at the end of the first year, you would have to pay interest on one quarter of the capital, in the second year on two-fourths, and so on; the sum of the four terms being 10, which, divided by four, equals two and a half years on the capital, which, at five per cent., equals 12½ per cent. for interest while unproductive during construction. In the second case, in the first year you would have to pay one-eighth, and in the second year two-eighths, and so on; the sum of the eight terms being 36, divided by eight, equal to four and a half years on the capital, or, at five per cent., 22½ per cent. for interest during construction, as compared with 12½ per cent. in the first case, leaving a difference of 10 per cent., or, in other words, to effect a reduction of from eight to four years in construction, you would not be warranted, in a commercial point of view, in paying, in the shape of increased prices, more than 10 per cent.

1122. Mr. *Stephenson.*] The result is, that expedition is obtained at too costly a rate?—Precisely.

1123. Taking the most exaggerated case, you can suppose you have 22 per cent. to pay upon, and the cost of expedition would be more than that?—Just so; taking the most extreme cases, it would only leave you a limit of 10 per cent. additional.

1124. Are you aware of what has been the effect in this country of attempts made from time to time to obtain expedition?—I am.

1125. Do you know of any case in this country in which expedition has not been productive of an enormous expenditure of money?—I know of no instance.

1126. I suppose that would apply to India more than to England?—More forcibly; there is there a very decidedly fixed limit to the rate of progress.

1127. *Chairman.*] I should like to ask you whether you consider the rate of progress in India has reached that limit?—If I may be allowed to say so, I think that on the works of which I had charge of, it has.

1128. Mr. *Stephenson.*] Your limit in India has been the amount of labour

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you could obtain?—It has; as a general rule you may assume that it takes half as long again to execute works in India as in England, and the reasons for that are, first, that you have to provide the whole of your materials, which here you go to the merchants for, as in the case of bricks, and when you have your materials you have to transport them over a country with no roads. Again, as regards the supply of labour, almost all the works that have been hitherto executed in India have been executed by compulsory labour, and the consequence of that has been that when we first commenced our works we found the labourers all hanging back because they feared they would be compelled to labour, and were exceedingly uncertain as to whether they would be paid.

1129. They felt that you would pay them if they worked?—They were secure from ill-treatment, and were sure of payment.

1130. Colonel *Sykes.*] Did you commence with compulsory labour?—Not at all, and the consequence was that in the first instance the progress was very small.

1131. The railway company used compulsory labour before you came there?—No. When we commenced our works we had so much difficulty that we could not get together sufficient men to erect bungalows for our shelter; that was about five years ago; and in the same district, when I left on the 31st of December last, having treated the people fairly, we had collected together a force of 24,000 workpeople over an extent of 45 miles.

1132. *Chairman.*] You feel that you have rather a better character?—I believe we have gained their confidence.

1133. Mr. *Crawford.*] What do you define to be compulsory labour?—The definition is very simple. I call that compulsory labour where a man is told he must go and work at a certain work at a certain nominal price.

1134. Supposing a man does not go?—He is put into prison.

1135. Mr. *Stephenson.*] What do you mean by "nominal price"?—When a man is engaged upon such work he has paid to him daily a certain sum of money called korakee, which is just sufficient to keep body and soul together, leaving the adjustment of the account until the completion of the works; but owing to the number of hands that these payments have to go through, and the small interest which those who are charged with the works take in seeing the people paid, the result is that they generally get nothing more than the korakee.

1136. Mr. *Crawford.*] Do you suppose that the Government officers employed have any cognizance of these facts; take the case of an engineering officer of the Government being employed in the construction of barracks at a station, and compulsory labour being engaged; do you suppose that that engineering officer is aware of the manner in which the labour is exacted from the people?—It is not so exacted now.

1137. Do you suppose that he was aware of it?—I should suppose that he must have been generally aware of it.

1138. Was it not a species of tyranny exercised by the natives who acted the part of contractors, and who employed the labour?—I have no doubt that he would be perfectly aware of the labour being compulsory, and he was so far to blame as regards the payment that he did not see that the men were paid.

1139. Colonel *Sykes.*] Are there any courts in existence there?—Yes.

1140. What is there to prevent the men recovering their wages?—I know of nothing to prevent them, but I know that they never do. The expense of recovering the amount would probably exceed the amount recovered.

1141. Mr. *D. Seymour.*] Is it not notorious that the officials, from the collectors up to the Governor-general, when on their journeys, are supplied with transport, the payment for which never reaches the people who supply the means of transport?—Yes, but seldom.

1142. Colonel *Sykes.*] Do you know that?—I know that it is notorious.

1143. You mean that it is the talk?—It is notorious.

1144. Mr. *Stephenson.*] What are the wages given under the compulsory powers?—I do not know; under the present Impressment Act the magistrate has power to fix the price at which the people shall work.

1145. *Chairman.*] That I suppose is represented by the minimum that will keep body and soul together?—I do not know.

1146. Mr. *Stephenson.*] Have you been over both the lines of railway?—I have been over one entirely, and over a portion of the other.

1147. The difference, I believe, is about 120 miles in the length of the lines?—About 120.

1148. Out of how many?—In the proportion of 420 to 540.

1149. That

1149. That is one-fourth longer?—One-fourth longer.

1150. Are your works upon the direct line heavier or lighter than they are upon the more circuitous one?—I think, on the whole, they are decidedly lighter on the direct line than on the other. Over about 150 miles of it, the earthworks would be decidedly heavier, but the bridging required over that length would be exceedingly light, and the whole of it on good foundations.

1151. What would be the ruling gradient upon that line?—As I remarked before, no very accurate section has ever been taken on that line, but I think it would be about 1,030 feet above the sea; and, from my own observation, I think there is no doubt that a ruling gradient of 1 in 200 might be obtained. An accurate section has been taken on a route tolerably near to that which was to go direct from Rajmahal to Patna, and it was found that a ruling gradient of 1 in 250 was obtainable up to the edge of the slope. On the route then taken it was found difficult to obtain good gradients further on, and therefore it was abandoned, but, on the main line, I have no doubt that 1 in 200 might be obtained.

1152. May I assume that a ruling gradient of 1 in 200 might be obtained on that line, at about the same expense per mile as on the Valley line?—Certainly within that.

1153. What is the ruling gradient upon the Valley line?—One in 500; the only exception being that of the Seetapahar Hill.

1154. I shall probably not be far wrong in assuming that 1 in 500 would be practically level?—Practically level.

1155. Have you ever considered the effect which that advance of gradient would ultimately have upon the cost of the locomotive power?—I have never gone into it very carefully, as the question of direction was settled when I arrived in India; but upon 1 in 200, as compared with 1 in 500, it would, no doubt, be greater.

1156. Are you speaking of heavy goods traffic?—Yes.

1157. In which case the engines are loaded to about their maximum?—Yes.

1158. And where you have to convey goods 400 or 500 miles, of course care is taken that the engine shall carry full loads?—No doubt.

1159. Between Yorkshire and Lancashire a large coal traffic is carried on, as you know, and at a very low rate of fares; do you know the rate?—I do not.

1160. I believe it is a halfpenny per ton per mile; that line, as you know, between Yorkshire and Darlington is practically level, and therefore it may be put in the same category as the valley line of the Ganges; do you know the weight of the loads they carry between Yorkshire and Darlington?—I do not.

1161. Supposing we assumed it to be 360 tons; when that cheap coal train arrives at York, we will suppose that the ruling gradient on the Great Northern line is 1 in 200, the engines being the same; if the traffic managers are compelled to reduce the load to 200 tons, what effect would that produce upon the economy of the locomotive power?—Assuming the facts to be as you state, it would be considerable.

1162. Assuming the load to be 360 tons at 3 *s.* 4 *d.* per ton, it would produce 22 *s.* 6 *d.* per mile on the level line?—Yes.

1163. At the same rate, on the other line, 22 tons at 3 *s.* 4 *d.* per ton would give an income of 12 *s.* 6 *d.* per mile?—Yes.

1164. The difference between 12 *s.* 6 *d.* and 22 *s.* 6 *d.* is 10 *s.* per mile, and therefore the engines upon the level line would earn 10 *s.* a mile more than upon the other line; what is the average cost of locomotive power in this country, or in India?—I am not aware what it is in India; but it is very much less than it was.

1165. Assuming it to be 2 *s.* in this country, the locomotive power upon the level line as compared with the other would cost nothing?—Supposing that is correct.

1166. Would not that induce you to modify your opinion, not looking at the cost of making the line, but at the cost of working a large traffic?—Most undoubtedly, supposing those data to be correct.

1167-8. If the line from Calcutta to Benares, the direct line, proved inferior owing to that circumstance, what effect would that have upon the ultimate result by adding 400 or 500 miles at the Benares end?—None.

1169. Supposing you had been tied down to a gradient of 1 in 500, on the direct line, would the result have borne any comparison with the present one?—Without accurate sections, it is difficult to say; but I should think that on the main line we should not have exceeded it. On a portion of the line it would have

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materially exceeded that; but on the whole I think it would have been constructed for the same money. In India we find that the works which cost most in time and money are not heavy excavations, but bridges over the rivers in soft alluvial bottoms.

1170. If you can state with confidence that the direct line might have had a ruling gradient of 1 in 500, and not have exceeded the other, then my previous questions fall to the ground in a great measure?—I am not prepared to state that with great confidence, from the fact that no careful examination of the country has been made, but I believe it generally to be so.

1171. Have you travelled over the whole of the direct line?—Twice.

1172. Mr. *Cheetham.*] What is the extent of the population over the direct line, as compared with the Valley Line?—The population on the direct line for about 150 miles of its length is exceedingly scarce.

1173. And, of course, its agricultural products for that length of line are similarly deficient?—Yes.

1174. Will the navigation of the Ganges proceed as usual, although the Valley Line be made?—I think a large proportion of the goods will go down as far as Rajmahal. The goods from Purneah and Tirhoot must be put into boats to go down to the line, and being once in boats, I think there can be no doubt that they will be brought down as far as Rajmahal, and then be transferred to our line.

1175. Mr. *Stephenson.*] It has been suggested with regard to the engineering staff, that the Government of this country might also have a consulting engineer of their own, would that simplify and facilitate or expedite proceedings in this country, the company having its own consulting engineer also?—I think it would be only introducing one more element of delay.

1176. Mr. *D. Seymour.*] Do you not think that there will be sufficient traffic, both in the Valley Line and the line round by Rajmahal?—I think there is no doubt that both will be eventually made.

1177. Mr. *Stephenson.*] When you said that the direct line, even with a gradient of 1 in 500, would not be more costly than the other, did you take into consideration that you have two branches to make over that line into the valley, for the sake of accommodating a very large population?—I took into account that we have one branch to make to Rajmahal, which is a distance of 120 miles.

1178. For accommodating the valley of the Ganges, you would have the branch to make, on the one line and not on the other?—Yes.

Mr. *John Freeman,* called in; and Examined.

Mr. J. Freeman.

1179. *Chairman.*] I BELIEVE you have resided for a very considerable time in India?—Upwards of 25 years in the district of which you have been talking, between Calcutta and Benares.

1180. I believe you can give us some information on the subject of brickmaking in that country?—I can.

1181. Give us the result of your own experience on that subject?—As a large landowner and indigo planter, I had to erect considerable dwellings in different districts of Bengal, and at the time I left India bricks were sold at the rate of 300,000 a lac; the bricks were made by the contractor burned with wood, but of late years coal has been so much used to simplify the process, and therefore that is a great advantage; and for 30 miles above Calcutta on either side you see, and for 30 or 40 miles below Calcutta on the other side you see, nothing but brick kilns burning at some times of the year. They burned with coal because they could get broken coal and dust at a cheap rate, and the bricks they make are very superior because they are very regularly burnt. The use of coal has reduced the price of brickmaking.

1182. From your knowledge and experience of that country, you give it as your opinion, as I understand, that the supply of bricks is almost unlimited?—If you take the proper course, I mean to say that it is possible to make bricks to any extent. I have passed through the works, and I have seen one-tenth of the number of people occupied, in the proper season of the year, in gathering material, preparatory to the dry season, because bricks can only be burnt between December and June, but during the other parts of the year when the waters are up, there are great facilities for conveying material, such as coal, and wood, and other things; and if you make proper use of the two seasons, and have a proper number of people at work, I maintain that you can make bricks to any extent. At a rough calculation I should say there are millions of kilns, and

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the men take mud just as it is, without mixing up sand with it, put it into form, and in two days it is dry enough to put into the shape of little walls, and in a week or 10 days you may put them up in the shape of a pyramid. I am sure that no country can offer such facilities.

1183. Is it not the fact that in Calcutta the soil is peculiarly adapted for the purpose?—All Bengal is alluvial.

1184. Mr. *D. Seymour.*] What would you do in the way of contracting for the manufacture of bricks?—All that would depend upon the number of people employed to look after them.

Jovis, 13° die Maii, 1858.

MEMBERS PRESENT.

Honourable H. G. Liddell.	Sir J. Elphinstone.
Mr. C. Bruce.	Mr. D. Seymour.
Mr. H. A. Bruce.	Mr. Stephenson.
Mr. T. G. Baring.	Colonel Sykes.
Mr. Crawford.	

THE HONOURABLE H. G. LIDDELL, IN THE CHAIR.

Mr. *George Sibley,* called in; and further Examined.

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1185. Mr. *Crawford.*] ASSUMING the figures which Mr. Stephenson gave you on a former occasion to be correct, do you still think that goods would be carried more economically on the direct line?—I do; the exceptional gradients on that line do not extend over the whole length of it, but only 150 miles, and assuming that these figures are correct, the goods to be carried on the steeper gradient would only be $\frac{5}{8}$ths of the full load, and that would be equal to doubling the locomotive expenditure over 120 miles, but the locomotive expenditure is only one item in the transit charges, amounting in the East India Railway to something less than 47 per cent. on the whole, and as 120 miles is about the extent of line saved by the direct route, even adopting this view, more than half the distance would be practically saved. Further than that, this additional locomotive expenditure should not be taken on the whole length of exceptional gradient, but only on half, the ascending plane, and that would bring the advantage equal to a saving of $\frac{3}{4}$ths of the whole additional mileage.

1186. What would be the difference in the expense of working the direct line with ruling gradient of 1 in 200 for 150 miles, as compared with 1 in 500?—Assuming again these proportions that the load would be only $\frac{5}{8}$ths of the full load over 75 miles, or about $\frac{1}{2}$th of the whole length of the line, $\frac{1}{8}$th being $\frac{5}{80}$th, the expenditure on that length would be $\frac{5}{80}$th of the whole; deducting the $\frac{5}{80}$th that would give an excess of $\frac{5}{80}$ or $\frac{1}{16}$; taking the locomotive expenditure on the East India Railway at 18 per cent. of the gross receipts, the increased cost would be $\frac{18}{16}$, or 2$\frac{1}{8}$ths per cent. of the gross receipts.

1187. Can you state what is the greatest load practically carried on lines with a ruling gradient of 1 in 200, as compared with that part of the railway now opened with the ruling gradient of 1 in 1,000?—On the Great Northern line the maximum load is 30 trucks loaded with 7$\frac{1}{2}$ tons, the trucks weighing 4$\frac{1}{2}$ tons; this gives a net maximum load of 225 tons, and a gross load of 360 tons. On that part of the East India Railway which is opened, with a gradient of 1 in 1,000, the maximum load is 35 trucks, loaded with 7 tons, the trucks weighing 5 tons; this gives a net load of 245 tons, and a gross load of 420 tons, being in the proportion of 7 to 6. On the South Western line, where the ruling gradient is 1 in 240, the maximum load is 40 trucks, loaded with 5 tons, the trucks weighing 4 tons; this gives a net load of 200 tons, and a gross load of 360 tons, the same as the Great Northern.

1188. Mr. *Stephenson.*] You have taken the locomotive expense at a certain rate per cent. upon the gross receipts; 18 per cent., I think you say?—Yes.

1189. You are probably aware that my questions the other day had particular reference to goods?—Just so.

1190. That was assumed to be a very important part of your traffic from the interior of the country?—Yes.

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1191. You are aware, I think, that the 18 per cent. of locomotive expense, as arrived at in this country, is by the mixing up of passenger with goods traffic?—Yes.

1192. Do you think that you can arrive at a fair result, taking the average cost in this country as compared with your mode of carrying goods in India?—Not as applied solely to goods.

1193. My questions, the other day, had reference especially to goods?—I have not a sufficient recollection of your questions.

1194. I asked you this question: "Are you speaking of heavy goods traffic? Yes."—"In which case the engines are loaded to about the maximum? Yes."—"And where you have to convey goods 400 or 500 miles, of course care is taken that the engine shall convey full loads? No doubt." Therefore all my questions had reference to goods?—My observation at present has not reference purely to goods.

1195. Then in point of fact the 18 you arrived at just now is upon the data taken in this country by mixing the locomotive expenses, including both goods trains and passenger trains?—Yes.

1196. Do you think, after that suggestion, that the conclusion you have just drawn is borne out by the facts?—Not if applied to goods solely.

1197. Mr. *H. A. Bruce.*] You said just now that in estimating the additional cost of working the line through a country, with comparatively bad gradients, the cost was to be reduced by one-half, inasmuch as it was only on an ascending plane that the cost was increased, but I presume there is a great deal of additional wear and tear on the descending plane as regards the rails?—Not within the limits of 1 in 200.

1198. Mr. *Stephenson.*] Have you had any experience in the wear and tear of coal traffic, and heavy goods traffic, descending a gradient of 1 in 200?—I have not had charge of lines in operation with a gradient of 1 in 200.

1199. Are you aware that all the down lines, as they are called, are those on which the wear and tear is heaviest?—I am aware that that is so in the neighbourhood of London, but I have heard that ascribed, not to the descending incline, but to the pace at which the coal trains are run.

1200. Mr. *H. A. Bruce.*] You have spoken of the ruling gradient as being 1 in 500?—Yes.

1201. Are there not considerable portions of the line at which the gradient is 1 in 65?—I am supposing it constructed at no worse gradient than 1 in 200.

1202. Mr. *Stephenson.*] You are supposing also that the construction is feasible with gradients of 1 in 200?—In the present case with 1 in 200.

1203. I understand you have not had correct sections taken throughout the whole length of the line?—We have not.

1204. Therefore you give your answer with some limitation?—Certainly.

1205. Sir *J. Elphinstone.*] What is the nature of the articles you would have to carry, in the shape of goods, over the direct line?—With the exception of indigo, we should carry the same articles as are carried by the Ganges route.

1206. Cotton and jute?—Also grains and oil seeds.

1207. Do you apprehend that there would be any great difficulty in carrying these at a slow speed over these gradients?—I do not anticipate that there would be. One in 200 is accepted as a good working gradient in this country.

1208. Are the calculations, about which you have just been asked, based upon a rate of about 20 miles per hour?—I am not aware that they related to any particular speed.

1209. Mr. Stephenson, as I understand, was asking you about the difference with respect to heavy traffic upon flat gradients, and upon gradients of 1 in 200?—I suppose the questions would refer to a somewhat similar speed as that at which the trains are run in this country, 20 miles per hour.

1210. What is the speed you contemplate upon this railway for the description of goods that you are likely to carry?—At present the running speed on the Indian lines is nearly the same as in this country, as regards goods traffic.

1211. What is the worst gradient over the lines now open?—The worst gradient, I think, is 1 in 1,000.

1212. Do you think that, practically speaking, it would be a matter of very great importance to the traffic of the Upper Provinces, whether it was carried at a slower speed over these gradients, which are very severe, instead of having the goods sent in a more circuitous direction?—There would be no practical inconvenience in reducing the speed. At present we have only a single line, which is the reason, perhaps, why the goods trains travel faster than they otherwise would.

1213. Have

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1213. Have you a good supply of hackerys in that country?—When we first commenced upon the works we had great difficulty in collecting them, but they now come forward with great readiness.

1214. What weight will one of those hackerys carry?—It depends very much upon the roads over which they travel; over the ordinary unmetalled roads they carry half a ton.

1215. Have they iron axles?—Generally wood, but with the nave of the wheel protected by an iron ring inside and outside.

1216. Is there any regulation as to the axles?—There is no regulation.

1217. As I understand you have found no difficulty in obtaining carriages of the description you require?—We have not now; over 45 miles of country we have 4,000 hackerys at work.

1218. Would there be much cutting on the direct line?—The cutting would in places be heavy.

1219. But in no case with a gradient above 1 in 200?—I believe not.

1220. Mr. *Crawford.*] Are you aware of any facts by which you can show that the Government of India is, or has been, aware that a forced supply of carriage and labour has been resorted to, and in some cases not paid for?—Yes. In paragraph 24 of Lord Dalhousie's minute of 20th April 1853, on Indian railways, and at page 118 he states, among the other advantages arising from the introduction of railways, "the heavy tax upon the people of district, which is inevitable in fact, by reason of the necessity of carriage for troops, would be removed." And further, in August 1857, when the present Lieutenant-governor of Bengal proposed the entire abolition of the compulsory supply of carriage transport it was stated in a letter, No. 1500, dated 29th August 1857, from A. R. Young, the Secretary of the Government of Bengal, to Cecil Beadon, Secretary to the Government of India, "The Right Honourable the Governor-General in Council is well aware of the difficulties experienced in ordinary times in procuring supplies and carriage for the march of troops, and the distress and loss which are inflicted on the people, as well as the delay and inconvenience experienced by the troops." And further, he proposes this scheme "so as to avoid pressing for those things at every time of need, to the great injury of agriculture and commerce, the discontent of the people, and the dilatory and imperfect performance of the service." This scheme was sanctioned by the Government of India, and the Lieutenant-governor then, in writing instruction to the commissioner appointed to superintend the supply, states, in official paper No. 2718, dated 22d September 1857, from A. R. Young, Secretary to the Government of Bengal, to J. R. Ward, Commissioner of Supply, "That to which your most earnest and careful attention must be directed is, that while the troops are promptly and properly cared for, the people shall be absolutely and entirely relieved from that grievous detriment and oppression which has so commonly arisen from the passage of troops through our districts, in consequence of the system of forced supply of every kind of goods, cattle, and carriage which has always been heretofore more or less in use."

1221. Mr. *T. G. Baring.*] I think you stated that the company made use of compulsory labour to construct their works?—I stated that the public works hitherto executed in Bengal had been all more or less performed by compulsory labour.

1222. By that answer, do you mean the railway company?—No.

1223. During the time that you were personally concerned with the works in India, was there any employment of forced labour to construct railway works?—None that ever came to my knowledge; certainly not on the works of which I had charge.

1224. Did you hear of any forced labour being employed to construct railway works previous to your arrival in India?—No, I never heard of it.

Mr. *George Barclay Bruce*, called in; and Examined.

Mr. *G. B. Bruce.*

1225. *Chairman.*] YOU are a Civil Engineer, I believe?—I am.

1226. Have you been extensively engaged in the construction of railway works in India?—Yes. I went out to Bengal towards the end of 1851, and I was at the Calcutta end of the East India Railway for one year; after which I was removed to Madras, as chief engineer of the Madras Railway; I remained there for four years, when I came home on sick leave.

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1227. Will you give the Committee some account of the early history of the Madras Railway?—I do not know of my own knowledge much about the very early history of it.

1228. Can you say of your own knowledge when the company was formed?—In 1852; but they applied originally to Government for a guarantee, as early, I believe, as 1845; I cannot speak with certainty to that date, but I have been informed so by the chairman.

1229. Can you speak to the early history of the company, from 1845 down to 1852?—No; the company was established with a chairman, and a deposit was paid up; they applied for a guarantee, but could not get it, and the company was consequently broken up, but ultimately formed a second time, when they did obtain a guarantee; their contract was signed on the 22d December 1852.

1230. Was it upon the re-formation, if we may so call it, of the company that you were appointed the acting engineer of the line in India?—Yes.

1231. Was the local government of Madras favourable to the scheme when it was first proposed?—They were favourable to the construction of a railway between the points named, but they were not favourable to its being undertaken by a joint stock company; they wished to make it themselves.

1232. What were the points named?—The line was proposed to be made from Madras to Arcot, in the first instance, a distance of about 70 miles.

1233. That was undertaken as an experimental line, I believe?—Yes.

1234. Can you state when the scheme assumed its present development?—About the end of 1853; the further concession to the Madras Company of the line by Salem and Coimbatore to Beypoor and the Malabar coast was then made, with branch lines to Bangalore and to the Neilgherry Hills, with permission also to examine the country, with a view to its being undertaken to join the Bombay line at some point in the valley of the Kistna.

1235. Is that the whole extent of line sanctioned and undertaken by the Madras Railway?—Yes.

1236. You have stated to us the period at which the experimental portion of the railway system in Madras was undertaken; will you state when the engineers arrived to commence the works?—I arrived in March 1853, and two assistants came out in May 1853.

1237. Were your surveys then first commenced?—I began them in April 1853.

1238. When were they completed?—We turned the first sod in July 1853, but the whole of the surveys were not completed at that time, because we had not a sufficient number of engineers, and we began to work two months after the engineers arrived.

1239. When did you open the portion of the experimental line you have described to Arcot?—We opened it on the 1st of July 1856. I should observe that we had sanction only in the first instance to go on for about 50 miles, and subsequently we were allowed to complete the other 20, and that delayed the opening of the whole of the line.

1240. If sanction had been given to the construction of the whole line at the same time, you think that you could have proceeded with the various sections *pari passu*, and that the whole might have been opened earlier than it was?—Undoubtedly; we did not begin the other part of it until fully 12 months afterwards.

1241. Describe the system of railway construction pursued in Madras?—We adopted the system of doing the work without contractors. I could more concisely explain it to the Committee by reading a sentence or two from a report. I refer to the report which I wrote at the end of the first year, when we had been two or three months at work, and it will explain in the most intellegible manner the reasons why we acted as we did; I wrote "It was found at the very commencement, that we should not be able to avail ourselves, as in England, of the system of division of labour, which assigns to engineers the designing merely, and to another class, contractors, the execution; leaving, in the language of my great master, Robert Stephenson, nothing for us, but the 'poetry of engineering.' Here there is no such class; and where labour is cheap, work can be done by rude means at such low rates, as not to be sufficient to induce any contractor to bring the machinery and appliances to use in society far advanced in civilisation; and the possession of which is one strong reason for the employment of contractors. Knowing this to be the case, I never hesitated for a moment to put myself in the place

place of contractor; as nothing could be worse than the only other alternative, which was to place ourselves in the hands of men with no capital, and less honesty; contractors to be found in the country. The plan pursued is, as you are aware, to let small contracts to parties who are able and willing to take them; or to deal with gangs of workmen themselves; such agreements to be only binding so long as the parties concerned do their work efficiently: when this ceases to be the case the agreement ceases, as we take no security and give no advances. We resort to labour on daily hire only when obliged to do so, it being expensive and unsatisfactory."

1242. How have you found that system work?—It worked exceedingly well. I am quoting this from selections from the correspondence of one year, and I would explain the working of the system by reading another sentence from another report. I refer now to the effects in rather a wild district near the Ghauts and Barmahal; this explains our position: "The appearance of Europeans in so wild a district, unarmed with power, vested with no authority, unconnected with the Government, was calculated to excite the astonishment and suspicion of the inhabitants; and when it was found that all labour was to be procured irrespective of the heads of villages, by holding out to the coolies themselves the inducement of a 'fair day's pay for a fair day's work,' there instantly arose, on the part of all the inferior native officials, an amount of petty persecution and passive obstruction, which can only be understood by those who have experienced it. I am happy to say that this opposition has been invariably broken down by the perseverance of the engineers, and the people along the course of our line begin to understand the blessing of being able to carry their labour to the best market, without seeking the sanction, or caring for the pleasure, or ministering to the avarice of some petty tyrant; a result, the beneficial effects of which, in elevating the position of the people, we can scarcely calculate."

1243. What do you mean when you speak of yourselves as an independent company, unconnected altogether with the Government?—We were partly so; we went there quite as private individuals, and we had to fight our way as private individuals. I am not casting any reflection upon the Government; we were under the immediate sanction and protection of the Government, and were also furnished with the Government guarantee upon all our capital.

1244. A Member of the Committee wishes to know whether the Government assistance had been applied for directly by the railway company, and if so, whether it had been granted or not?—We never applied for it; it was understood we were better without it, and I quite agreed with the Government on that subject; we never asked for it, and did not want it.

1245. You have stated, I think, the date at which the first portion of the line was opened; to what extent is the line opened at the present moment?—It was to have been opened on the 1st of May as far as Gooriattam, and I have no doubt that it is.

1246. What is the whole length of the line?—Ninety-seven miles.

1247. Has the progress on your line been all that, in your opinion, it might have been?—It has been on the whole very satisfactory; every portion of the line which has been opened has been opened within two years from the time of our getting possession of the land, and setting to work; but I admit that it has not been all that it might have been.

1248. When you say it has not been all it might have been, to what cause do you attribute the delay?—I think that the way in which the contract between the company and the Government has been carried out has been prejudicial to the progress of the works; and I think also we have always had too small a staff to carry on such an extensive undertaking.

1249. You say you attribute the delay in some measure to the Government supervision. Can you state in what way you consider the supervision to have been objectionable?—I should like, before answering that, to guard myself by saying that I accord to the officials of the Company credit for the same good intentions and honourable feeling and uprightness as I would claim for myself; but I think that their superintendence was prejudicially minute; that it was frequently exercised ungenerously (I wish I could use a milder term), so as to be very disheartening, and bordering on the petty.

1250. In your opinion was the principle upon which the Government supervision was exercised a sound or an unsound principle?—I think it was based on

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an unsound principle; I think it was based on carrying out the letter of the contract rather than the spirit of it, and that in that way we were led into misunderstandings, where there ought to have been none. I think the spirit of the contract is this, that the railway company, through their officers, are quite competent to conduct their own affairs, and but for the guarantee would do so. The Government, however, to guard themselves against any extravagance, retain a general power of check, which they may exercise for their own protection whenever they think it necessary; instead of this, however, the control has been exercised as though the railway company's officers were incompetent to the work for which they were selected, and that the want of experience and ability was to be supplied by the experience and ability which the Government officers brought into play; and this, although the officers of the railway company were selected with the sanction of the Government in the first instance. The control which, I believe, the Home Government wished should be exercised, and which was conceded by the railway company was, a general control to protect their own interests; but that exercised in India has gone far beyond this, and has been productive of no public good, but, on the contrary, of very much evil.

1251. Finding that the system was not working satisfactorily, did you send any remonstrances to this country upon the subject?—I did; of course I do not know what our directors did. We certainly got no redress; but Mr. Walker, perhaps, will be better able to answer questions upon that subject.

1252. Can you illustrate, by any specific examples, what you consider is the unsoundness of the system pursued?—I can show the way in which the control was exercised, and I will show it in the first instance, if you will allow me, by reading one or two extracts from reports, and I will endeavour to show that we were met in a somewhat ungenerous way in the reports of Government periodically, and then I will endeavour to show from the same source that those remarks were unfounded.

1253. At what periods were those reports furnished, and what is the nature of them; were they furnished to the Board of Works Department in Madras?—Some of them are the reports of the consulting engineer to Government; others are minutes of consultation by the Governor in Council, published by the Government. I have access to no document, except the selections made by the Government officers in Madras.

1254. Which are termed Minutes of Consultation?—They are termed "Reports of the Railway Departments, published by authority." As I observed, we began work in the beginning of July, and we had been only two months in the country, and yet we had made all our surveys, and staked out our line; we had arranged our plan of carrying on the works; we had arranged our plan of accounts, and had done everything of that kind within two months after the arrival of the engineers. I am now about to refer to a letter addressed by Colonel Pears to the Government, dated 24th of August 1853.

1255. Who is Colonel Pears?—He is the consulting engineer for railways in Madras. I do not accuse Colonel Pears; I give him credit for the same integrity of purpose as I claim for myself. I believe he did everything that he believed to be conscientiously right. He says: "The Progress Report (E.) submitted by the agent shows that earthwork to the amount of 35,338 cubic yards, and masonry to that of 108 cubic yards, have been executed during the month of July. This can be considered as a beginning, certainly, but not, it may be hoped, as a measure of the monthly progress hereafter." Considering that we had done what had never before been done in Bengal, or anywhere else, that we had got to work in two months after the arrival of the engineers, and considering that this was the first report upon our progress, I think that this was a little severe. Then we will take the next report, which was in the month of October 1854. It should be recollected that we had done 100,000 cubic yards of earthwork. He says: "He does not apprehend that the monsoon need much interfere with the engineer's operations, but he fully expects that, after the termination of the usual rains, the works of all description will proceed at a much more rapid rate than hitherto, and he looks to the energy of Mr. Bruce and his assistants for their being then vigorously carried on." We had done 100,000 cubic yards, although we had scarcely had time to breathe.

1256. Can you state the number of hands you had employed upon the line at that time?—I cannot.

1257. Had

1257. Had you any difficulty in procuring labour when you first arrived?—At some parts, until they gained confidence in us; but as a rule, we had no difficulty when they found that we paid well.

1258. Your mode of payment was regular and punctual, was it not?—Whenever we had the money we paid regularly; our plan was to pay by tickets every night, and to cash those tickets whenever the labourers chose; but as a rule, we cashed them once every week.

1259. You have been referring to the monthly report; what was the purport of the half-yearly report?—In the second paragraph of the report of the consulting engineer, at the end of the year, namely, the 25th of April 1854, he says, "the progress of the work has been, under the circumstances, considered most satisfactory."

1260. Was that the first half-yearly report?—Yes; the first half-yearly report, and it was at the commencement of our proceedings.

1261. I asked you to specify certain instances in which you considered that the Government supervision was unduly exercised, and was productive of annoyance to yourselves, and some delay to the progress of the works?—If you will allow me, I will refer to a letter of the 18th of April 1854, in which the consulting engineer writes: "The earthwork in district No. 2, and the brickwork in district 1, are alike unsatisfactory; the former amounts to 75,889, the latter to 455 cubic yards." Then the Governor in Council decided: "The progress does not appear satisfactory, either in earth or brickwork, and the Government desirethat a communication to the effect of the consulting engineer's remarks be made to the agent and chief railway engineer." Then on the 25th of May 1854, the consulting engineer writes: "On district No. 1, the progress in earthwork during March is fair; that in masonry very satisfactory." On the 15th June 1854, the consulting engineer writes: "I regret again to observe upon the unsatisfactory character of this report." On 19th September 1854, the Governor in Council writes: "The Right Honourable the Governor in Council cannot but regard the progress made during the month of May last, in the three districts referred to, as very unsatisfactory, and he resolves to bring the matter specially to the notice of the Honourable Court, with a view to its being represented to the directors of the railway company. The consulting engineer will inform the agent of the intention of the Government to make the above communication to the home authorities." I had previously explained to them that, so long as the ground was so hard (it being then the very hot weather), I could not make the same progress in the earthworks without going to a very extravagant expenditure, because the people would require double the price to do it. On the 28th November 1854, the Right Honourable the Governor in Council, acting upon information given to him by the consulting engineer, said: "The reports of progress, forwarded with the chief railway engineer's letters of the 25th October and the 14th November, continue of the same unsatisfactory characteras those lately received; they will be forwarded to the Honourable Court with reference to the despatch from this Government, dated 22d instant." That is the character of the remarks with which we were favoured from month to month, and which, to men who were doing the utmost of their strength, and beyond it, were very disheartening. Now, as to the justice of these remarks. If you will allow me, I will show what, at the end of the year, Colonel Pear's report was. After he had marched along the line with me, he writes in his annual report, dated 15th May 1855: "The progress of the work generally has been satisfactory, and will bear very favourable comparison with similar works in other parts of the world." The Governor in Council, on the 16th May 1855, made this remark: "They are, however, gratified to find it recorded in paras. 10 and 22, that 'the progress of the work generally has been satisfactory, and will bear very favourable comparison with similar works in other parts of the world;' and that the progress in the first three districts has been and continues to be sufficiently good to justify the expectation that the line, as far as Arcot, will be opened for traffic before the end of the present year." This shows the character of the supervision, and it could not fail to have a very injurious effect.

1262. In your opinion were these observations and strictures passed upon persons in your position, entrusted with the spending of thousands of pounds, annoying, and productive of some degree of soreness and ill feeling in your minds?—Certainly; those remarks did not refer to me individually, so much as to the engineers acting under my orders, and I know the effect upon their minds was very

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very disheartening; I kept them in as good spirits as I could, but it was very difficult under these circumstances to get men to work with spirit.

1263. Mr. *Crawford.*] What are the documents from which you have been reading?—The book I have in my hand contains selections from correspondence, and records of one year of the Madras Government with reference to railways.

1264. Are they to be obtained by purchase at Madras?—Yes.

1265. Have not the Madras Government a room, to which the editors of newspapers have access, for the purpose of perusing such documents as the Government may choose to place in that room for perusal?—Yes; and that has been productive of very great evil, inasmuch as documents have by that means found their way into the public papers, reflecting upon the conduct, and almost upon the characters of engineers, sometimes without at the same time giving the reply.

1266. Do you know any instance of strictures having been passed upon the officers of the railway company, by the Government having placed documents in that room, for the perusal of editors of newspapers, before an opportunity has been given to the parties, to whom those observations refer, to make any representation to the Government in reply?—There is only one instance that I can call to mind at this moment, and that was a case towards the beginning of 1856, I think, when strictures appeared in the newspapers, and a letter I had written in explanation did not appear. There were others; but these books do not afford me an opportunity of showing it. I know that one of the engineers since I left wrote a letter, very unwisely, I think, to the newspapers, on that very subject, complaining of it; and the directors of the Madras Railway wrote home to the Government here, complaining of that; and the Government here, I understand, took a very proper view of the case, and wrote out to the local Government, requesting that it might not occur again.

1267. Did it occur again within your knowledge?—Not within my knowledge.

1268. You had no means yourselves of replying to any such strictures as those referred to?—No; in fact I never saw Colonel Pears' remarks until I saw them in the blue book a year afterwards.

1269. Then, in point of fact, the effect of the publication of this newspaper in Madras, was to put before the public an exparte statement of the views that Government took in reference to the affairs of the railway company?—Yes.

1270. And you had no means of protecting yourselves against such effects as might be produced upon the public mind?—We had no proper means; we were bound by our agreement not to write letters to the newspapers.

1271. You were bound by your agreement with the railway company, not to resort to the public newspapers as a means of making known any matters of fact, or of expressing your opinion?—Yes.

1272. You were in point of fact then defenceless, while the Government held all the power in their own hands?—Yes.

1273. And they used that power to a very great extent?—Certainly; I do not say that they intentionally published one-sided accounts, but that was practically the effect.

1274. Mr. *T. G. Baring.*] When you say that one-sided accounts were published, do you mean that the Government published them?—I mean to say that the Government laid upon the editor's table certain documents, and that only one side appeared in the papers.

1275. Mr. *C. Bruce.*] These papers you have read, as I understand, were made known to the Government?—Yes.

1276. Might it not be inferred by you and other parties, from the nature of these remarks, that there was great anxiety on the part of the local government to forward the works as much as possible?—We knew that the works were going on as fast as possible, and that the effect of the remarks was the very reverse, whatever the intention might be.

1277. Mr. *Crawford.*] You stated at the commencement of your evidence, as I understood, that there was a feeling of disappointment on the part of the officials at Madras, that the railway was not made by the Government?—I said that they had expressed a wish to have it made through their own agency, and I know that that opinion has been again expressed with regard to the extension of the line; I do not think that I said there was a feeling of disappointment on their minds. I was asked the question, whether the Madras Government were favourable

able to its being undertaken; and I said, that they were, but that they wished to undertake it themselves, and did not desire that it should be in the hands of a joint stock company.

1278. How do you know that there was that feeling on the part of the Government?—It appears in the printed reports before the railway began.

1279. Did you hear that opinion expressed by any of the Government officials after you had gone to Madras in the service in the Company?—I am not sure that I heard it expressed with regard to our identical line, but with regard to other lines projected in the Presidency, and which would run into ours, have.

1280. Mr. *C. Bruce.*] Do you wish the Committee to infer that your opinion is, that these censures were rather with a view of discouraging the making of the railway by the Company instead of by the Government?—No; I do not state that, I do not wish to go further than to state facts.

1281. Considering the guarantee given by the Government, and the interest they had in the works, do you think it was unreasonable that they should express an opinion as to the mode in which the works were carried on?—Not at all.

1282. But you think their inspection went further than was necessary?—I think the opinions given month by month, ought to correspond with the opinions given at the end of the year, and if they found at the end of the year that the works were going on well, they ought to have spared us the censures month by month.

1283. Were the monthly censures published at the end of the year?—They came out in the public papers, many of them.

1284. Before the final report which seemed to contradict that first statement?—Yes.

1285. The final contradiction did not, you think, counteract the prejudicial effect produced by the monthly censures?—Our directors at home, I have been given to understand, were in a state of serious alarm at the way in which they supposed the works to be going on, in consequence of these monthly reports, and it was only when their minds were set at rest by the reports at the end of the year, and their sending out a new agent in the beginning of 1855, that they were reassured.

1286. Your opinion is that the monthly reports ought not to have been made public until the yearly report came out?—I would not object to the monthly reports if they had been what I considered correct.

1287. Mr. *H. A. Bruce.*] I understand you to complain of the one-sided publications in the newspapers. Do you also complain of the selection from the records of Government as giving the case of the Government officers with greater force than that of the engineers of the railway company?—I should be sorry to say anything to lead the Committee to imagine that the Government officers would intentionally do such a thing, but on looking through these reports I find that there are a great many letters of mine which I would rather have seen here.

1288. Up to this time you confine yourself to the question of vexatious criticism?—Yes.

1289. I suppose the effect of these unfounded reproaches might have been to call for examinations which would have led to extravagant and unreasonable expenses?—It might have been so.

1290. Or by shaking the confidence of the directors at home it might have led to your removal?—Yes; or unless one looks beyond these things, the effect might have been to make a man in despair fold his arms and let things take their course. I might almost say that the Governor in Council, on the 8th April 1856, shortly before we opened, wrote a minute which was very strong and severe upon the subject of the line not being opened. He says, "Thus, then, it is clear that the want of bolts and nuts had nothing to do with the delay. The real cause being, that in no one department appertaining to the railway chief engineer were the works sufficiently advanced to permit of the line being opened." This was sent to the Honourable Court of Directors, and after the line had been opened, the Court, writing on the 16th July 1856, say, "We look upon the completion in so short a space of time of a work of this importance (the greater portion of the materials for which were supplied from this country) as a great achievement."

1291. That quotation is your answer to the complaint of the Governor in Council?—Yes.

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1292. Colonel *Sykes.*] Are you aware of the view of the Court of Directors in regard to the supervision exercised by Colonel Pears?—I have been given to understand from the highest authority that the Court have acted fairly and uprightly in the matter, and have done everything they could to have the supervision placed upon a proper footing, but that it has been ignored.

1293. By whom?—By the authorities there; at all events the effect towards ourselves has been unaltered by the orders of the Court, which I believe to have been sent out.

1294. Are you aware of the orders of the Court with regard to the publication of correspondence between the railway officers and the Government officers?—Yes; the Court I understand have sent out orders that that is to cease, and it is a very proper and desirable thing.

1295. The practice of publishing letters of controversy is to cease altogether?—Yes.

1296. And that the information given to the public is to be confined to matters of fact?—I understand that to be the case.

1297. Are you aware also that orders have been sent out to relax the supervision exercised over the railway officials?—I have heard so.

1298. The Government having by contract the right of supervision over the railway officials, in case their officer differed in opinion with the railway, was it not his duty to express that opinion to the railway officials, and to state the reasons for that opinion?—Yes, I should say so.

1299. Did he express those opinions in an offensive manner to the railway officials?—Yes, I think so; I do not mean to say that the words were ungentlemanly; I should be sorry to say so, but the effect was offensive.

1300. He expressed in decisive terms the opinion he entertained, in opposition to opinions entertained by the railway officials?—Yes.

1301. Would you say that they were intentionally offensive?—No.

1302. In fact he was exercising his duty according to his apprehension of what his duty was?—I think so, but I think it was a mistaken view of what was intended in the contract, and of the kind of supervision that it was intended should be exercised.

1303. Are you aware that the monsoon in the Madras territory commences only in October?—Yes.

1304. When the monsoon in Bengal and Bombay terminates?—Yes.

1305. They are distinct?—Yes.

1306. Mr. *D. Seymour.*] When you say that the local Government wished to have the railway made not by a company, do you mean Sir H. Pottinger's Government?—Yes.

1307. Did you hear of Lord Harris expressing an opinion that railways should not be made by a company?—No.

1308. You have no reason to suppose that the opinions of Sir H. Pottinger were shared by the Government which succeeded him?—I have no reason to know it; it was in reference to the very commencement of the undertaking that I gave that evidence, and I have not made any allusion to subsequent events.

1309. You do not think that the opinion of the former local Government was the cause of the difficulty you experienced at a later period?—No; the Government officers are only men like ourselves, and I do not think it unlikely that they had a sort of lingering wish that they should make the railway themselves.

1310. Do you think that was shared by all?—Yes.

1311. You do not think that it was a disputed opinion amongst engineering officers in Madras as to who were the best parties to make the railway?—I could not give an answer to that.

1312. You are not aware that influential engineers were in favour of the company?—No.

1313. Do you not think that the monthly censures might have been the cause of the very satisfactory return at the end of the year?—I think rather the reverse; if anything done by the Government had the effect of stimulating us onwards, I think it was their expression of satisfaction.

1314. When the railway was commenced, was not a time fixed at which each section should be opened?—I think what I have always said is, that we could finish any section within two years from the time of its commeneement.

1315. Did you open at the time you anticipated?—We did not; but it was only because we did not open to the point we intended. We began with 50 miles,

miles, and it was thought not desirable to open the 50, and we therefore waited until the remaining 15 miles were completed.

1316. You have opened it, I believe, at the rate of about 10 miles a year?—Every section has been opened within two years of its commencement.

1317. In how many years have you completed the 70 miles?—We have opened 97 miles.

1318. In how many years?—Every section has been opened within two years of the commencement, and I would undertake to make 400 miles as soon as 40, if you will give me the staff and the materials.

1319. The progress was not considered satisfactory by persons in this country, was it?—The Court of Directors considered it an achievement.

1320. Are you aware whether the public have expressed an opinion as to the slow progress of railways in India?—Yes, I am aware that they have.

1321. Are you aware that indigo planters in the interior of the country have also expressed an opinion that the progress was not made which might have been made?—There are no planters in Madras.

1322. Do you know Mr. Fisher?—Yes.

1323. Do you know his opinion?—No; I do not think he knew anything about it.

1324. Are you aware that he has expressed an opinion?—No, I am not; I have said that the progress was not all that it should have been.

1325. I believe that reports from some sections were far more satisfactory than those from others?—That is always the case.

1326. What the Government asked you to do was to urge on those engineers whose progress had not been satisfactory?—I think every engineer, from one end of the line to the other, was censured at some time or other.

1327. Was that what the Government asked you to do?—I do not remember.

1328. And which you yourself considered unsatisfactory?—Sometimes we agreed, of course.

1329. Will you put in the letters which you say have been omitted in the records?—I have no copies of those letters in this country; they are in Madras; I do not make any charge upon that subject; but there are letters which I should like to see published with these.

1330. Would you not think it desirable that the orders of the Court of Directors directing a relaxation in the supervision should be published?—I think it would be very desirable.

1331. To show whether they are sufficiently stringent to induce the local Government to act upon them?—I think so.

1332. If it is a mere expression of opinion on the part of the Court of Directors, the local Government probably would not feel themselves bound to act upon it?—I believe they have done so repeatedly.

1333. I suppose a good deal depends upon the terms of the orders sent out?—Yes.

1334. Do you know whether any such orders have been sent out?—I have never seen them, and I have reason to think that they have not.

1335. Do you know when the modified instructions respecting supervision was sent from this country?—I am not aware, but I think they have been sent since I left India.

1336. I believe some were sent upon a previous occasion which were not acted upon?—I heard of some.

1337. It made no difference in the system practised by the Government?—No.

1338. Mr. *Stephenson.*] Do any of your letters in reply to this report of Colonel Pears, appear in these collections from which you have been reading?—Some of them.

1339. Sir *J. Elphinstone.*] I understood you to say that you had had great difficulty in procuring native labour for your work?—We had plenty of unskilled labour, but with regard to skilled labour we had great difficulty.

1340. I suppose you had great difficulty in procuring builders, bricklayers and carpenters?—We had great difficulty in getting them to do their work well.

1341. Was it during the period that you were collecting the labour, that these difficulties occurred with the Government?—No, they continued up to the end.

1342. You had upon all occasions as many labourers as you could employ?—With few exceptions we had.

1343. But the railway was in itself of an independent character?—Yes.

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1344. Have you the same difficulty now as regards labourers?—We are getting a better class by degrees, undoubtedly.

1345. Do you not suppose that you could now open a very much greater extent of line in the same time than you could do when you first began?—I doubt that very much.

1346. The improvement is not so marked as to enable you to speak confidently in that respect?—No.

1347. Who are the planters to whom Mr. Danby Seymour referred?—There are a few indigo planters; but I do not know of more than one European indigo planter.

1348. Is that at Salem?—Yes; Mr. Fisher.

1349. Colonel *Sykes.*] Have you any sugar planters?—I do not know that sugar is grown by the natives.

1350. Sir *J. Elphinstone.*] Is Mr. Fisher a man of large property?—Yes; he has a zemindary in his own hands.'

1351. Has he ever seen your works?—I do not know that he ever has; but he was a good friend to us when we first went to Salem.

1352. You have not run through any part of the country where there were European planters?—No.

1353. Mr. *T. G. Baring.*] Are there any expressions in reports which you have not read, of which you complain more than of those you have read to the Committee?—I had made a memorandum of several; but I have only referred to a few of them.

1354. Is there in those any language stronger than the term "unsatisfactory"?—I think there is one stronger; in the last they said, that the causes to which I had ascribed the non-opening of the line were not correct; I did not read the whole of that passage, but it almost amounted to saying that I had stated that which was untrue.

1355. I was referring to the consulting engineer's report?—This is the minute of consultation of Government, based upon these reports, and I think the usual expression was "unsatisfactory."

1356. You complain of the expression of the consulting engineer, that your work was unsatisfactory?—Yes, coupling that with his remark in the annual report, that it was satisfactory.

1357. One of the unsatisfactory reports I think is dated on the 18th April, and is addressed to the agent and chief engineer?—Yes.

1358. Was that communicated to you?—I have no doubt it was.

1359. Did you offer any explanation to the Court of Directors in answer to that report?—There is no letter of mine given in the book regarding that, so that I am not able to answer that question.

1360. You do not know whether your explanation was sent to the Court of Directors or not?—I have not the means of knowing.

1361. Upon what did Colonel Pears make these reports; was it upon personal knowledge?—No; we sent in a statement every month of the number of yards completed in each district, with a remark of whether it was more or less than usual.

1362. Had he no other information than those returns?—No; and in most of these cases I had not seen the works.

1363. Had he no other engineer, who saw the works as they were going on?—No; I am thankful to say he had not.

1364. It was from your own reports?—Yes.

1365. In those reports did you state the reasons why you did not make progress?—In many cases I thought the progress satisfactory, but when I thought there was occasion to give any explanation, I did it.

1366. Do you consider that Colonel Pears was capable of forming a judgment as to what ought to have been the progress of the works?—If I were to give a simple answer I should say "no," but I ought perhaps to qualify it; I think he was not qualified to do it.

1367. On what do you ground that opinion?—He had not had much experience in works of that character.

1368. Has he been employed on civil engineering works in Madras?—I do not know much of that; he is an able man, but I think he had been probably less employed on civil engineering works than any engineer in the Madras corps of his standing;

standing, he had been more engaged as a military engineer, and was, I believe, a very good one.

1369. Did Colonel Pears ever personally inspect the works?—Yes; generally, when he marched along the line with me, and in almost every such case, his reports were that the works were satisfactory.

1370. How often did he march along the line with you?—I should think about once a year.

1371. Previous to his annual report?—Yes; perhaps it might have been oftener than that.

1372. Do you think that the tone of the monthly reports, which you have objected to, created delay in the construction of the railway?—I think so, in consequence of their creating a feeling of dissatisfaction, against which it is impossible for the most conscientious man to stand up.

1373. You think, that because the Government engineer considered your progress on certain points not satisfactory, therefore you and the other engineer relaxed your efforts?—No, we did not relax them willingly, or intentionally; but so much of our time was taken up in replying to those things, and so much soreness was produced by them, that it could not fail to have its effect.

1374. *Chairman.*] Discouragement was the feeling under which you laboured?—Yes; I do not mean to say that, in every case, when the proceedings were considered unsatisfactory, that they were not so; but what I objected to was, that the Government engineer should fix upon faults, and represent them as characteristic features of our whole proceeding.

1375. Mr. *T. G. Baring.*] As I understand, your objection was more to the publication of these reports than to their being made?—Not only that, but also to the fact of their being written, because they came to our directors, and to the directors at home.

1376. In the position in which Colonel Pears found himself placed, was he not bound to give to the Government his honest opinion?—I do not think that he was bound to do it from month to month.

1377. You consider that the reports were too frequent?—Much too frequent.

1378. That is what you complain of?—That led to what we complain of; if he had contented himself with reporting at the end of the year, I do not think that this unpleasantness would have arisen.

1379. Mr. *Crawford.*] In what works had you been employed in this country before you went to India?—I was a pupil of Mr. Robert Stephenson, and had served my time with him for six years; after that I was with him for eight years more, so that I was, altogether, 14 years with him before I went out to India. I was in his manufactory for some years, and I was then engineer upon the Newcastle and Darlington Railway for a short time, under Mr. Harrison and Mr. Stephenson; I was then resident engineer to the Newcastle and Berwick Railway, a distance of 11 miles. I built the Royal Border Bridge over the Tweed, also under Mr. Harrison and Mr. Stephenson; I was afterwards engineer on my own account for the Alston branch of the Newcastle and Carlisle line. I conducted some other works, and then subsequently went out to work upon the East India Railway in 1851.

1380. In point of fact, then, you had had considerable experience upon which you form an opinion that the progress you had made in Madras was satisfactory?—Yes.

1381. Were your communications with the consulting engineer of the Government of Madras of a verbal or of a written character?—I think all our verbal communications were pleasant and agreeable; the written communications have caused all the mischief; personally, I was on the best terms with Colonel Pears the whole time I was there.

1382. Did the consulting engineer upon any occasion point out to you how the progress which in his judgment was unsatisfactory could be advanced?—We very often used to talk over the matter, and if I must tell the real truth, Colonel Pears' opinion was that we were doing exceedingly well, and that I should get great credit for the works and for the progress that had been made upon them; I do not mean to say that he would tell me one thing privately, and that he would say another in writing, but in writing he presented one phase as our deficiency, and represented that as being the general characteristic of the whole work.

1383. Then, as I understand, you were never indebted to the consulting

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engineer for any information which enabled you to make better progress in the execution of the works?—No; I have often received assistance from many men out there of local experience, and of course from Colonel Pears as well; I have no doubt that, as far as he had it in his power, he gave me every assistance.

1384. Although he remonstrated against what he considered the unsatisfactory progress of the works, you say he never made any suggestions which enabled you to proceed with greater expedition?—Never.

1385. *Chairman.*] Did you experience any difficulty in providing accommodation for your engineers and inspectors along the line?—We built bungalows for them; our districts were divided, and each engineer had 25 miles under his charge; our usual plan was to erect one bungalow for the engineer in the middle of each district; there were two European inspectors, and each of them had a bungalow six miles from him on each side.

1386. Did not some difficulty on more than one occasion arise, as to the price to be paid for these bungalows?—I originally applied to the Government to sanction an expenditure of 1,000 rupees for the building of three bungalows, one for the engineer, and one on each side for the inspectors; but they cut down the estimate to 750 rupees; that is to say, we were to build an engineer's bungalow for 35 *l.*, and the inspectors' bungalows for 15 *l.*

1387. What was the price at which you were ultimately compelled to build these bungalows?—An engineer's bungalow cost us 900 rupees; that is the sum which was ultimately sanctioned.

1388. The sum originally proposed being 350 rupees, and the expenditure that was sanctioned being 900 rupees?—Yes; I ought to say that we found the bungalows could not be built for that money, but that they were costing us more, and that they were also a little too small. I applied to the Government for an increase in the estimate, which was repeatedly refused; but after a long and weary correspondence, we all the time being obliged in reality to spend the money and being censured for doing so, the Board at home interfered, and the Court sanctioned the estimate of 900 rupees; that is to say, 90 *l.* for an engineer's bungalow.

1389. Did much delay and inconvenience arise in consequence of this objection to the erection of the bungalows?—Yes, there was a very great deal of discontent engendered in consequence of the engineers being called upon to explain the expenditure, and also in consequence of one or two remarks which appear upon the records of the Government, which would lead those reading them to suppose that the engineers were actuated, in applying for an increased expenditure, by the sole desire of making themselves comfortable. I stated in a letter that "the censures of the Government were again and again visited upon the engineers for not doing what was found to be impracticable, and an increase of ill will and bad feeling was engendered which it is painful to reflect upon." Perhaps you will allow me to say that the last order I am aware of as having been issued by the Government was that in certain districts, upon which we had not begun to build, no bungalows were to be erected at all, but that stations were to be built, and the engineers were to be left without bungalows until that was done; that of course involved the necessity of the men remaining under canvass for months, almost years, without protection, but the order sent out from here superseded that, and the engineers now, I have no doubt, have their bungalows.

1390. Are there any instances, within your own knowledge, in which the engineers have suffered in health from want of proper house accommodation?—I cannot directly trace it to that.

1391. Mr. *Cumming Bruce.*] The difficulties and impediments to which you have now adverted arose, as I understand, from the interference of the local government?—Exactly.

1392. But when you applied to the directors at home you had the grievance redressed?—Yes.

1393. Mr. *Crawford.*] What is the general character of one of these bungalows? It is a house of three rooms generally, each of them being about 14 feet by 16 feet; the centre room being a living room, and one of the side rooms being a sleeping room, and the other being an office or bed-room for visitors, as the case may be.

1394. These bungalows were required not only for the accommodation of the officers, but also for the transaction of the public business of the company?—Yes; the cash chests were kept in these bungalows, and they were, in fact, the offices

offices where all the business was transacted. They were generally built of mud-dried bricks, whitewashed, with plain Palmyra roofs, thatched, but generally with no ceilings; sometimes we had cloth ceilings.

1395. In what respect was the difference between the estimated cost, that is, 350 rupees which you were authorised to expend, and the 900 rupees which you expended afterwards?—We made the bungalows a little larger, and we put a verandah all round, because, without that protection, the mud-dried bricks would not stand; the weather would wash them away.

1396. Is not a verandah a necessary adjunct to all edifices of that kind in India?—Quite so; but in my notions of economy I tried one verandah, and I found it would not do.

1397. Do you know of any house, whether a palatial residence or a common bungalow, such as you describe, constructed without a verandah of some kind?—There are some houses without verandahs, but as a rule they must have verandahs around them, because if made of the bricks I have mentioned the rain washes them away; in addition to that I ought to mention that the engineers' bungalow was the place at which the native contractors met upon business.

1398. The verandah, in point of fact, is the waiting-room?—Yes; our bungalows were of the simplest character, there was nothing of pretence, ornament, or show about them.

1399. For what period were they intended to last?—For about three years; but there is no doubt that by renewing the roofs, they will last and remain permanent, and be of great service to the Company.

1400. In point of fact, then, the Government were willing to sanction the magnificent outlay of 117 rupees per annum for the accommodation of the railway officers?—Yes.

1401. And for what extent of land?—Twenty-five miles.

1402. That would amount to about four rupees per mile per annum?—Yes.

1403. An amount which, measured by the extent of the line, was perfectly inappreciable in point of expenditure?—Quite so; infinitesimal.

1404. And you would occupy these bungalows, you say, for about three years through all weathers?—Yes.

1405. The occupant of the bungalow residing in it during the intense heat of one part of the year, and during the wet monsoon months of the other part of the year?—It was the head-quarters on all occasions, even during the hot months in Madras, and being 12 miles from each end of his line, the engineer was frequently away from it for a day or two together, but not longer.

1406. Colonel *Sykes*.] I think you say that the superintendent of a length of line of 20 miles had a bungalow which cost 900 rupees?—Yes.

1407. And two overseers at a distance of six miles, each occupying a bungalow costing 350 rupees?—It cost more ultimately, but that was the original estimate.

1408. These overseers were, I suppose, of the quality of sergeants?—I suppose that class of men.

1409. Are you aware that subaltern officers of the army lived in bungalows, in military cantonments, in bye-gone times, which did not cost more than 150 rupees?—I have slept in a bungalow which has not cost more than 60 rupees, one of our own buildings; and afterwards, for convenience, we made an engineer's bungalow or little box towards each end of the line in which he could get his breakfast, and spend the heat of the day whilst looking over the works at that end of the line; this only cost 60 rupees, but it contained only one room, with neither door nor window in it beyond a little wicker-work thatch; it was not sufficient for a man to live in; he could not have his books there.

1410. Are you aware of the bungalows of which I speak, costing 150 rupees lasting for years, being made with a verandah, two rooms and a stable?—I am not aware of that; I am aware of one built by the Government officer in charge of the annicut over the Palar River at Arcot. He built a bungalow consisting, I think, of one large room which cost 1,200 rupees. I would also observe that these bungalows which you refer to, as costing so small a sum of money, have generally speaking been supplied by tehsildars, or native magistrates.

1411. The railway officials were at all events lodged as well as the subaltern officers I am referring to?—I do not think the engineers have any reason to object to the style of building; I think the buildings are as comfortable as could be desired; all we object to is, our not being allowed a sufficient sum of money to build them.

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1412. *Chairman.*] Were the railway officials responsible for the contents of the treasury chests, which you say were kept in the bungalows?—They were to all intents and purposes responsible; but what would have been the result of a robbery, which never happened, I cannot tell.

1413. Have you any other remark to make with regard to the bungalows?—I consider that the engineers are placed at a great disadvantage. I can quite conceive a Government officer, long stationed in a district, being able to build a bungalow much cheaper than an engineer first going there. The first thing that an engineer has to do is to build his bungalow, and whilst it is being built he has everything to learn. He has also to learn the character of the people, who will try to cheat him in every direction; and his attention is mainly occupied, not with his bungalow, but with surveying and staking out his line, so that the bungalow is necessarily left to other supervision than his own.

1414. Was the control of the Government exercised, generally speaking, with a view of keeping down the cost of the line?—No.

1415. Will you give us your reasons for stating that?—With scarcely an exception, the supervision of the Government was exercised in a contrary direction.

1416. State some instances in which the Government supervision was not exercised in keeping down the cost?—I would mention that, as a general rule, the supervision of the Government officer was exercised in checking little petty items of expenditure which had no bearing, to any extent, upon the price of the work; but when he did act in any matter of importance, it was, without exception, in the direction of making it cost more money instead of less; for instance, near Madras, when we first began, we had a gradient going down from the Canal Bridge at 1 in 528; that gradient the Government engineer required me to alter and to make level for a considerable distance, say two miles, the gradient itself being a short one of about half a mile. Of course that involved the necessity of considerable embankments, extra cost of bridges, and so on. I am not calling in question the expediency of that alteration, but merely saying that where I endeavoured to make work cheap, the supervision of the Government was in the direction of making it dear. There was another instance in district 5, where we had rather a heavy rock cutting to encounter. I wanted to save time because labour there was very scarce, and it was a district frequently visited by cholera. I intended to make rather a sharp curve round it at a radius, I think, of about half a mile; that was objected to, and we had to go through the hill. Then, again, in district 7 we had some gradients, the depth of which I forget; but the Government engineer made me alter them to make easier gradients at a great increase of expense and loss of time. Then in respect to district 16, I wanted to make some sharp curves to avoid a heavy cutting down to Malabar, at a radius of about 25 chains; that was objected to, but, I think, I was ultimately allowed to do it. I mention these cases as showing the directions which the supervision of the Government engineer took; but in other matters, when money was in question, or work was in question, it was generally with regard to small things; for instance, the bungalow question, which occupied a great deal of time. I can mention one or two other instances. I had about 3½ rupees disallowed upon peons' belts. Then there was a considerable controversy about the allowance of 10 rupees, the expense of a timekeeper. The engineers were at that time spending, of course, considerable sums of money, and it was necessary that we should have a timekeeper. I mention that to show that the economy was, in small and trifling things, only calculated to irritate men who had the spending of thousands of pounds.

1417. Had you not considerable difficulty, at times, in obtaining the actual amount of funds necessary for the payment of the current expenses of the line?—Yes, we very often ran short of money.

1418. What replies did you receive to applications for money for that purpose?—Very often it was a demand for explanation as to why we wanted money, or how we could require so much. I do not mean to say that the Government should not require those explanations, but I think they should not withhold the funds until they receive an answer.

1419. Can you give any specific case in which funds were refused?—Yes; I wrote to the agent on the 14th of April 1855 to this effect: "I beg to call your attention to the fact that on the 10th of April the salaries of the engineering establishment for the month of February had not been paid. I need not remind you of the inconvenience we are put to for want of money, and only call your attention

attention to the fact in the hope that you may be able to arrange for the more speedy payment."

1420. What was the reply?—Major Jenkins, the agent of the company, wrote to the consulting engineer, asking him to make some other arrangements, and Colonel Pears wrote in reply, to say that the abstracts had not been forwarded to his office, and that those abstracts were not received until the 10th of March, and that there was an unusual detention in his office in consequence of his being absent from the Presidency; but the fact was that the money for the whole establishment, from one end of the line to the other, was made dependent upon the sending in the whole of the abstracts; that is to say, that if there was a mistake, or an error, or an explanation required as to our abstracts upon one district, the whole of the abstracts were withheld until that was satisfactorily arranged.

1421. By the "abstract," you mean the "account?"—The account. Then Colonel Pears' defence used to be that we did not send in the account with sufficient expedition. Then I wrote again on the 18th of June 1855, drawing attention to the fact that many salaries for April had not been paid, and I added further, "The accounts are sent in as regularly and as quickly as possible. I can hope for no improvement in this respect." I wanted to have money in hand. Then I said further, "I must protest against the withholding of funds in the meantime, as an undue exercise of power calculated to do no injury to the delinquent, if such there be, but calculated seriously to injure the undertaking itself.

1422. Had those complaints reference to the payment of salaries, or did they include other payments?—This letter mixes up the two together, but the first had reference entirely to salaries. The agent in reference to the complaint about accounts says, "I have no hope of being able to transmit these papers to you with more expedition at any future time than at present." They were mixed up with a variety of things, which made it very difficult to set it right.

1423. Mr. *Cumming Bruce.*] Did that delay in supplying you with money create an increased expense in the construction of your line?—Very much so. I have known coolies leave their work; I recollect that we were sometimes without money to pay the coolies for a long time, and the men, in consequence, went away in disgust, and never came back again. We have then ultimately been obliged to raise the wages of the men, in some instances, 33 per cent., in order to induce them to come back.

1424. You consider that that would have been avoided if you had had money to pay them with at once?—I think I have made a mistake, and that I have been confounding two cases; in the case I refer to the men were not dismissed for want of funds, but in consequence of a deviation which the consulting engineer wished us to make, the effect however was the same.

1425. Then the case you have mentioned cannot be cited as having proceeded from a want of funds?—No; but I remember that on one occasion I had to raise the wages.

1426. You state generally, that if you had had ready money you could have conducted your works upon a more reasonable scale as regards expenses?—Yes.

1427. Mr. *Crawford.*] The principle of your payments was to engage services, and to pay for them afterwards?—Yes; we never made advances.

1428. Do you think that it would have been attended with advantage to the interests of the railway company if you had had the command of cash, instead of being under the necessity of applying in each case for sanction?—We did not apply for sanction in that way; we applied for money, say for 10,000 rupees for a district, without reference to the particular articles we wished to purchase; sometimes they would send to inquire why we wanted it; my applications for money do not appear in the printed book to which I am referring, and therefore I can only give the replies of the Government to them. I find an answer from the Government, dated 3d January 1855, in these terms: "The Government have already had to notice the inconvenience of applications like the present, and the irregularity of leaving to the last moment demands for funds, which it is expected the Government are to place at the disposal of the chief railway engineer at a few moments' notice, without having before them the necessary accounts as a guide for their proceedings. The Governor in Council cannot admit the validity of the excuse now offered by the chief railway engineer, and must decline complying with the agent's requisition in the absence of the usual statement of expenditure; the Government will regret if this course interferes with the work of the railway,

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and they can only observe, that if it does so, it might have been obviated by the exercise of a little foresight on the part of the chief railway engineer." That is one place in which my explanation is not given, and I have no means of knowing what it was; indeed I remember that my camp, with all my books, was at this time marching down from Salem to Madras, and therefore I could not supply the usual statement of the money, in which the money had been spent, and what remained in hand; the Government knew the amount of work we were executing, but when I applied for 120,000 rupees, it was refused upon the ground I have stated; subsequently to this we had no money during six weeks of the brick-making season at Madras, and we could not make bricks for the terminal station because we were without funds for that purpose.

1429. In point of fact, that publication then contains an animadversion upon your proceedings, without the explanation which your letter would have afforded?—Yes.

1430. Mr. *Stephenson.*] Do I understand you to say that many of the men left the work in disgust, you being in their debt?—The coolies would go away.

1431. Without having received their wages?—They would go away with their tickets; and would, perhaps, sell those tickets at the bazaar at a considerable discount, and they would afterwards be brought to us for payment.

1432. Mr. *H. A. Bruce.*] You said that a serious delay of six weeks occurred upon one occasion, in consequence of a want of funds; were you reported against during that time for not carrying on your works with spirit?—We were called to account, and requested to explain why our station buildings were not as they should have been, and I think I have a copy of my letter in reply. I wrote, "We had no money during six weeks or two months of the brick-making season, and in consequence lost the greater part of the weather suitable for making bricks during 1855, and as a matter of course, when we got sanction to proceed with the building, we had not a brick to go on with, and were obliged to wait until after the monsoon, and then make the bricks before we could begin to build."

1433. Do you consider that the delay arose from the refusal to make the advances to which you have just referred?—That and others; I applied on one occasion for 130,000 rupees, and the Right honourable the Governor in Council, on the report of the consulting engineer on the 1st June 1855, sanctioned 75,000 rupees, that is to say, I received 55,000 rupees less than I asked for. I wrote again for money on the 4th June 1855, when Government gave us 146,000 rupees instead of 180,000 rupees for which I had applied, and had sent in accounts; and they refused altogether the money for districts No. 6, 14 and 15, on the ground that we had no authority to go on with the works; but the fact was, that it was necessary to build one bungalow to make our bricks, to burn the lime, to gather stones and wood, and a variety of things which were required in all the districts, and which we always did before obtaining sanction from the Government.

1434. Mr. *T. G. Baring.*] Do you wish to convey to the Committee the idea that you were constantly kept short of money?—Very often.

1435. Ordinarily how did you apply for money?—I will take one district, and I should have upon that district 500,000 rupees.

1436. How did you get the money?—First of all I should say that I wanted to go on with the works, and that I required 3,000 rupees to begin building bungalows. Then when I had nearly spent that money, I might write and say that I had received 3,000 rupees, and had rendered accounts of the money expended to the extent of 2,000 rupees, and that beyond that I had advanced to the engineer 1,000 rupees, and that therefore I had nothing in hand and wanted more.

1437. You were a kind of impressed accountant; you received a part, and asked for further advances?—Yes.

1438. Did you do that regularly at certain intervals?—Yes.

1439. How often?—Once a month.

1440. Colonel *Sykes.*] You say that inquiry was made as to the reason of your applying for money?—Yes.

1441. Do you think that it would have been proper on the part of the Government officers not to have made those inquiries before advancing the money?—I think they should have known as well as I did what we wanted the money for; they knew the works were going on.

1442. You say that delay was occasioned by your not obtaining advances of money as soon as you wanted them?—Yes.

1443. Nevertheless, you say you were quite satisfied with the progress of the works,

works, and that the Government expressed surprise at your having made the progress you had?—I never said that the progress was quite satisfactory, but that if it had not been for the delay the progress would have been more satisfactory.

1444. Mr. *Crawford.*] Do not all the railway engineers give security to the railway company when they enter their service?—Yes.

1445. Colonel *Sykes.*] To what amount?—I gave security to the amount of 2,000 *l.* I do not know what is the usual amount. The fault appeared to me to be that we were working without capital, that we were working from hand to mouth, because every small amount of money we wanted was dribbled out to us, and if an account happened to be wrong it was sent back for explanations, and in the interval the office would run short of funds.

1446. Mr. *T. G. Baring.*] Do you mean that further advances were delayed because a former account required some explanation?—Sometimes the reason was that accounts had not been sent in up to the time the Government engineer wished.

1447. Was that given as a plea for not making further advances?—Yes; I am aware that the accounts were not sent in as fast as any of us wished, but we did everything we possibly could towards it.

1448. Did you object to furnish every explanation regarding any item upon which explanation was required?—We never objected to give the fullest explanation.

1449. *Chairman.*] Did you experience much difficulty in procuring sleepers and wood for sleepers?—We had considerable difficulty, and it is at this moment, I believe, a matter of serious consequence.

1450. Did much delay arise from the Government intervention in the mode of obtaining sleepers?—Yes, that was entirely the cause of it; we were required to insert advertisements in the newspapers calling for tenders for sleepers; the parties tendering had to send in upon an ordinary written form a statement of what they would supply, and they had to appear at the agent's office in Madras on a certain day. Ten per cent. of the money upon each contract was to be reserved, as is usually the case with English contracts; and the sleepers were to be subjected, not only to the supervision of the engineer of the company, but also to the sanction of the Government, and until the sanction was obtained the money could not be paid for the sleepers. The result of drawing up the contracts in that way was, that the natives did not understand the contracts, and it was only the richer and better class amongst them who were able to come into competition, and very few of them up country would offer. Madras was as much unknown to them as London is, and they were frightened at the idea of having to appear at the agent's office; and the consequence was, that we got no offers from men up country. The consequence of all this was, that instead of being able to buy our sleepers at Madras at one rupee a piece, we had to pay two, and sometimes two and a half rupees for them; even then we could not get them.

1451. Was there not considerable competition in the purchase of sleepers; were not the agents of other railway companies in the market, who, having fuller powers of purchase, were able to carry them off under the eyes of your own engineers?—Exactly so. After many remonstrances of the same kind, I wrote on the 15th July 1856: "Allow me to draw your attention to the state of the timber market in Malabar, and our prospects of obtaining sleepers there. The Bombay Railway, and the Scinde Railway, and the Bombay Government have agents down at Calicut buying up all the timber they can lay their hands on, and taking it to their respective lines. Owing to this the price is likely to rise very much. In the meantime, what are we doing? Your agent in Beypoor sent tenders for sanction to you in February last; and now, in the middle of July, we have just received sanction for two of these, the remainder being still under consideration. In the interval other parties have been in the market; and, after a delay of five months in accepting a tender, it is doubtful whether the parties tendering will abide by their offer. Unless some change is made, leaving the officers of this company as free to purchase sleepers as their neighbours, and the Government, we shall certainly be obliged to indent again upon England."

1452. Can you call to mind one occasion of the purchase of 3,000 sleepers, amongst which there were some of a quality described as unauthorised wood?—That was wood purchased in Malabar, called pillahmurdh.

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1453. Describe that transaction from the commencement?—A man came to me and offered wood; I persuaded him to send us in a tender, and he did so for 3,000 sleepers, to be delivered at Pal Ghaut; he wished not to have the clause enforced requiring the deposit of 10 per cent., and he wished to receive his money on delivery. Government, generally speaking, would not allow us to pay for the sleepers until they had received the sanction of the Government engineer; his sanction and my sanction were mere echoes of the sanction of the engineer on the spot; so that if he had been authorised, under restrictions, to purchase sleepers as he thought proper, under certain orders and rules, he could have done so, paying for them at any time, and getting them in any quantity.

1454. Colonel *Sykes.*] It might have been bad wood?—The names of the woods would have been selected.

1455. *Chairman.*] I want to have the whole history of that transaction. What was the reason alleged by the consulting engineer, in the first instance, for refusing his sanction to the purchase of those sleepers?—The reason was, that it was unauthorised timber.

1456. Did he not require that the botanical name of the wood should be supplied?—Yes; we had been in the habit of working that wood in the workshops of Pal Ghaut, and had found it was good wood. The man I have referred to offered to find us sleepers of that kind of wood, and the consulting engineer wrote requesting that we would inform him what was the botanical name of the wood, and so on. I found out that it was the same wood in point of fact as we were using on the other side of the ghaut by the Tamul name of maroothymarum. If it had not been for that, I suppose we should not have been allowed to use it.

1457. Over what period did that correspondence extend in the first place, and what was the result?—I think it occupied a period of two or three months.

1458. The result of the transaction, I believe, was that the purchase was authorised?—It was.

1459. And the sleepers were bought?—They were.

1460. Did you not find, from your experience as an engineer, that the readiest, the simplest, and the most efficient, as well as the most economical mode of obtaining a supply of sleepers was by paying ready money on the spot?—I think it is almost the only mode; up country certainly it is, although in Madras we may do otherwise. I never doubted the propriety and expediency of the Government exercising every proper and reasonable check upon the purchases of sleepers, because it is one of the most important things; but what we wished to do was to fix the kinds of wood which we were to use, to limit the price to which the engineers might go, and then to allow them to purchase the various woods at these prices, or as much under them as possible, to pay for them on the spot, and then that certificates should be sent through the other offices as for other things. That was not allowed, but we were to apply for tenders, which was a roundabout way that no native liked; there was a long delay in obtaining the sanction of the Government, and a longer delay still in getting the money and yet there was no additional check, because my signature was given upon the faith of the signature of the engineer on the spot, and the signature of the consulting engineer was given upon the faith of my signature.

1461. You state that the natives did not either understand, or did not consider themselves bound by the terms of the contract; can you state any case in which a native contractor failed in the performance of his contract?—Several of them failed; I cannot call to mind their names, but I know that dozens of them would not tender in consequence of the system.

1462. Under that system of paying ready money did you find that the natives were backward in coming forward?—At one time they were; we were allowed for a short time to follow that plan under certain limitations, but it was clogged by the contract system being at the same time in force, and we could not get people to come forward with the sleepers at the proper price of one rupee, when there were contracts in force at 2 and 2½ rupees; but there can be no doubt that if we had persevered in that system, and discountenanced the other, we should have succeeded.

1463. Do you consider that any serious delay occurred over any portion of the line from the restrictions placed upon you in regard to the purchase of sleepers?—Not upon the portions of the line opened, because it so happens that at Vellore, Mr. Sullivan, a civilian of great spirit and energy, and who was always willing to help us, was allowed by the Government to provide sleepers for the railway company,

company, and he provided us with a large number of sleepers, and did in point of fact what our engineers ought to have done; but for that we should have been very short of sleepers at that end of the line, but the difficulty will be felt most upon parts of the line which they are now going to open, where I do not think that they have one-fiftieth part of the sleepers they require.

1464. Mr. *Crawford.*] In point of fact the Government authorised their own servant, a civilian, to do things which they would not authorise you to do?—Yes.

1465. That is to purchase sleepers by a ready-money payment?—Yes; he in the first instance sent his own people into the jungles, and got some sleepers, and paid them money for so doing; after that, he paid the natives so much a cart-load for them; it would have been better if all the engineers had had the same authority.

1466. Colonel *Sykes.*] You say you were asked for the botanical name of the wood; by whom?—Colonel Pears.

1467. Are you not aware that, by ascertaining the natural family and genus and species of wood, its progress and growth, and consequent density are known without inspection?—I have no doubt that you may approximate to it, but we know its density much better, because we were working at it every day in the workshops.

1468. Its density being consequent upon its rapid or slow growth?—Yes.

1469. Therefore the inquiry was a prudent and proper one?—I do not object to the inquiry; but our use of the wood every day was so palpable a test that it superseded, I should have thought, any farther inquiry.

1470. Did you give the botanical name?—I think we did.

1471. Do you recollect what it was?—I do not.

1472. Has not the botanical name of every tree in Malabar and Madras been published by Mr. White?—I believe so.

1473. Mr. *T. G. Baring.*] If you had sent the botanical name in the first instance, the delay, I suppose, would not have occurred?—I do not know that; I do not know that Colonel Pears could have ascertained from the botanical name whether it was wood fit for use.

1474. Colonel *Sykes.*] Do you know whether he is a botanist?—I do not believe he is.

1475. Mr. *T. G. Baring.*] By reference to the books he would see what class of wood it was?—He could have ascertained it in that sense.

1476. Therefore, if you had sent the botanical name at first, the delay could not have occurred?—I was in camp at the time, and had no records with me.

1477. Do you consider that the difficulty arose from the name of the wood not being sufficiently known by the Government officer?—Yes.

1478. You subsequently informed the Government officer that the wood was the same as had been sanctioned before?—Yes.

1479. If you had given that account in the first instance no delay, I suppose, would have occurred?—I did not know it myself. It was from the information received and comparing the wood that I found it out. I did not know the name on the other side of the Ghaut; I only know the Malabar name, not the Tamul name. I do not place much stress on that case, but on the general system of nonpayment.

1480. You said it was necessary to fix the class of wood?—Yes.

1481. Therefore, you consider that the question put to you by the Government engineer was a proper question?—I do not object to the question.

1482. So far as this was a new class of wood, you admit the propriety of the question?—Neither the Government engineer nor ourselves knew the woods to a great extent; and it was only by experience, such as we have every day, that we can add a new wood to our list.

1483. You said that the course which you would have recommended was, that certain fixed classes of wood should be named, and that your engineer should have power to buy sleepers of that particular class?—Yes.

1484. Supposing that course to have been pursued, would not the inquiry by the Government be still necessary with respect to a new class of wood?—Yes.

1485. These 3,000 sleepers being made of a class of wood not already known to the Government, the inquiry was a necessary one?—Yes; but they need not have asked us the botanical name.

1486. But some inquiry must have been made?—No doubt.

1487. You say that a change in the system was authorised by Government?—For a short time.

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1488. When?—Some time towards the end of 1854, I think.

1489. On what account was it authorised?—On my requisition; I wanted to see whether I could not get sleepers better and cheaper.

1490. Was it changed?—It was changed back again.

1491. On what account?—I believe the first official allusion to the change was made by the agent, who wrote to the Government upon the subject, and that letter was written at the suggestion of the consulting engineer; the agent wrote to the consulting engineer to say that he did not think that that was a good system.

1492. Do you mean to say it was the act of your agent that the system was changed back again?—So far as the official records are concerned it appears so, but it was not so in point of fact, because the agent did that rather to prevent its being done by the Government authorities.

1493. Did he do it against his own opinion?—I do not know.

1494. He wrote the letter?—He did.

1495. Recommending that the system you object to should be reverted to?—Yes.

1496. But you do not know whether it was his opinion or not?—I have no doubt it was.

1497. The change was made at the request of your own agent?—Yes; but long after that he has applied time after time to have the system altered back again.

1498. Has that been refused?—Over and over again.

1499. On what grounds?—The reason was this, that the Government engineer thought that to pay for the sleepers without first of all obtaining his sanction was taking the matter out of his hands. Everything else is paid for before it is sanctioned, but this is an exception. That was the objection, so far as I could understand it. Will you allow me to add, that our directors here have, in concert with the Court of Directors, sent out strong remonstrances against the system as it now exists, and in favour of the system I have recommended.

1500. Did I understand you to say that there has been a delay of five months before a tender was accepted?—Yes.

1501. You have sent in a certain number of tenders, and have received no final decision with regard to them for five months?—That is so.

1502. How can you account for it?—I do not know; all I know is, that it has happened.

1503. Have cases of that sort been frequent?—Our tenders were not very frequent; but they have occurred at Malabar.

1504. Have any other goods been supplied by contract at Madras?—Yes; sleepers have been supplied there to a considerable extent. There are men of capital there, and the natives are more accustomed to it, and they import the sleepers from seaboard.

1505. Can you state any other cases in which injurious delay has occurred in the receipt of tenders?—I do not think that there has been any delay of any consequence at Madras.

1506. The sleepers of which you have spoken were, I suppose, made by an individual who cut the wood in his own neighbourhood?—Yes; there were five tenders, I think, and three of them only have been answered.

1507. The tenders came, I suppose, from your local engineer on the spot?—Yes.

1508. Did he send information as to whether the persons were capable of fulfilling their engagements?—I think the tenders were made when I was there myself, but what was said about the people I do not remember; I do not think that that was ever a question.

1509. Was the delay occasioned simply by the matter going through a certain routine of official business?—Yes; it is not improbable that it would be sent to me for some inquiry; I should have to send it back to Malabar, and I must then wait until I received it again; there is an eight days' post between the two places.

1510. In the end was one of the tenders accepted?—I think so, but I am not able to say from memory.

1511. You do not know whether it was accepted or not?—No.

1512. Colonel *Sykes*.] If the delay had been injurious, the progress of the works must have been stopped?—It fortunately happened that we were not at that point when we required the sleepers.

1513. Then

1513. Then expedition was not of such moment as it would have been if you had required them?—If we had required them, the system could not have existed so long as it has done; it is only now that it has become a glaring case, manifest to all, that our directors have interfered, and sent out stringent orders on the subject.

1514. Mr. *Crawford.*] Practically speaking, do you not think that the Government would have adopted a better course if they had relied upon your statement that you had found suitable wood, rather than in referring to you for the botanical name?—I think so; and it would have been much cheaper.

1515. Does it not look very much like an abnegation of all confidence on the part of the Government authorities, as to the proper performance, on your part, of the duties you undertook?—It was felt to be so.

1516. *Chairman.*] You have given us very full explanations of the description of demands made upon you by the Government; can you state that a very great amount of time was lost, and an immense amount of trouble occasioned in furnishing all these minute explanations?—Very great indeed.

1517. Do you consider that, if the supervising officer, on the part of the Government, had been himself a civil engineer, he would have required so much explanation?—I know I should not.

1518. You can state that as a civil engineer?—Certainly; because men who are brought up to it all their lives, see the fitness of things more readily than those who are learning as they go, to a certain extent.

1519. Did you experience any difficulty in consequence of the want of a sufficient staff of inspectors over the various parts of the line?—Very great. We applied again and again to be allowed inspectors from this country; but that permission was never granted, until the Board of Directors here, and the Court, sent them out in the face of the remonstrances of the engineer and the Government in Madras. It appears that in the progress report, dated 5th January 1856, I state "the want of experienced superintendence which Government considered unnecessary, is sadly felt, and must ever continue to be so." I was called on to explain that, and I said in a letter, dated 23d January 1856, "In reply to your letter No. 3, allow me to observe, that throughout our whole establishment we feel the want of practical assistance. Our ballasting and waggon-work is conducted and managed by men who never in their lives before saw a waggon. Our bridges, with scarcely an exception, are superintended by men, who, to use a common expression, 'do not know a brick from a stone.' The engineer had no practical assistance. To descend to particulars, Mr. Collins has spent the greater part of last month on the personal and detailed superintendence of a rock cutting, which could be much more economically done by a man on 4*l.* a week. There is no practical main at the Gareallum Bridge, none on District 6, where there will be several large bridges: at the Pennar and Muttoor Bridges, on District 7, we have felt the want severely." Then I go on to say, "I was myself most anxious to provide subordinate superintendence in this country, but after the experience of two years, I gave it up in despair. I am fully alive to the disadvantages or drawbacks there are in the way of sending to England for men, and have duly weighed all these. We pay as much for inexperience in this country as would provide experience from home."

1520. Is it not the fact that important bridging works were, in some cases, left to the inspection of pensioners, and men of that kind?—The bridge over the Cortelear River is a bridge of 26 arches, 30 feet span, and is a key bridge. It was superintended in the first instance by an old pensioner, but fortunately the engineer was within three miles; ultimately, before the end of the work, we had a man from home who was very efficient.

1521. Was there not considerable risk of the work being inefficiently performed by having it in the hands of such men?—Very considerable risk.

1522. For how long a period did that man continue to act as inspector?—I should think for eight months out of the twelve, during which we were engaged upon the bridge; he was a very hard-working worthy old man, but was not a mason.

1523. Did the Government virtually insist upon your obtaining a description of skilled labour in the country, which, in fact, was not to be found there?—They insisted upon our obtaining them in the country; the Government had their supervisors from the army; but we were not allowed to seek workmen in the army, or we might probably have provided ourselves with proper assistance, because each

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each regiment generally numbers amongst its ranks masons, bricklayers, and carpenters. I went to the Commander-in-Chief, General Anson, for permission to obtain our assistants from the army; but he said that a company like ours should find our own men, and he would not allow us to take his soldiers.

1524. Did you find that you could instruct the natives sufficiently to entrust to them the inspection of work of this description?—We found many of them very efficient in some things, but in others we could not altogether trust them; for instance, the bridge which we were building over the Cortelear, was a right-hand skew, and one of the natives, a mason, under the European, had charge of it. I thought, as he had had a year's experience at that bridge, that I would send him to another, but as the skew was the other way, he began working at the wrong end.

1525. That you mention as a practical illustration of the difficulty of instructing the natives in the inspection of works of this description?—Yes; and in depending upon them for supervision.

1526. Mr. *Crawford.*] Did you select that man, or was he recommended to you?—I selected him. He came to me first upon very small pay; he was a stone-cutter by trade, and he was with us for a long time; I raised his wages repeatedly, and he was a very useful man.

1527. Do the pensioners apply to you for service?—Yes; I had some exceedingly useful men as inspectors, inasmuch as they were good keepers of accounts. They came to me from the 15th Hussars, when that regiment left India; they were not practical men, and were not of much use, except from their having been accustomed to obey orders; they did not make up for the want of the other assistants we required.

1528. Had they obtained their discharge, or were they pensioners?—We paid their discharge in some cases, and they refunded us.

1529. Do you pay pensioners the same wages as you pay other superintendents and inspectors of the same class?—Yes.

1530. Are you aware whether the Government made any deduction from their pension in consequence of their employment by you?—I am not aware.

1531. Mr. *Stephenson.*] Do you not consider that an inefficient system of inspection increased your own responsibility?—I felt it seriously.

1532. Your own time, and that of your assistants, was in point of fact drawn away from important matters to reunite one which would have been as well left to a person of one-third the salary?—Exactly so.

1533. In addition to that, although you have accomplished these works, you cannot speak, from your own knowledge, to the complete solidity of the works with so much certainty as you might have done if you had had good inspectors?—No.

1534. In fact, you considered that your attention being directed to these minute details was an absolute waste of time and money?—Exactly so. I think I have already stated that the court here, and our directors, sent out a great body of the skilled labourers I asked for, but it was upon the remonstrance of the Government there, and I was called upon to give explanations why I had sent for them. In the report which I wrote I stated, "The only other point I would refer to is the want of skilled subordinate superintendence; we have not done what we ought to have done towards the improvement of the style of work in this part of India for the want of this; we have too often been content to use wretched bricks because we had no one to stand over them, and see them made, who knew how this ought to be done, and it is not desirable that, when determined to introduce a better description of bricks, your engineer should (as I have known to be the case) spend whole nights in brick-fields superintending the burning of a kiln, with no bed but cocoa-nut leaves, on which occasionally to rest."

1535. Colonel *Sykes.*] You said there was great difficulty in procuring native masons?—Yes.

1536. Do you suppose that skilful natives are not procurable?—Not off the Government works. They get employment there, and we could only get the under foremen, if we got any; but, generally speaking, we had to select a good sharp, active common workman, and train him as well as we could. Some of them did very well.

1537. In a country where there are such magnificent specimens of architecture, efficient native workmen must be procurable?—I have no doubt they are. We could train natives, and I have no doubt that the Government have some; but they are

are able to hold out a system of wages for years, and a pension at the end of them.

1538. The expense, of course, would have been considerably less?—Less in point of money; but I have known the difference in point of work done under European agents to be four times as much as that done under the eye of the native.

1539. What was the amount of the pay received by the native agents?—I think our foreman did not receive more than 30 rupees a month; as a general rule, they would perhaps not get more than 10 or 12, or 15.

1540. Mr. *T. G. Baring.*] In making a comparison between the amount of work done under native and that done under European superintendence, are you speaking of the natives you employed, or of any others?—I judge principally from my own workmen, and I judge also from what I have heard from other parties in charge of Government works out there, and from what I have seen of the works throughout the district.

1541. You would rather pay a higher salary to a European than a low salary to a native?—I must not be understood as saying that I would not employ natives; but I meant that if I had been doing this work myself, and if the profits of the construction were to go into my own pocket, I would have every man I asked for, when I applied for them, Europeans.

1542. You would have European superintendents?—Yes.

1543. Altogether?—No, only for the principal works, and to a much larger extent than was allowed by the Government.

1544. How high would you employ the native in the superintendence of works?—It is not easy to answer that; I would have had in each district, probably of 12 miles, one thoroughly good European mason to take charge of that extent of line.

1545. On each 12 miles you would have one European superintendent?—Yes; not only that, but a European superintendent who was accustomed to work. We had one European, but he was not a mason, or a practical man.

1546. The natives would be subordinate to him?—Yes.

1547. Practically, from your experience of that country, you say you would have employed European superintendents and natives under them?—Yes, as a general rule.

1548. Do you know whether there is a Government school for engineering at Madras?—The only one is that which we had ourselves; we had 20 or 30 pupils, and those who were turned out during the time I was there were exceedingly efficient.

1549. From the Government school?—We took them from any school, both for the works and for the office.

Lunæ, 17° *die Maii*, 1858.

MEMBERS PRESENT.

The Hon. H. G. Liddell.	Mr. H. A. Bruce.
Mr. Crawford.	Mr. Cheetham.
Mr. T. G. Baring.	Sir J. Elphinstone.
Colonel Sykes.	Mr. G. Glyn.
Mr. Campbell.	Mr. Stephenson.
Mr. C. Bruce.	Mr. A. H. Baring.

THE HON. H. G. LIDDELL, IN THE CHAIR.

Mr. *George Barclay Bruce*, called in; and further Examined.

Mr. *G. B. Bruce.*

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1550. Colonel *Sykes.*] IN a former part of your evidence you complained that you had not been allowed, of your own authority, to purchase sleepers?—I complained that we were not allowed to purchase them under certain restrictions, to be sanctioned by the Government.

1551. What were those restrictions?—As I explained before, the system in force was this: that formal tenders were to be sent in by the natives up country; that those tenders were to be sent first of all to the agent; that the natives were to appear themselves, either personally or through their agents, on the day that the tenders were opened; that 10 per cent. was to be reserved, and that the sleepers were not to be paid for until they had been sanctioned, not only by the engineer of the Company, but also by the Government; and also that each number of sleepers supplied had to go through the form of having the certificate passed through, first of all the hands of the resident engineer, next through my hands, and then through the agent's hands, and also through the hands of the Government engineer; it would then, perhaps, go back through the same course, in order that some inquiry might be made, and ultimately the people would get their money very long after they had supplied the articles.

1552. That is the system you complain of?—Yes.

1553. Do you desire that that whole system should not obtain, but that you should be empowered to make your own purchases?—I wished that we should be allowed to do with sleepers precisely the same as with everything else. Everything else we purchased and paid for, without the special sanction of the Government.

1554. What do you mean by "everything else"?—Take, for instance, bricks. We built our bridges, we made our embankments, and we bought our lime and things of that kind; after payment, the accounts were submitted to the Government, and sanctioned by them.

1555. Are you aware of any system of public works in any country whatever, in which the subordinates are permitted to make their own purchases, and to charge their own prices?—I stated that I thought the prices should be limited; that is to say I would, in concert with the Government engineer, decide on woods that we were to use (we will suppose in Malabar), and I would also decide the limit of price to which the engineer was to be allowed to go; I would say, "You may buy sleepers of these kinds of woods within that limit of price, and then when you have bought them, you must pay for them on the spot; it shall not be necessary for you to send your certificate through the circuitous route which will keep the men out of their money for a great length of time;" I would not, in point of fact, give him greater liberty than the Government did, but I would give him the power of paying on the spot, and of making his agreement with the people in a way

way they understood, over the table, or in a verandah, without going through the form of a written document, which they are afraid of, and which in nine cases out of ten they will have nothing to do with.

1556. My question required a simple "yes," or "no"; are you aware of any system of public works in any country in which the subordinates are permitted to make their own purchases, and to charge their own prices?—No.

1557. If it were permitted, do you not think that it would be highly improvident, and possibly dangerous?—I never would permit a subordinate of mine to do it, and never did.

1558. Then, in fact, this supervision which is exercised by the Government engineer was only in favour of economy and of insuring efficiency?—No; it was precisely the reverse. I have no doubt it doubled the price of our sleepers.

1559. How do you make that out?—In this way. I could have bought sleepers in Malabar for one rupee each; by this system we were obliged to pay two, and and two and a half rupees each, principally caused by the limited number of people who were able to enter into the contracts. If we had been allowed to buy the sleepers on the spot, we could have done so very readily. If a man brought me 100 sleepers, and I was allowed to buy them and to pay for them, I should get an unlimited supply; but upon the other system only a few men of large capital are able to undertake the supply, and they charge high prices because the small men are driven out of the field.

1560. You think that you should be at liberty to make your own purchases free from control?—Not free from control; but I would have the control exercised in laying down the rules, and not in fettering the actions of the officers after the rules were laid down.

1561. It must be apparent to you that if power were given to a person employed upon public works to make his own purchases, the State might suffer considerable loss, either from want of ability, or from want of honesty of purpose in the individual, or a desire to spend the public money for his own personal advantage, and that therefore the system of control is absolutely necessary in the interest of the State?—I quite agree with that.

1562. Mr. *Campbell.*] You were allowed without control to contract for the purchase of some classes of materials, and not others?—Every class except sleepers.

1563. What object had the Government in view in allowing you to contract for one class and not for another?—I cannot conceive the reason, except that the Government engineer, in one of his reports, said that it was ignoring the supervision of the Government; it did not ignore it, but it made it quite as efficient.

1564. This supervision was exclusively confined to the sleepers.?—It was.

1565. And no check was put upon the other work, as indicated by the honourable Member?—No check whatever.

1566. But a check which would meet the difficulty he suggested might have been imposed, and still would not have impeded the work?—I would not have agreed to anything which did not act up to the spirit of the restrictions which the honourable Member has referred to.

1567. *Chairman.*] The gallant Colonel in his questions to you has twice made use of the word "subordinate," and has asked whether subordinates ought to have the uncontrolled power of making purchases of this kind; I wish to know whether, in your opinion, it is fair to consider in the light of a subordinate a man in your position charged with the construction of great works of this kind, having all the labour under his control, and the whole responsibility of carrying out those works?—No; so little did I understand the question to be put in that light, that I did not take the gallant Colonel's remarks as applying to myself, but rather to those who were under me.

1568. Colonel *Sykes.*] If there be a superior controlling every one else, every one else must be subordinate?—Yes.

1569. There was a superior controlling?—Yes, but the word is generally used in another sense.

1570. *Chairman.*] Do you consider that the Government Supervisor is strictly responsible for the execution of the works which you are called upon to construct, or that he is merely there as a check upon extravagant outlay, and that alone?—I do not think the responsibility would rest upon him at all.

1571. Then in that case it is hardly fair to consider the chief acting engineer of the railway as strictly subordinate to the Government officer?—No.

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1572. Did not the home Government finally approve of the plan which you suggested for the purchase of sleepers?—I have understood that the railway company have since sent out instructions, with the sanction, of course, of the Government at home, to carry out the plan I originally proposed.

1573. Were directions sent out to that effect?—I understand so.

1574. What is your authority for stating that?—My authority is Mr. Walker, the managing director of the Madras Railway.

1575. Do I understand you to say that the home Government sent out sanction for the purchase of sleepers by the railway authorities to be paid for in ready money?—That is what I have understood from the gentleman I have named.

1576. Colonel *Sykes.*] Can any railway be opened for public use without the report of the superintending engineer?—No; neither here nor in India.

1577. Mr. *T. G. Baring.*] Have you ever been delayed in putting down your rails from the want of a sufficient number of sleepers?—I can hardly tell you; it was more upon parts of the line that were not ready that we felt the difficulty.

1578. On that part of the line already opened has the laying down of the rails been delayed from the want of sleepers?—I do not think it has.

1579. Mr. *Crawford.*] Is the railway company, as represented at Madras, considered by the public there, both European and native, to be a subordinate department of the Government?—No.

1580. Is it not rather looked upon as a large corporation carrying out, in concert with the Government, a great public work?—Decidedly so.

1581. And subject to the control only of the Government for the purpose of limiting the power of excessive expenditure on the part of the railway authorities with respect to the capital upon which the Government guarantee the interest?—That is the view generally taken of it.

1582. Do you think that is the fair and proper one?—Unquestionably.

1583. In a question put to you just now, I think the words "public money" were used; do you consider the term "public money" to be a term properly applicable to the funds of a railway company?—Certainly not; it is the shareholders' money.

1584. Nor would these works in India probably be considered as Government works?—No, they were never looked upon in that light.

1585. So far as your experience will enable you to ascertain, can you tell me whether the natives in the interior of the Madras Presidency are familiar with the system of supplying goods under rigid forms of tender?—They know nothing about it, and are afraid of it.

1586. What is it that they apprehend when they have a printed form of tender put before them to sign, or are called upon to supply goods in that form?—I can hardly say; there is some fear, which they cannot describe, that they are to be led into something, they do not know what.

1587. I believe there are various works in different parts of the Madras Presidency carried on by Europeans, in the nature of sugar works, and indigo works, and so forth?—Yes.

1588. Do you suppose that when any of these gentlemen are about to build a factory for the manufacture of sugar, or indigo, that they invite the natives to supply them with everything they want in the form of a written tender?—I am quite sure that they would not get what they wanted if they did, in nine cases out of ten, at the prices they ought to get them for.

1589. Then it comes to this, that in inviting supplies by tender, you are resorting to a mode of proceeding with which the native mind is not only not familiar, but which the native mind views with prejudice and alarm?—No doubt.

1590. Do you think that that arises from a feeling on the part of the parties that they will not get as good terms, or that they may be tied up by legal conditions?—I think it is the latter; I think they have some fear of legal conditions.

1591. Mr. *Campbell.*] Have not the natives generally an aversion to signing documents?—I do not exactly say that.

1592. Mr. *Crawford.*] Are the forests from which the sleepers would be supplied by the natives, under the control of the Government, or are they private property?—I think they are generally under the control of the Government; you require a Government order to be allowed to cut timber in them.

1593. Does the Government show any jealousy in admitting persons to cut timber in the forests?—The forests, I think, have been very much abused, and the

the Government are beginning to look after them a little better than they did; but there is not any undue jealousy.

1594. For what purpose are the forests resorted to; is it for timber for sleepers, or for building, or for the burning of charcoal?—The natives use it for both; they cut down timber for building purposes, and to a large extent for the burning of charcoal.

1595. Would you not require a different description of wood for charcoal to that which you use for building purposes?—I do not know what kind they use for burning charcoal. I know that at Beypoor the iron company use a large quantity.

1596. Do you know from what source they derive their supplies?—From the jungles of the river, near Beypoor.

1597. Have you seen that wood which finds its way down to the works for conversion into charcoal?—I think it is converted into charcoal in the jungles.

1598. Have you obtained any supply of sleepers for your railway from the Bay of Bengal?—We got a little teak on one occasion. We have had a great deal of teak for ordinary building purposes, but not for sleepers.

1599. From what quarter has your supply of sleepers been?—We have had a great deal from the jungles towards Cuddapah, and a great deal also from Cuttack, and we have had a great many also from the forests near Malabar.

1600. Do you lay down the sleepers made out of that wood without any preparation being applied to them?—Yes.

1601. Have you found the sleepers answer?—When we got really good wood, they answered very well. We have sometimes been cheated by the natives palming off upon us the wrong kinds of wood; they resort to all sorts of tricks in order to succeed in their objects.

1602. Have you suffered very much from the depredation of the white ant?—No.

1603. Do you attribute that to a fact, which has been noticed on many occasions, that the white ants will not attack the sleepers over which a railway train is passing?—Yes, they do not like the motion of the trains, and besides that the ballast is generally not very agreeable to them; they require soil rather than sharp sand or stones; the vibration disturbs them.

1604. Have you imported any sleepers from Europe?—Yes, but not very many; I think we imported about 20,000 on one occasion, because we were afraid of running short, and I think probably we should have done so and should have been delayed, but for the arrival of these sleepers.

1605. How have they answered?—They answered very well indeed; they were creosoted Baltic timber.

1606. They were not subjected to the process of Kyanising?—No.

1607. You have only had to deal with creosoted sleepers?—Yes.

1608. Colonel *Sykes*.] Are you not aware that the natives had undertaken contracts in different parts of the country?—In the Presidency towns; but not up country, so far as I am aware.

1609. On the public works all over India?—Not generally speaking.

1610. You do not know that?—I do not know that. The engineer officers up country, do not, so far as my intercourse with them allows me to speak, generally adopt that system.

1611. Are you aware that the Court of Directors has further given orders in the Public Works Departments, that all works which can be performed by contract shall be so performed?—Very likely. It is a very good order indeed; but there are many things which you cannot so carry out.

1612. Are the forests you speak of private property, or are they the property of Government?—The Government have a control over them, but the exact relation in which the Government stand to them I do not know.

1613. Supposing they belong to the Government, you then would have no right to cut wood in them?—Not without leave.

1614. Are you aware that the Government derives a revenue from the sale of wood in the forests of India?—I believe they do in some cases; I never said that I thought we should have a right to go into the jungles to cut wood.

1615. Are you aware that in consequence of the destruction both of timber and underwood which has been taken for charcoal purposes, it has been necessary to establish conservators of the forest?—Yes, and it is a very proper proceeding I think.

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1616. Sir *James Elphinstone*.] What forest do you get your sleepers from?—Some are brought from Malabar.

1617. Do you get them from the Patna Hills?—I do not know the Pulna Hills.

1618. Do you know anything about the wood trade at Malabar?—Yes; I have had a good deal to do with it; we get our wood principally at Calicut and Beypoor.

1619. Have you any difficulty in getting the size of wood you require?—No, not generally speaking.

1620. Was it principally teak?—Not principally; we have had the Vangey wood, and others.

1621. Is that a good wood for sleepers?—I am speaking of it not so much for sleepers; we bought it for ordinary railway purposes; for building and for waggons, and things of that kind; our hands were not tied in that description of work, but we could buy them ourselves.

1622. At what price could you buy your sleepers?—I have bought them as low as 12 annas, that is about 1*s.* 6*d.* each.

1623. What did your pickled English sleepers cost?—They cost us, I think, about 6*s.*

1624. Were the sleepers which you bought at 12 annas, laid down at the point where you wanted them?—That is on the opposite coast; the pickled English sleepers went to the Madras side.

1625. And you bought them at Beypoor for 12 annas?—I have not bought many of them at that price, but I bought a good many at one rupee.

1626. Of teak?—No; other woods.

1627. What did it cost you to lay them down at Madras?—We never brought any from the Malabar coast, but the native sleepers bought at Madras cost us 6*s.* and 7*s.*

1628. Cut at Salem?—No, cut at Cuttack; there is no large available supply at Salem.

1629. *Chairman.*] I wish to ask you whether the general plan laid down in the direction of this railway has been adhered to, or whether any diversions of the original plan have been suggested or adopted by orders of the Government?—As a whole, the original plan of the course of the line has been followed; there was one instance in which after we had began the works, and had built a good many of the bridges, and made some of the embankments, collected our materials, made our roads, and built our bungalows, and so on, we were stopped by the Government officer upon 70 miles of the line, and ordered to survey a new route.

1630. Did you make that survey?—We began to make it. It was partially made, but the Madras Government interfered upon the strong remonstrance of the Company out there, and ordered that the line should be carried out as it had been originally sanctioned.

1631. Was much delay or much expenditure caused by that temporary suspense of the works?—There was a delay of six weeks in point of time, I think, between the stoppage and the order to proceed, but the real amount of delay would be far more than that, inasmuch as the people who were gathered together under the promise of long-continued work were scattered; those who had made advances to workpeople, such as contractors and so on, were thrown out of their contracts, and these were all scattered; we had about 600 men at the Cauvery Bridge who were all scattered, and of course we lost credit, and it is a very difficult matter to restore confidence in cases of that kind, and to get the men back again.

1632. Are you prepared to state, of your own knowledge, what the motives of the Government were in proposing that change of line?—I believe it was that the Government engineer thought we could get a better line in another part of the country, but of course those considerations should have been borne in mind before the line was settled and sanctioned; the Government engineer said that he had requested me to examine this new line which he suggested, and that I had not done so, and that afterwards finding it had not been thoroughly examined, he wished it to be done. That appears in a letter published by him since I left India; but that was really not the case, inasmuch as the line which he afterwards reqested me to examine was a different one. On the 23d of May 1856,

I wrote

I wrote in answer to his request that I should examine the line to the north of Senkerrydroog, to know whether we could not avoid a rise in the line.

1633. There is, I believe, a range of hills there?—There is, which we wished to avoid; in my letter I said, "with regard to the practicability of changing the line to the north of Senkerrydroog, I satisfied myself, by personal inspection, that no such change could be effected. A granite ridge, connecting the two hills of Senkerrydroog and Soonamullay, would necessitate an alteration in the whole course of the line through Districts 9, 10, and 11, which should then have pursued a course near Woomalwor, west of Kangamullay and Soonamullay, crossing the Cauvery probably above its junction with the Bhowany, thus involving another large bridge, and in fact taking a totally different line of country from that which has been adopted." I wrote to explain that we could not come off a little west of Salem, and go round Senkerrydroog, because those hills prevented us, and I said if we went there we must come off near Woomalwor. When I said that, the answer of the Government was "go on with the original plan." They never said, "that line near Woomalwor is the very line we want examined," but when I indicated that this was the only course which I could take, they said, "go on with your original works." We went on, and Colonel Pears now writes to say he asked me to examine the line north of Senkerrydroog, leaving the impression that he told me the line near Woomalwor, which is certainly not the case.

1634. Were the engineering difficulties which presented themselves in carrying the line across that ridge of hills in your opinion, as an engineer, insuperable?—Not by any means; we took the line by way of Salem, in order to accommodate that town, the largest town, in that part of the country; there was no other reason; no reason showed itself why we should go by Woomalwor at the time we were stopped any more than we had known from the beginning.

1635. I believe the country over which the railway would have gone, *vid* Woomalwor, was not a difficult country for engineering purposes?—No; it was more a commercial question; we went to Salem entirely with a view to the commercial question.

1636. Was the country in the neighbourhood of Woomalwor a productive country, or a country in which there were large commercial towns?—There were no towns; I merely refer to this as a case in which the works had gone on to a considerable extent, and we had spent a large amount of money, which was all in danger of being thrown away, owing to considerations which ought to have been thought of at the outset.

1637. Were any other diversions from your original plan proposed?—Not of any consequence; I alluded to one or two small matters the other day.

1638. Mr. *Campbell.*] What may have been the loss sustained by the railway company by reason of the delay caused by the proposed diversion?—It is impossible to calculate either the loss of time or money, because they had to raise the prices considerably, in order to get the people back.

1639. I suppose it disarranged your previous arrangements and your previous staff of labourers?—Entirely so; and it discouraged everybody.

1640. Mr. *T. G. Baring.*] What was the date of this transaction?—August 1856.

1641. What was the length of the line upon which this divergence was suggested?—About 70 miles.

1642. Did the consulting engineer, Colonel Pears, recommend farther inquiry?—Yes.

1643. Did the Madras Government support him?—No.

1644. They supported you?—Yes; Colonel Pears wrote, "by the authority of the Government," to stop the works, and by the authority of the Government in reality the works were ordered to go forward again: Colonel Pears wrote literally without the authority of the Government, but in the name of the Government, which was in one sense repudiated by the Government when they became cognisant of it.

1645. I suppose you mean to say, that after the consideration of the subject, and after hearing the reasons, the Government supported the original line?—Yes.

1646. *Chairman.*] I wish now to ask you a few questions in regard to the supervisions. Have you experienced on your own line inconvenience in consequence of the supervision over the working of the line?—Yes; I think it has been very injurious to the proper working of the line.

1647. Were there not some very minute specifications required by the Government

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ment in regard to locomotives, trucks and other carriages employed on the line?—I think half my time was taken up in answering inquiries and giving explanations, which really had very little practical bearing, and were productive of very little practical good; the most striking one that I find in this report of the railway departments is one which does not refer specially to myself, but to the locomotive department. The Government engineer called for a statement which "should show in parallel columns the names and number given to the engines, the usual description and terms of its several component parts, its evaporating power, its weight, cost, consumption of fuel with an assumed load, and speed." He said also, "You are requested to furnish drawings of each different description of engines and tenders, as they are received. Each drawing should have some letter or distinguishing mark, so that when several engines of a precisely similar description are entered in the above return, a reference to one and the same drawing will be sufficient. I have further to request, that I may be furnished with a descriptive statement of the several articles of rolling stock, carriages, waggons, vans, &c., which may have been already constructed, or which it is intended to supply to your line, with drawing of each class. The above statement is required to show the description of carriage intended, and general dimensions, capacity, weight, number of wheels, estimated quantity of wrought materials, wood and iron, &c." Those and other similar inquiries which were easily made, but were very difficult to answer, occupied the time of the officials of the railway company, very much to the detriment of the progress of the works.

1648. I wish to ask you whether you had any one under your orders who was capable of making drawings such as those that were required?—The returns of course were made under the locomotive superintendent, but I know he had no one to do it, and I had no one in my office.

1649. Had you much difficulty in procuring draughtsmen for the purpose of the railway?—Very great difficulty; the number of drawings which the Government required from us was so great, that I applied to be allowed to have draughtsmen from this country, but it was refused; they ultimately sent out one, I think. Of course the best men were employed in the Government offices, which had been, previously to our going there, the only school in which the natives were brought up.

1650. Do the natives show much aptitude for drawing?—They are good copyists, but generally speaking they are not men who can draw from an idea or a sketch.

1651. They are not skilful at originating plans?—No. The Government gave us a great deal of trouble in that way. Then I applied to be allowed to employ the draughtsmen overtime. They work from ten to five. I had some good men who would have been willing to work over-hours for extra pay, but the Governor in Council did not approve of giving me that power. I was not allowed to make an arrangement even so simple as that.

1652. When you asked to be allowed to make that arrangement, what was the reason stated by the Government for refusing it?—I do not remember.

1653. Do you remember the date of that application?—No, I do not; but I think it was about the beginning of 1855.

1654. Mr. *Crawford.*] Where were your locomotives and rolling stock designed?—They were designed in England by Mr. Rendel, and sent out by the railway company.

1655. Are you aware whether the locomotive and rolling stock were of the same design as those used on the East Indian Railway Line?—I think they were.

1656. And the same gauge of course?—Yes; we had some lighter engines than those used by the East India Company, and some, which, I believe, were the same.

1657. Had you any discussions with the consulting engineer at Madras in reference to the fitness or otherwise of the locomotive or rolling stock sent out from this country?—Not in Madras; there was some discussion at home, I think, between our chairman and Mr. Rendel about it.

1658. Was any exception taken by the consulting engineer to the stock sent out?—I do not remember any.

1659. Have you any knowledge of the object for which so many drawings were required to be made and sent?—I cannot conceive any object, unless it was

that

that the engineer wished at some time that they should have a line in the Madras Presidency in their own hands, and that then they would have all the facts and figures before them.

1660. In point of fact, the result of that would have been to have made your railway company pay for any plans and drawings which the Government might require for any purpose to which your railway company was not a party?—That would have been so, if my idea be correct.

1661. Had you any discussion with consulting engineers as to the principle upon which those locomotives were built?—No.

1662. Mr. *T. G. Baring.*] The discussion between Mr. Rendel and Colonel Sims was, I think you stated, with reference to the class of engines to be sent out to Madras?—I think it was.

1663. Had not that discussion some reference to the weight of the engines?—Yes.

1664. And of the rolling stock generally?—Yes.

1665. Were not engines of a different description as to weight sent out to Madras in the first instance?—Yes; some were like those of the East India Railway Company, and some were of a lighter description.

1666. Would it not be of considerable importance to know how the engines of different classes worked, and which were best suited for Indian railways?—Yes, it would be so.

1667. The weight would make a difference in the freight and also in the expense?—Yes.

1668. Is it not possible that those returns may have been called for with a view to ascertain, in the first instance, the expense of working the different classes of engines?—No; I should think the inquiries themselves were not at all of a practical character, and could not be useful in the least degree in accomplishing that result.

1669. You think they were not of a nature to give that information?—No.

1670. Do you state that of your own knowledge?—Yes.

1671. Were the inquiries made of you?—No; but I know enough about locomotive engines to know that.

1672. Did you see all the correspondence about it?—I believe I may say I did.

1673. Had you any conversation with Colonel Pears?—I do not know that I ever had.

1674. On any occasion, has Colonel Pears stated, or implied, that he wanted these drawings in order to procure engines for the Government?—No.

1675. The supposition you refer to is completely your own impression?—Exactly.

1676. You have no ground except that for what you have stated?—Except that Colonel Pears, I know, would like to have a line on behalf of the Government.

1677. What line do you suppose he wished for the Government?—I can only turn to his own reports, in which he speaks of one to Cuddapah; I forget the exact course of the line.

1678. Is not that already sanctioned to be made by your company?—It is, very much against Colonel Pears' good will.

1679. When was it sanctioned?—I am not quite sure that the contract is signed yet.

1680. It has been sanctioned very lately?—Very lately.

1681. You think that his ordering the drawings of the engines might have referred to that line?—I do not think it was the direct Cuddapah line; but when I was asked what could be the reason, I said, that was the only one that I could suggest.

1682. You do not wish to assert it as a fact?—I cannot do so.

1683. *Chairman.*] Have you any special correspondence to which you can refer, in which Colonel Pears has expressed his views upon this line of railway?—I cannot lay my hands on it; it is not in my possession.

1684. Mr. *Crawford.*] Who is the chairman of the Madras Railway?—General Sim.

1685. He was an officer of the Madras Engineers, was he not?—Yes.

1686. And Colonel Pears was a subaltern of his, in the same corps?—Yes.

1687. Mr. *T. G. Baring.*] In answer to Question 1248, in which you were asked

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asked to what cause you attributed the delay, if any, in the construction of the Madras Railway, you say, "I think that the way in which the contract between the company and the Government has been carried out has been prejudicial to the progress of the works; and I think also we have always had too small a staff to carry on such an extensive undertaking." Will you be good enough more fully to explain what you mean by the latter part of that answer?—I mean that we have always had too few engineers.

1688. To what do you attribute that?—We always wrote home for them, and never got them; that is all I can say upon the subject.

1689. Had you any difference with Colonel Pears upon the subject of the staff of engineers?—No; I never had any misunderstanding with him on that subject, to the best of my knowledge.

1690. Did he not in 1854 recommend to the Government that a much larger staff of engineers should be sent out from this country?—I cannot tell without referring. I never said it was Colonel Pears's fault that we had not a proper staff of engineers. I merely said that that was the case.

1691. Do you recollect the date at which you made the representation about the want of engineers?—At the end of 1853.

1692. Are you aware whether that reference was in point of fact agreed to by Colonel Pears?—I have no reason to think that it was not.

1693. Did he not recommend 12 engineers to be sent out?—I do not remember; I asked for 18.

1694. By the report it appears that you asked for 15, and he recommended 12?—I asked for 18.

1695. Are you aware what course the Board of Directors in this country took upon that?—I am aware that they sent me out very few engineers.

1696. Do you know whether they in the first instance recommended that only two men should be sent out?—I am not aware of the particulars.

1697. I find that on the 10th of July, the Board of Directors requested that the addition of two engineers might be sanctioned by the Court of Directors?—I am not aware of it.

1698. Did you ever hear that the Court of Directors of the East India Company pressed upon the court of directors of the Railway Company the necessity of sending out more engineers?—I am not aware of it.

1699. Are you aware that subsequent to that, on 19th August, the Board of directors of the company asked for permission to send out two more engineers only?—I do not know these details sufficiently to answer the question accurately.

1700. And that subsequently the Court of Directors again brought to the notice of the Railway Board, the necessity of sending out more engineers?—Very likely.

1701. Are you prepared to state whether the want of engineers was the fault of the Government or of the Railway Company?—I am not prepared to say whose fault it was.

1702. Admitting that the Court of Directors of the East India Company pressed upon the Railway Company the necessity of sending them out, would not the responsibility rest more upon the directors of the Railway Company?—No doubt.

1703. What proportion of the delay has occurred in consequence of your not having a larger staff?—I could hardly state the proportions; it has been seriously felt.

1704. Do you consider that the delay which has occurred is owing more to the inefficiency of your staff of engineers, or to Government interference in the mode of supervision?—I should say that they have both acted very detrimentally to the progress of the works.

1705. Can you express an opinion as to which has operated most in keeping you back?—No, I do not know that I can go into facts and figures upon that question.

1706. Would you say that they had an equal tendency to delay?—I do not know whether it is fair to say anything about it; it rests entirely upon imagination.

1707. As regards the delay; what additional work, in your opinion, could you have done up to the present time if there had been no obstructions either from Government interference or from the want of an adequate staff of engineers?—I would

I would have finished the whole line from Madras to Beypoor, and opened it, before I left India.

1708. In what time?—In four years.

1709. How many miles is that?—About 400.

1710. You think that could have been finished and opened before you left India?—I have not the shadow of a doubt about it.

1711. In answer to Question 1239, you said that there was some delay in opening the first part of the line in consequence of your having received sanction only for 50 miles, and afterwards for 20 miles; what was the cause of that?—The course of the line beyond the first 50 miles was doubtful. They did not know whether we should go straight or diverge, and therefore we were ordered to go on with the first 50 miles, and after it was decided how the line should go, we were to complete the remaining 20 miles.

1712. It was a question as to the direction of the line?—Yes; the question was, whether we should go up *viâ* Palmanair to Bangalore or whether we should go *viâ* Vaniambaddy.

1713. When was that question settled?—I think it was about the end of 1853.

1714. Was it settled when the extended contract was made with the company in November 1853?—I think it was. I know we began the works upon the extension about April 1854.

1715. Do you attach any blame to any one with regard to the delay?—No.

1716. It was delay necessary to determine the proper route?—Yes, I think so.

1717. Sir *J. Elphinstone.*] Supposing you had *carte blanche* to make a line in India, such an average line as the Madras Line, and to cost about the average sum that that costs, at what rate could you make 100 miles?—It would depend so very much upon the character of the country.

1718. What would be the average of the Beypoor Line?—The cost of the part that is completed was about 6,000 *l.* per mile, including stations, but without rolling stock.

1719. How many engineers, according to your experience, supposing you was to make 100 miles, would be a proper staff?—The staff which I asked for was perhaps rather too small, but I never even had that; it was one engineer to every 25 miles, and under him two or three European inspectors.

1720. What would you do for time-keepers?—We had native time-keepers.

1721. Would not European time-keepers be more useful?—They would in many respects; I think the mixture of Europeans and natives is the best plan. We never trusted entirely to native time-keepers, but we had Europeans moving about, so as to check their keeping of the time. We never paid any money through the hands of the natives.

1722. Whom had you to superintend the building of the bridges?—We had old pensioners, but generally they were very inefficient.

1723. Are you not apprehensive of the probable effect upon the brickwork?—Yes; and I think I referred to that in a previous part of my examination.

1724. May you not have run a great risk with the skew bridges?—Yes.

1725. Ought not those bridges particularly to have been under European superintendence?—Unquestionably.

1726. Assuming that for every 25 miles you had an European engineer, you would require overseers and time-keepers, and for each large work, I suppose, an individual superintendent?—I do not know that you would employ European time-keepers to any great extent; I am afraid you could not get them, and they would be very much exposed to the weather. It is necessary that a time-keeper should be out in all weathers, and you would probably only employ Europeans as overlookers of time-keepers. I suppose if you had an engineer for each 25 miles, and about four Europeans under him, that would answer very well.

1727. That would make a total of about 25 men altogether on the engineering staff?—Yes.

1728. Would you require a staff of draughtsmen?—Yes. East Indians sometimes make good draughtsmen, but as a rule Europeans also are necessary.

1729. Mr. *Crawford.*] I wish you to particularise the staff of your railway company in India?—There was one assistant engineer upon each 25 miles; over three of these districts of 25 miles each, was one resident engineer.

1730. Will you describe the process you go through in order to obtain additional officers, or a supply of materials; in that case what steps do you take to

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make your wants known with a view of getting either men or materials?—If I wanted stores I should write to the agent of the company for them; the agent would write to the Government engineer; the Government engineer would procure the sanction of the Government and send back to the agent; the agent would then communicate with the Board of directors in this country; and they would communicate with the India House; the India House then would communicate with the Board of Control, and then it would come back to the directors of the railway company.

1731. Mr. *C. Bruce.*] Does that system still prevail?—I think it prevails still.

1732. Mr. *Crawford.*] You have described the process by which you obtain your supply of stores, or any addition to your staff of officers; I suppose it would be necessary to go through the same process to procure the consent of the Government to an increase of salary?—Yes.

1733. So far as you know, the agent in India has no power, even with the concurrence of the Government, to increase the salary of the officers?—No.

1734. It can only be done by the Board of directors in this country?—Yes.

1735. Mr. *T. G. Baring.*] Was there not some limit at which the Government at Madras might give their sanction with regard to establishments connected with your railway?—No officer sent out from this country can have his salary raised without the sanction of the Board at home.

1736. That would apply to engineers sent out from this country?—Sent out from this country. Those who were not appointed from this country had their salaries fixed with the sanction of the Madras Government.

1737. Beyond that there was a limit which the railway company here would not allow them to exceed?—There was originally, but it was found unworkable, and was abandoned.

1738. The Government there might do what they pleased?—Yes.

1739. *Chairman.*] Is it not the case, that so much delay has occurred in certain instances in the procuring of stores from England, that the necessity for their use has ceased to exist when these articles have arrived some 17 or 18 months after they were ordered?—There is one case which occurs to me. I indented for waggon iron work in April 1853, and I received it in April or May 1855, and in the meantime I had made my own waggons. Of course they were useful when they did arrive, but there was a delay of two years.

1740. Was not an application made for some iron pumps required for the purposes of excavation in the construction of some bridge works in which considerable delay occurred?—Yes; and by the last mail from Madras I had a letter in which a sentence somewhat to this effect occurs, "the pumps which you indented for two years ago, have just arrived."

1741. Mr. *A. H. Baring.*] Could you not avoid that delay by indenting for articles before you wanted them?—So we did, but we did not anticipate a delay of two years.

1742. Knowing the time that it takes, could you not indent for them in 1854, if you wanted them in 1856?—I wanted those waggons almost immediately on my arrival; I wanted them at the end of 1853, or the beginning of 1854, and I could not sit folding my arms at Madras for two years until the stores arrived.

1743. Could not the engineer, by applying beforehand, have got the articles required by the time they were needed?—Certainly not.

1744. *Chairman.*] Is it not the case that articles may be rendered necessary by accidental circumstances which you cannot foresee?—Yes.

1745. Sir *J. Elphinstone.*] When you arrived you had first of all to ascertain what the resources of the country were?—To a great extent. We never sent home for anything until we know that we want it.

1746. Your company did not know what they would find in the country?—Not until we found out by experience.

1747. *Chairman.*] Can you trace the delay that occurred to any particular cause?—No; I think it is the fault of the system more than any individual delinquency.

1748. Mr. *A. H. Baring.*] How long would it take before an indent was forwarded from Madras to this country?—I can hardly tell. I think it would be a great improvement if the stores, once sanctioned by the Government in India, were allowed to be sent by the Board of directors of the railway company immediately

immediately upon the receipt of the application from India, instead of requiring the double sanction in this country. Mr. G. B. Bruce. 17 May 1858.

1749. Do you know how long it takes to get that sanction?—I do not.

1750. Sir *J. Elphinstone.*] When you indent for a certain thing in India, do you know what time elapses before it is laid before the Board in London?—I have not the means of knowing that.

Colonel *John Pitt Kennedy*, called in; and Examined.

1751. *Chairman.*] WILL you tell the Committee what position you occupy?—I am an Engineer by profession. I first joined the Royal Engineers, and after about 10 years service in that corps I went into the Line, in order to carry on certain public works in the Ionian islands, where I continued for several years. Colonel J. P. Kennedy.

1752. Will you tell the Committee what posts you have filled in India, and what your present position in this country is?—I first went to India as Military Secretary to Sir Charles Napier in 1849; when he was about coming home, Lord Dalhousie offered me the appointment of Consulting Engineer to the Government of India in the Railway Department.

1753. How long did you fill that post?—I was appointed some time in the summer of 1850, but I did not join until November, when Sir Charles Napier returned; I came away in the spring of 1851, my health having suffered from the climate.

1754. When did you leave India?—In March or April 1851.

1755. In what capacity are you now engaged in England?—I am now consulting engineer for the Bombay, Baroda, and Central India Railway.

1756. Your attention has, I believe, been constantly and actively directed to the whole subject of railway communication in India?—Yes, it has; and also to railway construction at home for a considerable time previously.

1757. Do you attach any importance to the construction of railways in India?—I think it is a most important point for the improvement of India in every way, and also for the maintenance of the political and commercial interests of England.

1758. Have you made any calculation as to the extent of railway communication required in India?—Yes; I was lately called upon by the United Service Institution to deliver a lecture upon the subject, and I went very minutely into it, particularly with reference to the change which the late mutinies have produced, and that investigation led me to suppose that the military expenditure of India, which, upon an average of the last four years, previous to the meeting, amounted to somewhere about 10,000,000*l.* per annum, must be increased to 13,000,000*l.* In the course of the analysis I made I went into the comparison of what the army must be for India with railways and without; I believe that a system of railways would render possible a reduction of the military expenditure that must now be incurred of at least 7,000,000*l.* per annum; with regard to the importance of railways, although the calculation of military expenditure is one that can easily be made, I conceive it to be one far inferior in importance to the effect upon the industrial resources there, and to the on-going of Government in every department; those acquainted with India will know the enormous districts which it is necessary to place under individual Europeans; and as regards the Government supervision and political interest attaching to India, I look upon the extension of railways as absolutely essential.

1759. Have you made any calculation as to the probable amount of money and time that would be required for the construction of such a railway system as that which you consider necessary for India?—You must first consider what would be the railway system; and, in order to do that, I went into a comparison relative to the amounts in different countries. I took, as two specimens, the amount we had in England, and the amount which the Americans have thought it necessary to establish in the United States. England would not be a fair comparison to found a system upon with reference to India, because the enormous development of our industrial resources is such that we require a much larger amount of railway in proportion to the area than any other country in the world; but America is a fair comparison. I find that the extent of railways existing in America is about one mile of railway to every 112 square miles of territory. The proportion in the United Kingdom, I think, is as large as one mile to every 14 square miles, and, in the manufacturing counties, one to every five square miles. In speaking of the proportion of railways, and in comparing the necessities of India

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with those of America, we must recollect the population as well. In America there are about nine inhabitants to the square mile, but in India there are 124 to the square mile; and therefore the ratio of the importance of introducing railways into India is 14 to 1 as compared with America, and, taking the population into account, it must also be remembered that America is chiefly an agricultural country.

1760. Mr. *Cheetham.*] You state that America is supplied with railway accommodation to an extent of one mile to every 112 square miles; you are probably acquainted with the projected railways, for which the guarantees of the Government have been given in India?—Yes; the calculation upon which I have proceeded would give a total of about 12,000.

1761. *Chairman.*] The extent of the lines now sanctioned amounts, I believe, to between 3,000 and 4,000 miles?—I believe somewhere about that, but I do not recollect the proportion; 12,000 would give the American proportion.

1762. Mr. *Cumming Bruce.*] You say that the American proportion would be far below what the population in India would give?—It would be only one-fourteenth, if you take the population into account; but supposing the 12,000 miles were laid down mathematically, and at equal distances, which of course they could not be, you would find the most distant part from a railway to be about 66 miles; that would be about three forced marches, or six ordinary marches, for troops.

1763. *Chairman.*] If we may take as the basis of calculation the actual cost at which railways have been constructed in India, you would expect them to cost 6,000 *l.* per mile?—I trust that our railway, although going through very expensive districts, will not exceed 6,000 *l.*, including rolling stock for one train daily in each direction.

1764. Taking the 6,000 *l.* as the basis of your calculation, what sum of money will be required to give the system of railway extension which would be necessary to place India upon the same level as America?—£. 72,000,000.

1765. Is that a sum which you think would be sufficient to provide India with a fair amount of railway accommodation?—If 12,000 miles could be made for 72,000,000 *l.*, I think that would be an admirable beginning.

1766. Does your calculation apply to a single or to a double line?—To a single line.

1767. Can you state what the difference would be between the cost of a double and a single line?—I think it would be about as eight to five.

1768. Is it not the case that the most costly portion of the works, such as bridges, and works for crossing the rivers, are constructed with a view to the line becoming double eventually?—With regard to that, I think that all the piers and abutments must be constructed for a double line; the principle we are adopting is not, I believe, the same that is followed on many other lines: we carry both the piers and superstructure from England; I think that gives us a great advantage with regard to time and cost of construction.

1769. Have you made any calculation as to the probable amount of time that would be required for furnishing India with such a system of railways as you have described?—So far as our experience goes, I think that we can proceed at the rate of three years for the construction of any given portion, limiting, however, the advance upon each head of work to 200 miles per annum; that is to say, if we had a line leading from a port on which we must carry forward our materials in order to lay them down, then the limitation of our progress will depend upon our power of bringing up our materials for laying down our rail, and ballasting our road; because we must bring up our materials by the road that we ourselves make.

1770. Supposing that you have never less at any one period than 600 miles under construction, what extent of line would you undertake to open annually?—I think at the end of the third year we should open 200 miles, and thenceforth 200 miles annually, provided we always have 600 miles in hand.

1771. What do you say about the seasons?—The reason that I specify three years is, that we must have one clear winter season for making our plans and sections, and we must have two distinct years for our construction, because it is necessary, before we lay down our ballast and permanent way, that the embankments should be well seasoned by the monsoon rain. Although we could get through the absolute work in a shorter period than two years, I could not calculate upon opening more rapidly than I have stated, in consequence of the necessity we have for the monsoon seasoning.

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1772. Is the construction of Indian railways now going on at the rate you have just described?—The construction of our railway is going on at that rate, so far as the amount that was given us to construct would enable us, that is to say, we shall not have occupied more than the time that has been specified in opening our line from the time that we got possession of the land, not from the time that we have nominally been a railway company.

1773. Have you experienced any delay or obstruction in the construction of your line?—The most important delay I have to state is that in getting possession of the land. Our first surveyors went to India on the 20th September 1853; they furnished their surveys on the 28th of April 1854 to the local Government, and on 3d November 1854 the Supreme Government of India sanctioned the main line from Bombay, *viâ* Surat and Broach, to Ahmedabad; on the 16th of April 1855 the Honourable Court sanctioned only a remote portion of our line.

1774. You mean that from Surat to Ahmedabad?—Yes; we agitated in every possible way to get that portion which the home Government withheld from the original sanction that was given by the Governor-General in India, that is from Bombay to Surat, which was the most important part of our line to do first; because it led from the capital, the great focus of trade. We used every exertion through the Chambers of Commerce in Manchester and through the Chambers of Commerce in Bombay, and I believe the Governor in Council of Bombay urged very earnestly likewise what we were anxious to get; yet not until the 2d of November 1857 could we obtain consent to make that portion from Bombay to Surat.

1775. That is, after a period of nearly three years had elapsed from obtaining the sanction of the local Indian Government to the scheme, the sanction of the home Government was obtained for the main scheme?—For the most important part of it

1776. Can you explain to the Committee what you believe to have been the cause which induced the home Government to delay so long the sanction to the whole of that scheme?—That is rather a difficult question, but I believe it originated entirely with the Board of Control, so far as I have any grounds for forming an opinion.

1777. Why do you think it was the Board of Control, and not the Board of Directors that delayed it?—I think so because I had some conversation with the Parliamentary Secretary of the Board of Control, and he intimated pretty clearly that he was adverse to it.

1778. Are you able to state the reasons that were given?—There were a vast number of very irrelevant reasons given.

1779. Who was the Parliamentary Secretary?—Mr. Danby Seymour.

1780. Mr. *T. G. Baring.*] Do I understand you to say that the recommendation of the Government of India, that the line should be made from Bombay to Surat, arrived in England in November 1854?—No, I do not think it arrived in England until January 1855.

1781. Had you any communication with Mr. Lowe?—No, I had none whatever.

1782. It was subsequently to his leaving?—The only person I saw on the subject was the Parliamentary Secretary.

1783. Do you know at what time the question was brought before the Board of Control?—I cannot recollect the date; but I know we used every exertion in our power to get it sanctioned.

1784. Mr. *H. A. Bruce.*] This was probably agitated after the refusal by the home Government to sanction the line from Bombay to Surat?—Yes; some time after.

1785. Mr. *T. G. Baring.*] What was the date of that refusal?—I can scarcely call it a refusal; it was the sanction of a distinct portion. The sanction of the whole was given in India, but our difficulty arose when we came to deal with the authorities at home, who were the only parties we could deal with, because we could not get our money until they had given their sanction.

1786. *Chairman.*] Describe to the Committee why it was so necessary that the sanction of the whole line in its entirety should be obtained?—The idea of commencing the distant portions between Surat and Ahmedabad would be like taking some part in Scotland, and going down to Leeds, and stopping there, with a line of general intercourse to London.

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1787. Can the port of Surat be looked upon as a port of shipment?—Certainly not.

1788. Why?—I can give you one very good reason; we have tried in every way to get our stores from England landed at Surat, and we cannot get a single shipowner to undertake it. The monsoon, in the first place, cuts off communications for four months in the year. Then no large ship could get into the river at all, which is about 20 miles in length.

1789. Is there not also a very inconvenient bar?—Yes.

1790. Mr. *Crawford.*] In the Gulf of Cambay is there not a dangerous shoal?—Yes; there is a bar outside the harbour; but it is a harbour that might be made a good deal of.

1791. *Chairman.*] Is it the case that, owing to the delay in obtaining sanction for the whole extent of line, you will be in the position of having a railway opened out of a large productive district, leading to a port which cannot be looked upon as a port of shipment?—Yes; but I trust we shall overtake the delay. Since the 21 November we have had the plans and sections made, I am in hopes, by this time, of the whole line; a portion of them were given in some time previous to the sending of the reports that were received by the mail before last, and then we had leave to construct the first 10 miles southward of the new portion of the extension line, but the distant portion would be almost valueless without the southern portion of our line.

1792. Have you any very considerable engineering difficulties to contend with in the construction of that portion of the line between Surat and Bombay?—Our greatest difficulties are between Surat and Ahmedabad. There we have the three largest and most rapid rivers to deal with, namely: the Taptee, the Nerbudda, and the Mhye. They were in the portion first conceded to us, at the same time that the difficulties of the southern rivers were very frequently argued as a reason why we should not enter upon that portion.

1793. Mr. *C. Bruce.*] What is the nature of the difficulty in the southern portion?—I think there are as many as 18 rivers between Surat and Bombay, one of them being very wide, about one and a quarter miles across, it is called the Bassein Strait; but the difficulty in dealing with it is not great, that depends more upon the velocity of the water coming down than upon the width of the river; the velocity of the Nerbudda and the Taptee is very great, their waters flow over 300 or 400 miles of distance, but the sources of the southern rivers are not more than 40 miles distant from the crossing of our line.

1794. Mr. *Crawford.*] How do you approach Bombay; is it by an independent line, or do you approach Bombay by a junction with the Great Indian Peninsula line?—That brings us to a very nice point indeed, and I ought to have brought that forward in speaking of the delay, because, although our southern junction at Bombay was sanctioned on the 20th November, we do not know how we are to get into Bombay, and we find that our difficulty is in approaching Bombay. There is no question that we ought to go by the direct level line across the Strait of Bassein, and enter Bombay to a separate terminus of our own.

1795. By the Strait of Bassein and by Ghorabunder?—Yes.

1796. The passage from Bassein to Ghorabunder is across an arm of the sea, is it not?—Yes.

1797. Not across a river?—No; I suppose it is 10 times the width of the river that enters into the strait.

1798. Would there not be an interruption to the navigation between the sea and Tanna?—I do not conceive that the navigation is of any great importance there; and there are two ways in which it may be preserved, either by raising the line of railway at the bridge, or by making it on the level, and having a drawbridge.

1799. Mr. *C. Bruce.*] Can you state the depth of water under the arm of the sea?—The greatest depth, I think, is 16 feet; but that is for a small portion, and it shelves off to nothing.

1800. Mr. *Crawford.*] You approach Bombay by the western side of the island of Salsette?—Yes.

1801. Then you cross another arm of the sea?—At Mahim; but the whole of that question, as regards the crossing of the two waters, only affects the expenditure; the expenditure of crossing these two waters is included in our estimated rate of about 6,000 *l.* per mile.

1802. *Chairman.*]

1802. *Chairman.*] Did not the Government at one time propose a diversion of the direct line, and recommend you to join the Great Indian Peninsula line, and so reach Bombay?—Yes; our first instruction on going to make the survey was, that we should start from Callian; that is a point about 32 miles up the Great Indian Peninsula line. We did commence there; we made our surveys up to Surat, starting from that point; and, when I got the survey, I saw it was very difficult in the first part of it, in comparison with the ground by the western coast. I immediately ordered the engineers to complete a plan and section of that portion; I recommended that the alternative line by the western coast of Salsette should be adopted, and the Governor in Council expressed himself favourably upon that point.

1803. Favourable to your views?—Yes. By joining the great Indian Peninsula line, we should be thrown into rough country for about 20 miles, and should be obliged to travel over a line with different gradients to our own. It would reduce the loads of our trains, would give us a circuit of 16 miles, which must add to the annual working cost of our line *ad infinitum*, and would crowd the extensive operations of two companies into a limited station barely sufficient for one.

1804. Is it not the case that mechanical difficulties presented themselves, and that the buffers of the various engines were not equal?—When I came to the point of arranging for the rolling stock of our line, I got the Government to appoint a committee of the different consulting engineers, attended by Mr. Stephenson, Mr. Rendel, Mr. Garrow and myself, and that point was settled at once. There is but one gauge in India, and arrangements have been made by the consulting engineers in this country to see that the rolling stock on every line shall be able to work together on each.

1805. Mr. *Crawford.*] The line from Bombay to Surat may be considered, in a commercial point of view, as a most important one?—Most important.

1806. A very great proportion of the cotton which is supplied from Bombay comes, I believe, from Guzerat to Bombay?—Yes, Guzerat is a very large cotton producing district.

1807. I believe it is brought down now by boats?—By native boats.

1808. Do you recollect the cost of carriage by the native boats?—The freights vary from what would be equivalent to one-halfpenny per ton per mile at the lowest season, to a little over three-halfpence per ton per mile in the highest seasons; and my conviction was, that we should be able to carry quite as cheap as it costs at present by the boats.

1809. Mr. *C. Bruce.*] What are the advantages you expect to derive as regards the carriage, if the expenses are about the same?—We expect to get the whole of the cotton to carry.

1810. I mean with regard to the trade of the district?—It will result in enormous advantages. The navigation is shut up for three or four months of the year.

1811. Is not the cotton liable to be injured by exposure to the weather?—The cotton is liable to be injured very much throughout, but I think it is much more injured as it is carried on bullock backs. That involves the broad question of the importance of railways generally.

1812. Mr. *Crawford.*] Have you been in Guzerat?—I have.

1813. Then you know the country over which the cotton is carried?—I have not travelled much to the southward or the westward of Guzerat.

1814. Was it not generally understood that one cause of the delay in the settlement of the line that your railway was to take, was the large question as to the mode by which the interior of India in the direction of Malwa was to be approached?—No; I think that was a question, that has arisen since. The question of our communication from Baroda to Central India by Indore, was exceedingly pressed by the Governor-General's agent, Sir Robert Hamilton.

1815. Was there anything in the nature of a competing interest between your line and the Great Indian Peninsula line?—I understand there is now; that the Great Indian Peninsula Company are seeking to approach Indore from another point.

1816. You are probably aware that the Great Indian Peninsula line is sanctioned in a continuous route from Bombay to Jubbulpoor?—Yes.

1817. What was the nature of the competing interests between yourselves and the Great Indian Peninsula?—I do not see any competition, because I think both these lines will be required. I think it absurd to suppose that the Great Indian

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Peninsula going close to the Nerbudda River in its direction to Jubbulpore, should not likewise communicate with Central India.

1818. Do you propose to join the Great Indian Peninsula Line on the Taptee or Nerbudda?—Most assuredly; I cannot give up the great importance of the line we wanted, that going from Surat to join the Great Indian Peninsula direct from Candeish; but the question of competition is an absurd question. There is plenty of room for us all, and there can be no doubt that both of the lines from Bombay to Central India, and the junction that the Great Indian Peninsula Company contemplate from their line where it joins nearest to Indore, will be made before long.

1819. Is there not a competition in the sense of two different companies attempting to obtain a preference in point of time for the construction of the line?—I do not consider it would in the least impair our claims to go to Indore from the westward, supposing there were a junction between Indore and the Great Indian Peninsula Line; I do not look upon that as any competition.

1820. Mr. *Cheetham.*] You stated that in your opinion the most important object in the construction of railways in India was the development of its industrial resources?—Yes.

1821. Does your line go through a rich agricultural country?—Yes, a very fine country. Guzerat is one of the finest in India, and cotton is an important produce there, and in Central India there is a great deal of opium and indigo.

1822. I believe the cotton is carried from Guzerat by boat?—Almost entirely.

1823. Do you expect that that will go by your line?—With the extensions. We must have a branch line to the centre of Guzerat.

1824. At present your line would not answer for that?—At present those who are not at a great distance from us would send their cotton by our line rather than by sea.

1825. Could you convey it at a less cost?—I think we could carry it quite as low as the present rate, and lower at times.

1826. What is the present cost of carriage by boat?—From one-halfpenny to over three-halfpence per ton per mile, according to the season.

1827. What is your contemplated rate of charge?—I think we shall be able to carry, ultimately, at the rate of one-farthing per ton per mile.

1828. Have you any roads communicating with your line?—There are no roads; the whole country is considered a road in the dry season, and a sea in the wet season. That remark applies to almost every part of India.

1829. Would you be enabled, without roads communicating with your stations, to obtain produce for conveyance?—They carry produce to an enormous distance at present; the cotton comes down 300 or 400 miles on bullocks' backs. The mode in which produce was carried across the Himalayan mountains was still more defective, on the backs of goats and sheep that scramble up ladders quite impassable for horses and bullocks.

1830. Mr. *Crawford.*] In Guzerat there is no material, is there, for road-making?—There is a great deal of what is called kunkur, which is a sort of limestone.

1831. Do you find that in the neighbourhood of Baroda?—It is in a great many places.

1832. If it were desired to make a highway across Guzerat, in the direction of your railway, would it not be difficult for want of materials to make one?—In a great many places I think you would be obliged to burn clay for it.

1833. To make artificial stone?—Yes.

1834. Mr. *Cheetham.*] Can you give me the distance from Guzerat to Bombay by water?—Gogo is the main port; it would be about 220 miles from Bombay.

1835. What would be the distance of your line when you have taken it into the cotton districts by Baroda?—Ours is 180 miles to Surat, and it is 80 miles from there to Baroda; it would probably be 300 miles.

1836. Do you still think that, notwithstanding that extra distance, you would be able to convey produce to Bombay at about the same cost as the present water conveyance?—I think so; we should get the benefit of the traffic.

1837. By the regularity?—Yes, and by the advantage we can offer of carrying it throughout the year; as well as by the absolute comparative cost of freight.

1838. You are probably aware of the great difficulty there is in getting it down to

to the sea-port?—It must go to Gogo if it goes by sea, and we are as favourably circumstanced as Gogo.

1839. Is there not a difficulty in that port in shipping it?—There is no pier, but it would be easy to make one.

1840. Mr. *Campbell.*] I understand you to say that the completion of the railway system as indicated by you would be an annual saving to the East India Company of 7,000,000 *l.* per annum?—Upon the military expenditure.

1841. Then, so long as that construction is deferred, the East India Company are, in your opinion, losers to that extent?—I think so; but that depends upon whether my calculation as to the increase in the military expenditure is to take place. I think the country cannot be held without it.

1842. In addition to that economy, do you consider that the health and efficiency of the European force would be promoted by the existence of the railways?—There is no doubt that we lose more soldiers in India by the marches than by any conflicts in the field, and that that rate of mortality would be materially reduced by a sufficient network of railways.

1843. And with the power of concentration to dispense materially with a force that it would otherwise be necessary to preserve?—Yes.

1844. I suppose when the railways are completed the State would be able to dispense to a great extent with camp equipage, batta, tentage, elephants, camels, and other allowances in India to the army?—I cannot say that; I should be sorry to hazard a hasty opinion upon that, but all the long transport now carried on by beasts of burden would go by rail to the nearest points for assembling the troops, so that there would be a diminished military transport.

1845. You think that by the establishment of railways the vast camp equipage might, to a great extent, be dispensed with?—No doubt a large class of it could be, but there must still be the means of transport for an army in the field after it is brought up by railway to the point of assembling.

1846. I believe that population and production chiefly exist on the banks of navigable streams, and in no other parts?—It must exist with very great difficulty in proportion as you go from the navigable streams.

1847. Do you imagine that every fresh railway established will be equal to a navigable stream?—It will be much better than any navigable stream. The most perfect water communication that existed in the world, existed in England before railways were established, and yet England brought forth as an infant the railway system, and has matured it notwithstanding all the competition of her inland navigation.

1848. Were you on the frontier of India during the Punjaub invasion?—I was not.

1849. You do not know the cost of food for the army upon that occasion as compared with the cost in Calcutta?—I do not.

1850. Is it your opinion that the consumption of produce, now comparatively valueless to the producer, would, by railway facilities, become valuable to the grower, and thus encourage a consumption of European manufactures not now existing?—There is not the least doubt that it would; and one of the most striking things in India is the short distance you have to go to find an enormous difference in the price of the most common articles of consumption.

1851. Do you imagine that the zemindars, tallookdars and other landowners, could be made responsible for the preservation of such portions of the line as passed through their property?—I am afraid you could not calculate on that; but the expense of a railway police in India would be much less than in England.

1852. Sir *J. Elphinstone.*] I understood you to say that you had not settled upon your route into Bombay?—No.

1853. Is there any reason of a strategical nature which should induce the Government to require that all the lines should converge into one at Bombay?—Not that I am aware of.

1854. You consider that the line along the coast of Gorahbunder and Bassein is the preferable line into the island of Bombay?—It is the only rational one. We must otherwise travel on two sides of a triangle instead of one.

1855. What is the worst gradient on your line from Bombay to Surat?—Our ruling gradient is 1 in 500.

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1856. And the whole of it passes along alluvial country?—It passes through different descriptions of country.

1857. What gradient do you get into when you turn towards Callian?—That part has not been surveyed.

1858. It makes a difference of 16 miles?—It does.

1859. And brings you upon gradients of a much more severe character than those of the main line?—Yes.

1860. North of Surat, I believe, the gradients are much the same?—One in 500 is our maximum gradient.

1861. What is the ruling gradient on the Bombay portion after you form the junction?—I recollect that the approach to the Tana Bridge is 1 in 100, but I do not recollect what the others are.

1862. On the Bombay line, is there a provision made so as to allow the navigation to pass through the upper part of the Bombay Harbour?—Yes.

1863. That could be done equally with respect to the Bassein branch?—It could, but I trust that a different principle will be adopted, and that is, to make a level opening; that would avoid the description of rise that occurs at the Tana Bridge.

1864. How do you propose that the traffic from Bassein should pass under your railway?—It will pass through by an opening in the bridge, probably on the telescope principle, as applied in the railway viaduct in Moorcomb Bay.

1865. Mr. *H. A. Bruce.*] You said, in the early part of your evidence, that between April 1855 and November 1857, you were much engaged in inducing the Home Government to withdraw their objection to the completion of the line from Bombay to Surat?—To grant us that as an additional portion of our line.

1866. What were the reasons assigned by Mr. Danby Seymour for the refusal of the Home Government to authorise that line?—The strongest reason he seemed to dwell upon was the existence of the boat traffic on the coast.

1867. From Surat to Bombay?—Yes.

1868. In fact, then, his objection was that the line was not wanted?—Yes.

1869. Subsequently, when your company was authorised to make the line from Surat to Bombay, an attempt was made, and I believe is still made, to interfere with your own plans, and to force you to join the Great Indian Peninsula?—I can scarcely say that it is to that extent. After the general principle has been adopted in England, and the Indian Government in England has sanctioned a general line, all the details are left for the decision of the Local Government. That is what I understand to be the practice at present pursued, unless some extraordinary difficulty arises to call for discussion.

1870. Is it to the Local Government or to the Home Government that you attribute this persistence in an endeavour to force you to join the line at Callian?—I can scarcely say it was an endeavour to force us; it is a question that seems under discussion, and we are anxious not to bring it to a crisis for decision until we have had time to convince the Local Government that we are proposing the right course; and therefore we prefer carrying all our materials up to Surat, and working down from there, which is an expensive operation, rather than hasten the decision as to the question of how we are to get into Bombay.

1871. You consider, in fact, that the delay arises from the refusal of the Government to sanction that line which you say is the right and proper one?—Our plans are not all gone in yet; and therefore we do not know that that objection, which we know to be pending, will be enforced against us; and I am in great hopes that when our complete plans have gone in, the Government will thoroughly understand that there is but one proper approach to Bombay for us. By the last mails from India we only know of 10 miles of our plans from Surat to the southward being before the Government. They were immediately approved of, and therefore I do not mean to say that the Government are determined to force us, but we apprehend it; and, for that reason, we would rather incur delay and inconvenience, if it gives us time to mature our case.

1872. *Chairman.*] Will you describe shortly the condition of your line at the present moment?—I have prepared a paper, which, if you will allow me, I will hand in as my answer to that question;—

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PROGRESS REPORT of Works on the First Concession (143 miles) of Line from Surat to Ahmedabad, framed to ascertain how far the rate of Expenditure is in accordance with the original Estimate both as regards Money and Time.—May 1858.

Original Estimate of Mileage, Cost, and Time for Completion of First Concession.

MILES.	From	To	Date of giving Possession of Land to Company.	Date for Completion.	Average Cost per Mile, including Rolling Stock for one Train each way Daily.
36·86	Surat - -	Baroach -	1 May 1856 -	1 May 1858 -	8,623
43·53	Baroach -	Baroda - -	7 Nov. 1856 -	7 Nov. 1858 -	4,792
14·32	Baroda - -	Wassind -	3 Feb. 1857 -	3 Feb. 1859 -	8,769
48·05	Wassind -	Ahmedabad -	27 June 1857 -	27 June 1859 -	5,106
Total - 142·75	Surat - -	Ahmedabad -	- - -	27 June 1859 -	6,144

DESCRIPTION.	Amount of Works done and Contracted for.		Work to be Done.		Average Cost per Mile of Calculated Expenditure.	REMARKS.
	Approximate fractional Proportion, taking the whole calculated Expenditure as One.	Cost in Pounds.	Approximate fractional Proportion, taking the whole calculated Expenditure as One.	Cost in Pounds.		
English Expenditure.		£.		£.	£.	Dividends advanced by Honourable Court to Dec. 1857 to be refunded from revenue - £. 40,630
Including all permanent way materials, iron bridges, rolling stock, shop tools, preliminary disbursements, home engineering, management, and freight of materials for 143 miles, from Surat to Ahmedabad.	·441779	378,178	·260328	222,842	4,203	Interest on same to June 1858 - - 2,592
						Liabilities to be repaid from revenue - - - 43,222
Indian Expenditure.						Balances of this company in the treasury of the Honourable Court at the respective dates:—
Including earthworks, masonry, erection of iron bridges, ballasting, stations and workshops, surveying, engineering, general management, and all contingent expenses on 143 miles, Surat to Ahmedabad - - -	·119107	101,968	·178735	152,999	1,782	£. 31 Dec. 1855 - 205,625 31 Aug. 1856 - 272,104 31 March 1857 - 294,082 31 Oct. 1857 - 168,005 28 Feb. 1858 - 279,006
	·560886	480,146	·439063	375,841	5,985	
			Add for work done -	480,146		
			Total - - £.	855,987		

With regard to the supplies of iron materials going from England, over one half of the total amount required has already been dispatched, and the remainder will proceed progressively, so as to allow the last parcels to reach India within eight months from the present time. The whole of the earthworks for the 143 miles were completed; 14 miles of permanent way were laid. The pile piers of the only large bridge between the Taptee and Nerbudda Rivers were erected, and the whole of the culverts and minor brick bridges in that division were on the eve of completion in February last. The report therefore of the completion of the first 36 miles, with the exception of the two great bridges over the Taptee and Nerbudda Rivers may be looked for by the earliest mails. The greater portion of the materials for the Nerbudda Bridge have left England; and the contracts for the Taptee Bridge are in progress. The second division of 43 miles (Baroach to Baroda) was in nearly an equal state of advancement, and the two remaining divisions completing the first concession to Ahmedabad have but one bridge of any importance to occupy us. There is therefore every certainty that the line over the whole length will be completed within the calculated dates of two years from the time of our obtaining possession of the respective portions of the land. This is the most trying test of the principle that could have been given, because, as being the first portion of our line, it involved much cautious consideration and delay in fixing all those principles which shall apply to every portion of the line that is to follow, whether in reference to the different classes of rolling stock, machinery, permanent way, viaducts, bridges, &c., &c. The future extensions will require but counterparts of what has now been established, at least until further indisputable improvements in railway appliances shall prove that alterations in what we have adopted are desirable.

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In hauding in this progress report, I beg to say I consider the principle of accurate progress reports the most important principle that can be adopted in reference to the ongoing of railways. I think that our projects ought to be minutely defined and closely estimated, and that the progress reports should appear monthly, and should be audited by professional auditors monthly. That I look upon as the real safeguard of the Government which grants the guarantee, and the shareholders who are interested in the result derived from their funds. I think all other efforts at protection for a company, or for the expenditure of the public money, a perfect fallacy.

1873. Mr. *Crawford.*] Working down from Surat, how soon do you come to the point where you would turn off in one direction or the other?—It is within 30 miles of the lower extremity of our line, the whole extent of it being 180 miles.

1874. *Chairman.*] What is your opinion in regard to Government supervision over railway works; do you, or do you not, approve of that supervision?—I think that good and vigilant Government supervision is an important principle on any railway works. I do not wish to see it removed, but I wish to see the little impedimental harassings on the railway system in India done away with, and to see a wholesome check introduced instead of it.

1875. What improvement would you suggest in the department charged with the supervision of railway construction in India?—We have at each of our Boards an *ex-officio* director representing the Government.

1876. You are now referring to the supervision in England?—Yes; and considering the character of the gentleman who represents the Government on our Boards, his great capability, high qualifications and long standing, I think the whole of the decisions of the Government ought to be vested in his hands; I do not see that the Government gain anything whatever by going beyond Sir James Melvill's decisions, and sending papers round Leadenhall-street and Cannon-row. I should be glad to see the whole decision rest in Sir James Melvill, and that his decision should be final except on important matters, where you have to treat of the extension of a railway or the granting of a guarantee.

1877. What are the impulses and securities you would establish, in order to ensure the rate of progress which you have described as in your opinion attainable?—The first thing I have referred to; and that is, that the Government supervision should be modified as I have said. Next, I should be desirous that our officers who are engaged in the construction of works in India, should have what I call a bonus held out to them for good, efficient, and quick work. You will recollect that there are two different principles we are proceeding upon in the construction of works in India; one is through the instrumentality of large contractors, and the other is that of a company executing their works through their own officers. I am quite clear that the latter plan is by far the best for us. We have at present 28 officers in India; and with the experience they have had in constructing our works, they are quite as valuable now as any contractors' agent would be. You can only make a contract from piece to piece, and can get no contractor who could establish such an organization as a company can establish for the due and economical execution of the works. If you make a fresh contract in England the contractor goes out, and is obliged in a short time to pick up the general knowledge by which to carry on his operations. We have a large undertaking on hand; and having once trained our officers, we have them in an efficient state upon the footing of what I call a contractor's agency, perfectly able to execute any part of our works; and therefore what is called in India the departmental system, in opposition to the contract system, is the best to go upon. That gives a great deal of additional labour to the officers employed, and considering the additional exposure to climate which it entails, they ought to have considerable inducements held out to them. I recommended at my own Board, only a short time ago, that the system of bonuses should be established to such an amount, in each instance, as the Board might think each officer deserving of, not exceeding the amount of his regular salary in addition thereto, and not giving him an absolute claim.

1878. Would you fix the amount of that bonus you have described in the shape of per-centage upon the capital expended?—No, I would require the chief engineer out there to send home a report quarterly, showing the amount of work that each of the officers had done during the quarter, and placing them on his list in precedence according to merit; making such report along with that as he thinks

thinks fit, so as to give such information to the Board of Directors as would enable them to reward those officers who have served them zealously.

1879. In proportion to the work they had executed?—That would guide the directors of course, but within certain limits. We have lost several officers by death, several have been obliged to come home in consequence of ill health, and several have resigned, for our rate of pay is not a high one; indeed, it is lower than the other railways.

1880. Mr. *C. Bruce.*] What is your rate of pay?—One chief engineer receives 1,200 *l.* a year only; the next class to that, the resident engineer, receives 700 *l.* a year; the next 600 *l.*; and the next 500 *l.* a year.

1881. *Chairman.*] Why is the rate of pay on your line lower than on others?—It was established with a view to make it up by these very bonuses to which I have referred. This is a preferable system to that of paying high uniform rates of salary, whether officers deserve it or not. A zealous officer can scarcely be over-paid; an indifferent one, even without any salary, must be a wasteful incumbrance to his employer.

1882. Was that the understanding under which your officers undertook their duties?—No, they undertook their offices at their distinct rates of salary, and therefore they had no positive claim upon us for more; but it was the feeling on the part of the directors, from the first day I joined them, that we should establish that principle as soon as we could. I have not had an opportunity of bringing the principle forward earlier than at present, because it was necessary that the works should be carried to a certain extent before we could establish such a principle.

1883. Mr. *A. H. Baring.*] Do you think that the arrangement you have suggested would prevent their resigning, and therefore it would obviate the delay in the execution of the works?—Yes.

1884. *Chairman.*] Is the mode adopted with reference to the selection of railways, in your opinion, on a proper footing?—What I have already stated to some extent answers that question. If the subject had been philosophically gone into by Government, we should have had the whole of our line granted in the direction that our engineers could have shown was the best, without any interference whatever.

1885. Mr. *C. Bruce.*] You have stated that you consider the departmental system better than the contract system?—Yes.

1886. What is your opinion as to the propriety of the Government itself undertaking these works?—If I were the Governor-General, I would make every railway in India; if properly done, and if proper arrangements were made, it would be a most important and valuable source of revenue. There is no reason why the Government should not avail itself of that as well as the members of a company, but it is very easy indeed to run upon a shoal, as generally speaking Government works are not very cheaply executed.

1887. Do you think that the Government has at this moment in its engineering service the means of carrying out these railways?—Certainly not in their engineering service, because they have a numerical deficiency of engineer officers, and have been obliged to employ civilians to assist them in the other public works of the country; but they have the same faciliteis as a company has for obtaining additional engineers' assistance.

1888. Do you not think that the system of bonus you recommend might be perhaps more generally carried out by Government than by a company?—All that depends upon the arrangements made. If there is an able man at the head of the Government system, he will take care that everything is harmonious, and as it should be.

1889. Is such a work as the Ganges Canal, in your opinion, of the same class of importance and difficulty as one of these railways would be?—I think a broad extension of irrigation canals in India is second only in importance to that of the ways of communication. The one system augments your produce; the other enables you to distribute it, without which power the produce would be of little or no value.

1890. That great work was executed by the Government, was it not?—It was.

1891. Did Sir Probert Courtney himself create the machinery necessary for carrying it out?—Yes; it is a very grand work, and highly creditable to the Government of India.

1892. Would not the railways have been established more economically and

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more rapidly if the Government itself had undertaken them?—I doubt that very much and I will give you our own case as an example. If we had been left free to act as we liked, our 350 miles would have been opened before now; the impediments came from the Government.

1893. Do you consider that these impediments would have arisen if the Government itself had executed the work?—They would have had the power, and might have had the inclination to act more vigorously through the agency of their own officers. If the Government have a proper organisation, they can act as rapidly as the most rapid operations are carried on by a company.

1894. Mr. *Crawford.*] Did you not state that in your opinion it would have been desirable that the Government should have undertaken these works?—Yes, I think if they have the means and the determination to carry them on rapidly, it would be a better principle. They would then take all the benefits that the shareholders get now.

1895. Upon the broad principle, do you think it desirable that the Government of a State should undertake the construction of the railways of the State?—I believe that they could do it quite as well if they had the same impulse upon them as companies have. There is one advantage you have in employing a company, that you get the best amount of criticism and independent talent, which is not afraid to speak out its mind. Under the other state of things you lose all that, because there is very little criticism on the part of people employed under the Government.

1896. Do you think that the conditions would have made it profitable in this case?—I am afraid not.

1897. Then, in point of fact, it would have been desirable that the Government should have undertaken the construction of the railways themselves?—So far as the experience we have goes, I think not, but what I meant to say was that there was no reason why a government establishing a proper system should not carry on works as rapidly as a separate company.

1898. Do you not think that very great advantage is to be gained in what may be termed the mercantile and general experience brought to bear upon the construction of railway undertakings in India, which the Government could not have possessed through the mere departments?—They could not have carried them on by the departments; they must have employed the same class of agency as the companies employed. They must have come to England for men who had been in the habit of doing the work here. In the first place, they have not the proper number of engineers, and they are obliged to augment their number by civil engineers from England to do their ordinary public work.

1899. In the case of the East Indian Railway Company, it has been stated that they have sent out to India in four years, 240,000 tons of dead weight alone, and that they have sent that forward at an average cost of 24 *s.* per ton only. If you were informed that the ordinary rate of freight that the East India Company pays for the transmission of their dead weight, has been in excess of that 24 *s.*, may it not be inferred that the comparatively cheap terms upon which the Railway Company have sent out their goods, have been owing to the mercantile experience and acquaintance with the course of trade possessed by the Board of the railway company, and not possessed by a department of the East India House?—That all depends on what I said before; the man you have to look after it; if you found as capable a man to manage for the East India Company at the India House, as you have under a Railway Company, there is no doubt he would do the work as well for the Government as your man does for you; it is perfectly open to the Government to get the same class of men as the Company can get. I can see no real difficulty in their establishing a good system.

1900. You presume that the Government would have the same command over a supply of funds as the railway company?—The fact is, that our power of getting funds depends on the security the Government chose to give for our funds, and therefore if the Government ask for money at the guaranteed rate of interest, no doubt they would get the money.

1901. Are you aware of the proportions which the capitals of the railway companies in this country and in India respectively bear to each other?—I am afraid to say how small a sum we have in our own company for India; but I look upon it that most of the money for railways in England and other countries comes from the Stock Exchange in London.

1902. That

1902. That being the case, the capital necessary for the construction of those railways must have been provided in this country?—I think so.

1903. Are you not aware that the East India Company have no power of borrowing beyond a limited amount in this country, and that on a recent occasion very great jealousy was shown in Parliament in giving the East India Company powers under the sanction of the Legislature for borrowing?—If it were brought before Parliament as a question, whether there should be railways in India or not, and that that depended upon an Act of Parliament being passed giving the company parliamentary powers, I think that those powers would be withheld but for a very short time.

1904. Mr. *Cheetham.*] Do you agree in this opinion of Mr. Sullivan, which he stated before a Committee of the House of Commons in 1848: "I suppose there is no country in the world which offers such peculiar facilities from its physical conditions altogether as India for making railways"?—I perfectly agree with that.

1905. And again, when he says, "I consider that the Government of India has an intense financial interest in making railways"?—Yes, distinctly; and beyond that, I think there is a more important duty cast upon the Government of India than upon the government of any other country in the world, because the Government of India is the landed proprietor as well as the Government.

1906. Mr. *H. A. Bruce.*] Are you of opinion that private capital may be contributed, with or without guarantee, in sufficient amount to complete that system of railways you think necessary for the proper development of trade, and for the political security of India?—When I look back at the capital subscribed to effect the railways in England, the capital, if you can only show that it is pretty well secured, will never in my opinion be wanting to provide 72 millions for India, or such larger amount as may be required.

1907. Levying it in England?—Yes.

1908. Is there not this important difference, that the capitalists in England have under their eyes the means of judging of the advantage afforded by their proposed line, whereas their means of judging of such advantages in India are very limited?—I think that the effects that are now being produced on the different lines that are being opened will give to the English capitalists the means of knowing what is going on. If the lines are economically and rapidly made, and if they produce good dividends, there will be no difficulty in obtaining the money necessary to go on with them.

1909. You think that if each of the existing companies were to apply for such extensions as you think necessary for railway development in India, they could find in England the capital necessary for making those lines?—I have not the least doubt of it.

1910. *Chairman.*] I understand you do not consider the Government guarantee of the dividend indispensable in every case for obtaining the capital?—I think it quite indispensable in the first instance to give confidence to capitalists, but after that, if successful results are shown, I think we shall get our money without the guarantee.

1911. What course would you recommend to establish that confidence in capitalists?—I have already explained that the principle I would recommend is, that the original project should be accurately defined and estimated; by that I do not mean wide estimates, but estimates at which the work can be accomplished, and that after that the progress reports from month to month should be placed before the shareholders, to show how far the progressive execution is in accordance with previous anticipations and estimates; I think in that principle only is to be found security, both for the Government and the shareholders.

1912. What do you consider the best form of Indian agency for conducting the execution of these works in a subordinate position; by that I mean the directing Board in India?—I think a single responsible agent is much preferable to the other system of the directing Board in India.

1913. You consider the existence of the directing Board in India to be in itself productive of delay, and some degree of circumlocution?—I think that a directing Board anywhere for carrying on an executive work is the very worst invention that can by possibility be applied. If you want your work executed properly, you will have a proper responsible officer in charge; a small Board over him to see that everything is properly done by him might be a useful precaution, rather than

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than as intended to take any share in the work. I think that a responsible man is often exceedingly hampered by men not capable of forming an opinion upon the work he is conducting, but who insist upon interfering with it. The engineers should have nothing to do with the payments, either for labour or materials. These ought to be entirely made through a special pay department.

1914. To test the accuracy of that opinion, have you made any calculation of the proportion of the gross expenditure incurred respectively in India and in England?—I think the paper I have just handed in shows that the expenditure in England is a little more than two-thirds of the whole, and somewhat less than one-third in India.

1915. That expenditure, I suppose, includes the purchases of all articles necessary for the construction of the work?—Yes; chiefly iron, and, I am sorry to say, timber; we have had to send out timber sleepers to lay down our road.

1916. Mr. *C. Bruce.*] Is there not a great difficulty in India in getting the wood required?—There is very great difficulty in getting it, and that is a very strange thing, because the finest timbers to be had in the world are of Indian growth. I had with me the day before yesterday a gentleman of the name of Ommaney, who had been long resident in Australia, and he brought me a sample of Australian wood, which he says is impervious to the attacks of the ants, and of the greatest possible durability. Jarrah is the name of the wood.

1917. With regard to the expense of taking wood from Australia to India, would it be less than taking it from England?—That is a question that I would rather you put to Mr. Ommaney.

1918. Are you in the habit of kyanising your sleepers?—No, we creosote them.

1919. Have you applied any process of that kind to the sleepers you use in India?—No, I believe not.

1920. Is there any reason why you should not do so?—No, but I trust we shall avoid the question of wood sleepers altogether. I am anxious to see iron introduced instead of wood.

1921. Has it not been found that near London, where the rails have been laid down upon stone, it has created a great deal of shaking?—That is quite different from the principle of the proper support by iron sleepers.

1922. Are you aware of any railway where that has ever been tried with iron supports?—Yes, there have been several, of different degrees of merit. There is a principle I think highly of, lately brought forward by Mr. Bridges Adams, which has been tried at the Great Northern Station, I think, very successfully; it is now being tried on a more extensive scale on the London and North Western Railway, where several miles are being laid down. We shall soon have the benefit of their experience.

1923. Would that be cheaper in India than the present system?—It would be much cheaper. Timber sleepers going out from this country will require freight for about 160 tons' measurement per mile.

1924. Mr. *Stephenson.*] Just now you suggested a system, by which the Indian railways might be carried on more advantageously than they are now. Do I understand you to propose a monthly return as a substitute for the present system of supervision?—For the present system of checks, and all that correspondence which only adds impediments and delay. I think that each month the audited progress report would give a much more correct idea, and I am sure that there is no principle of economy in the present routine.

1925. My question rather had reference to the superintendence of the civil engineer by the Government engineer in the execution of the works?—I think it is exceedingly mischievous that there should be any interference whatever. I am very anxious that the Government engineer should come and criticise our works; but I think that the minute torment that takes place at present is very mischievous, and so mischievous, that we were nearly losing a most valuable chief engineer from the extent to which it is carried.

1926. Do you know, that in Australia they are seriously contemplating the abandonment of the wooden sleepers, in consequence of the depredations of the ants, and using iron sleepers?—I have not heard of that; if the wood is attackable by ants, they are quite right to abandon the use of it. The Jarrah timber mentioned by Mr. Ommaney he stated to be a produce peculiar to Western Australia, where there are no railways.

1927. You have spoken of one or two descriptions of iron sleepers adopted in this country. Are you aware that 150 miles of railway, between Alexandria and Cairo are laid entirely upon iron sleepers?—Yes, upon Mr. Greaves' principle.

1928. Have you passed over that line?—I have not been on the line since it was opened to Cairo.

1929. Mr. *Cheetham.*] Is the supervision of your railways under the Board of Works in Bombay?—No; it is under special officers. There is the consulting engineer of the Government there, who has charge of the whole department of the railways, and sends out assistants or subordinate officers to superintend the railways.

1930. That officer is an independent party to the Public Works Board?—Yes, they are separate departments.

1931. Would you still recommend the continuance of such an officer, but with less interference in detail?—Yes, I think so; I am anxious to see a good Government supervision constantly and actively watching us.

1932. Is any portion of your line opened?—It is not.

1933. Has your attention been drawn to the receipts of railways which have been opened in India?—Yes; I have been watching their returns, and I think they are very satisfactory.

1934. Are they so satisfactory that in your opinion the Government ought, without so much hesitation as they have hitherto shown, to sanction all reasonable proposals for further railways?—I think that, irrespective of the financial question, they are bound to do so. I think it is to their interest, assuming they have to pay the whole guarantee, to extend the railways; but after a railway has been opened for three or four years in an ordinarily good country, I believe we shall never have to look to Government for any guarantee whatever.

1935. Is it your opinion that the course which the Government in India and the Government here have taken, with regard to railways, has been one of delay and neglect?—They have not looked with my eyes; that is all I can say about it. They have not neglected the consideration of the subject, because it has been constantly brought before them for many years past. I suppose that, for some reason, they were not satisfied that it would be useful, if so, I believe they were the only people in the world who thought so. I know that the late Governor-General, and the present Governor of Bombay were most anxious to expedite the construction of railways in India.

1936. Mr. *H. A. Bruce.*] I understood you to say, that you would prefer using iron sleepers to wooden sleepers?—Yes.

1937. First, I suppose on account of the greater economy in the original cost; and, secondly, on account of the increased durability?—Yes.

1938. Have you recommended the company whom you represent to use iron sleepers?—I have.

1939. What has been the result of your recommendation?—I was not permitted to use them, except in an experimental sample.

1940. Who prevented you?—We referred to the Government for permission, but it was refused, and we were obliged to adopt the old wooden sleeper system.

1941. What portion of the Government interfered in the matter?—That is one of the questions that we can never come to the bottom of. We communicate direct with the India House, but whether decisions are made at the India House or the Board of Control we can never ascertain.

1942. You do not know at this moment who are the persons who have prevented you using the iron sleepers?—We do not.

1943. I suppose there is hardly any limit to the durability of the iron sleeper?—I take the iron sleeper to last 24 years.

1944. Why should you limit the duration of iron sleepers to 24 years?—I believe they would last a great deal longer; but I wished to give the largest possible value to the arguments opposed to my own convictions.

1945. What life do you give to the wooden sleepers?—From 3 to 12 years.

1946. There would be no direct pressure of the railway iron upon those sleepers?—None whatever; the only destruction would be from oxidation.

1947. Was any reason given to you, as the consulting engineer of this company, why the use of the iron sleepers would not be permitted?—I think the observation was, that the Indian Government did not try experiments.

1948. Were your Board of Directors willing to sanction the experiment?—They were, and are fully convinced of the importance of it.

 1949. *Chairman.*]

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1949. *Chairman.*] Do you think, if there had been a thoroughly practical man in the Indian Government, that that objection would not have arisen?—I know we have the advantage of a very valuable man and a very clever man in dealing with us; he is not a professional man.

1950. Are not these questions which must require the decision and judgment of a practical man, whose attention has been devoted during his life to the subject upon which he has to decide?—If he can get a professional man to assist him it might be a great advantage; but I think it would be a very great evil indeed to get a man not in every way fitted for the important task, because he acts as a sort of arbiter between the professional men of every company, and that requires great judgment and very high qualities indeed.

1951. You think the presence of the consulting engineer in England, to assist the decisions of the Government, might lead to controversy between your engineer and himself?—If he were of a high class of men, who I think might be found, it would be a great advantage. He, with the engineers, would form a committee, and they would consult upon those things interesting to India, and which would promote the interests of the companies, giving to each Company the practical experience of all the others, and a vast deal of good might result; but if he be not the capable man he ought to be, he would do a great deal of mischief.

1952. Mr. *H. A. Bruce.*] You have given us the instance of the sleepers; do you recollect any other instance in which you, as consulting engineer, were thwarted in your choice of materials to be sent out for the use of the railways?—No, I think that is the only case.

1953. Mr. *Stephenson.*] I believe Sir James Melvill is not in the habit of deciding questions involving large engineering subjects?—No; he has unfortunately not had, until lately, any power deputed to him of deciding on the part of Government. I wish everything were left to his decision.

1954. There are large engineering questions which he would not take upon himself to decide?—These should naturally be left to the decision of the responsible engineers of the respective companies.

1955. *Chairman.*] Is it not the case that considerable restrictions have been quite recently removed in the superintendence of the *ex officio* director?—Yes; there is a very great deal now that he is permitted to decide at our Board, and that has expedited matters very much, but it only commenced a short time back.

1956. Is it not the case that, for some reason or other it is found that you receive your answers more rapidly, and that the correspondence is more correct?—The only change I am aware of is in the latitude given to Sir James Melvill, to decide on the part of Government certain matters at the Board, without waiting for the written authorities from the court which were formerly required.

1957. Since when have you observed that change?—I forget the date of the letter authorising it, but it is very recently indeed, I think within a month.

Jovis, 20° *die Maii*, 1858.

MEMBERS PRESENT.

Hon. H. G. Liddell.	Mr. Glyn.
Mr. T. G. Baring.	Mr. D. Seymour.
Mr. H. A. Bruce.	Mr. Stephenson.
Mr. Cheetham.	Colonel Sykes.
Mr. Crawford.	

HON. H. G. LIDDELL, IN THE CHAIR.

Colonel *J. P. Kennedy*, called in; and further Examined.

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1958. *Chairman.*] IN your last day's evidence, you expressed some very important opinions as to the amount of railway intercourse that you think is required for India, and you also went into the probable amount of money and time required for giving India that amount of railway accommodation. You also, told us, I think, that in your opinion the construction of railways was not going on at the rate that you think desirable. I should like now to ask you whether you have made any calculation as to the financial effects of the delay which you mention, on the several interests involved in these operations?—I should look upon it that the effect of the delay, in a financial point of view, is of the very utmost importance, and I have made calculations, taking as a basis for those calculations the length of our line from Ahmedabad to Bombay at 335 miles. I have calculated it, supposing it were done in two years or in three years, or in four years or in five years, which I call modified rates of expeditious progress. I have likewise calculated it at slow rates of progress, as if done in 16 years, 18 years, or 25 years.

1959. That is, assuming the arrangements originally between the different railway companies and the Court, to be carried out as they were proposed?—No; I make my calculations of the effect of opening 335 miles in each of these different periods of time. The necessity of showing the effect of tedious periods of construction was suggested by the delay in opening lines for traffic in India.

1960. The one calculation is based upon existing facts?—Upon what might be done.

1961. And the other upon what is being done?—On what had been done to the time at which the calculation was made.

1962. These calculations are based on the one hand upon what you consider could be done?—Yes.

1963. And on the other, upon what has been actually done?—Upon what had been done at the time that this calculation was made. In fairness to the companies who have been executing the works, I ought to state that it does not take into account the balance of work in progress, and that is a very important thing, because it might otherwise appear that this was all that had been done; this is what had been opened only at the time that the calculation was made.

1964. Give us the result of this calculation?—I assume a general rate of expenditure in the construction at 6,000 *l.* per mile in every case. If the time occupied were two years, the cost per mile for advanced dividends and interest during the construction of the line and liquidation of the debt would be 427 *l.* per mile, added to the construction cost of 6,000 *l.*; if it occupied three years, 626 *l.* per mile would be added to the 6,000*l.*; if it occupied four years, 847 *l.* per mile would be added to the cost of construction; and if five years, 1,062 *l.* per mile would be added to the cost of construction. Then if the period of construction be extended to 16 years, 9,465 *l.* would be added to the con-

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struction cost per mile; if the period be extended to 18 years, 14,885 *l.* would be added; and if the period be extended to 25 years, 19,600 *l.* would be added to the construction cost per mile.

1965. That, I presume, includes compound interest upon the various periods?—This would be the result of the advance of dividend, and the interest accruing upon these dividends; it is not exactly compound interest, but it is interest accruing upon the dividends.

1966. That calculation includes interest accruing upon the dividends during the construction of the works, and the liquidation of the debt?—Yes; and the gross amount of dividends which would be advanced by Government during the construction of the works, to be refunded from revenue after the opening of the line, with interest thereon, would be, supposing the time to be two years, 143,102 *l.*; supposing it occupied three years in construction, it would be 209,945 *l.* If it occupied four years, the amount would be 283,734 *l.* If five years, 356,029 *l.* If sixteen years, 3,170,898 *l.* If eighteen years, 4,986,678 *l.* If twenty-five years, 6,577,241 *l.*

1967. Can you hand in a Table in answer to my question as to the financial effects which you anticipate will be produced by the delay in the construction of the railways?—Yes.

[*The Witness handed in a Table, which is as follows:*]

TABLE containing FINANCIAL ANALYSIS of the INDIAN GOVERNMENT GUARANTEE PRINCIPLE applied to the CONSTRUCTION of RAILWAYS.

Subjects affected by Greater or Less Length of Time occupied in Construction.	Effects of Greater or Less Time employed in constructing 335 Miles between Bombay and Ahmedabad.						
	As by Modified Rates of Expeditious Progress in				As by Tedious Practice in		
	Two Years.	Three Years.	Four Years.	Five Years.	Sixteen Years.	Eighteen Years.	Twenty-five Years.
AS REGARDS GOVERNMENT AND BRITISH AND INDIAN PEOPLE:							
1. Number of miles of railway to be constructed annually -	162½	111⅓	83¾	67	20⅝	18⅝	13⅜
2. Cost per mile for construction and stock - - -	£.6,000	£.6,000	£.6,000	£.6,000	£.6,000	£.6,000	£.6,000
3. Cost per mile for advanced dividends, and interest during construction of line, and liquidation of debt -	427	626	847	1,062	9,465	14,885	19,603
4. Amount of dividends advanced by Government, during construction, to be refunded from revenue - -	125,625	175,875	226,123	276,475	829,118	929,502	1,281,375
5. Amount of interest on Government advances accruing during construction and liquidation of debt, to be paid from revenue - - - - - - - -	17,477	34,070	57,611	79,554	2,341,780	4,057,176	5,295,866
6. Total advanced dividends and interest thereon, accruing during lease - - - - - - - - -	143,102	209,945	283,734	356,029	3,170,898	4,986,678	6,577,241
7. Annual refund, in liquidation of debt, after completion of line, assuming revenue to give 10 per cent. on capital, over working cost - - - - -	50,250	50,250	50,250	50,250	50,250	50,250	50,250
8. Annual increase of debt above liquidating fund, after line opens - - - - - - - - -	- -	- -	- -	- -	- -	- -	13,813
9. Total amount refunded to Government during lease, for advanced dividends, and interest thereon - -	143,102	209,945	283,734	356,029	3,170,898	4,070,250	3,718,500
10. Amount irrecoverable by Government, as remaining unliquidated at end of 99 years' lease - - -	- -	- -	- -	- -	- -	916,428	2,858,741
AS REGARDS SHAREHOLDERS.							
11. Number of years required, after completion of line, to refund debt to Government, assuming revenue to give 10 per cent. on capital, over-working cost and renewal fund - - - - - - - -	2⅜	4⅛	5⅞	7⅛	63⅞	130⅛	infinite.
12. Rate per cent. on their investment which shareholders must receive during period of construction - -	5	5	5	5	5	5	5
13. Rate per cent. which shareholders must receive during the liquidation of debt, assuming revenue at legal maximum - - - - - - - - -	7½	7½	7½	7½	7½	7½	7½
14. Number of years during which shareholders must receive 10 per cent. dividends, after liquidation of debt to end of lease, assuming revenue at legal maximum -	94⅛	91⅝	89⅛	76⅛	19⅛	-	-
15. Rate at which shareholders can require Government to purchase line, on giving six months' notice, and which rate they must receive in full, without deduction on account of unliquidated debt - - -	Full value.	Full value.	Full value.	Full value.	Full value.	Full value.	Full value.
16. Probable average of company's deposit, in hands of Government during construction - - - - -	£.251,250	£.167,500	£.125,625	£.100,500	£.31,406	£.27,916	£.20,100

Witness.]

Witness.] I must guard myself by saying, that that calculation does not embrace the balance of work in operation, but merely deals with the lines opened when the calculations were made.

1968. Mr. *Crawford.*] If, as you remark, it is only justice to the railway company to state that the opening of the line up to the present time is no criterion of what has been done in point of construction, what is the practical object of the calculations you have made?—I cannot say that the work may be materially expedited beyond that, and therefore I should guard myself against making an exaggerated statement. I apprehend there will be great delay, and this statement was intended to warn every one connected with these operations as to the extreme importance of rapidity of execution.

1969. *Chairman.*] When you say you apprehend great delay, I must ask you to explain the grounds of your apprehension?—The delay must depend upon the mode adopted in dealing with the chief impediment to railway construction.

1970. That impediment being?—The rivers of India. I think that unless a distinct course is taken for dealing with those rivers, there must be extraordinary delay; and I think that where there is any difficulty about the foundations which shall cause a very large amount of time to be expended in preparing those foundations to receive piers and abutment for bridges, very nearly the delay I speak of here must occur.

1971. Do you base that statement which you have just made, upon facts which have already come under your notice in regard to the progress made in certain bridging works with which you are acquainted?—I base it first, on the fact of the length of time which has elapsed in dealing with those works that are going on.

1972. Are you referring to works upon any other lines than your own?—I saw from the commencement that unless I could establish a principle that should rapidly account for the bridging of rivers, my operations must be quite on the footing of everything else of the kind that has been going on in India.

1973. Has your attention been called to the bridging works upon, we will say, the Great East India line, and have you formed your calculation upon the facts with which you are acquainted as to the progress of those works?—I have formed my calculation a good deal upon that; I was connected with those operations, as consulting engineer of the Government, before I had any part in the western works. I was anxious that no time should be lost in providing such bricks as might be required along the line; and with regard to the great rivers, such as the Soan and Jumna, I foresaw that if we waited to open our communications until we could get a thorough communication across those rivers by bridges, unless some very extraordinary course were taken, and the beds of those rivers were adapted to that course, there must be great delay.

1974. Do you consider that the progress made up to this time, and being made at the present moment, in the construction of these works, justified you in anticipating that great delay, of which you have spoken in the Table which you have just handed in?—I cannot by possibility say what the fair ratio may be; but I think I was not only justified but bound to call attention to the rate of opening the lines that have been longest in progress, in order to prevent the delay, and to expedite, if possible, the future progress.

1975. In order, so to speak, to open the eyes of the public to what might be the state of things?—Yes.

1976. Mr. *Crawford.*] The views which you have expressed in that paper which you have handed in, are founded, as I understand, upon assumptions to a certain extent?—They are, certainly.

1977. What are those assumptions?—They are that the rate hereafter shall correspond with the rate heretofore in opening the lines of railway.

1978. Do you think that is a fair assumption to make?—With the acknowledgment that the calculation is made on that assumption, I think it is.

1979. If these assumptions prove not to be correct, then of course all the deductions you draw from those assumptions are, so far as the argument is concerned, valueless?—I do not think they are valueless, because I maintain a great deal of delay has occurred in opening the line upon which the Tables are based; and their value will have been proved, as well as my object accomplished, by an increased rapidity in the future opening of lines.

1980. At what period did you quit the office of consulting engineer in the railway department of the Government of India?—I think it was in April 1851.

1981. Do you remember the particular stage at which the East India line had

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arrived at that time?—Yes, the works had been just commenced; there was a very slight portion of embankment put up, close to Howrah. I had perambulated the grounds with the chief engineer of the line from Howrah to Pundoah, with a view to settle the openings for the waterway; the plans and sections of a very short portion had been given in to me as consulting engineer to the Government, and I had adopted what I believe was an extraordinary course, of recommending the smallest portions he could give in as they came in, in order to expedite the construction. I think the two first portions that came in were of two miles only, and I felt justified in recommending those small portions of the working plans, because I had ascertained that they were in reference to a general plan which I knew to be perfectly correct. That was the state of things; they had their centre line staked out the whole way to Pundoah when I left India.

1982. To what extent did you, as consulting engineer, approve of the works of the East Indian line, as they have since been constructed?—There was very little done in the way of absolute construction when I left India, but I approved thoroughly of everything that was proposed to be done.

1983. Did you approve of the line to Raneegung?—Assuredly.

1984. Were you the consulting engineer whose official sanction was given to the construction of the line to Raneegung?—The consulting engineer had no power of giving sanction; he could only report to the Government his views. I reported most distinctly upon a question that had been long pending. My predecessor had left India, stating that he had not been over the whole of the line, and therefore could not give a decided opinion upon it; at the time I joined I had already arranged, from the effect of climate upon my health, to come home to England, but I saw that it was so extremely important a question that I determined to see the line, and to try whether I could have the decision of the Government upon it before I left. I was aware, as the cool season was rapidly terminating, that it would put the works off for a full year, if I did not get a decision upon that point, and therefore I arranged to go with the chief engineer of the East India Railway over the whole of the disputed points.

1985. Was the question of the extension of the line in the direction of the North West Provinces referred to you?—I took it up as a matter of course; it became my duty to look into it.

1986. Did you report upon it?—I did.

1987. What was the tenor of your report?—I think, in answer to that question, I had better read a few extracts from my report, which is dated 29th January 1851. In that report I stated, "The Government have not been furnished with any data upon which to ground a decision as to the further extension of the line beyond the collieries. My predecessor, in his last report, dated 29th April 1850, abstains from giving a decided opinion as to which of the disputed directions, that by Sherghottee Hills, or that by the Ganges River, should be subsequently adopted as the line of the road towards its destination in the North Western Provinces. Mr. Simms offers, as a reason for the withholding the expression of a decided opinion upon this very important question, the fact that he had only examined one-third of the river line." Then I said, "This omission I shall seek to supply, as I feel that the quick settlement of this question on sound grounds is essential to the systematic progress of the undertaking generally, as well as to the character for prudential forethought and energy of all those who are concerned in its control, superintendence, or direction. For these reasons, I shall make every exertion to examine generally the Ganges line before leaving India, as the working year here for such an examination is by most persons restricted to about five or six months; and if I allow this cold season to pass without placing before Government the means of coming to a decision, the question will most probably remain in its present undecided and unsatisfactory state for another year. I have twice seen the Sherghottee Hills line, and lest my health should prevent my intention of visiting the Ganges line before I quit India, I shall even now place before the Government such considerations connected with the known circumstances of the two lines as I am justified in doing, reserving my final opinion, as far as it is dependent on an actual view of the Ganges line, until after having visited that district; this course may avert fruitless arrangements and anticipations, or perhaps irretrievable errors. The original project, as it now stands, appears to be, that a line of railway should be formed from Calcutta to Delhi, passing over the Sherghottee Hills, and thence to Mirzapore, the latter place being 466 miles from Calcutta, throwing out one branch to Rajmahal, 140 miles

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in length; one to Patna, 40 miles; and a third to Benares, of 15 miles. The length of railway thus required between Calcutta and Mirzapore, including its branches, would be 661 miles by the Hill route. The branches are no doubt a very important part of the project as a means, although an imperfect means, of bringing upon the line the Lower Ganges traffic. The undulating land and hill district extend for about 200 miles; they would entail heavy cuttings and fillings, with quick inclines and curves. The old section shows a summit of 1,380 feet above Calcutta, and 1,040 feet above Mirzapore, with an aggregate rise towards Mirzapore of 2,044, and an aggregate fall in the same direction of 1,804 feet, and a maximum incline, for nearly 10 miles, of 1 in 61 or 1 in 62."

1988. Will you state the grounds upon which you recommended the Valley line in preference to the direct line?—I recommended the circuitous line in preference to the direct line, because it went through a rich, populous, and level district, instead of a hilly district, a barren district, and a district without much population, if any. I calculated that the expense of haulage upon the circuitous line would be much less per ton in making the whole journey from Mirzapore to Calcutta, than on the direct line over the hills, and that therefore, in a financial point of view, even for the Upper Ganges traffic, it would be much the most economical. I thought we had no right under the circumstances then existing to carry a line away from the richest and best country perhaps in India, through a barren district for 300 miles; and that we had no right, in looking at the interests of the Company, to leave perhaps the best feeder of a line, the Lower Ganges, for a barren district where it could get no local traffic; for these reasons I distinctly decided that every view bore me out in recommending the circuitous route. In this decision Mr. Turnbull, the chief engineer of the line, entirely concurred with me. I will beg of you to read a few passages from my report, written after we had been over the line. It is dated the 27th February 1851: "In reference to paragraphs 21 to 54 of my report, dated 29th ultimo, I have the honour to state that on the 9th instant I left Calcutta, and having joined Mr. Turnbull, the chief engineer of the East India Railway Company, at Serampore, we proceeded together, accompanied by Mr. De Craig, surveyor, to examine the comparative merits of the Ganges and direct lines preparatory to offering any final opinion as to which should be the route for continuing the railway from Calcutta to the North Western Provinces. We proceeded by Rajmahal, Monghur, Patna, &c. to the confluence of the Soan with the Ganges, and returned over the chain of hills by Dunwa to Burdwan. I had already obtained much information regarding the district lying between the River Hooghly and Rajmahal, both by personal communication with Colonel Forbes, and from his valuable report and survey of that district. The comparison of levels on the competing lines, and the general effect of that question as regards the future revenues of the railway company, I dwelt upon sufficiently in the paragraphs above referred to in my former report on this subject. The engineering difficulties I conceive, would be very much less by the Ganges than by the hill route, the width of the formidable River Soan being little more than three-fourths of a mile at the point where it would be passed on the Ganges route, whilst it is nearly 2½ miles wide at the point of passage proposed on the direct or hill route. The great commercial advantage to the public, as well as the financial advantages which must accrue to the railway company by the adoption of the Ganges route, will be at once understood by any one who will take the trouble of visiting the whole of the district, as I have just done. He will find the circular canal at Calcutta, or the terminal harbour for Ganges traffic, so crowded by arriving and departing boats of considerable burden, as completely to cover and block up that extensive canal. He will find numbers of boats with their loads 'laid high and dry' on the shallow banks of the Bagharetta River; he will perceive the broad waters of the Ganges from every point of view as he ascends that river, and as far as the eye can reach, covered with fleets of laden boats, with their crews toiling towards their different points of destination, against the most adverse circumstances; and finally he will be hailed by an enthusiastic and universal welcome from merchants, manufacturers, and producers of every class in any proposition that he can make calculated to remove the risks, to shorten the time, or to reduce the painful labour, cost, and uncertainty which now attend their efforts to bring the produce of their districts into any market. No man who makes this tour will have a doubt as to the enormous extent of the Ganges carrying traffic; nor as to the vast impediments which at present oppose its success. He will be struck with admiration at the persevering

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and courageous exertions of those enterprising men who dare to face such impediments, and he will be convinced of the enormous public benefit as well as the private advantages which must attend the removal of these impediments by laying a line of railway along this great commercial artery of India. And as the traveller turns in his course to examine the competing line through the hills, he will find that the Gangetic train will answer every purpose; that every hackery load of produce now travelling along the road must necessarily drop into the company's trucks, and that neither public inconvenience nor private loss can attend the withholding of a railway from the desert hill district in question. It is upon these grounds, in addition to the grounds put forward in my report of 29th January last, that I venture with the utmost confidence and earnestness to recommend the extension of the East India Company's railway by the route of the Ganges, and not by the desert hill route. If the Government should agree to my recommendation of adopting the Ganges line, I believe that the East India Railway with its extension into the North Western Provinces will, when completed, form the most perfect work of the kind in the world."

1989. Were you in possession at that time of any plans and sections for the direct route?—We had the trial plans and sections for the direct route.

1990. You stated in answer to a question just now, that you conceived that the difficulties of crossing the rivers were likely to present the greatest impediments to the progress of railway construction in India?—I did.

1991. Would there have been on the direct line any more than the one important passage over the Soan to contend with?—That was the chief impediment upon that line.

1992. In the way of river obstruction?—That was the greatest impediment, and it is the chief impediment on the whole line.

1993. Was there any other river that would have offered anything in the shape of serious impediment?—I think there was no great impediment besides that until we arrive at the Jumna.

1994. On the circuitous or Valley line, you would have to encounter a series of bridging works?—I do not think there were any great difficulties on that line except the Soan; it did not occur to us at the time we made our first examination that there were any very great difficulties. If the principle we follow upon the western coast were established there, I believe there would be very few difficulties indeed.

1995. Were you aware, at the time you recommended the circuitous line, that you would have to cross in the first place the Adjie with a bridge of 1,800 feet in length, and subsequently at a short distance the Mor, on a bridge two-thirds of that magnitude; and then a succession of heavy bridging works before you get to Rajmahal, and after passing Rajmahal that you would have to pass through very difficult country in respect to bridge-making, and that you would have to overcome water obstacles between Colgong and Dinapore?—I was quite aware that the water difficulties would be much greater on that line with the exception of the Soan, but I think they would not have amounted to the difference between the crossing of the Soan by the direct line, and crossing it at the place where we decided to cross it, because there was the difference of two and a half miles on the direct line in the width of the Soan, as compared with three-quarters of a mile on the other line. I do not think that the whole increased difficulties in other respects would come up to the difference which existed between the width of the two crossings of the Soan.

1996. You have left the direct line, which offered but one considerable bridging difficulty, and have adopted a line which presents one continuous series of bridging difficulties?—We had not a minute plan of the circuitous route, and our opinion was, that the united difficulties of the other route would not be equal to the difference in the difficulties between the two crossings of the Soan.

1997. Have you given your attention to the subject since you gave up the office of consulting engineer to the Government in India?—Not much.

1998. You are not aware, then, of the difficulties which have been found to exist on the circuitous route?—I have not had any detailed account of those difficulties.

1999. You are unable, then, from any knowledge of your own upon that point, to test the assumptions which you have made in presenting the series of calculations to the Committee at the commencement of this day's proceedings?—It does

does not alter the question; if the delay occur, no matter from what cause, these results must be produced.

2000. Have you been able to make yourself acquainted with the nature of the difficulties which the East Indian Railway Company have had to encounter in consequence of the circuitous route having been adopted in preference to the direct one, those difficulties being in the nature of bridges, flood arch openings, and other means of passing over a country very liable to inundation at certain periods of the year?—I do not know even now whether the difficulties are greater on the circuitous route, when I recollect that on one passage you have two miles and a half instead of three quarters of a mile; that leaves a difference of one mile and three quarters. I doubt whether you will find that all your difficulties amount to one mile and three quarters of viaduct, and of that class which the passage of the Soan would have thrown upon you there; that is a question to take into account; but I would go the length of saying that if we had two miles and a half at the other place instead of three quarters of a mile on the direct line, I should have preferred that, according to every principle that ought to regulate an engineer in laying out a line of railway, no matter what the difficulties were, if they were at all compassable.

2001. I confine my question to the question of bridging difficulties upon the circuitous route, throwing out of account altogether the political, commercial, and other considerations which may have affected your decision when the matter was referred to you; practically speaking, the result has been that in the selection of the Ganges line the East Indian Railway Company has had formidable difficulties presented to it in the way of bridging works, which would not have occurred if they had taken the direct route?—I should apprehend that in that comparison you have not given full value to the enormous importance of bridging two miles and a half on the direct line.

2002. Are you acquainted, generally speaking, with the district on which it was proposed to cross the Soan by the direct route?—I am generally acquainted with it, but I have never gone into an engineering examination of it.

2003. Do you know the banks of the river above the part where the grand trunk road crosses the Soan?—I have not perambulated the Soan river except at its two crossings, where it was proposed to pass near Patna, and the other crossing on the direct line.

2004. Did you hear that an eligible point for crossing might have been found at another part of the stream different to that at which the grand trunk line crosses it?—I heard it suggested that by keeping more to the contour line of the hills, and passing up the river, an easier crossing might have been had.

2005. No means were taken, so far as you know, to ascertain that?—No, and however easy it might have been, it would not have altered my opinion as to the propriety of selecting the circuitous route.

2006. You have made some reference in a former answer to the question of bricks, and, as I understood, you stated that you had foreseen a difficulty with regard to the preparation of bricks in sufficient quantities in Bengal?—No; but I was anxious that no time should be lost in preparing a sufficient supply of bricks for the works generally.

2007. Do you know the general character of the countries through which the rivers run, which descend from the Sherghotty hills, and fall into the Ganges?—No.

2008. It is an alluvial country, is it not?—After it has left the hills.

2009. These rivers are, in point of fact, nearly dry channels in the winter season, and immense torrents in the rainy season?—They are.

2010. Passing over an alluvial soil, was there not great difficulty in finding foundations for the bridges?—Very great.

2011. Do you not think, as you have led us to infer, that in your opinion some delay has been caused in the construction of the line, that the cause of that difficulty may reasonably be found in the great difficulty of overcoming these impediments?—That must be the only cause of the delay; I am convinced that dealing with the rivers is the only cause of delay on that line.

2012. Mr. *Stephenson.*] What is the length of the Ganges line from Benares to the point of junction; is it about 500 miles?—About 500.

2013. And the other, I believe, is about 400?—About 400.

2014. That does not fairly represent, I believe, the difference in the length to be executed to give the convenience required from the railway?—Certainly not.

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2015. I believe branches were in addition presented, which would reduce the 120 miles difference?—There was one contemplated to Patna, 40 miles; one to Rajmahal, 140 miles; and one to Benares, 15 miles; making in all, 661 miles.

2016. The fact is, that the cost of execution arose from a considerable increase in the length of the line?—Yes, by the direct line; and, in addition to that, these branches never could have supplied the requirements of that extremely important district; they never could have gathered up the traffic of the Lower Ganges district from both sides of the river as the present line must.

2017. Would the produce and population of the Valley of the Ganges, extending over 400 or 500 miles, have been greatly inconvenienced by the direct line?—I think so.

2018. It would have led, I believe, to the execution of both lines in the end?—I think so. The Valley of the Ganges had a right to a line, irrespective of anything else.

2019. Admitting that they had considerable difficulties in bridge building, and more on the circuitous route as compared with the direct route, have you any doubt in your own mind, taking the cost of hauling goods in large quantities over both these lines, that the difference in cost would have been far more than equivalent to any interest and money they have lost, or are supposed to have lost, by adopting the expensive bridge line?—My own calculations made it very much in favour of the circuitous line; and I can sustain those calculations by a very valuable corroboration, in the coal traffic on the North-Eastern and Great Northern Railways, as described to me by Mr. Harrison.

2020. With regard to the relative cost of locomotive power on both these lines, state to the Committee what has been the result of your interview with Mr. Harrison, the engineer of the North-Eastern Railway?—His views entirely corroborate the soundness of my opinion, and the calculation I made in reference to the comparative cost of haulage on the direct and on the circuitous line. I have stated that I consider the cost of hauling a ton of goods on the whole distance of the circuitous line would have been much less than the cost of hauling it along the direct route; the difference of the gradients upon the direct line would have added so much to the cost of haulage, by diminishing the loads that an equal power of locomotive engine could convey, as compared with what it could convey upon the level line, that the expense per ton on the whole journey would have been much greater on the hill line than on the level line. Mr. Harrison shows by the practice in the coal traffic upon the North-Eastern Railway, that in the distance from Darlington to York, the same power of engine can carry 45 trucks loaded with eight tons of coals, as compared with 30 trucks, when it passes York, and reaches the Great Northern line. This enables the same engine to carry 360 tons of profitable load upon the Darlington line, while it could only carry 240 tons upon the Great Northern line, in consequence of the difference of gradient.

2021. You have not stated the difference of gradient between that case and your line?—The ruling gradients on the Darlington line are 1 in 500, or the same as on the Ganges line. On the Great Northern the ruling gradient is 1 in 200; here we find that the difference in the load which the same engine carries is 360 tons as compared with 240, making 120 tons additional profitable load per train on the more level line. Now, assuming even that 1 in 200 could have been obtained as the ruling gradient on the Sherghottee barren line, which is not possible, without lengthening the distance proportionally, and comparing the haulage on that gradient with the haulage on the Ganges line, where the ruling gradient is 1 in 500, and putting the rate per ton for goods carried at ¾ *d.* per mile as charged on the Raneegung coals, your engine would earn 22 *s.* 6 *d.* per train mile on the Ganges line, and only 15 *s.* per train mile on the direct line, making a saving of 7 *s.* 6 *d.* per train mile in favour of the Ganges line; and when you take into account the cost of haulage, assuming it to be 2 *s.* per train mile, you have a distinct saving of nearly four times the cost of the haulage by adopting the Ganges line.

2022. The result of that calculation I think is, that if two engines left Benares for Calcutta, one by the Ganges line and the other by the direct line, each of them loaded to their maximum, supposing the circuitous line to be 500 miles, the engine would have produced on her arrival at Calcutta 120 *l.* more upon that journey than the other?—Yes; assuming the freight per ton on the whole length of the respective journeys to be the same, say 1 *l.* 5 *s.* Each Ganges train would

would earn 150 *l.* more than the direct train between Benares and Calcutta, each carrying its maximum load.

2023. Taking the distance at 500 miles, at 5 *s.* per mile, the saving on that journey would represent 120 *l.*?—Yes, it would.

2024. Mr. *D. Seymour.*] Are you of opinion that the short route ought still to be made?—I do not think it can be required, unless the passenger traffic arrives at that point that it may be worth while to make an express passenger line; I think the circuitous route must always carry the goods cheaper from Mirzapoor to Calcutta than the other line; but if you make a short line for the express passenger traffic, I think there would be a saving of some four hours to a passenger who was anxious to get rapidly over the ground; and therefore, as soon as the commerce of India arrives at such a point as to make time so valuable, it may be a question worth consideration whether you would not make that line.

2025. Is Mirzapoor the great *entrepôt* between Eastern and Western India?—Yes; it is a most important place for traffic.

2026. I believe Colonel Cotton does not consider the difficulty of bridging the rivers of India so serious as you do?—I do not consider them serious if the right course be adopted; they are almost the only difficulty you have, except where you have to deal with a hilly country.

2027. I thought you said that, in your opinion they were considerable?—I think they are the only difficulties.

2028. I have one or two questions to ask you with regard to your previous examination. I believe the general principle upon which it was proposed to guarantee the railways in India was to guarantee the main lines, and to leave the rest to be made by companies without a guarantee?—I am not aware on what principle it was adopted, but I have always urged the necessity of a rapid principle of extension of the railways; I never could find any principle very distinctly defined.

2029. In April 1855, when I came into the Board of Control, there was a question I believe before the Board as to which was the best way of reaching Eastern India at Mirzapore, whether by the Great Indian Peninsular, or by the Surat, Baroda, and Central India Railway?—Yes.

2030. You recommended the Baroda and Central India Railway?—Yes; I had always recommended it.

2031. As the best way of reaching the East India Railway?—Yes.

2032. You proposed to go up to Surat?—Yes.

2033. And then up the valley of the Taptee?—Yes.

2034. Taking your line in comparison with that of the Great Indian Peninsular, you would have gone two sides of the triangle, and the Great Indian Peninsular would cut across the other side?—Yes; but we should carry goods and passengers at much less cost from terminus to terminus, the level character of our road enabling our engines to convey larger loads.

2035. From Bombay up to Surat you would have had the sea in competition with you?—We run along the shore.

2036. From Surat up the Taptee?—Yes.

2037. Which is a river that some people maintain may be made navigable?—I do not think that I have ever heard anyone maintain that.

2038. Was there not a report of an engineer, in which it was stated as practicable?—I never heard of it; I have heard some wild people say that the Nerbudda might be made navigable.

2039. I think in your report you said it was a pestiferous jungle along the Taptee from Surat for a considerable distance along its banks?—There is an unhealthy district crossing the Taptee and going to Indore, I believe on this account that it is shut up for the passage of troops during a portion of the year.

2040. It has been considered unhealthy along the banks of the Taptee?—A portion of it only. But train-speed shields the traveller by rapidly passing through the Jungle, where the slow palanquin traveller or horseman may be obliged to sleep and meet his death.

2041. And is, I believe, very slightly inhabited?—One particular portion of it is.

2042. A considerable portion?—To the eastward of Songhier it is a very populous, and rich country.

2043. What is the distance in miles from Bombay to Surat?—About 180 miles.

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2044. I think that from Bombay to Damaun the country is thinly inhabited, is it not?—Part of it is.

2045. For the greater portion of the way between Bombay and Surat the country is thinly inhabited, and you run along the sea coast?—A portion of it is not thickly populated, but there are considerable towns along the coast, as also in the Taptee line; and the Governor of Bombay, at par. 13 of his Minute, dated 18 July 1854, states, "Without taken into account the many populous cities and rich districts which the prolongation of Colonel Kennedy's line would connect with Bombay, and confining our view to the places on either line between Bombay and Julgaum, I am prepared to show that there are more places with a certain amount of population and commerce, and a greater variety of exportable produce upon the Surat, than upon the Thull Ghât line;" and this high verdict is based upon accompanying comparative returns given in detail, from "the records of Government, and from other sources."

2046. On the other side of your railway, you run along a range of mountains which begin to rise about 30 miles distant from the railway?—Yes.

2047. So that you have a long barren district along the sea coast?—Yes, for some distance.

2048. Then you must depend for that bit of railway from Bombay to Surat, upon the traffic further on?—No, I maintain that there is no district in England that has a belt of 40 miles for its exclusive traffic.

2049. Would you say that, from Bombay to Surat, it is a rich and populous country?—Not as compared with some others. But the Minute of the Governor of Bombay, already referred to, proves that it is superior in these respects to the Thull Ghât line.

2050. I think you have stated in a former part of your evidence that you could hardly expect to carry the cotton down from Bombay to Guzerat cheaper than the boats do now?—I do not think I could have said that, because they carry it at different rates, at different times of the year.

2051. Your answer was, "I think we could carry it quite as low at the present rate, and lower at times." You could not carry it much lower than the present rate?—Not lower than the minimum rate, but a great deal lower than the maximum rate, and we could carry it all the year round.

2052. Do you remember when I had the honour of a conversation with you, that I stated that, so far as the direct line went, I greatly preferred the Great Indian Peninsula, so far as it was the connecting line from Bombay to the East India Railway, because it was 200 or 300 miles shorter; and because, from the accounts, it appeared to me to go through a more populous country?—It is not 200 or 300 miles shorter; it is not much shorter to the point of meeting.

2053. When it was first established, was it not intended that the Bombay, Baroda and Central India Company, should go across the main East India Line?—Our main line was to go to the north; I must clearly state that the main object we had was to construct the main line to the north from Bombay, to meet the East India Railway going up to the North Western Provinces, and the line which has been alluded to by Mr. Danby Seymour is a branch from that; that question had been decided when I had the honour of meeting Mr. Danby Seymour at the Board of Control.

2054. What was the original line which your railway company proposed to construct on the 5th April 1855?—The principal route was one from Bombay *vid* Surat, and Baroda to Agra; there were branches from that, and the principal of them was the Taptee branch.

2055. How far was the Taptee branch intended to go?—I contemplated its going the whole way through, to meet the Calcutta line.

2056. At Mirzapore?—At Mirzapore. I did not the other day allude to the question of the Taptee branch, because that was just at the time you joined the Board, and it was soon decided. What I did complain of, was the delay from that time, in receiving the sanction for the construction of the main link of our whole line, namely, from Surat to Bombay.

2057. Would you state what the vast number of reasons which I gave you, and to which you object, were, or some specimens of them?—One of them was, that having water communication, we did not want land communication, or something to that effect. I urged in that case that it was so very incomplete a water communication that it could scarcely be called a communication.

2058. Did I not state to you that the sum of money which the Government could

could guarantee upon railways was limited, and therefore I thought it was the duty of the Government to look to the whole of India, and see where there was the least communication, and that where there was a water communication, although it was imperfect, the railway should be postponed until districts through India, where there was neither imperfect water communication nor any land communication, were supplied?—I am aware that a great many principles have been adopted by the Government, but they have been altered upon very good grounds. I do not understand the principle upon which it is stated that the Government could not afford more funds, for they do not pay a farthing for anything that is done in India, as regards the construction of railways.

2059. Colonel *Sykes.*] Is it not entirely a jungle the whole distance from Surat to Boorhampoor by the Taptee?—Not at all.

2060. Have you seen the population returns for that line?—I have not gone through the returns, but I have gone through the country; there is a considerable distance to the westward of Boorhampoor, which is a rich country and populous.

2061. Are you aware of the population on that line per square mile?—I am not; but I know that Captain Wingate's revenue survey report gives a most favourable description of the whole of that district. In speaking of the assessment on Khandeish, he says at par. 4, "The soil of Khandeish is more fertile, and yields heavier crops than that of either the Deccan or Southern Mahratta country." At par. 6, "Irrigation is more extensively practised at Khandeish than in the Deccan or Southern Mahratta country." Par. 54, "These rates could not be paid at all in the Deccan, but the superior fertility of the soil in Khandeish, and the care with which its products can be converted into money, from nearly all being grown for export, as well as the advantages enjoyed by the cultivator in being allowed the privilege of free grazing over the wastes of Khandeish, make them in reality far less onerous than would be supposed from simply comparing them with the rates on dry crop land elsewhere."

2062. Have you seen the population returns of that district from Surat to Boorhampoor; are you aware of the population per square mile?—I am not.

2063. Is there any town along that line?—Several.

2064. What towns?—I forget the names of them.

2065. Is Nundoorbar one of them?—That is one of the towns; that is one of the worst towns.

2066. Name the towns?—It is a fine country, but I do not recollect the name of the towns. I have travelled through them, and they are very good towns.

2067. Have you traversed the line from Bombay to Surat by the coast line as well as under the Ghauts?—Yes, I have traversed the coast line; they are very nearly the same.

2068. Have you done it, or have you not; have you traversed the line from Bombay to Surat by the coast?—I will tell you the route I went.

2069. Answer "Yes" or "No;" did you traverse the line from Bombay to Surat by the coast?—Most of the way does go along by the coast.

2070. Did you?—I did.

2071. Did you traverse the line along the foot of the Ghauts from Surat to Bombay?—No.

2072. Did you traverse the intermediate line between the foot of the Ghauts and the coast line?—No, I only travelled one.

2073. Are you aware that the bamboo jungles there exist for scores of miles together, and are of the densest character, between Surat and Bomby?—There were no dense jungles to be found, and I have gone the whole line.

2074. Are there not very numerous inlets of the sea along the coast line?—Yes.

2075. All of which would require bridging?—Yes.

2076. What is the population along the coast?—It has been given by the Governor of Bombay, as already referred to by me.

2077. What is the population inland, supposing the route were to run inland?—I would not think of taking it inland, because then you would get into the hills.

2078. You do not consider the difficulty of the inlets of the sea a serious impediment?—No, I do not.

2079. Are not two or three of them very wide?—There is only one wide inlet on the coast, and that is at Bassein.

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2080. Is that three miles across?—No; one and a quarter, of which a considerable portion may be embanked, so as to reduce the bridging to much less than a mile.

2081. Are there not others besides that along the coast?—There are rivers, but nothing else of that character.

2082. Of great width?—No.

2083. Tidal rivers?—Yes.

2084. And tidal creeks?—We keep inside the wide parts of the creeks, so that we have nothing of a very wide character except Bassein, and that is an easy matter to deal with, because there is no great velocity in the current; it receives the waters from a comparatively narrow river.

2085. You consider, with a rival means of transit by sea for eight months in the year, that you can carry goods profitably for the whole of the year from Surat to Bombay?—I think so.

2086. Have you made a calculation to that effect?—Yes.

2087. As compared with sea traffic?—Yes; when I was there I made the calculation, and I thought we could carry as low, if not lower; much lower at certain times.

2088. At what rate do the pattamars carry goods?—At very different rates at different seasons of the year.

2089. What is the highest rate?—It ranges from what would be equivalent to three-halfpence down to a halfpenny per ton per mile.

2090. Is it a higher rate than you would be able to carry at?—The high rate is much higher than we should carry at, and I think we should carry at about the lowest rate.

2091. In reference to your hypothetical calculation, as to the future probable progress of construction, would it not, in your opinion, have been safer to make your calculation from the date of commencing operations to the completion of the sections, rather than from the date of the agreement with the Court of Directors?—I think not, because it was made as much to stimulate the Court of Directors as with any other object; if there were difficulties that prevented the rapid commencement of the works, it was right that the Government should know that those delays had a very important financial effect upon the operations of the railways.

2092. Supposing that those delays were consequent upon matters over which neither the Court nor the Government of India had any control, is it right to make these hypothetical calculations upon the assumption that they had that control?—They must have had the control; there were no other parties but the railway authorities and the authorities of the Government, and there could be no delay except what originated with one of them.

2093. Did it not occur that it was owing to parties who had made contracts with the Company not fulfilling their engagements to pay up the capital?—I never heard any difficulty about that. We have never had any difficulty so long as we have had a Government guarantee. There was very little chance of obtaining money without that Government guarantee, but with it we have had no difficulty that I am aware of.

2094. Might there not be other causes than the mere action of the authorities to occasion delay in the commencement of operations?—I do not think there can be other causes, because the Government have always regulated their rate of guarantee to suit the money market; some of the guarantees are down to 4½ per cent., and others are five; there is a discretion for the Government to use, but we have always had the power of obtaining capital by the rate of guarantee they chose to offer.

2095. Do you consider that the difficulty of obtaining bricks occasioned delay in the sections of the East India Railway?—I should think that must have occasioned difficulties if the contractors cannot keep to their contracts, or if the Company do not keep the business in their own hands; if they do, I think they can arrange the supply of bricks in any way they choose.

2096. My question was whether the difficulty in obtaining bricks had occasioned delay?—They had not commenced that class of operations when I was there.

2097. I understood you to say there might be a difficulty in obtaining bricks along the East India line?—No, I think not.

2098. If there had been that difficulty, it would most likely have existed on the lines of Western India; but was there any difficulty in obtaining the bricks there?—I think not.

2099. Mr. *Cheetham.*] Would there not have been a considerable saving of time in the construction of the direct line, supposing you had adopted that?—I would not have signed my name to a paper selecting the direct line for any consideration; it was so objectionable in every view as regarding the wants of the public, that no inducement could have made me sign a recommendation for that line in preference to the Ganges line.

2100. You do not say whether there would have been a saving of time in the selection of that route?—I do not think it is of any use to save time in performing a faulty operation.

2101. You stated, I think, that the expense of the line of the valley of the Ganges was justified in your opinion by the increased traffic and population, and also by its better gradient?—I do not go into the question of absolute expense of construction of the two lines, one would not have answered the object in view, and the other did.

2102. You stated that the difference in the gradient justified the construction of the line of the Ganges?—That was referring to the working cost, and the haulage power of the engines; that was one of the principle reasons in favour of the level line.

2103. Supposing this Committee has had in evidence before it that the gradient of the direct line might have been made as good as the valley line for no greater expense, what then would be your opinion?—It is impossible that such should be the case.

2104. Mr. *Stephenson.*] Do you know any country in the world, except the Ganges valley, through which a river runs that would admit of that ruling gradient for 400 miles of 1 in 500?—I think it would be impossible to find any without increasing proportionally its length.

2105. Do you believe that you know any country in the world in such a position as that, that will admit of a ruling gradient of 1 in 500?—I think it would be exceedingly difficult to find it, except at a sacrifice of distance that would be very great indeed. I think that by running according to the contour of the country, you may select any gradient you like, but you pay for it in the distance.

2106. Do you know any country in the world in which there is any district of that extent not situated in a great valley with a ruling gradient of 1 in 200?—I do not.

2107. Mr. *H. A. Bruce.*] On Monday last I asked you some questions with reference to sleepers. Are you prepared to give any fuller evidence now; first, as to the cost of wooden sleepers delivered on the line, and in the next place as to the duration of iron sleepers?—Since I was last here we have had a communication from India, and our agent reports that he cannot undertake to get sleepers under from 6 to 10 or 12 rupees, that is from 12*s.* to 20*s.* a-piece, and therefore we must send the whole of the sleepers we require from England; the sleepers for a mile of rail will give us a measurement tonnage of somewhere about 160 or 170 tons; it will nearly double the total tonnage per mile that we shall have to send from England.

2108. Now, what have you to say with respect to the duration of iron sleepers?—I calculated that our iron way, that is the rail supported upon iron brackets, could have been furnished at a first cost saving, in the construction, of about 100 *l.* per mile; that the estimated saving, calculating the life of the two materials, and taking the very limited life of only 24 years for iron, and from 3 to 12 for wood, would vary from 1,345 *l.* to 4,750 *l.* per mile in 24 years in favour of the iron.

2109. What I want to know is, why you have limited the life of iron which is not brought into actual contact with the wheel to so short a period as 24 years?—I did it more to establish the means of comparison without exaggerating the view that I myself took of the subject. I am perfectly convinced that it is much too short a life for the iron.

2110. Have you considered the subject of extending the means of conveyance in India by a system of tramroads?—I have heard it spoken of; I believe there are notions that such roads might be established, but I have no faith in them; I think the course we are taking arrives at the cheapest road, that it will be desirable to lay down as a railroad. I am aware that in some of the manufacturing districts, where they had tramroads, they have been gradually converting them into strong efficient railways, and therefore I think it would be bad

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economy to start upon that principle. I think the tramroads suggested are really railways; I do not think they would lay down an angle iron instead of a properly formed rail.

2111. Do you make rails calculated for the traction by engines?—I am not sure that I know the principle they propose to adopt; but the only economical principle is a good and efficient railroad. If you attempt to make a cheap railway, it would be like a lady buying the cheapest sort of calico and sending it to a very expensive mantua maker to have it made up. I think nothing can be more absurd, or more costly, than making a defective railroad in India; what you ought to make is a railway with the smallest amount of expenditure, but making it a perfectly efficient railway with a proper quantity of metal per mile. The principle of economy depends upon the engine you put upon your railroad afterwards; if you have a heavy traffic, the strongest and best engine you can put upon it, if you have a load for it, is the cheapest engine; but it would be a dear engine if you could not give it a full load. There are many people who discuss the merits of small and large engines, as a universal principle, whilst they are both applicable in their proper positions; it would be very extravagant to put an engine capable of carrying 500 tons upon a branch line that could only give you, say 100 tons, or 50 tons a day; and therefore a cheaper class of engine is what ought to characterise a branch or small traffic line, and not a defective railway.

2112. *Chairman.*] I have two or three other questions to put to you to complete your evidence; will you describe to the Committee how your works are conducted in India, and what is the organization of the engineering departments there?—There are two modes of conducting the works; one by large contracts, and the other by what is called the departmental execution by the officers themselves; ours is the latter, and it is working very well indeed. In selecting our officers it is difficult to get gentlemen who have been accustomed to the actual construction, and therefore up to this point we have been obliged to select the best gentlemen we could, and send them out, and they become practised on the works themselves; but I think the departmental execution is the best course, because it retains all the contractor's profits for the benefit of the shareholders, and it gives the company the opportunity of applying its force as it chooses, without being restrained or impeded by the operations of bad contractors. It is the cheapest, most efficient, and most rapid way of doing the work, and I believe the East India Railway Company have latterly adopted that principle.

2113. Will you describe precisely what your staff consists of; state the number of assistants which your engineer has, and what reserve he has in case of sickness, accident, or other causes, reducing the number of his staff?—We have a chief engineer with 28 assistants at present.

2114. Over what length of line?—We have not had occasion, at present, to appoint more than one chief engineer; about 350 miles have been conceded to us, and we conceive that one engineer is quite equal to that extent of line; there are three classes of engineers under him, some of whom are employed in the surveying department; then there is one officer placed over every 10 or 12 miles of road, who has the entire charge of the construction for that distance.

2115. Every section of 12 miles has a chief officer charged with the superintendence?—The whole distance of 153 miles has been divided into 12 districts, so they are not exactly equal distances of 12 miles; an officer is appointed in charge of each, and he conducts all the operations that are requisite.

2116. What assistance has he under him in the shape of inspectors?—We have a few English gaugers, but very few of them.

2117. Have you employed native agency for the purpose of inspection?—All, except the engineers, a few gaugers, and a few of the leading artificers, are native agents.

2118. How are your masonry works inspected?—That is entirely done under the superintendence of the officer in charge of the particular district, and he makes his own arrangements for it.

2119. Has any delay been caused in consequence of officers being laid up by accident or sickness?—We have lost many valuable officers; some by death, others have been obliged to go home from sickness, and some have resigned; it is a grievous thing to lose an officer so trained; we have had some difficulty in supplying their places; there is a little too much impediment in granting us at once the assistance of the engineers we require. When an application is made for 10 officers, it is perhaps reduced to five.

2120. In conducting operations in an unhealthy country, or in a distant country, does it not appear consistent with reason that you should be rather over than under manned?—I think so; when we take into account the excessive financial importance of rapidity, the mere pay of the officers employed, the engineers who are essential to rapid construction, ought not to weigh for one moment; one engineer to every 10 miles, would amply repay the cost of the salaries, and would be a good establishment.

2121. Do you apprehend that there would be any difficulty in getting freight for the quantity of materials annually required to admit of that rapid railway progress which you recommend?—The first consideration I would bring before you is, that there are 5,312,436 tons of shipping belonging to this country; that was all the registered shipping on the 31st December 1856, and it includes the British possessions; but the principle that this question hangs on is the shipping employed in the East Indian and Singapore trade. We find that, in 1853, 276,621 tons cleared out for the East Indies and Singapore; in the year 1854, there were 292,434 tons; in the year 1855 that was increased to 510,171; and in the year 1856 to 542,088; it more than doubled within two years, and we never found that there was any great rise in the freight in consequence of that, nor did we find any difficulty in getting ships.

2122. What inference do you draw from that important fact?—That it is utterly impossible to conceive any amount of extra freight that railways could throw upon the country which would be for one moment an impediment to getting freight. It may have this effect, that we may have to pay a little more for our freights, and that I have no doubt would be the effect, because we know perfectly well that the balance of trade has been homewards instead of out, as we see proved by the fact, that there went out in ballast 3,720 tons in 1853; in 1854, 21,512; and in the year 1855, 29,965; none went out in ballast in 1856, and therefore I should imagine that our freight may have had some effect in equalising what you call the balance of freight to and from India. All the shipowners to whom I have mentioned the subject justify me in assuming that there would be no difficulty in finding freight for any amount of tonnage we choose to send out.

2123. Does not the price which the shipowner asks for his freight very materially depend upon the chance of a cargo back?—Yes; and in considering this question you must always be guided by the double voyage; it is just possible you may have to pay the double voyage, and freights home have at times nearly paid the double voyage; it is perfectly clear that if a ship goes to Calcutta to bring home a cargo, and takes nothing out with her, she must manage to pay the two voyages by her cargo home; freight out to Bombay at present would be 1 *l.* 5 *s.*, but home it would be 2 *l.* 10 *s.*, and the double voyage, therefore, would be 3 *l.* 15 *s.* Shipowners say, if you choose to give 3 *l.* 15 *s.*, they do not care whether they get a freight home or not; they will take the freight out for you; to Calcutta it would now be 1 *l.* 5 *s.* out, and 3 *l.* 7 *s.* 6 *d.* home, making the double freight 4 *l.* 12 *s.* 6 *d.* You may always have a supply of freight, so that it becomes a pure question of the amount you are to pay for freight. With respect to our railway works, I think that our ordinary shipments to India would not much exceed 200, or from that to 300 tons per mile, or at the outside 400, assuming that we are obliged to carry our timber from England for sleepers, because the timber for the sleepers of a mile of railway will come up to about 170 tons measurement; if we choose to adopt iron instead of timber we shall have a large saving in our freights.

2124. Mr. *Crawford.*] Is it the fact that in the normal condition of things in the Indian trade, the rate of freight outwards, as compared with the homeward freight, has been almost nominal?—It has been, because there has been a much larger quantity of goods coming home than going out.

2125. Do you not think also that the necessity for sending such a very large quantity of coals to India for steam fuel purposes, has had the same effect of increasing the rate of freight outwards from this country?—Yes; I think that every ton you send out must tend to the same effect.

2126. In your view with regard to Indian freight you have not taken into account the large number of ships that come up to India from Australia?—I have only dealt with what is recorded as the clearances between England and the East Indies and Singapore.

2127. What is the weight of your rail?—Sixty-two pounds per yard.

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2128. Is that to be the ruling weight throughout?—It appears to answer, and I do not think we shall alter it until we see good reasons for doing so.

2129. Have you sent out any iron sleepers?—We have been allowed to provide bearers for 20 miles as an experiment, but they have not yet gone out.

2130. You draw a distinction between bearers and sleepers?—They are the longitudinal principle as opposed to the cross sleeper.

2131. Is it known by any name in the profession?—It is called Adam's girder rail, and I have seen it in operation in this country.

2132. With what results?—I think with very excellent results, there are several miles of it being laid down on the London and North-Western line.

2133. Have you sent out any sleepers from this country?—We have.

2134. Of what description of wood?—Principally of red Baltic timber, creosoted.

2135. Have you sent out any saturated with chemical solution?—We have sent out nothing but the creosoted sleepers.

2136. Have you received any account of their working?—They have been sent out so recently that we have had no account of them.

2137. What process do you go through in obtaining your freights; do you employ an agent?—It is done at our office; we have a general agent in charge of our books at the Docks, where we receive everything; the Dock Company are responsible for every thing, and we have hitherto made our own arrangements. There is some notion of changing that, and giving it to an agent, which I think is a very bad course.

2138. You think it is more desirable to make your own arrangements in each particular case, as your necessities require you to do, in the office, rather than to employ an agent to do it upon the terms of a contract?—I think so; if you give the monopoly to an agent, it is difficult to know what the consequences may be.

2139. Have you sent out any locomotives?—We have sent out two ballasting engines only; we have ten now constructing, and two of them we expect will leave next month.

2140. Have you sent any of the materials you have forwarded to India over to Surat?—We have tried to get freights to that port, but we cannot accomplish it. Large vessels cannot enter the river.

2141. In the case of the locomotives you are about to ship, you will have to send them to Bombay?—Yes.

2142. By what means will you be able to forward them?—We shall put them into the small craft which trade with Surat. We have received no account of any difficulty, so far as the small ballasting engines are concerned.

2143. What would be the weight of each locomotive?—Our ballast engines are about 13 tons; the train engines about 26 tons. They can be taken to pieces for embarkation.

2144. You construct the locomotive in England and put it up at Surat?—Yes.

2145. Have you any establishment at Surat for that purpose?—We are just making our establishment.

2146. Colonel *Sykes.*] Do you consider that the progress in making the sections has been satisfactory?—I think so; I think if we had a sufficient extent, say 600 miles in hand, we could have calculated upon opening at the rate of 200 miles a year.

2147. As compared with the progress of sections in Europe?—I think we shall do it faster than any sections which have been opened in Europe.

2148. How do you expect to cross the Nerbudda, the Taptee, and the Mhye?—By wrought iron superstructures on cast iron piers.

2149. Is not the Taptee below the surface of the neighbouring country; very deep?—Yes.

2150. Would it not be something like 60 feet?—Yes, in the centre of the river, it will be about that.

2151. You will have considerable difficulty there?—I think not; our piers are of a very simple construction; Mitchell's patent screw piles. We are very particular in getting all the component parts of our various bridges as much as may be uniform, so that having established what is a right span for one bridge, others shall be multiples of that.

2152. Mr. *Crawford.*] Have you followed any plan in use in this country?—It is in use in this country. Putney aqueducts is made upon Mitchell's pile piers

piers. as also are several of our railway bridges; there is one not far from the Bricklayers' Arms.

2153. Colonel *Sykes.*] Are you aware, that during the monsoon, large trees are brought down the Nerbudda, the Taptee, and the Mhye?—Yes, timber comes down.

2154. And that there is then considerable risk to piers and any similar kinds of structure?—Yes; but the velocity is not very great after all; it is only about six miles an hour.

2155. What would be the length of the bridge across the Nerbudda?—Sixty spans of 60 feet each.

2156. About 3,600 feet?—Yes.

2157. Will the railway be supported by a screw pile of piers?—On piers made of screw piles.

2158. Is that the longest bridge you will have?—The longest, with the exception of that over the Bassein.

2159. What is the depth of water between Bassein and Gorabunder?—About 16 feet, I think, at low water, and at the high tides about 31 feet.

2160. You would have to provide for the spring tides?—Of course.

2161. Mr. *Cheetham.*] Would there not have been a saving of time, supposing the Governor-General had been clothed with powers to give sanction without referring home?—He did give sanction to our line; and I think if we had been able to act upon that sanction we should have had within a very few months 350 miles open.

2162. Looking to the future, would you advise that the Governor-General should have powers of sanction without the necessity of referring to the Home authorities?—I think it would be desirable. I suppose that if the Home authorities are the chief parties in the financial arrangements of the country, they must regulate the rate at which they choose to proceed; but I think the actual selection and sanction of the lines might be left to the Governor-General.

2163. By so doing; less delay would take place in the construction of the line?—I think so.

2164. You stated, I think, that you have never had occasion to come in contact with the Board of Public Works in India?—No; they have nothing to do with the railways; the supervision of the Government is carried on by a special officer in each Presidency.

2165. You have stated in what way, in your opinion, the delays that have arisen from that supervision might be avoided?—I think so.

2166. Mr. *T. G. Baring.*] With reference to the actual delay which has taken place in the construction of your railway, I understood you to say, that that delay took place in consequence of the refusal to sanction the line between Surat and Bombay?—That was the chief delay.

2167. Leaving that out of the question, and confining yourself to the line from Surat to Ahmedabad, for which sanction was given in April 1855, do you consider that the progress of that line has been such as you anticipated?—It has been quite equal to what I anticipated; the official correspondence going on between the officers, and so on, has been productive of some delay; but the great delay was that in approving of the southern section.

2168. You say the other difficulties in communications, and so on, have created some delay?—They have.

2169. What special instances of delay can you give, confining yourself to delay in consequence of the powers of Sir James Melvill being limited at your Board?—All our correspondence must go for approval before we can write to our agents in India; a month or six weeks' delay may sometimes be caused by that.

2170. I wish you to give me some instances of delay caused in the construction of the railway by the powers of Sir James Melvill being limited?—I think, that if he had had the power to decide at once, as the agent of the Government, all the delay caused by the correspondence would have been avoided.

2171. There would have been less correspondence?—Yes.

2172. Has there been any actual delay in supplying you with anything that was necessary for the construction of the line, in consequence of the want of larger powers in Sir James Melvill?—I do not know who are the authors of the discussion about the timber and iron; but I think that that, next to the delay in the sanction of our line, is what I have to make any comment upon.

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2173. Would that discussion prevent your proceeding with your works as quick as you would have done without that discussion?—I think all these discussions have that effect, because throughout, it delays our making contracts, and we do not feel sure of the ground we are going upon.

2174. Can you say, positively, that there have been any cases in which the want of greater powers in Sir James Melvill has prevented your opening your line of railway for a month or six weeks?—If he had the power it would make a greater difference than a month or six weeks or six months; supposing all this extra correspondence were cut off, and the agents of the Company knew they had a course of action that they could follow, it would make much more than a difference of six months in every 100 miles opened.

2175. If Sir James Melvill had had this power, do you, as an engineer, say that you would have been able to open your line in December 1858, instead of on the 27th of June 1859, as you contemplate?—It is very difficult for me to say that, but I can say that I can take measures to meet the working seasons, if I know that by coming to the Board we are to have an immediate answer, and can act upon that answer. We cannot take those distinct measures if we are to wait for an answer, and if it is expected that each particular letter we write shall receive a sanction.

2176. You cannot state positively that you would have opened your railway sooner?—It is not open yet.

2177. Your date for expected completion is the 27th of June 1859; I asked you whether you thought the progress satisfactory, and you said "Yes, according to the estimate." I want now to know whether any actual delay in the construction has been caused by the want of greater powers in Sir James Melvill?—Whether the power given to Sir James Melvill would meet it I do not know, but we have had delays in the execution of our surveys, from their not granting a ready concurrence with the requisitions our officers have made for better assistance.

2178. You say there have been cases in which sanction for additional assistance being refused that has delayed you?—Yes; certainly.

2179. Can you give to the Committee papers connected with that particular case?—I think I can, but I am not certain whether that originated here; there was a requisition in India for 10 officers, and it was cut down in India to five. I recollect having selected a very good officer, and I asked that he should be allowed to go out at once, but difficulties were made by the Court of Directors, and I lost him because there was not a requisition from India; it was requisite to give him a higher rate of salary than the lowest rate we gave. The general principle we have in making gentlemen go out at the lowest rate of salary is a good one, but in this particular case the officer in India had been applying for a higher class of men; I found this man; but I could not get his appointment here.

2180. Are you satisfied with the change made in giving Sir James Melvill additional powers, as the only thing to be done in this country to obviate delay?—I think if it is carried out, and you give him power to decide all things except perhaps the establishment of a particular line, or the raising of guarantees, it would relieve us from all the small difficulties in England.

2181. Turning to India, you stated, I think, that the interference in India was too minute?—I think so.

2182. That interference rests with the Government engineer?—Yes, it grows out of the reports of the Government engineer, who is located as the agent over our works.

2183. Can you state any case in which that supervision exercised in India has caused delay in the construction of the line?—I do not know that I can say it causes much delay, but it disheartens our officers; a misapprehension of the principle under which we are working is taken hold of and sent forward to Government, and then some censure comes out upon our officers when they are working to the height of their powers, and with great judgment and discretion; that disheartens them, and we run the risk of losing our officers. They are going on rapidly now, and we have nothing to complain of, because on the extension line as fast as we prepare plans for 10 miles, they are sanctioned; but when we commenced our operations they required us to send in 40 miles of plans before they would approve of anything.

2184. Do you think that the Government supervision is of assistance to the railway company or not?—I am anxious to see it kept up as an efficient supervision;

vision; I think it is a useful thing for ourselves as well as for every one else, but I should like it to be managed with great discretion on the part of the officers.

2185. The manner in which it is exercised must depend upon the orders from home, and upon the individual discretion of the officer?—Precisely; I think the officer placed there may expedite and stimulate us, and raise the spirit of our officers instead of depressing it.

2186. Who is the Government engineer at Bombay?—Colonel Crawford; I think he is anxious to stimulate things; it is not only dependent upon the chief engineer, but he must take his reports from the subordinates at the works.

2187. Is it possible to guard against those being sometimes a little too sharp?—It is very difficult; very few of them have had experience on the subject.

2188. The reports must be made to the consulting engineer?—Quite so; he must receive the reports in order to give him any idea of the progress.

2189. At present you say you have no complaints to make of the manner in which the supervision is exercised at Bombay?—Not if a little more delicacy were observed as to the mode of interference.

2190. That is in the tone of the reports?—In the tone of the reports, and a thorough understanding by the officer of what he is reporting upon before he reports.

2191. *Chairman.*] Do you consider broadly that a military man brought up to the military profession, and engaged all his life in military service and works, is a proper man, in the full sense of the word, to place as an inspector over the works of a civil engineer?—It depends entirely upon whether he has had the practice necessary for the carrying on of those works where he is employed; if he has not, he is not fitted for it. If you put a man who has not studied the subject of railways to inspect railways, he knows little about it until he learns that particular branch of his profession. As regards the present education of a military engineer, it has a great deal better foundation than nine-tenths of the civil engineers have obtained; there is a distinct examination, and a distinct preliminary qualification, before a military engineer receives his commission, but there is not any such ordeal for a civil engineer.

2192. Is the practice that a military engineer employed in India obtains, in the common performance of his duty, an experience which would qualify him for inspecting railway works?—I supposed that an officer who commences without having had any previous experience would put himself upon the works and see them going on; he would serve his apprenticeship while he was conducting the operations.

2193. From what you have stated, then, I draw this inference, that the Government inspector of railway works in India, before he can be competent to undertake those works, has to go through an apprenticeship to learn the work that he is called upon to superintend, to control, and to regulate?—Before a military engineer is appointed, he ought to be sent to where works are going on, and at least serve an apprenticeship there before he is put in a position to control.

2194. Mr. *Cheetham.*] Would it not be better if Government sent out a superior civil engineer?—That depends upon who you send out; if you send one connected with the Permanent Way Company, or some clique in England, that would do more harm than good; a military engineer has none of those tendencies, and he has a knowledge of the practice of works generally going on in the country. I think, before the officer is appointed, he should be made acquainted with the routine of railway work. The officers in India are charged, from their first going out, with high civil duties; in fact the whole of the public works are carried on by them.

2195. Colonel *Sykes.*] Are you aware that the Court of Directors encourage all their Indian officers who come home on furlough, to visit all railway, canal, and other works in progress in Great Britain, and that they have their expenses paid for so doing?—I am aware of it.

2196. The knowledge necessary for the supervision of that kind of works in India is probably obtained by those means?—If the officer appointed happens to have had that advantage.

2197. Do you know that they are not paid their expenses without producing certificates from the different railway and other works upon which they put themselves?—I am not aware of the precise fact, but I am aware that they are encouraged to look over the works.

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2198. You have said that you are anxious to have Government supervision kept up?—I am.

2199. Is not the delay of reference and correspondence the necessary consequence of that supervision?—I think not, if the supervision is delegated to a man in whom the Government can have absolute confidence; I think then that the delegate of the Government may decide upon all ordinary cases; not upon the great questions whether there shall be an extension of a railway, or whether there shall be a guarantee.

2200. *Chairman.*] Is it not also further necessary that the Government supervising officer shall have the confidence of the railway authorities, in order to insure co-operation?—I think it is very important; but I conceive that the case we have at present to deal with is precisely one in which the railway companies have great confidence in the Government officer.

2201. Colonel *Sykes.*] When there are references and correspondence, there must necessarily be delay, must there not, and that delay is consequent upon supervision?—It makes a great difference whether we consider the question in England or in India. I think the delay arising from correspondence need not occur at all in England, and in India I think the Government ought to be satisfied with the monthly report of progress. I do not think that there need be any impedimental supervisor at all as regards the railways; and that the monthly reports, made upon a proper footing, would insure every object of supervision, the Government having a representative in the district to see that the progress reports were correct.

2202. Supposing the supervising officer does not concur in the report as made to the Government; or supposing there may be misstatements in it?—It is always open to him to establish the facts.

2203. And therefore there would be references, correspondence, and delay?—Of course, if misstatements are made, they must be verified.

2204. Mr. *Crawford.*] Have you a separate and distinct officer under the consulting engineer charged with the superintendence of the line?—There is a deputy of the Government consulting engineer appointed over our line.

2205. What are the reports with regard to which you have to charge a little want of delicacy in the manner in which they are made?—Reports came out finding fault where no fault was due, but where great energy was going on.

2206. Are they of recent date?—They have been going on while our chief engineer has had the very difficult task of organising his departments and training his officers to do departmental work, instead of mere inspection.

2207. How long has he been so employed?—From soon after the commencement of our works; about 18 months.

2208. *Chairman.*] In handing in your progress report you made this statement to the Committee: "I think that our progress ought to be minutely defined and closely estimated, and that the progress reports should appear monthly, and should be audited by professional auditors monthly. That I look upon as the real safeguard of the Government which grants the guarantee, and the shareholders, who are interested in the result derived from their funds." Have you anything to add to that statement?—In the progress report I stated the amount of balances in the treasury of the Court at certain dates, and I likewise gave an estimate of the amount of dividends, and what the interest upon those dividends would be. If you look at the large amount of balances in the hands of the Court, I think it becomes rather a hardship that the company should be charged with interest upon the dividends while those balances stand so largely in the bankers' hands.

2209. They being able, as your bankers for the time being, to employ that money, if they think fit, profitably?—Exactly.

2210. Mr. *T. G. Baring.*] Was that part of the terms of the contract?—The contract said nothing about our getting any interest from the bankers.

2211. Does the contract say that you are to pay interest upon your dividends?—It does.

2212. You say that on the 31st March 1857 there was no less a sum than 294,000 *l.* of your money in the hands of the Government; could the Government, looking at the amount of work in progress, and the probable demands for the current expenses of those works, have employed any considerable portion of that money in a remunerative manner to themselves?—I have no doubt that at all events they could have paid the amount of the dividends out of it, because railway

way companies have the power of calling up additional capital at any time they choose. I have no doubt that the balance would have admitted of their paying the dividends out of our own money.

Colonel *J. P. Kennedy.*

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Colonel *Thomas Townsend Pears*, C. B., called in; and Examined.

2213. *Chairman.*] WILL you tell the Committee what you are?—I am a Major in the Madras Engineers, and Brevet Lieutenant-Colonel.

Col. *T. T. Pears*, C. B.

2214. You have been employed, I believe, as consulting engineer on the part of the Government upon the works carried on by the Madras Railway Company? I have.

2215. For what period?—For nearly five years.

2216. Since the commencement of the works?—Yes.

2217. The sole responsibility of that supervision has, I believe, been on your hands?—Yes.

2218. Do you consider that the system of Government supervision, as laid down under the terms of the contracts, is such as to insure a rapid and satisfactory amount of progress on the works?—I consider that the system of Government supervision is essential in justice to the people of India, the guarantee being dependent upon the revenues of India.

2219. That is, you claim, on behalf of the guardians of the public purse, that amount of supervision which is necessary to guard them from undue expenditure?—Exactly so.

2220. Do you think it is possible to carry out the amount of supervision consistently with rapid progress on the railway works?—I certainly do.

2221. Have you, on particular occasions, found the railway authorities anxious and ready to co-operate with you in the carrying out of these great works?—They have been always anxious, as anxious as myself, that the work should be carried out promptly; but we have not always agreed upon the best mode of doing it.

2222. And considerable delay, and no small amount of controversy has therefore ensued?—I do not think any delay, or very little indeed, has arisen, but a great amount of controversy.

2223. The controversy is carried on chiefly, I believe, by correspondence?—Yes.

2224. Is not that, in itself, a necessary cause of delay?—In the case we are now speaking of, I think not, because, to the best of my recollection, the controversy has had regard to general principles, and relates mainly to the traffic operations.

2225. Do you remember when you suggested a change in the route of the Madras line?—I do.

2226. Will you describe to the Committee, first of all, the grounds of that objection?—They were that the line had not been sufficiently examined; that there was evidence of the probability of a better line being found than the one which had been sanctioned. The works which had been begun were suspended; and the order was given under the notion that, considering the position of the works on either side, it would not cause any ultimate delay in the opening of the line. The line had been undertaken as far as a certain point which overlooks the valley of the Cauvery, near Salem, and from that point there was a descent in the rail by a slight pass from whence the country fell right down to the River Cauvery; in passing from that pass to the River Cauvery, the line which had been adopted ascended again a very lofty plateau, or ridge, near the town of Sankerrydroog, and thence descended rapidly to the River Cauvery. I had requested before that line was ultimately marked out and sanctioned, that another line to the north of the Cauvery, where it appeared we should have one continued unbroken fall down to the river, might be examined. It may be that my instructions were misunderstood, but it was not done; when I came to the ground I found it had not been done, and I requested that the works might be stopped in order that the examination might be made, which could not take long. The examination was made by one of the railway officers, a very intelligent young man, who, on a cursory examination of it, pronounced it favourable or promising.

2227. What was his name?—Mr. Brice; if he had reported unfavourably of the first view on the ground, I should have said, Very well, go on; but he reported favourably in general terms, and I felt that in the meantime no great loss either

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of time or of money, as I thought, could happen if the other work was suspended; this was arranged between myself and the chief engineer in person. As I always did, I took care to write to the agent and manager to say what I had done, and what I proposed; the agent and manager did not convey my instructions in an official form to the chief engineer; he did not forward my letter, and the chief engineer did not carry out my wishes; so that some time afterwards, six weeks or two months afterwards, I found that nothing had been done, and the works had been going on.

2228. I thought you said they were suspended?—They were not suspended. This placed me in a dilemma, and I then gave a peremptory order that they should be suspended, and reported the circumstance fully to the Government; the chief engineer was then, I think, going home, and the next senior officer reported very strongly against my interfering with the works; but after due consideration, the Government, without finding fault with what I had done, said the works had better be allowed to go on.

2229. The result was, that your opinion in regard to the changing and the opinion of the engineer were brought into direct conflict, and the opinion of the engineer outweighed your opinion, and you yielded as to the propriety of choosing that line?—No, I had formed no opinion; neither the railway engineer nor myself had seen the line; we could foresee that it would probably furnish us with a superior line to the other; I wanted it to be carefully considered, but I formed no opinion. If, as I said before, Mr. Brice had said that there was such and such impediments, I should have been satisfied, but he reported favourably of it on the first view.

2230. Did you apprehend a saving in the cost of construction, or what were the principal objects you had in view in recommending the change?—My chief object was to avoid the bad gradients, which were in opposition to the natural fall of the country.

2231. What were the improvements stated ultimately by the acting engineer, which induced you to withdraw your proposition?—It was the very large sum of money that we thought would be lost, which had been expended on the other line; nothing but that.

2232. Did his opinion coincide with your own, as to the advantageous gradients he would have obtained by adopting your plan?—I do not think he gave any opinion; he merely stated the great loss that would arise, and even that was not certain, because we did not know from what point the other line would diverge.

2233. Admitting that the works were suspended, and that numbers of men were thrown out of employ, can you state what was the amount of time lost on that occasion?—I should think about six weeks.

2234. You have been in the habit of attending carefully and minutely to the various details of expenditure upon the line, I believe?—I have.

2235. I believe you have had many differences of opinion upon various subjects with the railway engineers, in matters of minute detail?—Not very many in matters of minute detail, I think.

2236. Have you seen the evidence that has been given upon the subject of the Madras line?—I have seen Mr. Bruce's evidence.

2237. Are there any particular points upon which you would like to be examined, or are there any statements you would wish to correct?—I should wish to be examined on all those points on which Mr. Bruce has spoken in disapprobation of my mode of proceeding.

2238. Colonel *Sykes*.] Did you ever express an opinion adverse to the present system of carrying out railways in India?—Yes, I did; two years before the railway company was formed.

2239. When did you express that opinion, and in what terms?—It was in a report, dated 5th March 1851. Speaking of the inconvenience that might arise from the Government endeavouring to exercise supervision over a railway company, I wrote as follows: "With a Board of Directors seated in London, and all the chief executive officers appointed from thence, it is to be feared that the control exercised by a Government officer would be little more than nominal; or, if called into active exercise, would prove in too many cases a source of dissatisfaction and embarrassment. Under such circumstances, every question relating to the amount of expenditure, or to the proceedings of individual servants of the company, would become the subject of reference home; and it seems not too much to prognosticate that arrangements of this nature for the exercise of authority on the part of Government,

Government, would become almost, if not altogether, inoperative." That was my opinion two years before the railway company was formed.

2240. With this view of the difficulties attending a Government supervision, what system did you propose to adopt when called to the office you now hold?—With the proper regulation existing between the local government and its officers and the railway, it would be difficult in most cases to try to control the proceedings and their expenditure by the direct exercise of authority; it must be done in some cases, but, as a general rule, it would be by the expression of opinions which would serve as a guide in all the details of their proceedings. The control in fact should be retrospective. In that way only could I produce a report and lay before the Government, and if necessary the public, the proceedings both of the railway company and their officers, and of the Government. I considered that would be a sufficient check over their proceedings. I generally acted upon that principle.

2241. Have you expressed any opinion upon the same subject since you have had experience of the working of the present system?—I have. I have a letter which contains other matters, but which has a passage upon that subject written after I had been about four years at work, and addressed to the local government.

2242. After what experience?—After four years' experience. This is what I wrote: "Looking at the result, I fear, that the system of entrusting the construction and management of our Indian railways to a body of self-elected directors in London must be pronounced thus far a failure. The only chance of success under such a system is for those directors, in the exercise of their patronage, to disregard all personal consideration and private interest, and appoint as their representative here a man chosen for his judgment, ability, experience, and resolution. Such a one could not serve under interference from England, and would neither need nor find anything but cordial co-operation on the part of the local government. Under no other circumstances can the present system prosper, and failing this the railway company labour under the peculiar disadvantage of being saddled for a given time with every servant they employ, whether he is fitted for his post or otherwise. They are not in a position, as Government would be, to immediately remove a man (though his only fault be incapacity) by placing him in some less onerous, though perhaps equally lucrative post, and getting a better qualified man in his place. The best remedy, were it practicable, that I can see for this complicated machinery, of which the gentlemen in the House of Commons lately spoke, would be to get rid of the Railway Board in London and their representative in India, and with the same instruments in other respects working under the direct orders of Government, I am satisfied that the work would be carried on with 50 per cent. saving of time, and not much less saving in money."

2243. *Chairman.*] Have you not always had a strong opinion that the Government ought to have undertaken and to have constructed these works themselves?—I have.

2244. Colonel *Sykes.*] You did not mean that the Government should execute these works by any particular persons or body of men; but merely that the works should be carried on as any other public work with Government money, and under the direct orders of Government?—Exactly.

2245. Did you always advocate giving the greatest possible publicity to the correspondence and proceedings in the railway department?—I did.

2246. What was your object in this?—I thought it was the only way to insure the proper influence of Government, and to insure fair play and avoid misunderstanding.

2247. Did not the publication of your reports create a feeling of irritation and uneasiness in the minds of the railway officers?—I think they did, but they were unreasonable.

2248. Were you careful that their explanations should be published as well as the remarks of the Government?—I was very careful.

2249. In remarking on the amount of work done on this or that position of the line, and pronouncing it unsatisfactory, did you consider you were censuring the engineers in immediate charge?—By no means. I know in some cases he was not answerable for it, and I knew in all cases it was not my business to decide who was answerable. I felt I was pronouncing on the works of the railway company, and it was impossible for any man in my position to say what member of that company was answerable for the delay in the works; it was not a mere theory, but an actual

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fact, as I had occasion to know several times, that the officer was not in the least to blame; I could not say who was to blame.

2250. You say you were anxious that both sides should have their representations published; did it occur that letters from you were published, and that letters from the railway officials were not published in the newspapers?—Not that I am aware of. Yes, I must correct that. I had nothing to do with the publication in the newspapers, but there was one instance, I believe, in which papers went up on two different occasions, and one set of papers appeared in the newspapers; but the others which went up subsequently did not appear. I have carefully abstained from having anything to do with publications in the newspapers; I never alluded to the subject; it was the chief secretary's duty, and amongst the multifarious duties he had to perform he did not pay much attention to it. One letter from the chief engineer did not get into the newspapers, but whether it was placed on the table, or not, I do not know; the newspaper reporters might be responsible for not having taken the paper.

2251. Was any explanation given of why it did not appear?—No explanation was asked for.

2252. Can you account for it?—I cannot.

2253. *Chairman.*] Are you aware, of your own knowledge, by whom the selections from those papers were made, and furnished to the editor's room?—I am not certain, but I believe the system was this, that the secretary to the Government in whose department the papers were, was in the habit of laying before the council an abstract statement of papers he proposed to lay upon the reporters' table; there is a room in the Government House to which the newspaper reporters have access.

2254. Colonel *Sykes.*] Do you think the papers were designedly omitted?—Certainly not. There is not the slightest chance of the secretary having given it a thought; it might have been on the table, but omitted by the reporter; it was put into the newspaper afterwards.

2255. *Chairman.*] The papers were thrown upon the table, and it was at the option of the editors to select such portions as they thought fit for publication?—Entirely so.

2256. Colonel *Sykes.*] Had you reason to think that in any case the railway official was not to blame?—I had.

2257. There were two modes in which your proceedings were made public; one by annual reports, the other by the documents getting into the newspapers. How was the publication in each case managed?—That by annual report was under my own supervision. I had nothing to do with that by the newspapers; that was under the chief secretary's orders.

2258. How were the newspapers in Madras, generally, disposed towards the Government?—They were all generally hostile to the Government, and there is one particularly adopted by the railway officials to advocate their cause against the Government.

2259. Was there not a complaint made by memorial or otherwise, that *ex parte* statements were thus published; and how was that complaint met?—There was a memorial signed by 15 or 16 engineers, containing various complaints against the supervision of the Government; and there was one of the paragraphs to the effect that the Government officers had been in the habit of making public the reports to the Government, but withholding their replies. This memorial was sent home without my knowing anything about it, and it was several months before I observed it in the newspapers in Madras. I immediately obtained permission to call upon the manager to ask these 15 or 16 gentlemen to point out one case in which such a thing had occurred; they made some objection to answering this letter for some time; a considerable delay took place, and ultimately they gave an answer, and it appeared that among the whole of them there was not one case forthcoming; and the only case that was mentioned to substantiate that very serious charge, was a letter found in the report for 1855, whereas the engineer thought it ought to be in the report of 1854, it having fallen there in due course, according to the system I had adopted.

2260. *Chairman.*] Have you in your possession a copy of that memorial?—No.

2261. Can you tell us where we can find a copy of it?—I should think in the railway company's office.

2262. Who publishes these reports for the Government?—They pass to the Government press under my supervision, and then they are made over to a bookseller to dispose of in any way he likes.

2263. Mr. *Crawford.*] Those reports of the Government, you say, are furnished by you to the Government?—Yes.

2264. And are not supplied from any other quarter?—No.

2265. So far, then, as concerns those reports, the consulting engineer is responsible for the contents of them in his department?—Yes.

2266. *Colonel Sykes.*] Since the works were executed without the intervention of contractors, it was necessary to make advances of money from time to time to the engineer. What system did you establish for regulating the amount to be advanced, and the mode of handing over the money?—I had some trouble in the first instance, in getting all the facilities that I wished to see afforded to the railway company's officers, to get their money. I managed to keep the whole matter out of the hands of the accountant-general and out of the audit-office; that was a matter of some difficulty, for they could not understand any money coming out under the Government without its going through their hands. I managed that the agent should get his advances upon orders on the Treasury, countersigned by myself; then, after a warm controversy with the accountant-general, who opposed it, I got the Government to sanction the money being lodged in the talook kutcheries, so that the various engineers along the line were supplied with bills by the Government on those kutcheries, from whence they drew the money as they wanted it.

2267. Did you ever refuse or delay the advance asked for?—I did so several times in consequence of the non-receipt, for instance, of workshop accounts; and on some occasions, in consequence of the reports sent in of the state of their funds not being prepared in accordance with instructions that had been repeatedly given.

2268. Do you think that on those occasions the works could have been retarded by a want of money?—I think not, except in the case of advances being withheld from the workshops. I am not quite sure of that.

2269. Mr. *T. G. Baring.*] Did you consult with the Company's agent about those advances?—Very often.

2270. What was his opinion?—It was that he had no power to get documents sent up with more expedition, or in any more complete manner; he often complained that the officers subordinate to him could not make the things out in a more satisfactory manner.

2271. Colonel *Sykes.*] The want of the documents occasioned delay?—The want of the necessary information.

2272. *Chairman.*] Were you aware, and if you were, did you approve of the mode by which the current expenses of the railway were paid; I mean with regard to the payment of labourers' wages, and matters of that kind?—I did not know anything about it; but all I did know generally was, I thought, very well managed.

2273. The system adopted by the railway officials, the payment by tickets every night which were convertible into cash at any time or at the end of the week, rendered it necessary that money should be forthcoming, and in the hands of the railway officials, to carry on their works?—Always; and it was my great desire that they should always have money in their hands; in fact, the work could not be carried on without it, but the supervision would be entirely defeated if the officers of the railway company did not comply with our demands in the shape of returns, and then were able to say that because they had not got the money we were delaying the works.

2274. Is it your opinion that if the railway officials had made their calculations accurately in order to forestal probable expenses, they might always have had a sufficient sum of money in hand?—No doubt; during some four or five years these reported deficiencies have only occurred on two or three occasions; and on all those occasions, whatever they may be, the Court of Directors, when referred to, have decided that the railway company's officers were to blame; although I cannot positively say so, I believe their own Board has decided the same thing.

2275. Colonel *Sykes.*] When large advances were thus made to the agent, how were they disposed of by him?—I did not consider it my business, except privately, to inquire much into that, because I had told him he was responsible for the distribution of the money.

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2276. Had you any check over the balance in case of the sudden removal of the chief engineer by death or otherwise?—I believe there was no check, or at least a very imperfect one; the whole of the large advances to the chief engineer of whose integrity there could not be the shadow of a doubt, amounted to something like 15,000*l.* or to 20,000*l.*, which was on his responsibility and in his keeping; I wrote to the agent and suggested that he should ask for monthly reports, and obtain a statement of all the cash balances in the district engineers' cash chests; he wrote back that he would do it, but it was never done; and when the chief engineer was obliged to leave the country from extreme ill-health, brought on in the performance of his duty, it took about eight months before they could forward, for the information of the Government, a statement of the amounts or the distribution of the cash balances; there seemed to be some confusion and great difficulty in finding out where they all were.

2277. What amount of balances do you suppose the chief engineer ever had on hand at one time?—I should think he may have had two lacs of rupees.

2278. Twenty thousand pounds?—Yes; I have no distinct recollection of that.

2279. When you desired, in the name of the Government, to have anything done, did you communicate direct with the chief engineer or through the agent?—I had a great deal of direct communication with the chief engineer, but I was very careful in all matters of any importance to communicate with the agent also, for there was a great deal of jealousy.

2280. Did you find your instructions verbally expressed generally attended to?—I think there was an unreasonable degree of sensitiveness about the suggestions from the military engineer, and they were not, I think, generally attended to; but if they were of any importance, I placed them in the form of an order, and sent them through the agent.

2281. Do you recollect any particular instance in which your views and suggestions, either verbal or in writing, were disregarded?—I can recollect a few of no particular importance, but they may be sufficient to show that suggestions were made, and that conveyed in a merely verbal way, I was not sure that they would be attended to. I recollect frequently suggesting a particular measure for the protection of the slopes of the banks running through what we call the tanks or reservoirs of water, that they should be protected with rough stone, but it was never done; I dare say it will have been done by this time, because they have found the effect of the water very injurious. Then I suggested that the down stream opening of the various bridges should be protected by rough stone flooring; I often talked about that, but it was never done up to the time I left India. I suggested on one occasion, but I think this was in writing, that a bridge which it was proposed to build on the skew, merely going over the common road, should be built square and the road turned, or that it might be more easily built, and much more expeditiously; that was not done, and the bridge, although only of one arch, took a long time to build. I objected also to laterite blocks being used, but it was persevered in. I got the Government to sanction an experiment upon about three quarters of a mile, but they were all taken up afterwards. I should not have thought it necessary to mention all these things, but that I observed that, in a previous day's examination, it has been stated I made no personal suggestions. It is hardly possible that I should walk and ride about on friendly terms for three or four years with a railway engineer, and not make some suggestions.

2282. Did the laterite fail from decomposition?—No; it would not stand the shock of the engines.

Jovis, 3° die Junii, 1858.

MEMBERS PRESENT.

Honourable H. G. Liddell.	Mr. Cheetham.
Mr. A. H. Baring.	Mr. Crawford.
Mr. T. G. Baring.	Sir J. Elphinstone.
Mr. C. Bruce.	Mr. G. Glyn.
Mr. Campbell.	Col. Sykes.

HON. H. G. LIDDELL, IN THE CHAIR.

Colonel *Pears* called in; and further Examined.

Colonel *Pears*.

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2283. *Chairman.*] WE have had a good deal of evidence from the acting engineer, Mr. Bruce, upon the subject of contracts. I wish to ask you, first of all, whether the native of India, in Madras especially, understands the precise nature of a contract?—I have no doubt that a great many of them do, because they are very much in the habit of entering into contracts at Madras.

2284. I am speaking more particularly of the inland parts of Madras. Do the natives possess, in the first place, the capital necessary for undertaking contracts of an extensive character?—There are certain rich men among them who are found to undertake contracts.

2285. Are there many men of that class?—I should say, not many; there are to be found in the large towns, such as Madras, Velore, and Salem, men of considerable wealth.

2286. In the rural districts they are scarce?—They are all poor men.

2287. Have you often found the native contractor failing in the fulfilment of his contract when made?—Constantly.

2288. It is a very common occurrence?—Very common, but chiefly with the poor contractors in small affairs.

2289. Is it not the case that the native has some indescribable objection to signing a document, such as a tender for a contract; has he not some feeling about putting his name to paper?—I think that the poor and uneducated among them have that feeling, but it is by no means an uncommon thing for men of that class to enter into contracts with the officers of the Public Works Department, for instance.

2290. I believe you were universally in favour of the system of sealed tenders to be delivered, and to be submitted to the sanction of the Government before the contract is made?—In the article of sleepers, but nothing else.

2291. You did not insist upon that mode in regard to the supply of other materials: brick, lime, and other things of that sort?—No.

2292. You have allowed them to be supplied by the engineer?—Yes.

2293. Will you state your reasons for your strictness in enforcing a system of tender in regard to the supply of timber for sleepers?—In the first place, there was little or no analogy between the supply of sleepers, and bricks or lime, required in small quantities along the line for each particular work; they were obtained in small quantities generally in the immediate neighbourhood, but the sleepers on the other hand had to be obtained out of the forests. I consider that, in the first place, the engineers had nothing to do with the supply of materials for the permanent way; and next, that having their hands full, they should be occupied with their own duties. I thought the only way to open up the forests, was to induce men of capital and position to enter into contracts, as indeed, at one time they did, and so to bring their influence to bear in opening up roads, and in opening up the forests; that was the only way in which I thought it could be done.

2294. Which mode do you think was calculated to create the greatest amount of competition among the native undertakers of contracts, the system of tender,

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or the punctual and certain payment of ready money for the supplies as they were brought in?—Certainly, the system of tender.

2295. Does your experience enable you to state positively that the greatest amount of competition, the lowest prices, and the best articles have been obtained by that system?—No, it is very difficult to get any competition at all in India; but I considered, particularly at Madras, and in the large towns, that we had a sufficient number of men of capital who had become accustomed to the system of competition, and who would be found to take to it in the supply of large quantities of sleepers.

2296. In theory that is doubtless correct, but in practice have you found that it has been carried out?—The theory I proposed had never been acted upon from the first moment.

2297. How have the sleepers been obtained?—By a sort of half system of advertising by contracts, but not adhering to the sealed tenders; I believe that in no instance has the system I have proposed been acted upon. The practice was to advertise for sealed tenders, and after they had come in to wait for others; there was the usual backdoor for the natives to come in after the tenders had become known, and so the competition which I desired to see established was never encouraged as it ought to have been.

2298. Is not the greatest competition created by inviting the largest number of tenders?—Yes; but when the natives understood that the tenders were not final, and that the lowest would not necessarily be accepted, they would wait to see what the tenders were, and then make their own bargains.

2299. Your system of tender in itself is a system involving a certain amount of delay, when each has to be subjected to your sanction as the representative of the Government; is not that so?—There is delay in the first instance, but if it leads to the employment of men of capital, who are ultimately to carry out the work, there would be less delay in the end. That is my firm belief.

2300. Have you found that that system has worked well?—In the first place, I say that the system had never been fully carried out, and therefore it cannot be condemned as not having worked well. On several occasions I have declared my conviction to the Government that the system, as they carried it out, could not work well. We tried another system, we tried whether we could purchase the sleepers through the engineers themselves.

2301. Was that by payment upon the spot?—No, they sent their reports upon sleepers, and their bills were submitted and passed by the agent and myself. That was tried for 14 months, but it was admitted by the agent to be an utter failure. The engineers had bought between 7,000 and 8,000 sleepers in the whole time, while those that remained of the contractors who had entered into engagement were to a far larger amount; the result was, and I think it was due in a great measure to our having adopted that system, that the tenders fell off after that. I think it was an exceedingly bad system that the engineers and their subordinate officers, whose duty it was to inspect the sleepers, should have the purchasing of them, and should be in a position to declare as they did that the contract system was a bad one. A native contractor was not likely to come into the field when he knew that that was the feeling among the engineers and their people. I will state one thing as the basis of my views; the great difficulty we have to contend with is to prevent corruption among all our native subordinates; if they have an opportunity you will find collusion between them and the people who come to sell. They keep down the supply, and consequently keep up the prices.

2302. Is that found, in your experience, in the Government service?—Certainly.

2303. Do you not think the railway company's servants are perfectly competent to protect themselves against these practices?—I should think they would find it exceedingly difficult; everyone else does.

2304. As a Government officer, what particular power do you possess over the natives to enforce fair dealing more than anyone else?—We cannot enforce it. We looked to the system of tender to prevent it, and to bring independent men into the market who would not be called upon to conciliate native servants.

2305. If these independent men did not exist, what then?—I do not see how the

the thing is to be done. It will be found that at the very time that the engineers were so anxious to purchase their own sleepers in the district of Malabar, contractors were offering 20,000 or 30,000 sleepers at a time. Some of the very best kind of men, Parsees, men of capital and enterprise, came forward at that very time. The argument the agent used against encouraging this class of men was this, that all they did was to employ sub-contractors, and, therefore, that there was no use in the railway company employing them; they were the very class we wanted, men who would employ sub-contractors.

2306. They were only to be found in Madras, were they?—On the Malabar coast; we had men of a different kind at Madras, and I have no doubt that they would be found at Salem and other places.

2307. I believe the Parsee is the most honourable and active native contractor in India?—I should think he is about the most enterprising and industrious man they have in India.

2308. What is your objection to fixing the price to be given for the sleepers, stating the qualities of wood which in your opinion are the best calculated for the purpose, and giving the railway companies' officers the power to purchase where and how they thought fit?—The same reason that I have given for advocating the adoption of the contract system; I wish to confine them to that, and I do not think it would be a good plan to name any price. On the contrary, when it was proposed to me that the engineers should buy their own sleepers, I said, "Let the experiment be made, but do not fix any prices; they will do the best they can." If I had named any price, there would have been an end to any fall in the price, whereas all we wanted was to get the forests well opened, and then the prices would fall.

2309. How do you explain the fact, which I think has been stated in evidence, that the railway engineers succeeded in obtaining sleepers at one rupee a piece, which, under the contract system, would have cost two rupees?—I do not remember that occurring, and I cannot explain it; but I am satisfied that it could never happen on a large scale: sleepers or any other supply would be procured much more economically by way of competition than by direct bargain.

2310. The forests are the property of the Government of India, are they not?—Not always; they very often belong to zemindars, and men of that kind. I suppose the Government have a proprietary right over a vast number of them.

2311. Describe to us the nature of the forests in Madras; are they composed of large old timber, or what is the character of the wood?—There is a great deal of very old timber; in the whole of the Malabar division, they have a great quantity of remarkably fine timber, and a great deal of teak.

2312. Colonel *Sykes.*] Below the Ghauts?—On the side of the Ghauts. In the Salem district, the timber is small, but fine; there are hard woods and remarkably durable, but there are no very lofty trees.

2313. *Chairman.*] They are large enough for the purpose of sleepers?—Quite sufficient; there is an enormous supply if we could only get at it.

2314. What is the nature of the woods in the neighbourhood of Pal Ghaut?—There is a great deal of teak and various native woods, the names of which I do not recollect.

2315. Are there many different descriptions of timber all over the Madras Presidency, admirably adapted for railway construction?—Yes.

2316. In the Government forests, what are the regulations as to the cutting of timber?—Until very lately, there has been no precaution taken to preserve the timber; within the last two years, they have appointed an officer called a conservator, but until that time, I think very little care was taken of the timber; and every kind of wood, even the teak, which was very valuable, was destroyed in the most wanton manner.

2317. Colonel *Sykes.* To what area do you mean that remark to apply?—To Madras.

2318. *Chairman.*] Do I understand that anyone who wanted a load of timber might have gone into the forest and cut it?—In some places, if it was the property of a zemindar, you would have been interfered with, but I think that with regard to Government forests, you might probably have done it without interference. I cannot speak of that from any personal experience. The fact is, if I had anything to do with public works, I have generally sent into the forest when I wanted any wood.

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2319. Do I understand that in forests, which are the property of zemindars, the regulations are much more strict?—So far as I have heard of them, but not being a revenue officer, I am not very conversant with these things. I have heard of disputes in the law courts, and I think the zemindars are much more strict than the Government.

2320. Mr. *Crawford.*] You stated that it was only within a very recent period that a conservator of forests had been appointed on the part of the Government?—Madras I alluded to.

2321. Was not Mr. Fell, an officer of the Bombay Government, for several years conservator of the forests on the Malabar coast?—I remember there was such a man, but I thought he was there to provide timber for the use of the Bombay Government; he had no connexion with the Madras Government.

2322. Was he not subsequently succeeded by Dr. Gibson?—In the Bombay forests, I think, he was.

2323. Will you state your experience as an engineering officer employed under the Madras Government?—I have been 32 years in the service; I have been five years employed on military duties, or partly military and partly civil; as being in command of the sappers, I have had a good deal to do with civil works. All the other parts of my service have been in the Public Works Department in various parts of the Presidency.

2324. Had you been employed on any large works analogous in their character to railway construction?—In everything of the same kind; making roads and bridges has been my employment all my life, and that is very much the same thing as with railways.

2325. Had you given your attention to railway construction before you entered upon the office of consulting engineer?—Yes, in England; I had been some short time employed on railways in England.

2326. Will you state to the Committee what experience you had gained in England?—I was at home under the authority of the Government, and, with their assistance, I visited various works during the time that I was at home; and, in fact, I did everything I could, by visiting railways, to make myself acquainted with their construction as far as I could.

2327. Was that in reference to the construction and working of railways, or did you extend your inquiries into the mechanical engineering of railways?—Not much into mechanical engineering, but into the construction and working of railways.

2328. Were you in India at the time that the scheme for the Madras Railway Company was first broached?—Yes, I think I was; it was broached some years before the company was formed, I believe; but I cannot say for certain whether I was actually in India.

2329. Was the construction of a railway to Madras a matter of much public interest and discussion?—I should say not much; but we have not a very large public; there were several public men who took an interest in it, and formed a committee two or three years before the company was formed.

2330. Did you take any part in the proceedings yourself?—I was a member of the committee, I believe, and also was employed with a brother officer to report upon some part of the line from Madras to Arcot.

2331. Had you formed any particular or precise views of your own as to the mode in which the railways should be constructed?—Yes; I thought they should be constructed directly under Government for the benefit of the people.

2332. It was your opinion that the railways should be constructed with Government money, and should be a work in the Department of Public Works?—We had no particular Department of Public Works then, but I thought it should be constructed by Government with the Government money for the benefit of the people. I never gave a thought as to whether it should be placed in the Department of Public Works, or whether it should be a department of itself.

2333. Your opinion was, that it should be constructed without the interference of the public?—Quite so; but the interference of the public would be exercised, as it always is, on the Government through the press, and a very good thing it is.

2334. But without any active interference on the public, such as forming a company to supply funds for the construction of the railway?—Without any interference

interference of the kind; but I think I stated in one of my reports that if the Government did not like that, it would be a good plan for the Government to construct the works, and then to allow them to be worked by a company, if they did not like working them themselves.

2335. What do you conceive to be the relation subsisting between the Government and the company as at present constituted?—I think the Government is called upon, in consequence of its having guaranteed this interest on the capital, to control the proceedings and the expenditure of the railway company as laid down in the contract, which I think is very clear.

2336. Do you then consider the railway company in its relation to the Government as a body acting in subordination to the Government, or as an independent corporation engaged with the Government in carrying out a specific work under a contract?—I consider them as a body acting in subordination to the Government; in fact, that they were merely agents to carry out their intentions; and that was the expression of the Honourable Court of Directors itself.

2337. You look upon them as acting under the Government, subject to their control in everything, almost in the same way as a department of the Government?—I cannot say that, because in a department of the Government all individual agents are servants of the Government. I have argued always that the Government has to do with the railway company or their representative, and not with any of their servants, which makes a great difference.

2338. The Government of Madras acted as the agent of the Court of Directors in this country?—Yes.

2339. And the railway agent at Madras acted as the representative of the railway company in this country?—Yes.

2340. So that, in point of fact, the chief authority in each case was in this country?—Yes.

2341. And the active parties in India were merely agents acting for the principals abroad?—Exactly so.

2342. Are you aware of the extent to which the funds for the construction of this railway have been provided from Indian capital?—I should think very little indeed.

2343. Is there any department in the office of the railway company at Madras for the registration of shares?—No.

2344. There is no buying and selling of the shares of the railway company, so far as you know, recognised in Madras?—No.

2345. If a party in Madras purchases a share in a railway company of another party residing there, his transfer must be completed and effected in this country?—I think so.

2346. The other day you expressed an opinion unfavourable to the result, so far as you had been made acquainted with it, in the system under which railways were constructed in India?—So far as I am acquainted with it.

2347. You had, in the first instance, expressed that opinion in a report which you made to the Government?—Yes.

2348. You stated, in answer to a question, that after four years' experience you adhere to that opinion?—I do.

2349. You say, in the same answer, "Looking at the result, I fear that the system of entrusting the construction and management of our Indian railways to a body of self-elected directors in London must be pronounced, thus far, a failure." Is that your opinion still?—Yes.

2350. Is it an opinion you entertain in reference to the Madras Company alone, or to the companies who are constructing railways in other parts?—My opinion is formed chiefly in reference to the Madras Railway; but I do not think the other railways have made the progress they ought to have done.

2351. Is your opinion upon the point of failure referable only to this question of progress?—Expense also.

2352. You conceive that, under the present system, as to expense and progress, and method of constructing the railways in India, through the intervention of a public company, are a failure?—Certainly, so far as we have gone. I do not know what it may be hereafter.

2353. Have you made yourself acquainted continuously with the progress, with

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with the cost of expenditure, and with the circumstances generally of other railway companies in India?—No.

2354. Then how can you express an opinion?—I spoke with regard to the Madras Railway.

2355. I understood you to state that your opinion applied to the railway system generally, including the undertaking of the East Indian Railway Company to Calcutta, the Great Indian Peninsula, in Bombay, and all the railways?—By no means. I observe of the others, that I have no means of knowing anything further, except that they do not appear to have made the progress they ought to have done.

2356. Upon what do you form that opinion?—The length of time they have been engaged on the railways.

2357. Do you think you are in a position to express such a decided opinion as that upon a mere superficial view of the extent of time occupied on the works?—Yes; I think any man can form an opinion, if he knows anything of the country.

2358. Do you know anything of the country through which the East Indian Railway passes?—I know the Bengal country.

2359. Do you know the country over which the East Indian Railway passes?—I have been over the country.

2360. Do you know the course of the line from Calcutta to Mirzapore?—I do.

2361. Have you been over the line?—I have not been over the whole distance.

2362. Do you know the general character of the works upon that line between Calcutta and Rajmahal?—I have not been as far as Rajmahal.

2363. You do not know whether the East Indian Railway Company, with respect to that part of the line I have mentioned, are constructing a railway over a plain level surface, or over a tract of country where they have considerable engineering difficulties?—I know that in some parts they have considerable engineering difficulties.

2364. Do you know the character of the country, for instance, between Rajmahal and Calcutta?—I believe the chief impediments there are the rivers.

2365. Do you know the character of the rivers?—They are broad rivers with sandy beds, I have heard.

2366. Do you know the dimensions of any of the bridges in the course of construction there at this moment?—I do not know exactly, but I believe they are very large.

2367. Do you know whether they have experienced any difficulty in providing themselves with materials for the construction of the bridges?—I do not know.

2368. Then do you think you have sufficient materials before you upon which to form an opinion in regard to the question of progress, and to state positively that the system under which the railways have been constructed has been a failure?—I do not offer any opinion as to the cause of the failure; I say that the time occupied has been much longer than expected, and as it appears to me might have been expected.

2369. Expected by whom?—By the public, and by themselves, I believe.

2370. Do you think that the public is in a position to form a correct opinion upon it?—I do not know.

2371. *Chairman.*] Do you consider that they have been a failure in point of time and in point of construction, that is, that the works have been inefficiently constructed, or what is the precise meaning that we are to attach to the word "failure"?—I allude particularly as to the time. There were great complaints of delay in carrying on the works, and it seemed to me, and seems to me now, that there would be much less delay if they had been carried on directly under the authority of the Government, that what is generally understood to be a complicated machinery by the railway company in connexion with the Government.

2372. Have not the Madras Government expressed an opinion that the works have been carried on in a space of time that would bear favourable comparison with other works?—Only once, I think.

2373. Mr. *Crawford.*] You refer to the system of entrusting the construction and management of railways in India to a body of self-elected directors in London. Will you explain what you mean by that?—I alluded to the formation of

of a company by men who may be called self-elected; but what I meant to say was, that men employed in spending public money should be men appointed by the Government.

2374. When you say the money is public money, you must be aware that this money is provided out of the pockets and resources of private individuals entirely?—Yes; but it seems to me that it is as much public money as money raised on loan is.

2375. Although it remains at the risk of the shareholders?—There is no risk in it that I can see.

2376. You talk of Indian railways; I want to know distinctly from you whether you apply the charge which is conveyed in that answer of yours to railways generally?—I do not understand what charge you mean.

2377. In the answer to which I refer, you say, "the only chance of success under such a system is, for these directors, in the exercise of their patronage, to disregard all personal considerations and private interest, and appoint as their representative here a man chosen for his judgment, ability, experience, and resolution." In the former part of your answer, you have stated that in your opinion you consider the system to have proved a failure; and you proceed then to say, that the only chance of success is from the exercise of a certain judgment on the part of the railway company in the performance of their duty, which they did not exercise?—I did not observe that they had not exercised it.

2378. You say that the only chance of success is from the system of disregarding all personal considerations and private interest?—Yes.

2379. Were those considerations absent on the part of the directors of the railway companies already constituted?—I am not aware that they were.

2380. Will you explain to the Committee what is the alternative you put in the answer?—It was merely meant to refer to the extreme importance of selecting men possessing the necessary qualifications, without any reference to any other consideration, or any personal feeling towards them.

2381. Do you conceive that the directors of the Madras Railway Company have disregarded personal considerations and private interest, or have they kept those interests in view?—How far they have been actuated by those feelings I cannot tell. So far as I know, they have always been desirous of getting good men; I am sure they have.

2382. You do not intend, in this answer, to imply anything like an imputation upon the directors of the Madras Railway Company?—I do not.

2383. Or upon any of the railway companies, with respect to the manner in which they have exercised their selection in the appointment of their officers?—Certainly not.

2384. In the same answer you repeat your opinion, that if the Railway Board and their representatives in India were dispensed with, and the work placed under the direct orders of the Government, the work could be carried on at 50 per cent. saving in time, and not much less saving in money. Do you not think that a considerable saving would be equally the consequence if the railway companies were left free to carry on their works as they thought best?—I do not think under any circumstances, even with the railway unconnected with the Government, that the plan of having the chief management in England could be favourable to expeditious work. I think the great evil is having the chief government in England.

2385. Do you not think that as the funds for the construction of the railways are found practically to be obtained only in this country, it follows as a matter of absolute necessity that the control of the railway undertakings should remain in this country in the hands of those who find the money?—I think, in the first place, that one great evil is that the funds are obtained in this country, and in the next place, I do not see that it necessarily follows that the chief agents in carrying out the work should be in England, because the funds are supplied there; but it is a matter I do not feel competent to form an opinion on; financial men in England will know more about it than I do.

2386. With reference to the functions of the representative of the railway company in India, he has of course to superintend the execution of the works in India; you are aware that an immense amount of duty would have to be performed by some person or other in this country, whether representing the Government or in any private railway company; I mean as to the supply of those materials, and

Colonel Peers. those stores of one kind and another, which can only be got in this country?—Precisely.

3 June 1858. 2387. Do you think it would be desirable that all the large experience which has been gained in this country by gentlemen in the formation and construction of railways, and the supplying of machinery, and things of that kind for railway companies, should be lost?—Certainly not.

2388. Do you not think there is some advantage to be derived from the mercantile experience of gentlemen who may be disposed to undertake the construction of railways in India?—I think you might take advantage of all their experience here, but you might have your masters and managers of your works situated in India; I think the supreme authority, so far as regarded all the executive of the works, should be in India and not here. It is easy to take full advantage of the mercantile knowledge of gentlemen here, without giving them any power over the management of the railway.

2389. Does that necessarily imply that the funds must be provided in India?—I do not feel that I have anything to say to that question; I am speaking of it as a matter of convenience. I wish the funds were supplied in India. We have no native investors in these railways; and to my mind that is a serious mistake.

2390. From what does that arise, in your opinion?—It is merely because all the dividends, and everything else, are paid here, and the shares are registered here.

2391. Do you not know that in the East Indian Railway and the Great Indian Peninsula the shares can be transferred in India, that registries are kept in India, and that there is no necessity for taking out administration in the case of a person who dies, and that the shares being transferred there is no occasion for a reference to this country; are you not also aware that the dividends are now regularly paid in Calcutta and Bombay?—I now remember that they are in those two railways; and I presume, for that reason, that they have more native shareholders than we have at Madras.

2392. *Chairman.*] Have you heard any native opinion expressed in Madras leading you to suppose that the natives desire to hold railway stock?—I have.

2393. Mr. *Crawford.*] Do you think that if the Madras Railway Company had an office for registering shares in Madras, it would be satisfactory to the natives of Madras?—I should think so.

2394. When you made this statement in answer to question No. 2242, "With the same instruments in other respects, working under the direct orders of the Government, I am satisfied that the work would be carried on with 50 per cent. saving of time, and not much less saving in money," did you bear in mind that the cost of the Madras line, to which your remark may be presumed chiefly to refer, did not exceed 6,000 *l.* per mile?—I bore everything in mind that had reference to what I saw, or thought I saw coming on; I do not think that any remaining portion of the line will be executed so cheaply.

2395. The length of line to be constructed from Madras to Beypoor, being about 420 miles, and the works having been entered upon in January 1854, when do you expect that they will be able to complete the line from Madras to Beypoor?—I have heard within the last few days from the gentleman holding my office, and he says he thinks it may be done by the end of 1860. I was in hopes that it would be about the end of 1858, but he now says 1860.

2396. Is it your opinion that if the works had been entered upon at the same time by the Government as they were entered upon by the railway company, working in co-operation with, and, as you say, in subordination to, the Government, that the line which will have taken six years to make, and will have cost 6,000 *l.* per mile, would have been constructed in three years, and at an expense of 3,000 *l.* per mile?—In the first place, there is no chance of its being constructed at 6,000 *l.* per mile, and it will have taken seven years if it is opened at the end of 1860. I think all our sanguine prognostications have failed hitherto, and I think it is very doubtful whether it will not be so now.

2397. It matters not whether the time is six or seven years, or whether the amount is 6,000 *l.* or 8,000 *l.*; do you adhere to your opinion that it would have been done in half the time, and at half the amount of cost?—That expression "50 per cent.," was used to convey the idea that it would have been very considerable. I believe it might have been done at a very considerably less expenditure,

diture, both of time and money. I believe the whole line might have been completed if it had been under the sole orders of Government, with funds fully supplied, in four years. I think also that it might have been made much cheaper than it will be now. Colonel Pasley. 3 June 1858.

2398. You are of opinion that if the Government had acted according to your method they would have constructed a railway equally good and substantial for something like 3,000 *l.* per mile?—I am not prepared to say that. I think this will cost considerably more.

2399. You think the Government could have done it for a less sum?—Very much less, in my opinion, from what I have seen, and from what I believe is now going on. Will you allow me to add a few words to that: the first portion of the line, 65 miles, was executed at a cost of about 3,000 *l.* a mile, besides the permanent way material, which was exceedingly heavy. The estimates by the railway officers themselves, exclusively of the stations, which should not cost about 70 *l.* or 80 *l.* per mile, were 1,500 *l.* per mile. We generally find, in the Public Works Department, that the estimates are pretty closely adhered to. If they are not, it creates great dissatisfaction, and is a serious matter for the officers concerned. That portion of the line, although I think, under all circumstances, it was completed at a reasonable cost, and was cheaper than many other lines, yet it exceeded by a considerable amount the estimates made and sanctioned.

2400. Those estimates were made by gentlemen who had no large amount of experience in the country?—They had not much experience.

2401. Drawing a comparison between the estimates formed by railway engineers who had no experience, and estimates which you say have been made generally successfully by the officers of the engineering department of the Government, in the one case there was almost an entire want of experience in the country, as against a very long and complete experience of the country?—The estimates were, I believe, when made, well considered; all the prices were kept low, because Mr. Bruce was anxious to be as economical as he could. I mention that to show that it might have been done cheaper.

2402. Has it been your practice, when exercising the duties of consulting engineer, to maintain a minute supervision over the mode in which the works had been constructed, as to their details?—I have generally looked to the plans, and seen that they were not, in my judgment, deficient either in strength or waterway; and if they were correct, I did not take any further notice. If there was a superfluity of material in them I did not interfere; and in fact only interfered when I thought they were insufficient.

2403. You are aware, probably, that under the contract the risk and maintenance of the works rests, after a certain time, with the railway company?—I do not think they have any risk, because it all goes into the guaranteed capital. I do not recognise any risk on the part of the company; it is all at the risk of the Government.

2404. Supposing you have completed a section of a railway, that the works are considered therefore as finished; but after the railway has been in the course of operation for a given time, say a year, some casualty occurs from the faulty construction of a bridge, would that have to be made good out of the earnings of the railway company, or could it be taken out of capital?—After the first year, or whatever was the time allowed for the maintenance of the railway to fall upon capital, it would be taken out of the revenue.

2405. And therefore the risk would be upon the railway company?—If the railway company expect to get anything above 5 per cent. it is a risk, but not otherwise.

2406. The risk being upon the railway company, do you not think that the supervision on the part of the Government would be sufficiently exercised by the consulting engineer and the railway company's engineer agreeing upon certain matters of principle, or certain matters of detail, in the construction of the line, the whole of the construction being left in the hands of the railway engineer as representing the railway company, which bear the risk of any default on his part?—Certainly not; in the first place I do not think that the risk is with the railway company, because of the 5 per cent. they are guaranteed, and I think their chance of anything more upon most of the railways very remote. As regards a general understanding with the chief engineer of the railway, that might be done wherever we have the contract system; but the peculiarity of our system at Madras rendered it necessary, if there was to be any control on the part of the Government, that it should be a control of details; that the officer of

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the Government should be made acquainted with the expenditure as it went on. If the engineer of the railway company sends in an estimate of 100,000 rupees, for a bridge, I might say it was very moderate; but if I did not inquire further, he might expend 200,000 rupees. The only plan I saw was to get the monthly details of their expenditure and progress, and if I saw any point on which the estimate was not likely to be acted upon, I could mention it, and exercise some sort of check in that way. During the four or five years we have had this system going on, very few instances have occurred of any remarks being made on the details. My plan was to report to the Government, that from what I could see of the details the expenditure was going on *pari passu* with the progress, and at the end I reported upon it, and showed that the money had been advantageously laid out.

2407. Your reasoning would be different if the railway company were paying a dividend out of profits over 5 per cent.?—In some measure.

2408. Your remark is referable more to the case of the Madras Railway, from which you do not expect large results?—I have not given much attention to the other railways; my opinion depends also upon this consideration, that while the benefit to the railway company from any extra profits may be pronounced uncertain and remote, there is a benefit from every extension of capital; that is, every time, whether from extravagant expenditure or other causes, there is an extension of capital, there is necessarily an extension of shares, and those shares have been almost always standing at a premium in the market; therefore by a large expenditure there is an immediate and certain profit, but by economy there is a remote and uncertain result of profit in excess of the guarantee.

2409. When you speak of extravagant expenditure, you are stating an ideal case?—That is all.

2410. *Chairman.*] You say you think the chance of the railway earning more than 5 per cent. remote; is it not the fact that a portion of the line now open is earning 7 per cent.?—That is an exceptional case; it is worked under very favourable circumstances.

2411. Were you referring to the Madras or to the Bengal line when you gave that opinion?—It is my opinion that the lines generally across the plains of India will not pay more than 5 per cent., and that the line of the Valley of the Ganges is an exceptional case.

2412. I ask you to answer this simple question, have you any railway now open in India that is not earning more than 5 per cent.?—Yes; the Madras Railway does not earn anything like 5 per cent., and the last account I saw of the Bombay Railway, I think, shows that that just comes up to it.

2413. Do you think you can form an opinion, from the earnings of a small portion of a line which will ultimately extend into large productive districts, of what may be the probable earnings of that line?—I am inclined to think, that in all cases the portions of the lines now open are the most productive portions. They get an accumulation of traffic on a short line in the neighbourhood of large populous towns, where they have a great deal of local traffic.

2414. Mr. *Campbell.*] You have given it as your opinion that expense and delay might have been saved if the railways had been constructed by the Government instead of by the companies?—Yes.

2415. How do you arrive at that conclusion?—It is an opinion I have formed from what I have seen of the expenditure of time and money on the works.

2416. Can you give us any practical example, showing that if the Government had constructed them on their own account, they would have constructed them more expeditiously than they have been constructed by the railway companies?—I could bring forward many instances of practical works, such as large bridges, constructed much more expeditiously than the works have been here. Upon this line there is one bridge, as to which we are complaining that we cannot get it opened; the railway company has been three years engaged upon it.

2417. Do you know the grand trunk road from Delhi to Calcutta?—I have heard of it.

2418. Do you know when that work was commenced?—No.

2419. Do you not know that Lord William Bentinck commenced it upwards of five and twenty years ago?—I do not know when it was commenced.

2420. Are you aware that it is not completed?—I am not.

2421. And that 25 years have been occupied in the construction of a simple road

road from Delhi to Calcutta under the supervision of the Government?—I know nothing about it, as to how far it is completed.

2422. With reference to the Madras Presidency, are there any other Government works which, in comparison of the amount of labour and money expended, have been executed with greater expedition than the works of the railway companies under the Court of Directors?—Taking the railways as a whole, we have no works that have demanded a large expenditure; but we have works of the same kind, such as bridges across rivers; they have, in many instances, been executed much quicker than some of the bridges over the railways. In one similar instance, as regards the difficulty of foundation of a bridge, we began and completed one within ten miles of one of these railway bridges, the non-completion of which we regret.

2423. In support of your assertion, that both time and money would have been economised, I understand that you have no practical illustration in comparison to adduce?—Yes; I have just mentioned a practical illustration of a bridge, and I judge of the expense from what I know to be the ordinary expenses under Government.

2424. Will you name the particular bridge?—It is a bridge over the Colleroon river, which we built within two years. I cannot tell you the exact time. It consists of 38 arches of 60 feet span, and to the best of my recollection it cost something less than 150,000 rupees. I have not the particulars of any other bridges, but I know the fact itself, and the data from which the estimates were made. I do not think it is very much to be wondered at, because the Government has a great advantage in the class of men they employ.

2425. Do not the Government co-operate with the railway companies?—Most cordially, but they cannot enter into details; the great thing wanted is discipline, and prompt exercise of authority. I do not find fault with the instruments of the railway companies; they had exceedingly active and intelligent men; but the difficulty arises from the complicated kind of authority.

2426. From the system of double government?—That is it.

2427. If left to themselves, the railway company might have constructed their line with greater expedition?—I think it very likely. I should explain, that I mean, if they had adopted a plan of prompt local government, because without that, I am sure they cannot.

2428. You say it would be advantageous if the railways were constructed by the Government, and that then the natives of India would invest in them?—Yes.

2429. You are aware, probably, that no confidence existed in railways on the part of the native community, and the services of India, or on the part of the Government of India, until private enterprise from this country induced the Government to guarantee the funds necessary for the creation of the railway?—I do not think it implied any commercial enterprise to lend money at 5 per cent on good security.

2430. I ask you whether you are aware that the official opinion of India, and the opinion of the Government of India, and the opinion of the native community of India was opposed to railways, and that they had no confidence in them, when English enterprise and capital came to the rescue in the construction of the railways?—I remember that many of the mercantile houses in Calcutta expressed rather desponding views regarding the commercial success of railways, and therefore I think that if matters had been left to commercial enterprise, you would have had no shareholders; they required the Government guarantee to induce them to put down their money.

2431. You are aware, probably, that it was through the intervention of Lord William Bentinck, and the commercial enterprise of men in this country, that the railways were commenced?—I think it was rather through the exertions of Sir M'Donald Stephenson, and afterwards through the expressed opinion of Lord Dalhousie. Instead of trusting to the commercial enterprise, they trusted to the interest paid to them upon the guarantee of 5 per cent.

2432. You say that the prospect of getting anything beyond 5 per cent. is remote; how do you arrive at that opinion?—I expressed that opinion with particular reference to the railways in the south of India.

2433. You consider that railways are a great advantage to India?—Yes.

2434. The circulation of such an opinion, without anything upon which to found your opinion, from an officer of your position and experience in Madras, is likely

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materially to interfere with the extension of railways, which you admit are so beneficial?—I do not think it will at all interfere with it so long as there is any guarantee; I merely give an opinion.

2435. Have you no practical experience to found that opinion upon?—Of course, I have been many years in India; my opinion is, that railways have a work to perform before they can be expected to be found remunerative.

2436. You think that the fraction of the line which has been opened is sufficient to warrant you in coming to such a conclusion?—It is from what I know of the interior districts, and population, and produce that I form that opinion.

2437. Will not the effect of railways be to produce a traffic where it did not exist before?—That will depend very much upon the charges.

2438. On the soil and on facilities of railway communication?—It depends upon the charges of the railways. If you do not carry goods cheaper than they have been carried hitherto, you will not have a single additional bale of cotton carried.

2439. Mr. *Cheetham.*] Do I rightly conclude that your opinion is, that the construction of railways in India should be originated in India, by the Government of India?—Yes.

2440. You think that as regards a saving of time and economy of construction, those two results would have ensued from the Government construction?—Yes.

2441. Did you ever press that opinion upon the Government of India?—I gave that opinion before the railway company was formed.

2442. Is it your opinion, that as regards the other railways in India, which it is evident must hereafter be made, the Government ought to undertake the construction of those lines?—I hold the same opinion as I did before, that it would be better for the people of the country, better and cheaper, if done by the Government.

2443. Have you any suggestion to make as to improvements upon the present system of construction in India as carried on by private companies?—The only suggestion I could make would be to simplify the ruling authorities as much as possible, by having some railway managing authority on the spot in communication with the Government, and that there should be no appeal, upon questions of management and discipline, to England.

2444. You have spoken about native shareholders; is it not the fact that a very small proportion of railway capital supplied to India has been raised from native shareholders?—In Madras I think there is very little indeed; and in the other Presidencies I suppose it has been small.

2445. With regard to the Madras line, so far as it is already opened for traffic, am I correct in understanding your statement to be, that it does not pay the guarantee of 5 per cent.?—It does not yet, so far as I have seen the returns.

2446. Is it not in a populous district, so far as it goes?—Tolerably so, and there are very large towns at its termini.

2447. How far is it up?—To Vellore.

2448. Was the direction of this line suggested by the Madras Government, or was it at the instigation of the railway company?—It was approved by them.

2449. In their advice did they look to the commercial results as well as the convenience to the population?—I think almost wholly to the commercial results.

2450. Does it open into an agricultural district?—Entirely so throughout. I must tell you that at the present moment a great part of the traffic does not go upon the line at all, but by a road alongside of it.

2451. Colonel *Sykes.*] You say that the shareholders in the railway have no risk; explain what you mean by that?—I conceive they have no risk, on account of having this guarantee on their capital. But perhaps I should qualify that expression by stating, that the risk, if any, is extremely remote; they would suffer if the line did not pay its working expenses, but there is no fear of that in any case.

2452. You mean to say that the only risk they run is in case the line does not pay its working expenses?—Yes.

2453. Do you mean they run no risk because they have a right to transfer their responsibility to the Government?—Yes.

2454. Under what circumstances?—I do not recollect the exact terms, but I think if the work fails they can, by giving a few months' notice, make it over to the Government, and take back their capital at its market value.

2455. Do you mean to say that they can transfer the responsibility of the whole of their subscriptions to the Government, in case they wish to throw off the responsibility, under a certain notice?—So I understand the contract.

2456. Then, in fact, you consider that this is, on the part of the Government, merely a loan of money, paying 5 per cent. for it?—So I consider, with this disadvantage, that the shareholders can demand payment wherever they like.

2457. And that the shareholders, the moment they entertain doubts of their investment being sufficiently profitable, can divest themselves of responsibility?—Yes.

2458. Your observation as to the saving of time and money, had reference to the action of double authorities, namely, railway boards in England, and the railway departments in India?—It had, chiefly.

2459. And you consider that the cost of those double establishments in England and in India, might be avoided by the Government undertaking the works themselves?—I think so; and not only so, but I think the direct exercise of authority on the part of the local Government, with reference to the agents immediately concerned, in carrying out the works, would have an extremely beneficial effect.

2460. As it would have been economical, and at the same time more efficient, how do you account for the Government not having done it?—I do not know; they thought otherwise, I suppose.

2461. Do you think that money could not have been obtained upon loan in England, at a less rate than 5 per cent?—I should think they might have obtained it, and that they might have obtained money in India, although not perhaps to the full extent they required, upon a loan of 5 per cent.

2462. You consider that the Government might have obtained some 20 or 30 millions of money, at a less rate of interest than they are now paying for the guarantee, either in England or in India, and that they could have carried out the railways with greater expedition and more efficiency than they are now being carried out?—I think they could have raised it at least at as low a rate of interest, and that they would have made them more efficiently, and would have had it in their power to give the natives in India the full benefit of the works, working the railway on a liberal scale of charges.

2463. You have a terminus I think, at Beypore?—Yes.

2464. What is the object of having a terminus there?—It was as near as we could conveniently get to the capital town of the province; it was in the direct line of the large military establishment at Malabar; it is one of the best harbours on that part of the coast, and at the mouth of a river navigable for 40 or 50 miles up the interior.

2465. Is the improved navigability of the river and the capacity of the harbour necessary to the successful operation of the railway?—I think not.

2466. Do you not think it is desirable to improve the harbour and the navigability of the river?—It would be so; the river is navigable now so far as I know, but I doubt very much the practicability of improving the harbour by any means short of a breakwater outside; it is a river with a bar, as usual, across the opening. I doubt whether anything could be done to improve the harbour as it now stands; if it was found necessary to execute any great work, the only thing would be a breakwater outside, protecting the line of the harbour, and giving good lying ground under shelter.

2467. Do you not think that trade would be increased, and that the line would be better fed if there were a good harbour?—No doubt; but the seasons out there are nothing like ours; for nine months in the year they do not require any harbour; and during the rest of the year they could hardly approach any harbour.

2468. *Chairman.*] Is there not an extensive line of backwater which extends from Beypoor almost to Cape Comorin?—It does not touch Beypoor within, I think, 40 miles; from thence to the southward there is almost a continued line down to Cape Comorin.

2469. Has the attention of Government been called by the railway company to the want of improvement in the harbour of Beypore and the inland navigation?—I do not remember that; I have called the attention of the Government to the necessity of improving the harbour, and an officer, I think, was sent to report upon it.

2470. Would not a system of inland navigation assist very materially in bringing up the supplies of all that district upon the line of railway?—Very much indeed;

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indeed; the railway runs up to Beypore; and from there northward, there is no great facility for introducing this kind of backwater navigation; from the south there are many miles of backwater navigation, and 12 or 15 miles would throw it into communication with the present railway.

2471. Is the district through which that natural backwater communication exists, a productive district?—Yes, it is the same as the rest of that coast.

2472. Is it your opinion, as an engineer, that the navigation should be improved and brought into action?—Certainly.

2473. In order to facilitate and to ensure the ultimate success of this line of railway?—Certainly, I have often given that opinion.

2474. Colonel *Sykes.*] Did the railway company's agent express on any occasion his sense of the support and assistance received from the Government?—It was very often expressed to me personally; and it was expressed in the first of our annual reports. The first gentleman who went out as agent was Mr. Smalley; and in his first report, dated 5th April 1854, he writes, "I cannot close this brief report without expressing my acknowledgment of the kind aid afforded by the Government, on every occasion that I have had occasion to seek it, and of the readiness with which it has been afforded."

2475. Is there any other report of the same character?—I do not observe any other allusion to the Government; but the same feeling was often expressed in words by Mr. Smalley, and by Major Jenkins who succeeded him.

2476. What is the date and general tenor of your last inspection report?—My last inspection report is dated 22d September 1856, and its general tone may be gathered from this paragraph, which, if the Committee will allow me, I will read: "But, putting aside past difficulties and shortcomings, I consider the future prospects of the work satisfactory. A uniform system of work and of supervision of accounts has been established; the engineers are at work at nearly all points on the line; the amount of work executed during the month is on the increase, and my own impression is, that we are justified by present appearances in expecting to see the line open as far as the Sherwaroy Hills by the end of 1857; to the other coast by the end of the following year." The rest of the report is made up of detailed accounts of what had been done.

2477. *Chairman.*] You say that the last accounts do not confirm the view expressed there?—They do not.

2478. The last accounts you have received were on the authority of the consulting engineer?—They were.

2479. Your successor?—Yes, in a private letter I received from him. He speaks favourably of the work, and he adds the hope that the line will be opened by the end of 1860.

2480. What is the name of your successor?—Captain Johnson.

2481. He does not anticipate that the whole line will be opened before the end of 1860?—The end of 1860 he mentioned to me.

2482. Sir *J. Elphinstone.*] How far is Beypoor from Calicut?—Five miles.

2483. The line runs over by Pal Ghaut?—Yes; it is a natural opening in the ghauts.

2484. There is a considerable extent of that country on which there are no inhabitants, I believe?—All the first portion close under the hills is uninhabited, but it is a populous district.

2485. Malabar is not populous, I believe?—The most populous, I think, taking it as a whole, that we have; it is very populous in those portions that are inhabited at all.

2486. Do you suppose, at the present rate of tariff, that you would get the whole traffic of the country to carry upon that railway?—No; I think at the rate that was in force when I left, it would probably be sufficient to take all the existing traffic in goods, but I do not think it would have the effect of lowering prices in such a way as to extend the traffic in agricultural produce.

2487. When did you first begin to make the line?—In the beginning of 1853.

2488. What extent of line have you opened altogether?—By this time, I believe, about 91 miles; when I left India there were only 80 miles open.

2489. In what state are the works on the other part of the line, are they pretty forward?—They were in such a state in 1856 when I saw them, that I thought they would be finished by 1858; but I am told now that they will not be finished until the end of 1860.

2490. That is the whole line to Beypoor?—The whole line to Beypoor.

2491. Are you acquainted with any cause of delay in the construction of the works, which, if you had to do the work over again, you would be able to remedy?—No; the Government officer cannot put anything on a better footing as regards delay in the execution of the work.

2492. Supposing you had to make a line into any other district of the Madras territory, could you improve the practice that has been resorted to in the construction of the Madras line?—If we had to make a railway by a company under the present system, I could not propose any alteration as regards the proceedings of the Government; there might be some minute errors which I have myself fallen into that I could avoid.

2493. Your distinct opinion is that the Government ought to make these lines?—Yes.

2494. What would you propose to do with them afterwards; would you work them by a company, or would you offer the stock for sale?—I did suggest at one time that the Government might allow a company to work the lines, but my own view is, that it would be better worked by the Government; my reasons for saying that is, that I think the Government would be disposed to work them for the benefit of the people.

2495. The alternative you proposed was to lease the lines of railway to a company or that the Government should work them?—Yes.

2496. Had you any practical difficulty in getting the proper number of sleepers?—There is a difficulty which arises from the want of roads into the forests, and the unhealthy nature of some parts of the forests, and from the ignorance of the people generally; there was a demand for an enormous amount of wood all at once, and the supply was not ready for it; we wanted a new system to get anything like a supply.

2497. Had you not the means of inducing the wealthy contractors to take contracts?—I have observed that there was such a class of men, and if we had carried out the system I proposed, I think many of them would have tendered.

2498. Are you aware that in Ceylon the whole system of work is carried on by contracts?—I am not aware of that.

2499. Does the difficulty of procuring wood for sleepers arise from the lower parts of the hills being cultivated?—It arises from the forests being inaccessible for want of roads, and also from some parts of the forests being unhealthy; there is a small number of wood-cutters who have accustomed themselves to the climate, and who are sufficient in number to meet a small demand only for timber.

2500. They are a very troublesome people, are they not?—I expect they are.

2501. Mr. *T. G. Baring.*] Mr. Bruce read a great many of your progress reports in 1853 and 1854; they were generally unsatisfactory, were they not?—I do not know that they were generally so, I think they were of a mixed character.

2502. Some of them were unsatisfactory?—Some were unsatisfactory.

2503. To what do you attribute the unsatisfactory progress of the works at that time?—I left that to be explained by the railway agent; I had no means of knowing. I was prepared to admit any explanation of it, but my duty was merely to say that, as a quantity, it was not sufficient. It was not my duty to inquire into details, and I could not tell whether the agent was to blame, or the resident engineer, or any one else. All I had to do was, to call the attention of the Government to the fact, that the work done was not satisfactory.

2504. Can you express any opinion as to the cause of the unsatisfactory progress?—It is impossible to do so; it might arise from inexperience on the part of the local engineer, or it might have been from bad arrangements on his part; there are thousands of causes which they might explain, but which I could not. I have known some cases in which the engineers themselves have told me all their difficulties, but I would not have done for me to report officially any direct communications from the executive engineers.

2505. Mr. Bruce referred to the annual report of 1854, which you made in 1855, to show that your reports were rather hard upon the railway engineers; do you happen to have that annual report by you?—I have.

2506. Refer to this paragraph, quoted by Mr. Bruce: "In some cases the progress of this work was not such as could be considered satisfactory, and was remarked upon in consequence by Government"?—That was the surveying and levelling; and it was not only remarked upon by the Government, but by the agent

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in his report; the agent, in one of his reports, mentioned the names of some of the engineers whose progress had not been satisfactory.

2507. *Chairman.*] Did the remark of the agent and your remark apply to the same thing?—It was in the report of 1853 that the agent remarked upon the progress; those two paragraphs in my report refer to two different things, as I understand.

2508. The remark of the progress being unsatisfactory refers only to the surveying and levelling?—In that paragraph.

2509. Your general impression, at the end of the year, was, that the work had progressed satisfactorily?—Yes.

2510. Mr. *T. G. Baring.*] Your view is, that although in some cases the progress in particular parts was not so quick as it might have been, yet that on the whole for the year the progress was satisfactory?—Precisely so, and there is not the least doubt that the generally satisfactory character of the progress was owing to the little spurs given to them by the Government. If one district showed 120,000 yards of earthwork, and another only 40,000, I could do nothing but say that they were unsatisfactory.

2511. In your communications with Mr. Smalley, the agent of the company, had you often differences of opinion with him?—I think rarely, nor had I any difference of opinion with his successor until we came to issue on discussions relating to traffic.

2512. In the construction of the railway, did you work cordially with the agents of the company, Mr. Smalley and Major Jenkins?—Very much so.

2513. The difference would be between the engineer of the company and you and the agent?—Yes.

2514. The agent and yourself concurring, but the engineer differing from both of you?—Generally so.

2515. Was that the case with regard to the difficulty of obtaining accounts, previous to the advance of money?—In most cases it certainly was. I should explain that by saying, that the agent was always anxious, if he could, to put the best appearance on the matter; but he frequently complained of the difficulty he had in getting the accounts we called for.

2516. Was there one case in which Mr. Smalley agreed with you as to the necessity of delaying the advance?—Yes, writing in November 1854, he says: "With this explanation perhaps you will no longer demur to obtain the sanction of the Government for the advances required; I fully enter into your views as to the necessity of stopping supplies of money after so many unsuccessful applications for correct and complete accounts."

2517. With regard to sleepers, was it the case that the agent and yourself were agreed upon the whole course pursued with respect to obtaining them?—No, we were not agreed; the agent preferred buying them as he got an opportunity.

2518. He differed with you in that respect?—Yes; I think the first agent differed slightly; he took up the advertising system, but was disposed always to be at liberty to buy them as he could. Mr. Smalley did not come to any discussion about it, but he had not the confidence which I had in the ultimate effects of adhering to the system of tender.

2519. Have you any observations to make upon the remarks which Mr. Bruce made with respect to the cost of bungalows?—I looked upon that as a matter of discipline more than anything else; the fact was this, that the engineers came out from England with a certain amount of salary, and we were told that it included all their personal expenses. When they arrived, they were furnished at the suggestion, I think, of the chief engineer with a set of tents each, which were given to them; they then had certain marching allowances; and then, after a little consideration, it was decided to build small huts, as being cooler and drier than their tents.

2520. *Chairman.*] At whose expense?—At the railway company's expense; the allowance for their own huts was 350 rupees, which was considered at that time sufficient; in fact, I know it is, for I have lived in one often myself. The first two engineers exceeded the allowance considerably; one was a married man, and he thought he might supply accommodation for his wife. Mr. Bruce, the chief engineer, when sending in and asking that the extra account might be sanctioned, said, "I trust that this question will be met liberally, and that the same consideration for the circumstances in which the engineer was placed as a perfect stranger, will be shown, as was done in district No. 1. I would not again

advocate

advocate the allowance of the smallest excess above the estimate, because the matter is now so fully understood, and the woodwork can be done for so much less, that there will be no excuse for it." After that, the engineers exceeded, to a considerable extent, the amount authorised. It seemed clear to me, and I presume that the Government took the same view, that the agent's authority in this matter was set at naught, and it appeared as if the chief engineer himself could not enforce the orders he had properly concurred in, and the Government determined, as I think rightly, to vindicate their authority and support that of the agent by withholding their sanction to this expenditure.

2521. Mr. *T. G. Baring.*] Mr. Bruce attributes some portion of the delay to the want of a sufficient staff. Did that ever come to your notice?—The agent frequently applied for an increase of staff, and I think it will be found that in most of the cases he was supported by the Government; in the case of European subordinates a wish had been expressed by the Court of Directors and by the Board that they should be employed as sparingly as possible; all we did was to express an opinion that they could do very well without them, but leaving it to the railway directors at home to send out as many as they thought proper.

2522. Was it the case that the agent of the Company, with your concurrence, forwarded a requisition for a greater supply of engineers?—I think so; I was always an advocate for a full supply of engineers; they advocated one for every 25 miles. I was anxious that that should be kept up, and in fact they have had hitherto a sufficient number.

2523. Has a sufficient number been sent out from home?—I think so for the work we have in hand on the Madras and Beypoor line; they have been unfortunate in their selection in two or three cases.

2524. You stated that, in your opinion, the line would have been carried out cheaper and quicker by the Government?—Yes.

2525. On what particular points would the Government have had an advantage?—Merely in the exercise of discipline; I think, if the Government had had all these gentlemen, many of them active and intelligent gentlemen, under their direct orders, and any district was late in its work, the officer of the Government, who must be supposed to understand something of the country, could have looked into it immediately, and if he had found any one incapable, he could have removed him at once.

2526. Do you think that delay has occurred from the necessity of the agent of the Company referring home to the Railway Board?—I know it has in some cases. I can mention a remarkable instance of a bridge that is now under construction, and that is a bridge I mentioned in a report to the Government. There is an estuary called Kuddulhoondy. The engineer went into that district in December 1854; on 29th March 1856 the agent forwarded drawing of a bridge proposed for this Kuddulhoondy estuary, and forwarded also a letter from the chief engineer, requesting that the opinion of the railway company's consulting engineer in England might be taken upon one important feature in the plan. It was impossible to submit a plan to the Government under condition that it should be altered after they had sanctioned it. This plan was therefore returned, and he was requested, as soon as he had determined on his plan, to submit it to Government; this was in March 1856; on 19th December 1856, eight months afterwards, the agent was reminded of the subject, and he replied that the plan and estimate were in hand, and would be transmitted without delay; nothing more was heard of it until 8th August 1857, when it was found that it had been submitted to the Railway Board, and they then wrote out to ask for more information for their consulting engineer to decide upon the plan for this bridge. From the time the plan was submitted to the Government, there was an interval of a year and three or four months, and then the Railway Board at home asked for more information. The bridge, I believe, is not begun yet.

2527. Had you sufficient engineering authorities whom the Government might have consulted at Madras, to settle the point there?—No doubt the chief engineer of the railway might have done it; the plan sent out was of a common wooden structure, such as the natives are in the habit of building in that district, only that it was rather more substantial.

2528. In consequence of the delay it would be necessary to incur the expense of making a temporary structure?—I do not know whether it is a consequence of

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the delay, because I think it was the best thing they could do, and it will last probably 20 or 30 years.

2529. What discretion did the Railway Board give to their officers?—I think they intended that the works should be carried on in connexion with the local Government. I do not suppose it was their intention that any plans of works should be sent home to them; but they did sometimes exercise their own discretion in making suggestions as to plans, and bridges, and waterways, that it would have been better to have left alone. We had engineers enough there to do it.

2530. Do you think that any practical delay has ocurred by a reference to the Railway Board at home?—No. I think this one case is a remarkable one of what delay took place in that instance, and of what would take place in references of the same nature.

2531. Did the Railway Board give sufficient discretion to their officers on the spot?—I think so.

2532. Then the objection is rather theoretical than practical?—Yes; so far as regards their interference with the practice; but my objection to the Railway Board is chiefly as regarded their discipline. I think the agent on the spot has not sufficient authority, in consequence of there being a Railway Board as a sort of court of appeal behind him; if any blame is cast upon the officers they look to the court at home.

2533. Could the agent, with the consent of Government, discharge any officer?—I believe not. I am not quite certain about that; but I know he was very much afraid to try it; and the only time he discharged a man he had to pay him six months' salary.

2534. You think the necessary consequence of a Government guarantee, accompanied by Government supervision, is to entail very considerable delay?—I do not think Government supervision need do so; I think the delay arises more from the Railway Board being in England, and from the references that may be made, and will often be made, by the servants of the railway company to England.

2535. Do you conceive, then, that a railway might be carried out by a company, with the authority of the company being in India, with Government supervision, as quick as by Government itself?—I should doubt even that, because then there would be the double government; the Government, with its officer, could not interfere with any of the agents at work; there would always be a screen between him and the working men.

2536. *Chairman.*] In the selection of the Madras line, were military grounds the chief reason of the Government for their selection?—No.

2537. Was it constructed essentially with a view to commercial advantages?—I believe essentially so.

2538. You have alluded to certain differences which occurred between you and the railway engineer; and I think I understood you to say that on most occasions you and the agent agreed pretty well; did the agent and the engineer differ on many occasions in their views of different questions?—They did frequently; and their differences arose chiefly from the difficulty the agent experienced in getting replies to his references; and, in fact, I believe he complained to his own Board about it.

2539. Replies from his own engineer?—Yes.

2540. Will you tell me what the chief points of difference were that arose between the agent and the engineer; was it principally matters of correspondence?—I believe chiefly that; I was not in a position to know; they had their own business to do amongst themselves.

2541. It is only due to the engineers that I should put this question to you. You made use of the word "indifference." You said that if the Government had the control, wherever there were instances of indifference on the part of the engineer, it would be disposed of by dismissal. Can you state any instance in which any engineer employed upon any line in India did show indifference?—I have not been in a position to know.

2542. You do not wish to make any charge of indifference against the engineers employed?—Certainly not.

2543. Is it not the case that they have in the main shown remarkable alacrity in the discharge of their duties?—They have; and I frequently reported to that effect, so far as I could venture to make any observation.

2544. Was not the conveyance of salt to the interior kept in view as a very important object in the original construction of the line?—Very important.

2545. It was determined, I believe, that salt should be the return cargo, if I may use that expression, for the trains bringing produce from the interior?—It was so.

2546. Has a branch been laid down to connect the Government salt depôt with Madras?—I think probably it will be laid down.

2547. Do you know whether the Government sanction has been given to it?—They have sanctioned the principle of it, but there is some difference of opinion as to how it shall be done.

2548. Can you state how long since the proposal for laying down that branch was first entertained?—I cannot.

2549. Am I right in supposing that the question of salt bears materially upon the profits of the line?—I think so.

2550. Did you propose that this branch should be laid down on a narrower gauge than the railway itself?—I did.

2551. Will you state upon what grounds?—My grounds were stated fully in the report; and if the Committee had time to read them, I think they would see that I had good grounds for the opinion I gave.

2552. Is it usual in railway construction to construct branches on a different gauge to the main line?—No; but in the first place, this is not looked upon in the light of a branch line; it is a mere inclined plane that runs down from the railway to the salt depôt, and only a few hundred yards in length. The salt depôt is very extensive; it is three-quarters of a mile in length, and very deep. Government declined to carry the salt up the country; if they had said they would convey the salt up to the stations on the railway, I should have said, lay down the broad gauge; but they declined to do so. I then said, "If you have a broad gauge, so that you can carry seven or eight tons in a carriage, how will all the petty dealers, who deal for half a ton of salt, come into the market at all?" I felt satisfied that the only effect of having these large waggons run down would be to establish a monopoly in some one individual's hands, and I had good reasons for supposing that there was every prospect of that; it was not therefore establishing a branch narrow gauge, but it was merely continuing the narrow gauge that ran among the salt heaps; all you would have to do would be to continue those, and then any small trader who wanted a bushel of salt could take it; the traffic manager said they would not run down a waggon there unless they could get such and such a load, and if Government would not undertake it, it must fall into the hands of one man.

2553. What is the length of the branch?—I do not think it is above 800 or 900 yards.

2554. I understand that the salt traffic upon which probably a considerable portion of the estimates of the railway were based, has not yet come into operation?—No; we have seen the bullock carts taking away the salt as usual up the high road.

2555. Do you think that if the railway were used as a mode of conveying salt into the interior, it would increase the amount of profits?—No doubt, and I have been anxious to see it done. I thought the Government should establish a salt depôt on the line, and then they could have sent 300 or 400 tons at a time.

2556. What is the reason why the arrangements in regard to the conveyance of salt upon the line have not been completed?—I need only tell you that there has been a great deal of delay in getting the reports from the railway officers themselves as to what they wished or proposed to do. Six or eight months ago, the reports and the estimates of the Public Works Department were before the Government, when the only question pending was what part of the work each party should undertake. The Government proposed to construct the line, and they said that the railway company would probably lay down the rails. My proposal of the narrow gauge was misunderstood, because if you have a narrow gauge running by the salt heaps, you must break somewhere, and I wished to continue that so as to secure to the small dealers in salt, some share of the traffic.

2557. Did you make that suggestion to the Government and the railway company?—I did.

2558. Mr. *Crawford.*] Is there a department of public works at Madras?—Yes.

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2559. Who is the officer in charge of the public works?—Colonel Faber.

2560. Upon the question of bungalows was there not one special bungalow which was the cause of the difference of opinion?—There were some that cost much more than others; in No. 6 district, one gentleman spent about 5,000 rupees to the best of my recollection; those which cost most, of course caused more sensation than the others.

2561. These bungalows, as we understood from a former witness, were constructions which were intended to serve for the purpose not only of a roof, under which the engineer could shelter himself, but also of an office in which the business of the railway company could be conducted, and on the outside of which, under the verandah, the public business between the railway officers and third persons could be transacted?—They were intended in the first instance as a substitute for a tent for the engineer.

2562. Do you think that a tent would be sufficient for all purposes?—Certainly; it would depend upon the establishment he had; if his establishment increased, and he had not room in his own tent, he might have had another. The officers of the service generally do their business in one tent.

2563. I believe these bungalows were intended for the use of an officer having 25 miles of road?—Yes.

2564. It was his lodgment, and was also intended for the purposes of shelter under which he could transact the business of the railway company?—Yes.

2565. He was allowed 350 rupees for the erection of a bungalow?—Yes.

2566. Is that a sufficient sum to construct a bungalow?—Quite enough.

2567. Of what description?—A small building of mud walls and thatched roof, the sort of building that all the officers put up as being cooler than their own tents.

2568. Has the engineer occupying that bungalow any property of the railway company in his custody for which he would be responsible. Has he a treasure chest?—His responsibilities would depend upon circumstances; he has a certain sum of money.

2569. Do you think that an edifice costing 350 rupees, affords a man sufficient protection for property he has in his charge?—He would never think of trusting to the building for protection. It was suggested I think by the Accountant-general, to build small treasuries for them, but I think the agent himself raised some objection to that. You do not trust to the building, but to the peons and guards you have.

2570. That was the occasion, was it not, of a reference to the Court of Directors?—Yes.

2571. What view did they take of the subject?—It ended in the Court of Directors directing that all the balances might be passed, and they were passed accordingly by the Government.

2572. Was not that bungalow controversy the cause of the memorial that was sent home by the railway engineers?—I do not know what was exactly the cause of it, because several other points were mentioned; they mentioned what they called unfair criticism of their operations. I do not know that there was any particular cause beyond a general feeling of vexation at having the progress of the works noticed. There is only one passage that concerned myself which I thought required any notice.

2573. By whom was that memorial signed?—By the engineers; all, I think, but one; some of them, in fact, we had never reported upon, had never seen, and knew nothing about, neither the Government nor myself.

2574. What was the name of the gentleman who did not sign?—Mr. Wilson's name, I think, you will not find there.

2575. Did the chief engineer sign?—He did not; it would not have done for him to sign of course.

2576. Did not the Government, in commenting upon that memorial, say that the engineers had not been able to prove that any documents had been kept back from the Government?—Yes.

2577. Is it not a fact that the engineers did not complain of that, but that the documents had been kept back from the public?—They complained that the documents had been withheld from the annual reports, as well as from the newspapers; nothing could be clearer than what they said, or, as I say, more unfounded.

unfounded. They said that the reports were published, and their replies withheld. One of the engineers apologised for having done so, and told me that he had found his letters, which he expected had gone to the Government, were all stopped in the chief engineer's office.

2578. You say you did not speak of the engineer of any particular district; do you not think that a statement of unfavourable progress, without any special explanation, is an implied censure upon the officer?—Certainly not; from a man situated as I was; I was reporting on the railway company's works. I can now explain to you why upon one district there was some delay under a very active man. He wrote to me on one occasion, and said he wished I would interfere, because they were sending all the plate-layers on to districts far ahead, which could not be open for some time to come; I wrote, saying, I was the Government officer, and could not interfere.

2579. Did not the East India Company send out a request that the names of the engineers whose districts were unfavourably reported upon should be made known to them?—I do not remember their doing anything of the kind.

2580. What is the practice when fresh engineers are required to be sent out; supposing the chief engineer wants more assistance, what does he do to obtain it?—He writes to the agent; the agent asks permission of the Government to make application home.

2581. Did I understand you to say that the question was left to the directors of the railway company in this country?—With reference to subordinate European agency, our practice was to express our opinion, but to leave it to the Railway Board at home to decide whether they wanted the assistance they asked for.

2582. What is the character of the bridge you were mentioning?—It is a bridge carried across an estuary generally shallow, and under the influence of the tide; it was proposed, if I recollect right, to construct a bridge upon iron piles, and some question was left to be referred to the consulting engineer at home.

2583. What was that question?—I do not remember.

2584. Was it not a question which could only be settled by a person in possession of the experience of a consulting engineer in this country?—I do not know what the question was; I cannot conceive any question which the chief engineer out there could not have decided.

2585. Would not the materials for the construction of the bridge have to be sent out from this country?—Not necessarily.

2586. What was the width of the estuary?—It may have been 400 or 500 yards, perhaps.

2587. It was a considerable work?—Yes.

2588. It was, in point of fact, an engineering work of importance?—Yes, but not one of difficulty, I should say.

2589. Was there any other occasion on which the mode of constructing any particular work was referred to the consulting engineer in this country?—Yes, a wooden bridge was proposed in the same district; they sent home the plan, and there was a delay, I think, also in that case. The engineer commenced his survey in December 1854. On 17th March 1856, some discussion having taken place with regard to the drawing, the agent was requested to forward an estimate; no answer was received to that letter in October 1857, but it was referred home.

2590. In the case of the Kuddulhoondy Bridge, was not the question which caused a reference to this country pending at the time of the chief engineer being obliged to come home?—The reference had been made before that; it took about 14 months.

2591. Do you not think there may be some connexion between the departure of Mr. Bruce and the delay?—There ought not to be; the reference was made in the beginning of 1856, and he came away at the end of that year. It was after he arrived at home that they wrote out again, and asked for more information.

2592. Has any prejudicial consequence resulted from that bridge not being proceeded with?—That particular work has been delayed, and it is likely to delay the opening of the line at that extremity.

2593. How far is it from Beypore?—About three miles.

2594. Mention has been made by a former witness of what appeared to him to be an excessive demand made upon the officers of the railway company for plans

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and drawings, especially in the case of locomotives?—I think that is rather a singular objection to make. As a Government officer, concerned in superintending everything connected with the railway, I required a copy of drawings which they received from England, a very reasonable demand, I think; in fact, without them, I could not carry on my duties. I wanted the dimensions, and I took the opportunity of getting from the locomotive superintendent, with whom I had a great deal of conversation upon the subject, information regarding its character altogether. I wanted the plan for various purposes connected with the engineering works, and I wanted the other for my own instruction and assistance in judging of the working of the line afterwards.

2595. Because you had no knowledge of locomotives yourself?—I had some knowledge of them, but I considered myself so imperfectly acquainted that I wished to have all this information to improve myself.

2596. *Chairman.*] Was the information, such as a civil engineer, practically acquainted with all the working of a locomotive department, would have required; would he not have been able to judge, from sight, of an engine what its power would be?—No, I should think not; with regard to its evaporative power, and the pressure which the boiler was calculated to resist, all those things must be told him, unless he has been actually engaged in the construction of the engine.

2597. You asked for drawings of each different description of engines and tenders, which drawings should have some letter or distinguishing mark, and also for a descriptive statement of the several articles of rolling stock, carriages, waggons, vans, &c., with the general dimensions, capacity, weight, number of wheels, estimated quantity of wrought materials, wood and iron, &c.?—Yes.

2598. When you made this request, were you aware that there were no draughtsmen procurable who were able to make the drawings?—I was not aware when I made the request, and having been made aware of it, I have waited patiently until the present time. I have not got the drawings yet.

2599. Is it not your opinion that with the staff necessarily limited, as it must be in India, those are minutiæ which it is hardly necessary to insist upon?—On the contrary, they were important; all I wanted were tracings. I should have been exceedingly glad to have them done myself. If I was to make, as I had to make, anything like an analysis of the traffic, I must know the weight and the capacity of the carriages; all that information was necessary to enable a man to do the duty I had to do satisfactorily. You will, perhaps, allow me to add this: that I thought the carriages were a vast deal too heavy, and I wanted to know where the weight lay, and whether they could not be reduced.

2600. You think that to arrive at a correct estimate of the cheapest mode in which the line could be worked, these details were necessary?—I think so.

2601. Colonel *Sykes.*] Did I understand you to say that one bungalow for the temporary residence of a railway officer cost 5,000 rupees?—He had permission to build one of 350 rupees, and two others at about 60 or 70; a mere room to remain in during the day. His expenses for those for his own accommodation were about 5,000 rupees. There may have been others that it was desirable he should erect.

2602. Do you mean to say that permanent bungalows of that kind were requisite?—Not at all; these were merely temporary bungalows, which could be of no further use to the railway afterwards.

2603. By what authority was that money spent; was it sanctioned, and by whom?—That was one of the cases that was not sanctioned; it was done, so far as I could judge, without any authority.

2604. At whose loss has it been built?—It was afterwards sanctioned by the order of the Court of Directors.

2605. Then the loss has fallen, in fact, upon the guaranteed capital?—Yes.

Lunæ, 7° die Junii, 1858.

MEMBERS PRESENT.

Hon. H. G. Liddell.	Mr. Crawford.
Mr. H. A. Bruce.	Mr. L. Seymour.
Mr. T. G. Baring.	Mr. Campbell.
Mr. A. H. Baring.	Mr. Cheetham.
Colonel Sykes.	Mr. C. Bruce.

THE HON. H. G. LIDDELL, IN THE CHAIR.

James Walker, Esq., called in; and Examined.

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2606. *Chairman.*] I BELIEVE you are the Managing Director of the Madras Railway Company?—I am.

2607. Will you give the Committee, in the first instance, the early history of the company, with the dates of the concession of guarantees, and the various contracts and Acts?—There was a company formed for the purpose of constructing a railway at Madras in 1845, but after two years' unsuccessful application for a guarantee, it wound up and dissolved itself in 1847.

2608. It dissolved itself in consequence of unsuccessful applications for guarantees?—Yes.

2609. Were those applications addressed in the usual form to the Court of Directors?—I believe they were; I was not connected with that company myself, so that I cannot speak from personal knowledge; I was not in England in fact.

2610. Give us the history of the company from the period at which you were connected with it?—The present company was projected, and applied to the Court of Directors of the East India Company for a guarantee in May 1849.

2611. Was the guarantee obtained in the form in which it was applied for by the company?—It was declined altogether at that time; the Court replied, that until the result of the experiments already authorised had been seen, they were not disposed to grant any further guarantee.

2612. Experiments where?—In Bengal and in Bombay.

2613. You are referring, I presume, to the experimental lines set on foot, the East Indian and Great Indian Peninsular lines?—Yes.

2614. What steps did the Madras Railway Company take upon the receipt of these objections on the part of the Court of Directors?—After a time, namely, on the 20th February 1850, we renewed the application in a letter addressed to the East India Company. We expressed our great disappointment at the unfavourable answer we had received to our application, and at hearing that the Court were of opinion that no further pecuniary support to undertakings of this nature could be granted until the result of the experiments already sanctioned was ascertained. We went on to say, that relying on the Honourable Court's appreciation of the merits and claims of this line, we did not enter in our former applications into details which a full exposition of them required. We proceeded to do so, and to submit that the two sections of line, as sanctioned in Bengal and Bombay, could only be taken as experiments so far as regards the cost of constructions in their respective localities, and that no expectation could be entertained that, in their isolated and fragmentary state, they would afford any criterion of the value of railways in India generally as a commercial speculation, or of their public utility, and that it did not appear, therefore, to us in what way the result of these experiments could bear on a line of an entirely opposite character in the Madras Presidency, or why the introduction of railways there should be postponed on their account.

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2615. What was the result of that communication to the Court of Directors?—I do not remember that there was any immediate result.

2616. What length of time, in fact, elapsed before you obtained the concession of your guarantee?—After this letter was sent in a deputation went to the Board of Control, consisting of a number of Members of Parliament, who accompanied us there.

2617. At what date was that deputation?—I think it must have been in April 1850.

2618. Was that deputation successful in obtaining a favourable hearing?—It was only successful to the extent that we were given to understand that a reference would be made to the Madras Government on the subject.

2619. Did the Madras Government report favourably upon the proposed scheme?—I should mention that on the 11th of June following Lord Jocelyn brought on a motion in the House of Commons upon the subject which elicited some further assurance that the line should be made, and the question was referred to India; I am not aware of what the answer specifically from the Madras Government was, but in May 1852 another step was taken.

2620. Are we to understand that two entire years passed between the time when the deputation waited upon the Board of Control and the next step to which you are going to refer?—As nearly as possible; it was upwards of two years from the date of the letter I have just referred to.

2621. In May 1852, what occurred?—The East India Company conceded to the Railway Company a guarantee of 4½ per cent. interest on 500,000 *l.*, for an experimental line, beginning at Madras and proceeding in a westerly direction.

2622. In the direction of Arcot?—Yes.

2623. That was not a sufficient sum to complete the whole extent of line from Madras to Arcot, I presume?—It was a rough estimate.

2624. When did the works commence?—The work may be said to have begun at Madras in July 1853; Mr. Bruce, our chief engineer, who was before that in Bengal, arrived at Madras in March 1853, and one or two engineers arrived in April and May. The first sod was turned in July 1853.

2625. When was the first portion of the line opened?—The first portion of the line was opened in July 1856.

2626. What was the length of line opened?—Sixty-five miles.

2627. When was the first contract for the experimental line obtained?—In December 1852, and the Act of Incorporation of the company was passed and the Royal Assent given in June 1853. In September 1853 the railway company agreed to the proposal of the East India Company to undertake to extend the line to the western coast, with branches to Bangalore and to the foot of the Neilgherry Hills. For that purpose the East India Company agreed to increase the capital, on which they would guarantee an interest to 4,000,000 *l.* sterling. The Act of Parliament was obtained for this purpose in June 1854, and the extended contract with the East India Company was signed in December 1855.

2628. Subsequently to that, was not a still further extension of the line applied for and sanctioned?—Yes; it came in the form of a proposal from the East India Company to the railway company.

2629. Describe the nature of that proposal?—It was a proposal to undertake the execution of a line from Madras, by Cuddapah and Bellary, to a junction with the line coming from Bombay to the southward.

2630. The point of junction being in the neighbourhood of Kistna?—To be determined hereafter.

2631. Is that point of junction fixed at the present time?—It is not.

2632. At the time that extension was agreed upon between the East India Company and the railway company, was any further extension of capital suggested?—Yes. This was in September 1856, and the Court agreed to guarantee interest upon the capital that might be required for its execution. In the meantime the railway company were authorised to raise, and did raise, a million of capital for that purpose.

2633. Were the rates of interest guaranteed upon these (three) separate capitals (if I may use that expression), the same, or did they vary?—They varied.

2634. Describe what the difference in rate was?—The rate of interest upon the first half million was four-and-a-half per cent., the next half million was issued at four-and-a-half, and was afterwards raised by the East India Company to five per cent.; then followed another issue of a million at four-and-three-

quarters

quarters per cent; then there was another issue for what we may call the south-west line, which is the original line to the Malabar Coast, of one million, at five per cent.; and a million sanctioned for the north-west line, which is the Bellary line, was also at five per cent. At present, the amount of capital upon which guaranteed interest is given is four millions.

2635. That is the whole amount of the capital belonging to your company upon which interest is guaranteed at the present time?—Yes.

2636. Did this change in the rate of interest produce any dissatisfaction in the minds of the original shareholders?—It has produced a great amount of dissatisfaction.

2637. What is the whole amount that has been raised by your railway company and paid up to the present time into the East India Company's treasury?—Our payments on account of capital into the East India Company's treasury up to this date are 2,754,690 *l.*

2638. What balance do they have at present?—As near as I can say, deducting the amount drawn in India up to the 30th April last, there is a balance of about 287,000 *l.*

2639. Colonel *Sykes.*] Exclusive or inclusive of advances in India?—That is, after deducting all advances in India, so far as I can ascertain them up to the 30th April last, and I have taken the payments made by us here to the 31st May.

2640. *Chairman.*] Are all the original shares of the first half million paid up in full?—Yes.

2641. At 4 ½ per cent.?—At 4 ½ per cent.

2642. How much has been paid out of the second instalment of capital of half a million?—It has been paid in full.

2643. The third instalment, I think, of one million, was at 4 ½ per cent.?—Yes.

2644. What extent of that has been paid up?—It is called up to the extent of 15 *l.* per share, a share being 20 *l.*, but a great deal more has been paid by the shareholders in anticipation of calls.

2645. Mr. *C. Bruce.*] The whole amount of the call has been paid?—Yes; we have no arrears.

2646. *Chairman.*] State the whole amount you have received from the East India Company as interest upon capital?—The amount received from the East India Company for interest guaranteed up to this date is 260,756 *l.* 12 *s.*

2647. What amount has been paid to them from profits obtained upon the line already opened in repayment of the interest?—The account shows it to be 17,505 *l.* 17 *s.* 7 *d.*, but there is a disputed amount of about 6,000 *l.* which depends upon the time at which the maintenance of way is chargeable to capital, or to revenue; that is not yet determined, and it may make a difference of 3,000 *l.* or 4,000 *l.*

2648. Will you now give the Committee the tonnage and rates of freight of materials and stores shipped to Madras and Beypoor?—The total amount to the end of last year from the commencement was 85,458 tons.

2649. Does that include rolling stock?—We do not send out rolling stock, we send only the iron work of it, and the carriages and waggons are constructed in India.

2650. Does that include locomotives?—Yes.

2651. Colonel *Sykes.*] Are the carriages satisfactorily constructed in India?—Yes, very much so; we only sent out model carriages, and all the rest are constructed there.

2652. *Chairman.*] Can you give us the rates of freight you have paid for the conveyance of that mass of material?—The rates of freight have fluctuated a great deal; the average rate for the whole has been 1 *l.* 8 *s.* 6 *d.* per ton. I may observe, that we had great difficulty in regard to freight, as compared with the other two companies; the trade of Madras is very much more limited, and it appears from a statement published on good authority in Madras, that the average total amount of freight from England to Madras for three years before our operations began, was only about 23,000 tons a year.

2653. Then I presume the chances of a vessel obtaining a return cargo from Madras, are much less than from any other port?—Yes, commerce is much more limited there; of course few vessels will take the whole amount of their cargo in dead weight; as a general rule, they will not take more than half, and therefore

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we had considerable difficulties to contend with in sending out our freight, which was almost all dead weight.

2654. Is it not the case that shipowners always make a great difficulty in the conveyance of such articles as iron, and large heavy goods of that kind?—They did at first, but the objection is not so often raised now. There is a fact connected with this tonnage question, which I may mention as showing the elasticity of British commerce, that although, as I said, before our operations began, the whole tonnage from England to Madras was about 23,000 tons a year, we shipped to Madras in one year only, namely, in 1855, 40,772 tons, almost entirely dead weight, and that at an average freight of *1l. 6s. 6d.*; it did not appear sensibly to enhance the freight even. We had particular facilities in that year, because there was a large trade in the import of rice from India to this country, and vessels obtained charters accordingly, which facilitated our object in sending cargoes from here.

2655. Will you describe the progress and present state of your works, and the precise extent opened for traffic, and also what is at present under construction, giving the whole number of miles you have in hand?—On the 1st of July 1856, as I mentioned, we had opened 65 miles from Madras to Arcot; in May 1857 we opened to Vellore, which is 81 miles from Madras; and on the 10th of last month everything was ready to open to Goriattum, making 97 miles from Madras; the line is expected to be completed to Vaniembady, about 120 miles from Madras, about the end of the year.

2656. There are heavy bridging works, I think, both at Goriattum and Vaniembady?—Between Goriattum and Vaniembady there are two bridges, which are and have been the obstruction, otherwise we might have opened further by this time.

2657. Will you give us the names of the two rivers that are crossed?—The Goriattum River and the Palar River. Our engineers expect to open to Salem, which is about 200 miles from Madras, by the middle of next year; considerable sections of the western portion of the line are, at the same time, being completed.

2658. Can you state the number of miles actually in course of construction over the western portion?—It is all in construction to Beypore, and by the end of 1859 the whole line from Madras to Beypore, which is 420 miles, will be finished, with the exception, perhaps, of the Cauvery Bridge; but the latest period at present assigned by the Government consulting engineer for the future opening from coast to coast, is the 1st of May 1860. I have the Government consulting engineer's report on the subject.

2659. Is that the last report you have received?—It came by the last mail from Captain Johnston.

2660. Does that quite agree with a statement that was made the other day by Colonel Pears in regard to that report?—I think, in point of dates, it does not agree.

2661. Did not Colonel Pears say that he had received a private communication from his successor, in which he expressed some doubts as to the opening of the line at the period there named?—Yes; he made a statement to that effect in answer to Question 2477 and following questions.

2662. You say it will be opened in May, and Colonel Pears's successor does not anticipate the opening until the end of the year?—Colonel Pears must be under a mistake as to the nature of Captain Johnston's report. I have his report, and I will read it to the Committee. There has been some mistake in the private communication perhaps; but the report itself says that the latest period fixed is the 1st of May 1860; he says what I have just repeated, that if certain piers of the Cauvery Bridge can be got in, it may be opened by the end of 1859.

2663. Is it possible that Colonel Pears may have received any private communication subsequently to the receipt of the report which you refer to, or is it merely a mistake on his part?—I cannot say; the report to which I refer came by the last mail.

2664. Refer to Captain Johnston's report, and give us the important particulars contained in it?—The date of the report is the 9th of April 1858, and it is contained in an extract from the Government Minutes of Consultation, under date the 20th of April 1858. It is a copy furnished by the Government to our agent in Madras, and is signed as a true copy by Captain Johnston, the officer in question.

He

He submits his report for the information of the Government, on his inspection of the whole line of railway from Vellore to the western terminus at Beypoore. He says there is every certainty of the line being fairly opened to Goriattum for traffic by the 1st of May. Then he says, "The opening of the line to Salem will, in fact, be determined by these bridges, for, as far as I could judge from the progress made, and from the information obligingly given me by the several railway officers, the entire works between Goriattum and Salem, with the exception of a heavy rock cutting through the Moroor pass, are likely to be finished and ready to receive the permanent way by the end of this year. Should the season prove healthy, and labour continue to be abundant, Mr. Beattie feels satisfied that the work on the pass will be completed by June 1859, so that no delay in the opening of the line will be occasioned on that account." He remarks that the masonry works in a number of districts he mentions, "and indeed, with very few exceptions, throughout the entire line, are remarkable for the excellent quality of their materials, and style of building. The work is carried on quite independent of the contract system, which, in the earlier stages of the railway proceedings, attained to a great extent, and the result is a most marked improvement in the building, over those generally on the open portion of the line. On the time of completion of the Cauvery bridge will depend the opening of the line to Beypoor, and should it happen that the whole of the foundations are got in this year, the superstructure with girders is likely, Mr. Bryce informed me, to be finished by July 1859. In this case we may expect to see the communication from coast to coast open by the end of that year. On the other hand, should the Cauvery freshes come down this season before all the foundations of the bridge are in, the opening of the line will probably be delayed for another three or four months, or till the 1st of May 1860:" that is the latest period he names.

2665. Give us some account of the Bangalore branch, and tell us why that was not begun: when was it sanctioned?—That is part of our contract into which we entered under the arrangement made in September 1853.

2666. Was I right in supposing that it is not yet commenced?—It is not yet commenced; the Railway Company were desirous of commencing that branch; they attach great importance to it, and the Madras Government also have attached great importance to it; and so far as I am aware, the Court of Directors of the East India Company have also been desirous that it should be proceeded with.

2667. Colonel *Sykes*.] Who has objected?—I have no knowledge who objects to it. I state, so far as I know, that the Court of Directors have supported the applications of the Railway Company on the subject.

2668. *Chairman*.] Have you pressed the Court of Directors from time to time to hasten the sanction of that part?—We have done so repeatedly. We wrote to them on the 22d of October 1855, again on the 7th of December 1855, and on the 24th of January 1857, and quite recently again, on the 28th of May last. The subject was also referred to in a letter to the agent of the 1st of November 1855. Those letters the Committee are aware come under the notice of the Court of Directors of the East India Company, and are sent out with their sanction.

2669. Do I understand that the Railway Company are anxious to proceed with that portion of the line, that the Madras Government have reported favourably upon it, and that the East India Directors are also in favour of it?—So far as I know.

2670. And yet no direct sanction has been obtained for the construction of that line?—We have been refused permission to go on with it.

2671. You are unable to say, of your own knowledge, where the objection arose?—I am not able from my own knowledge to state, but I can show what the Madras Government have said about it.

2672. Mr. *Cumming Bruce*.] Is there more than one quarter from which an objection to your proceeding could have come, seeing that the Court of Directors were favourable to it?—I do not see more than one quarter.

2673. It must have been the Board of Control?—I conclude so.

2674. Upon what ground do you believe that the Court of Directors were favourable to it?—I have no official knowledge of it.

2675. What induces you to say that you believe them to be favourable?—I have had communications with Directors of the East India Company, from whom I have learnt that the Court have always been in favour of proceeding with this branch. I may say that I saw a late president of the Board of Control on the subject

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subject of being allowed to go on with this Bangalore branch, and extend it to Bellary.

2676. Now will you give us the history of the north west line by Bellary; that portion of the line which is ultimately to meet the Great Indian Peninsular?—I have mentioned that the railway company undertook the execution of this line in September 1856.

2677. At the suggestion of the East India Company?—At the suggestion of the East India Company.

2678. The draft of the contract was submitted in December 1856, was it not?—On the 8th of December 1856 we submitted for approval of the Court a draft of the contract for that line.

2679. Was that contract completed there and then?—No; we heard nothing of it until the 9th of June 1857, when the Court wrote objecting to make this a separate contract, as we had proposed to do; the Board, on the 25th of June, pointed out that they could only undertake it as a separate contract, and that they had entertained the proposal on that understanding. On the 29th of July the Court wrote again, waving the objection to the separate contract, but proposing some further alteration in the terms of the contract.

2680. What was the nature of those alterations?—In the letter from the Court it is referred to as a discrepancy or inconsistency between certain articles in the clauses of the existing contract which they thought should be remedied.

2681. Could you explain precisely what the points that they wished to modify were?—As it afterwards appeared, the points were these: they wished to limit the period within which the Railway Company were to be at liberty to surrender the line if they pleased, and to receive back their money.

2682. What was the difference between the period which they last proposed, and the original period named in the contract for surrender?—The contract gives the Railway Company liberty to surrender, and receive back their money at any time.

2683. Upon six months' notice, I believe?—Upon a certain notice.

2684. What modifications did the Court of Directors propose upon that?—After the receipt of that letter from the Court of Directors, the Railway Board proposed, in order to save time and to facilitate an adjustment of these questions, that they should be left to be settled between the respective law advisers of the East India Company and the railway company. We understood that the same question had been raised by the Court in reference to the contract by the East India Railway Company for their Jubbulpore line; and as the solicitors were the same for both companies, we thought it better that the question should be decided for one without agitating it for both.

2685. Has any settlement been come to between the two solicitors?—I understand the contract of the East India Company has been settled, but ours is not yet completed.

2686. Have you agreed to take that as a precedent?—We are willing to take it as a precedent.

2687. Can you state from your own knowledge what the modifications are which have been introduced?—The modifications amounted to this, that the power of surrender should be limited to the end of the first 50 years of the contract. The present power of surrender on the part of the railway company, extends over the whole time; they have liberty to surrender at any time upon giving a certain notice.

2688. Under the proposed modifications, supposing the Railway Company to continue in possession for 50 years, they will for the remaining 49 years have no power of surrender under the terms of the contract?—They would not have had, if they had agreed to the proposal.

2689. But you have not agreed to the proposal?—No.

2690. Has the surveying and staking out of the line been proceeding in the meantime?—Yes; it is surveyed and staked out now, I believe, as far as Bellary.

2691. The whole of the surveys to Bellary have been completed?—Not the detailed surveys; but the general survey of the line has been made in its course as far as Bellary.

2692. Colonel *Sykes*.] You mean the route by Cuddapah, and not the route by Bangalore?—Just so.

2693. *Chairman*.]

2693. *Chairman.*] Do you desire to offer any explanation upon any portion of Colonel Pears' evidence, which I believe you have heard, or have had an opportunity of reading?—I wish to offer some observations both on Mr. Bruce's evidence and on that of Colonel Pears.

2694. Confine yourself at present to Colonel Pears' evidence?—Both those gentlemen allege delay, which Mr. Bruce attributes to the system and to the action of the Madras Government, and which Colonel Pears attributes to the system and, in a certain degree, to the independent existence of the Railway Company, and to its action. In their evidence some cases of delay are stated, the blame of which without some explanation, might rest in some degree upon the Railway Company and their officers in this country; and I am desirous of giving some explanations upon those; of course, it is not to be supposed that cases of delay will not occur in an undertaking such as we have been engaged in for some years; but I hope to show the Committee that they have been very few. A few are alleged, and in those I shall be able to show that the circumstances are not always correctly stated, and that the delay was less than that evidence would show. The first is in reference to the want of engineers. Mr. Bruce has stated, one reason of the delay which is referred to, in construction, has arisen from his not having a sufficient number of engineers. There is no doubt that if he had had more engineers at the outset, more work would have been done. I do not wish to deny that, and perhaps, seeing the course that events took, it would have been better if he had had a greater number of engineers; but I wish to show the actual state of the case, and what were the reasons of the Board for not sending out the entire number which was originally asked for by Mr. Bruce.

2695. What was the original number asked for by Mr. Bruce?—In January 1854 Mr. Bruce asked for nine engineers in addition to the seven he had, that is, one for each of the 16 districts from Madras to the Malabar coast.

2696. Mr. *Cumming Bruce.*] Each district containing how many miles?—About 25 miles; and at that time it was proposed to make 16 districts; but 17 were afterwards laid out. That was on the assumption that he should proceed at once to the construction of the whole line. The Railway Board did not consider that course expedient, looking to the difficulties that were then experienced and anticipated in obtaining freight for the quantities of materials that had to be shipped from this country, and also to the economical construction of the railway. They were of opinion that it was desirable to confine, in the first instance, the operations of their engineers to the line between Madras and Vaniembady, and the line from the Malabar coast to Coimbatore, and they sent out instructions accordingly, with the sanction of the East India Company. On that account they did not think it necessary to send out the number of engineers, not contemplating proceedings upon that extended scale at first. In the meantime Mr. Bruce, anticipating that his requisition would be complied with in full, had appointed some of those engineers, as they came out, to some of the central districts, because they were most difficult of construction, and if not entered upon at once, were likely to interfere with the eventual through opening of the line. Having so placed them in charge of those districts, and the work having begun, he was unwilling to remove them, very properly, from the work, and in consequence of that, there was for a time a scarcity of engineers to undertake the other districts. The Railway Board, on learning the state of the case, supplied that want.

2697. What was the additional number the Railway Company sanctioned?—They have gone on adding more and more engineers, and we have now 30 engineers. We have added them as the exigencies of the case required.

2698. I think I am right in supposing that you are constructing the whole of your line of railway yourselves. You do not employ contractors upon any portion of it?—We have no European contractors. We have some small native contractors, but to a much less extent than was at first the case. It did not work very well, but was in some instances a cause of delay. We have been very anxious, and the Court of Directors and the Madras Government have also been anxious, to employ, as far as possible, the labour, the means, and the resources of the country; and Colonel Pears, in one of his reports, has stated, and very truly, that delay has ensued from an anxiety to give every possible fair trial to the native

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contract system. The consequence of that has been that we have been obliged to take up works and finish them ourselves, and that explains, in fact, the delay that has occurred.

2699. You corroborate that which we have already heard in evidence, that the native contractors have in several instances failed in the fulfilment of their engagements?—Yes; they have in the case of these very bridges, which create the delay, the Goriattum and Palar. There was considerable delay from a contractor having failed altogether; it was necessary that he should be allowed to try, and it is not always easy to get rid of a contractor. We are now carrying on the work by our own engineers. In reference to the conduct of the Board, there is a letter published in the despatches of the Honourable Court of Directors to the Madras Government, in which the Board so fully explained their proceedings in regard to these engineers, that I shall be glad of an opportunity of bringing it before the notice of the Committee; it is dated the 9th of December 1854, and is in answer to some representations received from the Madras Government, regarding the want of engineers to carry on the works. The Board replied to this effect: "In reply the Board respectfully request the Honourable Court will be pleased to refer to the correspondence which has previously passed on the subject, to my letters to your address on the 13th of March and 10th of July last, and to that addressed to the agent, No. 21, of the 10th of April last. The views and intentions of the Board as to the course to be pursued in the construction of the line which were there fully set forth, received the approval of the Honourable Court, and have ever since guided the Board's proceedings. For the reasons there stated, it was decided that the works of construction should for the present be chiefly confined to the part of the line between Madras and Vaniambady, and for those reasons it was not deemed necessary to appoint so large an engineering staff as had been proposed at that time by the consulting engineer of the Madras Government, acting under different expectations of the extent of work to be simultaneously carried on. The Board, however, anxious to provide for all the engineering wants, proceeded at once to the appointment of two additional assistant engineers; and on the receipt of the representations from the agent of the chief engineer, in reply to letter No. 21, above mentioned, they applied, on the 19th of August last, to the Court, and received permission to appoint two more. These last engineers, it was stated in the letter to you of that date, completed the number and description of engineering staff which the Company's officers in India concurred in reporting to be sufficient for carrying on and effecting the works and survey of the Cuddapah and Bellary line, included in the scale and in the manner detailed in the correspondence already quoted." So that in December 1854 the Board sent out the number of engineers required after they received this information. Then they refer to their former proceedings, and they say, "This was done under the expectation that the construction of the intermediate or central part of the railway between Vaniambady and Coimbatore would not be proceeded with until that of the two ends was so far advanced that the engineers could be conveniently spared from them for the purpose. But the examination and survey of the district near Salem (including the Moroor Ghaut), had been previously commenced by three engineers; and Mr. Bruce considered it unwise to interrupt the work in the most difficult and laborious part of the whole line, in which progress had been made and experience gained, that would thereby, in a great degree, have been sacrificed, and, instead of removing the engineers from Madras to Vaniambady, allotted Messrs. Collins and Fenwick, with another engineer, to the latter duty. The Board are not disposed to blame their officers for having in this instance considered it right to depart from their instructions, for Mr. Bruce has given strong and satisfactory reasons for the course that was pursued."

2700. Does that complete the question as to the engineers?—That completes the question as to the engineers.

2701. Can you describe the extent of the Goriattum and Vaniambady bridges and works?—I do not know that I can give you the precise extent of those two works.

2702. Can you give us the estimate of the cost of the whole?—I can give you the cost of some of the bridges we have built, but I do not know that I have with me

me the estimate of all the bridges. The Goriattum Bridge consists of 24 arches, of 30 feet span, making a length of about 900 feet; the estimate for it was, I believe, 47,000 rupees. The Palar Bridge consists of the same number of arches, and arches of the same span each, giving 900 feet, and the estimate for that was 64,000 rupees, there being additional difficulties in its foundation.

2703. Have you any account to give of the Cauvery Bridge?—That was estimated to consist of 22 arches of 60 feet, and the estimate for the cost was two lacs of rupees; the piers are required to be very high, the roadway being from 40 to 50 feet above the bed of the river. We have built two considerable bridges on the part of the line that is opened; one is the bridge over the Cortilliar River, consisting of 26 arches, of 30 feet span, the total length being 1,000 feet, and width 29 feet. It was built, I believe, in one year, and it cost 74,000 rupees.

2704. I presume all these bridges and works are constructed for a double line of railway if required?—They are. The largest bridge on the part of the line opened is the bridge over the Poiney River; it consists of 56 arches, of 30 feet span, giving a total length of 2,050 feet. It was built in about 18 months, or within two years, and cost about 140,000 rupees, which was considerably under the estimate. These two bridges are built of granite, and are described as very handsome bridges. The Government commented upon the excellence of their construction, and complimented our engineer on the Cortilliar Bridge.

2705. Were the materials found on the spot?—Yes; they could not otherwise have been built for anything like the money.

2706. What is the nature of the bed of those rivers?—They are, for the most part, sandy.

2707. Has much difficulty been found in obtaining foundations for the piles?—The practice has not been to pile it. There is a peculiar method of construction adopted in India, by what are called wells. A paper has been read on that subject by Mr. Bruce, since he returned to this country, before the Institute of Civil Engineers, where the whole system will be found set forth.

2708. Did you find that the expense of construction of these bridges was increased by the non-employment of contractors, or the reverse?—I do not think we could have constructed them cheaper by the employment of contractors. In some of the bridges delay, and probably expense also, has been incurred through the desire to employ native contractors.

2709. Have you any other explanations to give in reference to the evidence already adduced?—Mr. Bruce also referred, as a cause of the construction of the line not having been proceeded with so rapidly as it otherwise would, to his not receiving some waggon iron work. Mr. Bruce, of course, as the Committee are aware, is no longer in the service of this company. It is right that it should be understood that Mr. Bruce having left India from the failure of his health in September 1856, has never returned, and he ceased from that time, I may say, to act as the chief engineer of the company, and is no longer connected with it; and, therefore, he does not appear as an officer of this company, nor have they anything to do with his appearance before this Committee. It is proper, in justice to all parties, that that should be mentioned.

2710. In justice to Mr. Bruce, I may ask you this question, did he leave the service of the company, and did he return to England from India solely upon the score of his health?—Entirely so; we regretted it much, and we consider that part of the delay that has ensued has arisen from the unfortunate circumstance of Mr. Bruce being compelled by illness to leave the service at the time he did. In respect to the iron work, Mr. Bruce, speaking from memory, and not having the dates before him, has fallen into a little error with reference to the delay, and makes it appear a great deal more than it really was; and I am anxious to show that the delay was not so great. I have a copy of the requisition, which is dated in July 1853; it is a requisition for a number of things apparently contemplated to be employed when the railway should have been completed. He asks for locomotive engines of two descriptions, and carriages, carriage trucks, goods waggons, ballast waggons, luggage vans, and a variety of other things; and with regard to the carriages and trucks, he says, "I do not think it desirable to send them out in a complete state, but only that the iron work be sent out." I am going through this, with a view partly to illustrate the conditions under which we worked in the early stage of the proceedings here, and to show the time that was necessarily consumed in complying with any requisition. The requisition

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was dated in July 1853; it was received by the Board on the 2d of September 1853, and was referred to Mr. Rendel, our consulting engineer at that time, on the 7th of that month. Mr. Rendel wrote to say that it would be desirable to have further information from Mr. Bruce, before proceeding with the requisitions. The Board was sorry to lose time by a reference back, and they wrote to Mr. Rendel again, requesting that he would give, if he could, upon such further information as they could individually afford, a report that would enable the Court to proceed with the requisition, as delay was very unadvisable. On the 18th of September he wrote, that being out of town, he was unable to prosecute the work till the first week in October. On the 20th of September I wrote again upon the subject, and urged the necessity of an immediate compliance, and again on the 3d and 10th of October to the same effect. We then saw Mr. Rendel, and arranged with him that it was desirable that the ballast waggon iron work at least should be proceeded with, as that appeared to be the only part of the indent that could be immediately useful in construction. On the 7th of December he wrote to say that the plans would be ready in two or three weeks, and on the 19th of December the Board received the drawings; and his recommendation to invite parties to tender for iron work for 24 waggons. The Board, on the 28th of December, applied to the Court for sanction to invite tenders, and they received their sanction on the 11th of January. The tenders were then invited and received, and a tender accepted on the 30th of January. On the 2d of February the sanction of the Court was requested for accepting it, and we received it on the 13th of February. The tender was accepted accordingly, and it was completed in July 1854, shipped on the 5th of that month, and received at Madras in December 1854, being about 18 months from the date of Mr. Bruce's requisition. It will be seen that so far as the Railway Board were concerned, there was no delay in the matter, but it was due to the system, in a great degree, under which we at that time acted.

2711. When you say it was due to the system under which you acted at that time, you refer to the period at which the *ex officio* director had not the power of giving immediate sanction to the purchase of any materials without consulting two branches of the Indian Government at home?—There were other difficulties at that time; we were obliged to refer in some anterior steps to the Government for sanction.

2712. What do you mean by anterior steps?—The course we had to pursue was this: when we received from India a requisition, we had to apply to the Court for permission to take steps to comply with it; on receipt of that, we had to refer it to our consulting engineer to report upon it, and as to the parties whom we should invite to tender for it. We had then to submit that report with our opinion to the Court, and request their sanction to our acting as there recommended; on the receipt of that sanction we proceeded to invite tenders; the tenders were received, examined, and reported upon by our consulting engineer; then we had to write again to the East India Compay for their sanction to our accepting that tender, and it was only on the receipt of that sanction that we could accept the tender and give the order.

2713. That circuitous mode of proceeding is simplified considerably, is it not?—Yes, it is, very much; in consequence of representations of the enormous waste of time arising from that, a letter from the Court, in June 1855, informed us that when supplies of materials from this country are once sanctioned by the Court, they do not require any further reference upon questions of detail, provided the *ex officio* director were a concurring party in the proceedings connected with the provision of the various articles, and that full particulars be recorded on the minutes. Then, subsequently to that, we received a further communication in answer to a representation we made to the Court again upon delays that still arose, because there was a necessity of referring a requisition received from India, with the sanction of the Indian Government, to the Court for their sanction; that involved a delay of about 20 or 25 days. We represented that to the Court; and in reply, "with the view of diminishing the length of time required under the present arrangement for supplying requisitions from India, and concurring in the proposal of the directors of the Madras Railway Company, the Court authorise them, with the concurrence of the *ex officio* director, to comply at once with such indents from India as may have been sanctioned by the Madras Government; a full report of the proceedings being recorded

recorded in the minutes of the Railway Board which are submitted to the Court, this arrangement not being considered to apply to the creation of fresh appointments."

2714. Have you found that in consequence of those two modifications the business is now conducted in a more satisfactory and expeditious manner?—Very much so. If the Committee will allow me, I will show what can be done when we are at liberty to supply requisitions, as men of business would deal with it if it were their own affair. I have gone through the details of that first requisition of Mr. Bruce, which occupied 18 months; that was a requisition from him of July 1853; on the 19th August 1854 he made a requisition to the agent for the supply of 100 axles and 200 wheels for the construction of railway waggons. The agent forwarded it to the Government on the 23d; it was received in London on the 6th October, and was immediately attended to. There was some difficulty about the tracing of the axle being imperfect, but we got over that. The Board applied to the Court to be allowed, under the emergency of the case, to order the wheels and axles at once, and that permission was granted; they were shipped for India on the 9th December, and arrived out there in April 1855. They were shipped within four months of the date of Mr. Bruce's requisition, and within two months of its receipt by the Board in England. They were received in Madras in eight months from the date of Mr. Bruce's requisition, which was as expeditious as it could possibly be.

2715. Mr. *T. G. Baring.*] Was not that before these changes took place?—Yes; the Court, on our application, it being a case of emergency, agreed to waive the usual forms.

2716. Mr. *A. H. Baring.*] Is that the only case in which they waived the usual forms?—The only case, I believe. We could not go to them unless we had a case of emergency, and showed that it was one.

2717. *Chairman.*] The Court did not complain of the summary mode you adopted?—No, I believe it was satisfactory.

2718. Even under the old system of strict supervision and circuitous procedure, do I understand you had, in cases of emergency, the power you have just described?—There was no understood power; but, in any isolated case of extreme urgency, we acted upon it, although we could not expect the rules to be relaxed, unless we could show that it was a case of emergency.

2719. When the long delay of 18 months occurred, might you not have represented that as a case of emergency, and so have supplied the materials quicker?—It did not come to us as a case of emergency, but the other did. There was only one other case referred to by Mr. Bruce, in which he attributes delay to the Board in not having sent out certain iron pumps in time; and, I think, he quoted in the evidence a letter which he had recently received from one of the engineers, to say that they had just arrived, at the end of two years. That seems to require a little explanation on the part of the Board; and I shall show that the time was 15 months instead of two years. The requisition for them is dated July 1856; it was part of a very large and multifarious requisition. It was received on the 11th October, and the Court's sanction requested on the 20th. We received the sanction on the 13th of November, and the requisition was, on the same day, sent to the consulting engineer to report upon it; but just at that period, I regret to say, Mr. Rendel died, and of course his death caused considerable interruption; at that same date also, Mr. Bruce himself arrived in England, and we took the opportunity of obtaining his valuable assistance in considering these requisitions, and arranging them. They required to be classified and arranged, so as to divide them into separate contracts, and, with Mr. Bruce and Mr. Rendel, jun., we went into the question. The contracts were classified, and tenders were invited on the 21st January, and sent to the consulting engineer for report on the 2d February; that report was received on the 5th, and the tenders were finally accepted on the 13th February. The pumps were shipped to Madras in April, and arrived in October 1857; so that the time was from the end of July 1856 to some period in October 1857, which would be 15 months. I think I have shown a reason why that was an exceptional case, and that the delay could not have been avoided by any act of the Board, owing to the unfortunate loss of our consulting engineer.

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2720. Have those pumps been received?—Yes; they arrived in October 1857. I think these are the three cases that Mr. Bruce referred to.

2721. Mr. *Crawford.*] Do you wish to make any observations to the Committee on the question of bungalows?—Yes, I do; I see that Colonel Pears in his remarks upon the bungalow question, and more especially with reference to the bungalow of the engineer in the sixth district, stated that that engineer had expended a sum of 5,000 rupees in the construction of a bungalow for his own accommodation; the cost of that bungalow, instead of being 5,000 rupees, was, I am glad to say, only 2,020 rupees. The Madras Government disallowed the expenditure incurred in excess of the amount they had sanctioned.

2722. Colonel *Sykes.*] They disallowed the excess above what?—Above 350 rupees; there was a great deal of difference of opinion and a great deal of discussion about the amount to be allowed to engineers for their bungalows; the Board disapproved very much of their engineer's proceeding in going to that extent of outlay; but eventually, on a full consideration of the subject, we addressed the agent on that subject, under date 13th February 1857, to this effect:—"With reference to the resolution of the Madras Government declining to sanction a sum of 2,500 rupees for engineers' and inspectors' bungalows, included in the estimates for the first and second sections of district 4, I am directed to observe that when 350 rupees were originally authorised for each of the temporary bungalows for engineers, that sum was fixed, on the supposition that the buildings in question were intended solely for the personal accommodation of the engineers, to shelter them while superintending works in their vicinity; and that they were to last for perhaps only a few months, or a season at most. For such a purpose the Board are disposed to concur in the opinion expressed by the Government that a sufficiently commodious temporary building might be erected for 350 rupees. But, as under the system of construction pursued, accommodation is required, not only for the engineer himself, but for his office and establishment, for the safe custody of his cash chest, containing often large sums of money, for the examination and settlement of the accounts of the labourers and contractors employed on the district, and other similar duties, for the convenient discharge of which considerable space is required, the Board are of opinion that a building of the description shown by the accompanying plan, and which it is understood can be erected for about 900 rupees, is not more than sufficient. It seems necessary that in each district one such building should be provided, and the Board trust, that on the circumstances being explained, the Government will see reason to reconsider its decision on the subject." That has been sanctioned, and the sum now allowed is 900 rupees.

2723. Mr. *Crawford.*] How did you deal with the sum that was disallowed?—After censuring the engineer for his proceedings, it appeared that the bungalow which was erected was of a more permanent character than was contemplated or intended; and it was reported to us that it might be useful for the residence of some of the officers of the Company eventually, when the line was finished and opened. In consequence of that, and under all the circumstances, we relieved the engineer of the necessity of being personally liable for the excess beyond the expenditure that he was allowed to make, and requested the Court to allow it to go as a charge in the construction.

2724. Do you wish to make any observations upon any other of the points referred to in the evidence of previous witnesses?—There are some other points of Colonel Pears' evidence which I am desirous of offering some explanation upon, such as Colonel Pears' observations on the failure of the system, and as to the expense of the line. The cost of the first 71 miles of the line has been equal to something less than 6,000 *l.* per mile, so far as can be at present ascertained; that includes everything, engineering, and general superintendence, Indian management, stores, permanent way, English management, the estimated amount required to complete the laying down of the telegraph, the proportion of the expenses of the general office, or terminus at Madras, and the proportion of the expenses of the great workshops at Madras, the salary of the chief engineer, and altogether it comes to 59,786 rupees per mile, which also includes the two bridges I have mentioned; at 1 *s.* 10 *d.* that would be equivalent to 5,484 *l.*; at 2 *s.* the rupee, which is the more current value, it would be 5,978 *l.* Colonel Pears has made several observations as to the

the increased cost of construction arising from the system pursued, and particularly from the existence of a railway board, and above all, in London. In analysing the elements of this cost, at, say 6,000 *l.*, the materials for permanent way sent from this country, have cost, when landed at Madras, at the rate of 2,291 *l.* per mile; that is, exclusive of sleepers; it is quite clear, therefore, that unless Colonel Pears means to say that those materials could have been purchased and shipped, and sent to India at a less cost by the Government than by the Company, the only reduction which could be effected must be in India. I am quite prepared to show that it is impossible for any Government to get these materials cheaper than we have got them, and I am quite sure they could not have got the freight at anything like the money; no Government can; and therefore I say, and I say it with every confidence, that so far as 2,291 *l.* out of 6,000 *l.* goes, it is utterly impossible for the Government to effect any saving; I believe it would cost them a great deal more. In addition to that, I am not aware that in India the Government could have any means of getting the line constructed cheaper, except by that influence which the Government always has in India in obtaining labour; no doubt the Government have powers and facilities at times in procuring labour which a private company has not, but I doubt whether, in the end, labour obtained by any other influence than that of good wages and punctual payment will be cheaper. As Colonel Pears has not assigned any particular ground for the opinion that the railway should be made so much cheaper by the Government, I cannot, of course, address myself to his reasons. I can only express my opinion, that although in one respect the Government might make it cheaper if left free, the Company, if left free, might also make it at much less expense, both of time and money.

2725. Mr. *A. H. Barkley*.] Have you any personal experience of the Madras Presidency?—I have been there, but I have merely passed through the Presidency of Madras as a traveller. Colonel Pears has also stated his belief that the rest of the railway will not be constructed at anything like the figure of 6,000 *l.* per mile; I do not know exactly on what grounds he founds that opinion; but my opinion is different; and so far as we have seen we have no reason to doubt that we shall conclude the whole of that line at the cost that we originally estimated it at, namely 7,000 *l.* per mile; and with regard to the time within which it will be executed, and the alleged delay, I have already read from Captain Johnston's report the time at which an impartial observer like himself considers that the railway will be completed. When we undertook this extension of the line to the Malabar coast, we stated that it might be completed in five years from January 1854; and it appears that if certain bridge piers can be got in, it will be completed by the end of the year 1859; and looking at the delays that we have been subjected to, and which we could not have anticipated, and to the ordinary relation of execution to estimate, I do not think there is any delay that calls for particular remark. When Colonel Pears speaks of our having been engaged on the railway from the beginning of 1853, I wish to say that it was not until the end of that year that we agreed even to undertake it; we were engaged on an experimental section only of 50 or 60 miles from July 1853, but we could not begin this new line until the beginning of 1854. We had only, in 1853, a contract with the Company to make 50 or 60 miles, and we could not anticipate that after being three or four years in obtaining a concession of guarantee on half a million, that in three months after we got it we should be asked to undertake lines that would cost three and a half millions more. I am anxious to add, in reference to the anticipation of the increased cost of the line, that the portion which has been completed is laid with heavy rails, and in consequence of that the permanent way material sent out from England to Madras cost above 2,200 *l.* per mile; and the cost of these materials for the rest of the line, to be laid down with light rails, will be only 1,674 *l.*, which makes a difference of 600 *l.* in our favour per mile. I am quite at a loss to know on what grounds it is assumed that the cost of the remaining portion of the line will be so much greater. I think Colonel Pears is also in error in the quotation he makes about the estimated cost of the earthwork, and its cost as actually executed by our engineers on the portion of the line that is opened. I am prepared with the details, but I do not propose to take up the time of the Committee by referring to them.

2726. Colonel *Sykes*.] You have stated that you obtained your freight cheaper than it could have been obtained by the Government, or by the Court of Directors; do you know what has been the maximum and minimum freight for

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dead weight paid by the Court of Directors since your railway commenced?—My answer did not apply to the Court of Directors particularly, but to any government.

2727. Do you know what has been the maximum and minimum freight paid by the Court of Directors for dead weight since you commenced?—I do not.

2728. Upon what ground do you infer that the Court has not obtained freight as cheap as your company has done?—From time to time, for my own guidance in engaging freight, I have made it my business to ascertain what the East India Company were paying for freight similar to that which I was engaged in securing. I have invariably found that they were obliged to pay a higher rate, sometimes 10, and sometimes 20 per cent. higher; the East India Company proceed in all these things by inviting tenders, under certain conditions, which are considered by the shipping interest rather onerous; they involve considerable delay, which to the shipowner is a loss. He is precluded from making other arrangements for his ship while an answer to his tender is being received, and the consequence is, that the shipowners prefer to engage with us, at a considerably lower freight, when they can come into the office and get their business done at once.

2729. Then it is not your practice to proceed by tender?—Very rarely.

2730. You are aware that the Court always proceed by public tender?—Yes.

2731. Offering to any one who chooses to tender the means of taking up a contract?—Yes.

2732. Do you not consider that you run some risk, in consequence of taking freight under those circumstances?—No, I do not think we run any particular risk; we take freight subject to the approval of the ship by our underwriter. We engage freight upon which insurance can be had at the lowest current rate. Our ordinary rates on ships with general cargoes have been 30 *s.* per cent., and we have had no losses.

2733. With regard to the outlay for bungalows, you say that the real amount expended was 2,020 rupees, and not 5,000 rupees?—Yes; and it appears in the published books.

2734. The outlay, nevertheless, was incurred in violation of prescribed rules?—Yes.

2735. Had you other instances of independent proceedings on the part of your officers?—The regulated allowance was exceeded in several instances.

2736. In any case did you make the party who violated your rules stand the consequences?—If you mean to ask whether we made him pay the excess out of his own pocket, we did not.

2737. In all these cases of violation of rules the loss fell on the guaranteed capital?—It went to the charge of construction. We expressed to the engineers at the time our opinion, and we censured them when we thought they deserved it.

2738. Have you thought it worth your while to compare the progress of your railway with the progress of railway construction in Great Britain?—I cannot say that I have; the conditions are so very dissimilar that it did not occur to me that any comparison could be of much practical use. I may say that I think we have been at a disadvantage in the mind of the public in the comparison of our line with those of Bengal and Bombay, which were so much earlier in the field, and the construction of which began so much before us.

2739. I am asking you with regard to Europe; have you any impression that your progress in India has been as satisfactory as the progress upon lines generally in Great Britain?—I think, making allowance for the different circumstances under which railways are made, the progress has been quite as satisfactory.

2740. With the same means of procuring rails and dead weight, and other things which you can procure on the spot in India and on the spot here?—The novelty of the undertaking in India altogether, the distance to which the permanent way materials must be sent, the great difficulty of procuring skilled labour, the difficulty of supplying the place of an officer disabled by sickness or removed by death, and many other difficulties, are of a nature to enhance the time of execution.

2741. You have not thought it worth your while to make an absolute comparison between any number of miles of construction of your railway and any line similarly circumstanced in Great Britain?—I have not. I think when some of the witnesses have spoken of completing this line in four years, they have made calculations far more sanguine than experience can possibly bear out. I do not think

think the Government could have made a line of this description, of 420 miles, within four years from its commencement, it could only be done, if at all, at an enormous increased expenditure, but my belief is, that with any expenditure, it could not have been completed and opened in four years from the commencement.

2742. As managing director, you are satisfied with the progress of your railway as hitherto made?—On the whole we are satisfied. We are aware that the progress has not been what we expected; we expected, as I have said, that it might be completed by the beginning of 1859, but things have occurred which I may mention, which have proved causes of delay that we did not anticipate; we have lost time in the first place from our great desire to encourage the system of native contracts, and to make use of the resources of the country. There has been an unlooked for difficulty in obtaining labour in the jungle districts, and also from the increased demand for labour for a time on public works. Two or three years ago there was a sudden increase of expenditure on public works in India, and it was carried on to a great extent at Madras, and produced a great increase to the demand for labour, and in that way materially interfered in certain quarters with our works; that is recorded in the Government's own orders, under date July 1856. We have also been delayed by the unfortunate changes we could not anticipate in the office of our chief engineer; Mr. Bruce's sudden and unexpected illness deprived us of his services. It was necessary that another officer should take temporary charge, and he again had to be succeeded some months later by an officer appointed from this country, who necessarily arrived new to the work; delay was also occasioned by a reference to England as to the line to be taken between Salem and Paul Ghaut, and the commencement of the Cauvery bridge was delayed in consequence, and the works were afterwards suspended there, and the stonemasons were dispersed, by a special order of the consulting engineer of the Government, until a certain alternative line should be examined. There was also a deficiency of skilled European inspectors for a time. The Madras Government were opposed to our engineers drawing on England for that class of men, and the engineers complained, and I think with reason, that our progress was impeded by the want of them, particularly for the construction of the bridges; we have suffered at times also from the pressing of carts and bullocks by regiments moving through the country.

2743. With the exception of the interference by the Government in taking labour from you for public works, and by pressing carts and bullocks for the movement of troops, none of the delay has arisen from interference or from any action of the Government upon the railway?—There are some additional causes of delay; but I think they are of minor consequence to those I have mentioned.

2744. *Chairman.*] Was not the employment of native contractors especially urged upon you by the Government?—I think it was our own proposal as well, and we were not at all averse to it. It was our wish to employ native contractors if we could with advantage, and we should be now desirous to do so if it were possible. We were delayed by the stoppages of works; there was a stoppage of works on the line at the Shevaroy Hills, and a more considerable one afterwards at Salem.

2745. Colonel *Sykes.*] Caused by what?—In the first instance, it was an order that a certain alternative line of deviation might be examined; the engineers complained that in consequence of that, they were obliged to stop works and to discharge the labourers, whom there was a great deal of difficulty in collecting again; many of these districts were in unhealthy situations, and for that reason also it was difficult to get labour.

2746. Did that proposal of the alteration of the line originate with the Government or with the engineers?—It originated in both cases with the Government consulting engineer.

2747. For what object, political or commercial?—I believe it was from an idea that a better line might be found.

2748. Politically or commercially?—In a railway point of view; it was thought that better gradients could be found. The Board thought the effect of these stoppages so material that they brought the matter under the notice of the Court of Directors, in the shape of a draft to their agent, which was approved by the Court, and sent out. In regard to the stoppage in the Salem district, it involved a stoppage in works upon a part of a line on which 200,000 rupees was stated to have been laid out.

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2749. During what length of time?—The stoppage was not of long duration, because the Government declined taking upon themselves the responsibility of stopping the works, although the works had already been stopped for about six weeks; and they directed, under the circumstances, that the Company's engineer or agent should go on with the line on his own responsibility.

2750. By whose authority were the works stopped?—By the order of the Government consulting engineer, whom we regarded as the organ of the Government.

2751. In spite of all those stoppages, you are, on the whole, satisfied with the progress you have made?—Yes; there has been a difficulty in obtaining land for brick-fields.

2752. With all that, you are, on the whole, satisfied with the progress you have made?—Yes, considering the difficulties we had.

2753. Have your shares always been at a premium?—No, they have not always been at a premium; they have often been not at a premium.

2754. At what period?—At this moment certain of our shares are at a discount.

2755. Are those the 4½ or 5 per cent. shares?—The 4½ and 4¾ per cent. shares.

2756. Are any of the 5 per cent. shares at a discount?—I rather think they have been, but they are now about par.

2757. They have been at a discount?—I think so.

2758. *Chairman.*] Is not that a natural consequence of the variety of the rate of interest?—Of course when there is a large amount of that description of stock and shares in the market, one sort carrying a higher rate of interest, those at a lower rate of interest will naturally go to a discount; and in this particular case, it is a curious thing that the 4¾ per cents. which ought to stand midway in value between the 4½ and 5 per cent. shares, never are at that value. The public appear to have a great objection to fractional interest, and they are very averse to having anything to do with these shares. I believe the existence of those varying rates on the Madras Railway, have had a great effect in depreciating the value of the shares in the market. It gives an appearance of complication, which the public do not understand, and they cannot be made to understand that the stock of the company, bearing an inferior guarantee to that of the other company, is not also in some degree of inferior value and quality. There is no foundation for it, the guarantee is the same in all cases, but the share-buying public are very sensitive people.

2759. Mr. *Crawford.*] Is it not one effect of the variety of rates of interest that different and conflicting interests exist among the shareholders?—They do or may exist.

2760. During the recent depression in the value of securities was there not a disposition on the part of the shareholders of the lower guaranteed capital to return the railway upon the hands of the East India Company?—Some of the shareholders of the 4½ and 4¾ per cent. shares, expressed themselves to that effect.

2761. Do you think it undesirable that such a difference of interest and value should exist in any company?—It is very undesirable.

2762. It disturbs that uniformity of feeling and that harmony of interest which exists in all the other railways which have 5 per cent. guaranteed upon the whole of their capital?—Certainly, it is desirable that the interest of the shareholders in a company should be identical, as far as possible.

2763. Colonel *Sykes.*] Have you had any difficulty in getting the allotments of shares paid up?—Sometimes, but not much.

2764. On the whole, you think it has been a popular investment?—In England it has.

2765. Consequent upon the guarantee?—Consequent upon the guarantee.

2766. Without that guarantee I presume there would have been very little chance of raising the capital at home for railways in India?—I do not think the capital could have been raised without the guarantee.

2767. It is owing to the Government having guaranteed a sum of money that the railways have taken their origin, and have progressed as they are now doing?—The guarantee was necessary to their existence.

2768. Mr. *Cheetham.*] I think you stated that the cost of the line, so far as it is now constructed, is 5,400 *l.* a mile?—It depends upon how you turn the rupees into

into English money; we have a regular rate of exchange with the East India Company, which is 1 *s.* 10 *d.*, and if turned into English money at that rate it is the sum you mention, or 5,480 *l.*; but if taken at 2 *s.* it would be very nearly 6,000 *l.* per mile.

2769. What was the estimated cost?—We estimated that we should complete the whole line from coast to coast for 7,000 *l.* per mile.

2770. So far, you are under the original estimate?—Yes, excepting that that estimate I have mentioned does not include rolling stock; it includes everything but that; the value of the rolling stock must depend upon the amount of traffic; it may be taken at some 700 *l.* or 800 *l.* per mile in our case; so that if we can execute the rest of the line at the rate we have done the first part, the 7,000 *l.* will cover the rolling stock and everything else.

2771. As regards the time; how does the duration of time occupied in its construction compare with the estimated time?—We estimated that we should complete the line in five years from January 1854. The latest accounts we have, and which I have read to-day, are from the Government consulting engineer, and his opinion is, that if certain piers of a bridge can be got in before the monsoon, it may be completed by the end of 1859, instead of in January 1859, as we contemplated.

2772. Did the Indian Government or did your own engineer lay out your line?—The Indian Government directed the course to be taken by the railway, but our engineers surveyed and laid out the line.

2773. Are you aware why they chose the course by Cuddapa instead of by Bangalore?—No, I cannot tell what their reasons were; the railway company were very desirous at one time of going the other way, and prolonging the branch from Bangalore and Bellary, and they made more than one representation on the subject; but it was overruled, and they were directed to proceed by the way of Cuddapa.

2774. Is that a longer line than by Bangalore?—The line by Cuddapa is somewhat shorter than that by Bangalore.

2775. I believe you heard the evidence of Colonel Pears?—Yes.

2776. Do you agree with him in his opinion that Government would construct all these railways in India in much shorter time and at much less cost than a company?—That is not my opinion. I do not think that the Government could do it at less cost. I think it possible they might do it in less time; but I think the railway company, if left entirely free, could do it both at less cost and in less time than the Government could.

2777. When you say the railway company could "if left entirely free," do you mean that you would remove all superintendence on the part of the Government?—I am not an advocate for doing that. Colonel Pears goes upon the hypothesis of the Government having free and sole action; I say that if the company had free and sole action, they could do it in less time, and for less money. We do not object to Government supervision and control; on the contrary, we think, if properly exercised, it is very valuable and very useful.

2778. Have you any suggestions to make to the Committee as to any improved mode of supervision by the Government over your proceedings?—I think the controlling supervision of the Government has been exercised in too minute a way; and I think the manner in which it has been exercised, particularly during the latter part of the operations of the company, has been of a harsh and rather arbitrary character.

2779. And the result of that mode of operation, in your opinion, has been delay?—It has evidently irritated and vexed our servants there, which can never be conducive to their good working, but in some cases it has been productive of actual delay. It is not, however, so much in regard to Government interference in the construction of the line that we have to complain, as of the interference with the working of the line after it has been constructed.

2780. Do you mean in the traffic department and in the carriage of passengers?—Yes; in the mode in which the whole traffic of the line is conducted.

2781. Mr. *D. Seymour.*] With regard to the preference given to the Cuddapa line over the Bangalore line, I believe the country through which the line passes by Cuddapa is a much more important, more cultivated, and more populous country than the line by Bangalore, is it not?—The districts immediately round Cuddapa are fertile and productive; but taking the line as a whole, I do not think

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think it is more populous, and I question whether it is more productive than the other.

2782. Cuddapa is one great seat of the indigo manufacture, is it not?—Such indigo manufacture as there is in Madras; it is not extensive.

2783. The greater part of the Madras indigo is produced in the Cuddapa district, is it not?—Yes.

2784. It opens the whole country up to the Northern Circars, does it not?—Starting from Madras it is very little in the road to them.

2785. If the railway were opened to Cuddapa, people going from Madras to Guntore or Hyderabad would take the Cuddapa line?—My answer is, that I do not think people going from Guntore would go to Cuddapa; people going by Hyderabad might.

2786. Is it not the fact that there has been a great want of communication between the Cuddapa and Bellary districts and Madras?—So we understand.

2787. It takes now, I think, 10 days to go from Cuddapa to Madras?—I think it was one of the most impracticable roads in the Madras Presidency.

2788. So that the whole of the upper part of the Madras Presidency is cut off from communication with Madras?—I do not admit that; it is in evidence from the collector of those districts about Bellary, that a considerable part of the cotton and other commodities of the Cuddapa district would be equally served by a line from Bellary to Bangalore, and our present line. The produce of that country finds its way down to Madras by different roads than by Cuddapa.

2789. In laying out capital, and guaranteeing railways, you must look as far as you can to all the different parts of the Madras Presidency?—Yes.

2790. You should not expend all your capital in one part, and leave another part without communication?—Those are considerations for the Government, but, in a commercial point of view, we should make a railway where we were likely to meet with most traffic, and we consider that that would be cheapest and best done by going from Bangalore to Bellary.

2791. That would depend, I suppose, upon the large military establishment at Bangalore?—No; upon Bellary, and upon the products of all the country between Bangalore, Bellary, and Cuddapa. I will read a letter from the Collector of Bellary in answer to an inquiry from Colonel Pears, in the report of the Government, with reference to the preference to be given to the Bangalore line. He says, "Simply as affecting the direct trade between this district and the eastern coast, there is not much to choose between the two lines. But, as connecting that commerce with Bangalore, Salem, Coimbatore, and the southern districts, and as connecting the two great military stations of Bangalore and Bellary, there can be but little doubt but that the Bangalore line should be selected for first execution." The Madras Government have been much in favour of the line by Bangalore.

2792. There are opinions both ways, are there not?—I have not seen any opinion the other way.

2793. There were some reports, I believe, of your own engineer on the Cuddapa line?—No; the report of the engineer had reference, not to the comparative merits of a line by Cuddapa to Bellary, or by Bangalore to Bellary, but to the merits of a line by Madras to Cuddapa by Naghery, as opposed to the line by the Doorenalla Pass to Cuddapa. I have not seen any opinion from India in favour of going to Bellary by Cuddapa rather than by Bangalore.

2794. You would consider, would you not, from the reports, that the country between Bellary and Cuddapa is the far more important of the two?—The evidence we have before us shows that, so far as these districts were concerned, in the neighbourhood of Bellary they would be equally well served by either line. I have just read that opinion of the collector. Cotton is not grown as much at Cuddapa or Bellary, as at the intermediate places between.

2795. The cotton is grown about half way between Bellary and Cuddapa?—Yes, and therefore the collector says there is little to choose between the two lines; but as regards the commerce with the south of India, this is the much better line of the two.

2796. Mr. *Cheetham*.] Are you personally acquainted with this district?—I have never been nearer than Bangalore. Colonel Pears, in a report to the Madras Government, on the subject of this Bangalore and Bellary line, writes to this effect: "It seems to me that the work which could confer the greatest amount

amount of benefit upon both Government and people would be the completion of the wanting link between Bangalore and Bellary. By this measure the social and political ends aimed at by establishing a connexion between the two Presidencies, would be accomplished as well, better I think I can show, than by the line through Cuddapa; but that district would derive little benefit from it. We are not yet arrived at that stage in our proceedings when we can lay rails solely for the advantage of this or that particular district; nevertheless, if there be a district in this part of India that merits such high consideration, it is Cuddapa, and sooner or later, I think, a line should be laid, for this among other purposes, direct from Bellary across the northern talooks of Cuddapa and towards the coast. The line from Bellary direct to Bangalore would be over a tract of country the most favourable of all I have yet seen for the construction of a railway." Colonel Pears goes on to state, "It will be seen that while this line would confer, in a commercial and social point of view, greater benefits on the country at large than the direct line from Madras through Cuddapa would, I propose it also as a present substitute for the latter, in the attainment of the political ends aimed at by the connexion between Madras and Bombay."

2797. Mr. *D. Seymour*.] What do you understand by the social and military advantages of that line?—The advantages are stated to be of a political and military and commercial and social character, and I think that in employing the word "social" the intention was to signify that it would be for the convenience of the people of the country and for the passenger traffic. If the Committee wish to see it, I have a printed copy of the representations which we made, with the reasons we had for preferring one line to the other.

2798. In any case do you not think, from your knowledge of the country, that the line from Madras to Cuddapa ought to be made for the sake of the inhabitants living to the north of Madras?—I think a line should be made from Madras to Cuddapa; but I think the object of completing the communication between Bombay and Madras, which was the main object, as I understood, would have been better secured through Bangalore than through Cuddapa. I think if that line, after reaching Cuddapa, were afterwards carried more in the Hyderabad direction, while the Bangalore line was extended to Bellary, the object of railway communication through that part of India would be better effected.

2799. The difficulty of communication between Madras and all the northern districts is very great indeed at present, is it not?—Only to Cuddapa.

2800. But Cuddapa lies between Madras and the northern districts?—People pass round the hills; they do not go through Cuddapa.

2801. Are you aware that the rate of travelling there for the greatest part of the year is only nine miles a day?—I am not aware.

2802. Are you aware that the general principle at first laid down was, that main lines should be finished first?—Yes; I am sorry that the East India Company have departed from that principle in other cases.

2803. Are you aware that steps have been taken to improve the harbour at Beypore?—No; I am not aware that any steps have been taken.

2804. You do not know that reports have been called for with a view of improving it?—I do not think any steps have been taken. I have the report of Captain Johnston, in which he says that he has examined Beypore Harbour, and he concludes by saying that one of our engineers has been examining it, and is of opinion "that by extending the reef to the south, and throwing out a groin from the beach, anchorage may be secured for vessels drawing as much as 10 feet of water. It is very desirable that Mr. Lovell should be placed in possession of the several reports and surveys called for in extract Minutes of Consultation, No. 35, dated 18th January 1858, from the Public Work Department, but which have not yet been furnished."

2805. Are you aware that the object of the Government has been to have that harbour improved by the time the railway is finished?—I am not aware what the Government have done; the railway company brought it under their notice some time ago, and requested that something might be done.

2806. It is stated by Colonel Pears that you have one engineer to every 25 miles?—We have more now.

2807. That is about half the number of engineers who are employed on the East India Railway?—I do not know the number, but I should think more than half. We have at present one engineer to every 25 miles, and a divisional

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engineer over every three of those gentlemen, so that we have four engineers upon 75 miles.

2808. I believe upon the East India Railway there is an engineer to every 10 miles?—I cannot say.

2809. Do you think that a register of shares at Madras would be advantageous?—The Board considered it a matter of very little importance. We had no reason to suppose that shares would be taken to any extent in Madras.

2810. Would it not be desirable to encourage the natives to invest in a public undertaking of this kind?—No doubt; but the rate of interest, and the sort of antagonism which has unfortunately existed between the officers of the railway company and the officers of the Government, would discourage the natives from embarking in the undertaking.

2811. Would you not give them an opportunity, if they wished, of investing their money in that kind of property?—For the railway company it is a question of cost; it involves an additional expense and additional risk in having two registers; the company have not considered it worth their while hitherto to run that risk, or to incur that expense, for the very indefinite prospect of obtaining shareholders in Madras.

2812. Is cotton still carried along the road by the side of the railway?—I believe it is to a certain extent; it is partly carried on the railway and partly on the road.

2813. Do you consider that it would be a good thing to have depôts of salt in the interior of the country?—We have urged it on the Government more than once.

2814. It would be, in your opinion, a great benefit to the people?—It would be a great benefit to every one; the Government being the producers and vendors of the salt.

2815. I believe you have only two trains a day between Madras and Vellore?—Two trains a day each way.

2816. Mr. *T. G. Baring.*] Do you, as representing the Board of Directors, agree with the statements made by Mr. Bruce, that considerable delay has arisen from the mode of supervision exercised by the Madras Government?—I do not think considerable delay has occurred; some has.

2817. You say that you believe the manner of exercising supervision has been harsh and arbitrary, and that your servants have been irritated by the manner in which the supervision was exercised?—Yes.

2818. During the existence of your Board was the conduct of the chief engineer ever brought under the notice of the Board by the Madras Government?—Yes; that is, the Madras Government have complained to the Court of Directors, and the Court of Directors have brought the matter under the observation of our Board.

2819. Do you consider that your servants are free from blame in the manner in which they have conducted themselves towards the officers of the Government?—I do not consider that our servants were altogether free from blame occasionally. I think on some occasions the Government probably had reason to find fault.

2820. Did you write a letter to your agent at Madras on that subject, dated 15th July 1855?—Yes.

2821. I believe in that letter you did not conceal your opinion that you viewed with considerable displeasure the conduct of your own chief engineer?—On that occasion such an opinion was expressed, I believe, and the Board in that letter censured some parts of Mr. Bruce's proceedings.

2822. Have you seen any reason to withdraw from the opinion expressed in that letter?—On subsequent information it appeared that the Board had censured Mr. Bruce without sufficient cause, and they took an opportunity of so recording in a subsequent letter.

2823. The rest of the letter contained the expression of opinion of the Board of Directors?—That was the expression of the opinion of the Railway Board.

2824. That being so, do you think that you can fairly say that any delay that occurred was the fault of the officers of the Government?—I think it was on more than one occasion.

2825. Notwithstanding the opinion expressed in that letter?—Notwithstanding that opinion; I have instanced cases with which that letter had nothing to do, and which have occurred since.

2826. What other cases have occurred since, which you have not mentioned?—I have mentioned delay, arising from the stoppage of the works.

2827. Are there any other cases which you have not yet mentioned?—We consider that delay arose from the withholding of funds on some occasions.

2828. Are you aware that on one occasion your agent agreed with the consulting engineer upon that point?—There were two or three occasions, and I can show you the opinion of the Board upon the subject.

2829. I ask you whether you are aware that, upon one of these occasions, your own agent at Madras agreed with the course which the consulting engineer of the Government took?—He did on one occasion; but there were others in which we thought it necessary to address the Court of Directors on the subject of a want of funds. We addressed the Court on the 15th December 1856, with reference to a case which occurred in September; there had been previous occasions, and the Board considered that a recurrence of them called for a representation to the Court of Directors.

2830. Was any change made in the system in consequence of those representations?—We have had no complaint since.

2831. Was there any other instance in which delay was caused by the supervision at Madras?—Delay was caused, I think, by the opposition on the part of the Madras Government to our engineer being allowed to draw for English trained subordinate assistants, such as inspectors, draughtsmen, and so on. As a general rule, the Court have laid down that we are only to send out what is indented for with the sanction of the Madras Government; the Madras Government were opposed to it, but the question was referred to this country, and the Court, on our representation, agreed to our sending out the men required, and we sent out a considerable number. Delay has also at times occurred from the Madras Government ignoring the contents of our letters to the agent, or our instructions for his conduct. These letters go out of course with the sanction of the East India Company, but notwithstanding that, the Madras Government at times do not take any notice of them, and fresh references are made to England, which occasion loss of time.

2832. Have there been any other causes of delay?—I consider that our officers' time and attention have been taken up very much by correspondence and references which such a minute interference occasions, and the requirements of the consulting engineer in the way of drawings and information have been very considerable and very minute; it has occurred that he has sent back a drawing to an engineer as not being sufficiently distinct for the purpose. On one occasion the engineer sent the drawing home, to request that an opinion might be taken upon it; we referred it to our consulting engineer, and he said that the drawing was all that was necessary. These things, of course, take up a great deal of time.

2833. Mr. *A. H. Baring*.] Was that the case of the bridge over the Kudulhoondy?—No; that was the case of a bridge over the Thoota River.

2834. Mr. *T. G. Baring*.] Have you any other causes of delay to mention?—It does not occur to me that there were any other cases of direct action causing delay.

2835. Do you think that if your chief engineer at Madras had shown considerable inattention to the orders of the Government, and delayed furnishing information when called upon to furnish it, that would afford some explanation of the points to which you have referred?—In that particular case; I think the letter to which you refer had reference to some proceedings in regard to station building at Madras chiefly.

2836. Will you refer to and read the 23d paragraph of the letter of the 15th July 1855?—"Without attributing to Mr. Bruce an intention of wilfully opposing the orders of Government, the Board must say that the correspondence under review exhibits evidence of inattention to its orders and wishes, of unaccountable tardiness in furnishing information, with an unreasonable impatience of supervision and control, and a tendency to indulge in objectionable freedom of language in commenting on the acts and decisions of Government and others when opposed to his own opinions or disapproving of his own acts or those of his subordinates." I wish to say that the Board made it a matter of complaint to the Court of Directors that

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letters written by them to their own agent for his information and guidance should have been published and printed as they have been.

2837. That being your opinion of your chief engineer, you can hardly attribute blame to the Government consulting engineer in that matter?—So far as relates to the events which took place before the date of this letter, that opinion as to the effect of the Government interference would no doubt be qualified.

2838. You mean, that previous to the date of that letter you would say that your own officers were not altogether free from blame in the transaction which took place?—Not altogether.

2839. At the same time you wish on the whole to express your opinion that your chief engineer, Mr. Bruce, was an able and efficient servant of the company?—He was an able and efficient servant, and a most zealous servant.

2840. That being your opinion, from what do you consider that the difference of opinion arose between the Government and your engineer?—I think it arose perhaps on one side from a want of sufficient consideration for the susceptibilities of our engineer, and on the other, from a little impatience on his part of observation upon his proceedings by the consulting engineer.

2841. The result being some delay in the construction of the railway?—Yes, but trifling; I do not think that the delay that arose from differences of that kind was material.

2842. Then you do not agree with your engineer, who says that he could have completed the line in four years, or do you agree with the Government engineer, who says that the Government could have completed it in four years?—Certainly not; I think it is much too sanguine a view to take of the matter; I have no doubt our chief engineer could and would, if he had had all the means he wished, have finished it in less time; but I do not think that even then he could have done it in four years.

2843. *Chairman.*] You consider that the fault rather was in the excess of zeal on either side?—I think so; they were both very zealous officers, and, like all zealous men, they were a little impatient.

2844. Have you any further statement to make on the conduct of your chief engineer?—Our opinion of our chief engineer ought not to be drawn from a single letter, which never came before the public with our sanction and concurrence; it was a letter written by the Board to its agent for his information, and that of the officer whom it concerned, but not for the public, and we protested and objected to this publication, and to the publication of other letters by the Government.

2845. Mr. *A. H. Baring.*] Do you remember a reference being made, about the end of March 1856, to your consulting engineer in England concerning the bridge over the Kudulhoondy?—Yes.

2846. At what time did Mr. Rendle die?—He died in November 1856.

2847. That is adduced by Colonel Pears as an instance of delay on the part of the company. I wish you to explain it?—I am desirous to show, that so far from a reference to this country and to the Railway Board having caused delay, it was by reference to this Board, and by the course they took upon it, that that question, which had been under discussion for two or three years, was finally settled at once. It is one of the two instances adduced by Colonel Pears of delay caused by the existence of a Board in London. I wish also to observe, that it is a work of greater magnitude than might be supposed upon reading the evidence of Colonel Pears. He stated it was, perhaps, 500 feet in length. I hold in my hand a report of our consulting engineer, Mr. Hawkshaw, in which he says, "The bridge would be in two lengths, separated from each other by a short embankment; one length would be 360 feet, the other 780 feet, and the aggregate length 1,140 feet." The question of the best mode of crossing that estuary was under discussion for a long time, and was the subject of correspondence backwards and forwards, and finally a reference was made to Mr. Rendle about it. We wrote, on his recommendation, for some further information on the subject, and I believe the engineer was to make a viaduct with iron piles. At the date of Mr. Bruce being obliged to leave India the drawings for that bridge had not been completed. We required them in England as a guide by which to furnish the iron piles; after Mr. Bruce arrived here, the drawings followed, and it was found that some information was still required about the bed of the river, and that in the absence of that

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we could not proceed to order the iron piles or the materials for the bridge. We consulted with Mr. Hawkshaw as to what, under the circumstances, it was best to do; and at his recommendation we resolved to erect a temporary bridge. We ordered the materials here and sent them out, and an end was put to that question, which had been under discussion for years.

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Jovis, 10° die Junii, 1858.

MEMBERS PRESENT:

Hon. H. G. Liddell.	Mr. Crawford.
Mr. A. H. Baring.	Mr. Glyn.
Mr. T. G. Baring.	Mr. D. Seymour.
Mr. C. Bruce.	Mr. Stephenson.
Mr. Campbell.	Col. Sykes.
Mr. Cheetham.	

HONOURABLE H. G. LIDDELL, IN THE CHAIR.

J. Walker, Esq., called in; and further Examined.

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2848. *Chairman.*] IN reference to the publication of the remarks, or the strictures, made by Government, will you give us some information as to the publication of those remarks in the public papers; did not your officers frequently see those remarks in the papers before they came to them officially, and before they had any means of giving their explanations?—Yes; and we made a representation to the Court of Directors on the subject.

2849. You made it a ground of complaint?—We made the publication of those censures in the public newspapers, and also in the large publications issued by the Government, a ground of complaint.

2850. What was the nature of the reply you received from the Court?—The Court replied that they had addressed the Madras Government on the subject.

2851. Do you know whether the Madras Government have taken any steps towards a more equal publication of correspondence since that time?—We objected altogether to the publication of censures on our officers in the local newspapers, independently of the replies of those officers being admitted; we considered it a most objectionable practice; we thought it could lead to no good, and we saw it was productive of much harm. We considered that the Madras public had nothing to do with the opinion of our Board, or in point of fact of the Government officers as to their proceedings in construction. The Madras public were not our shareholders; it is in evidence that very few shares were held in Madras; and we could not see what good could be effected by such publication, whereas the evils were apparent.

2852. Speaking from memory, I think that Colonel Pears has expressed a strong opinion upon the subject of the publication of this information; I think he stated that he considered great public advantage would be derived from that. As I understand, you do not agree with that opinion so expressed by Colonel Pears?—We do not, and I believe the Court of Directors concur in our opinion upon that subject.

2853. As a matter of fact, have the Madras Government restricted the publication of those observations in consequence of your representation?—The practice of publishing continued, although perhaps in a less degree, for some time after we had hoped that it would have been put a stop to by the orders of the home authorities, but latterly it appears to have ceased altogether in the newspapers.

2854. Mr. *C. Bruce.*] You considered that bringing public opinion generally to bear upon the execution of the works was of no advantage?—Not in the way in which it was done; these were generally censures upon the progress of the works in a particular district, or at least they were so considered by the public and by most people. Colonel Pears has explained that he did not mean them as censures, but merely as observations; but the result which was produced by their publication too clearly shows what the effect of the publication of those observations was.

2855. What were those results?—Considerable irritation on the part of those who considered themselves aggrieved by them; they also complained that while these observations were published in the public newspapers, and made the common subject of talk at Madras, their explanations were not published equally in the newspapers.

2856. *Chairman.*] Do I understand you to express an opinion adverse to any publicity given to the correspondence that passes between the railway officials and the Government upon the subject of railway construction?—I would not go so far as that, but I think it requires great discretion as to what is to be published, and what is not to be published. I do not think that any company can carry on its works satisfactorily, or without disadvantage, if its orders and letters addressed to its agents are published *in extenso* for general information.

2857. Am I right in supposing that it was in consequence of the publication of this correspondence that a large number of your engineers drew up a memorial expressing their views upon the subject?—We received a memorial from our engineers, complaining of the terms that had been applied to their conduct in some of these observations, and of the publication of the observations, without their replies and explanations being also published.

2858. Great dissatisfaction, I think, was expressed in that memorial?—Great dissatisfaction.

2859. Can you furnish the Committee with a copy of that memorial?—Yes.

2860. Do you know whether it was signed by the whole body of engineers employed upon your line?—My impression is, that it was signed by all the engineers employed upon the line, with the exception of the chief engineer, who did not sign it.

2861. Who was the chief engineer at the time?—Mr. Bruce. I ought to add, that one of the engineers afterwards expressed his desire to withdraw his signature from it, on the ground, I believe, that he had no individual cause of complaint as to the publication of observations on his work.

2862. Do you believe the statements contained in that memorial to be substantially true?—The Board considered that the complaints of their engineers were not without foundation, and in acknowledging the receipt of the memorial they stated that the subject had already attracted their attention before the receipt of the memorial, and had been made the subject of a representation from them to the Court of Directors.

2863. Have you ever heard what followed that representation to the Court of Directors, whether any steps were taken in consequence of it?—I have no means of knowing what steps the Court took.

2864. Mr. *Crawford.*] To whom is the memorial addressed?—To the Chairman and the Directors of the Madras Railway Company.

2865. What is the date of it?—The date is that of the 7th May 1856.

2866. How did it reach your hands?—It was forwarded direct by the engineers.

2867. You did not receive it through your agent at Madras?—We did not.

2868. Was any intimation given to the Government at Madras by the engineers that they had forwarded this memorial to your Board?—Not that I am aware of. I should say that this memorial was originally handed by the engineers to the agent, as all correspondence is ordered to proceed through the agent; the agent returned it to them, with the observation that, in the public service, joint memorials of that description were not allowed, and the engineers afterwards forwarded it to us direct.

2869. *Chairman.*] In regard to the supply of money to meet currrent expenses, when an application was made for money, it was made by your agent and on his authority, was it not?—All applications for money, and all communications with the Government, are made by our agent.

2870. Do you think it is possible that the agent could, in any case, agree with the Government engineer in refusing money for which he himself had previously applied?—I suppose that question refers to a reply of Colonel Pears in his examination.

2871. Refer to Question 2516, in the answer to which Colonel Pears speaks of a communication with Mr. Smalley in these terms: "Was there one case in which Mr. Smalley agreed with you as to the necessity of delaying the advance?—Yes; writing in November 1854, he says, 'With this explanation, perhaps, you will no longer demur to obtain the sanction of the Government for the advances.'"

Do you remember that case, and can you explain it?—The quotation from Mr. Smalley's letter on that occasion is a little obscure, but he requests that the Government will make the advances required, and I think what he meant to express was that he entered into the views of the Government consulting engineer as to the necessity of stopping supplies of money where complete and correct accounts were not delivered. It is clear he did not oppose the application for money, but, on the contrary, requested that the sanction would be given for it. It appears to me that it is more a general expression of his opinion that unless complete and correct accounts were obtained, advances should not continue to be made to the engineers. That is how I read it.

2872. Am I right in supposing that the correct and complete accounts to which Mr. Smalley refers were workshop accounts?—In part.

2873. Do you remember any case in which your agent made a direct observation to your Board in reference to the non-receipt of any accounts?—The agent has frequently observed upon the want of punctuality and promptness in the rendering of accounts.

2874. What has been the general tenor of the explanations furnished on the part of the engineer?—They have sometimes been satisfactory, and sometimes not satisfactory. The Board have been of opinion that there was more delay at times in furnishing accounts than there should have been.

2875. I think you stated that, in your opinion, this reply of Mr. Smalley ought to be taken in a general sense, as expressing an opinion that, as a general rule, the accounts should be rendered punctually, and in a complete form?—I think he goes a little further than that; he agrees apparently, from this extract, with the Government officer, that unless accounts are obtained in the way in which he thinks they ought to be, advances of money should not continue to be made.

2876. What steps did the Board take in consequence of this representation?—I believe they took no steps on that occasion in reference to this.

2877. Do I understand that the supplies asked for were refused by the Government engineer with the sanction of the agent?—On this occasion they were not refused.

2878. Then there was merely a remonstrance on the part of the Government, and the money was afterwards supplied?—On this occasion there was no refusal of the money.

2879. There was a demur?—There had been a demur, but the money was given; on subsequent occasions the Board have felt it necessary to address the Court of Directors on the subject of advances of money being withheld.

2880. What was the nature of the reply of the Court of Directors to that?—The Court of Directors brought the subject under the consideration of the Madras Government, and the explanation furnished by Colonel Pears on the subject was again submitted to us by the Court of Directors.

2881. Did that explanation appear satisfactory to you?—No, it did not.

2882. Did you again address the Court upon the subject?—We have had no occasion to complain since that time.

2883. Then, in fact, the evil of which you complained has been rectified?—Yes, it has; the occasion to which I referred of our addressing the Court of Directors on the subject was the withholding of funds in August and September 1856, which was considerably after the period to which your first question referred.

2884. We have heard that there was some delay in sending in the final settlement of Mr. Bruce's accounts; was that delay satisfactorily accounted for?—All his accounts were satisfactorily settled.

2885. What was the balance that remained ultimately unaccounted for?—It was something infinitesimal, but I do not remember what.

2886. I believe it was 2½*d.*, was it not?—It was some infinitesimal balance.

2887. Upon an expenditure of how much?—I suppose it may have amounted to half a million sterling; the complaint, I think, to which you have been referring, was about the delay that took place in furnishing the balances of the different district engineers at the date of Mr. Bruce's departure; the Government expressed a wish that these balances should be rendered up to the date of Mr. Bruce's departure; they were called for, and a considerable delay took place in finally rendering these accounts; that was owing in part to the circumstances of Mr. Bruce's sudden departure from India on account of extreme illness, and

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to what I think was a very impolitic proceeding on the part of our authorities in allowing Mr. Bruce's assistant to leave India along with him. Mr. Bruce was in a very precarious state of health, and the medical officers did not think it was expedient that he should go without some one to take care of him. On application, Mr. Bruce's assistant in his office, one of our engineers, was allowed to accompany him, under the impression that he would go as far as Aden, and then return; on arrival there, the medical men were of opinion that it was still desirable that he should proceed further with Mr. Bruce, and he did so, and, in fact, came to England with him. We sent him back as soon as we could, but there was a delay of about four months between the time of Mr. Bruce's departure and this gentleman's return; of course, that interfered very much with the adjustment of their accounts, and before they could be rendered, it was necessary that each particular district account should be balanced with the chief engineer's account, and the whole, in fact, brought to a balance. A good deal of correspondence was necessary, and also references backwards and forwards. I should mention that the auditor of the engineer's accounts was at that time also taken up with the examination and settlement of some store accounts, so that altogether there were many impediments in the way. These balances were, however, eventually rendered in a satisfactory manner, and Mr. Bruce's account closed satisfactorily.

2888. The departure of the two persons responsible for the rendering of these accounts you consider sufficient to explain the delay complained of?—In a great degree.

2889. Mr. *Crawford.*] Upon the accounts rendered by Mr. Bruce there was only a difference of 2½*d.* between the whole sum received during his service in India and the sum that he accounted for?—I think that may be about the equivalent in English money.

2890. Am I right in supposing that from the system adopted in carrying out your works in India those accounts may be considered as divisible into two large heads, the expenditure upon the construction, and the expenditure on the workshops?—Yes.

2891. With regard to the workshops, is it not a matter of considerable difficulty to render the accounts required in the detailed form required, so as to show the exact cost of every article produced in the workshops?—Very great.

2892. And some delay in a department recently organised by a gentleman whose experience had been in this country and with English workmen, might be reasonably expected when he came to deal in a foreign country with foreign workmen, whose language and manners he was unacquainted with?—Undoubtedly.

2893. Have you any form that you could produce to the Committee, showing the nature of the accounts which the engineers are required to deliver monthly to your agent in Madras?—We have a complete set of forms of accounts.

2894. You are not aware of any delay of any consequence having occurred as a habit in sending in these accounts to the agent?—The agent has complained of delay.

2895. *Chairman.*] Colonel Pears has stated in his evidence that your engineer's estimate was 15,000 rupees per mile, but that the work cost 30,000 rupees; can you explain that, and will you state whether it is quite correct?—I cannot explain that statement.

2896. Is that statement correct in the first place?—I should think not. So far as I am informed, the estimated cost of the works in India, without stations, was 16,261 rupees per mile; that included earthwork and bridges. The actual cost, so far as I am in a position to state, including some extra work, was about 18,000 rupees per mile.

2897. I refer you to Question 2399, in which Colonel Pears states that the estimates of the railway officers themselves, exclusive of the stations, which should not cost above 70*l.* or 80*l.* per mile, were 1,500*l.* per mile; can you offer any explanation upon that statement?—My impression is, that the estimated cost of the work, without stations, was 16,261 rupees.

2898. Is it not the case that the terminal sections of any line of railway are always more expensive in construction, in consequence of the stations that have to be made with a view to the ultimate completion of the line?—It is not so, except with regard to the terminal station itself; and in estimating the cost of the portions of railway completed, we only charge them with a proportionate amount

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of the cost of the terminal station, spreading it over the line which it is to serve.

2899. Mr. *T. G. Baring.*] I find, in a letter before me, that in one of the districts, the amount stated by the Government is 14,020 rupees per mile, which is 2,800 rupees less than the estimated outlay on the first district?—That, in all probability, did not include the cost of bridges; whereas the sum I have stated includes the cost of the bridges.

2900. *Chairman.*] Do you remember an answer made by Colonel Pears, that the Government could have executed the works at 50 per cent. less than the railway company; and do you consider that that statement would have been borne out by facts, had they undertaken the construction?—I think he afterwards explained that he did not mean to state that in positive terms, but that he only meant to express an opinion that the Government could have executed it at much less cost.

2901. Is it your opinion that the Government could, under any circumstances, have constructed a line much cheaper than you have done?—I do not think they could, and I so stated in my first day's examination.

2902. In regard to time, could they have constructed the line quicker, in your opinion?—I also stated in my last examination that if the Government were entirely free to act without control, they might undoubtedly have executed the work somewhat quicker, but so in like manner could the Railway Company. The delay has been attributed by all the witnesses to the double government, as it has been called, rather than to anything else.

2903. Colonel Pears, in further support of the view he took, quotes the case of the Colleroon Bridge; how does the case stand with reference to that?—I do not know the cost of the Colleroon Bridge; that does not belong to our railway company.

2904. Were your bridges built quicker and cheaper than the bridge constructed over the Colleroon?—I should not like to say that, because I have not the means of ascertaining; I have no knowledge of the cost or the time occupied.

2905. Did not the Madras Government censure the chief engineer for having commenced the Goriattum Bridge without the sanction of the Government?—There was a complaint made.

2906. Did they not afterwards find out that they had made a mistake in so doing?—Yes; the Government afterwards admitted that Mr. Bruce did not, in point of fact, commence the bridge, and that is referred to in the letter which I have handed in to-day.

2907. Did they not censure him for having commenced some temporary shops at Madras without sanction, when, in point of fact, he had the orders of your agent to do so?—Mr. Bruce acted under the instructions of the agent in that case in commencing a temporary workshop.

2908. Has the agent the power of ordering, previous to obtaining the sanction of Government, the construction of any works upon the line?—That was an irregularity on his part on which the Board animadverted.

2909. The blame attaches, if at all, to the agent, and not to the engineer?—So far as the engineer conformed with the instructions he received from the agent, he has no direct dealing with the Government.

2910. Was it not stated that the position of these shops had involved the building of an expensive bridge?—It was, or, at all events, that the position of the shops rendered the bridge larger and more expensive than it would have been.

2911. For what purpose were the shops built?—They were workshops and construction shops; that is also adverted to in the letter I handed in, in which the Board exonerated Mr. Bruce from the censure that had at first been put upon him, having, on the receipt of more perfect information, and a plan of the works, seen that the construction of a bridge there was necessary.

2912. Then, in fact, many of the cases that were adduced by the Government, and upon which the Board's letter was based, were found not to have been accurately stated?—I have mentioned these three cases in which the censures proceeded on imperfect information.

2913. And on which the Board exculpated the engineer?—Yes.

2914. And the letter, of course, represented the views of the Board?—Yes.

2915. Who is the chairman of the Board?—General Sim.

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2916. He belongs to the same corps as Colonel Pears, does he not?—He was formerly chief engineer of Government at Madras.

2917. Were the complaints confined to your own engineers, or have your other officers ever complained of undue interference on the part of the Government?—We have had complaints from other officers also.

2918. Have you ever had any complaint made by your agent?—Yes.

2919. Has your traffic manager been always satisfied with the Government supervisions?—The traffic manager has complained very much of the interference of the Government in respect of traffic, and the working of the line.

2920. And I think, in consequence of a letter addressed to the Madras Government by the Court of Directors, the supervision of the traffic management and the working of the line, has been materially modified?—It has been to some extent, and I am led to believe that it will be still more so.

2921. Reference has been made to a letter of complaint on the part of the Board with their engineer; can you put in a copy of your engineer's reply to that letter from the Board?—I think there are some explanations that were addressed by our engineer to the agent in reference to those complaints, and I will put those in.

2922. I ask you whether you consider it fair on the part of the Government to publish the one letter without publishing the other containing the explanations?—I think every man's explanation ought to receive equal publicity with the charge.

2923. Mr. *T. G. Baring.*] Are you aware whether Mr. Bruce addressed any letter to the Government of Madras which came before them officially before the publication of this letter in the despatches?—Mr. Bruce, in his situation as our chief engineer, did not correspond direct with the Government.

2924. Are you aware whether the agent communicated Mr. Bruce's explanations to the Government in reference to that letter?—I cannot tell you unless I compare the dates; I am not sure that I can tell when that letter was published.

2925. Unless the Government was in possession of the explanation from Mr. Bruce, they were of course unable to publish it?—Certainly; if the Government were not in possession of it, they could not publish it.

2926. Do you mean to imply that Government purposely withheld any explanation of Mr. Bruce on this point?—I cannot say, without an opportunity of comparing the dates.

2927. You are not aware of the dates of any letter that may have been addressed by the agent to the Government on this particular point?—I cannot at this moment state the date.

2928. Colonel *Sykes.*] At the date of the publication the Government may not have received the letter from your agent containing the remonstrances of Mr. Bruce?—They may not have received it.

2929. Mr. *J. G. Bruce.*] This letter having been addressed to your agent by you, as managing director of the Board, would not the reply of the agent be addressed to the Railway Board?—The reply of the agent to that letter certainly would be.

Mr. *G. B. Bruce*, called in; and further Examined.

Mr. *G. B. Bruce.*

2930. Mr. *T. G. Baring.*] WHEN was this letter, of the 15th December 1855, written by Mr. Walker to the agent of the company, communicated to you?—I may answer that by saying that my explanation of that matter was written in December 1855, before the letter of the Board.

3931. On the receipt of this letter, did you write a letter to the agent, requesting him to communicate that letter to the Government?—No; I never wrote a line with reference to the letter of the Board. My explanation was written in September 1855; and if the Committee will allow me, I may say further, that to this hour I have never seen a single line of the charges brought against me by the Government engineer, upon which the Board of Directors wrote that letter.

2932. When you say the "Government engineer," you are aware, I suppose, that the communication to the Court of Directors came from the Government of Madras?—Yes; and with that they would send Colonel Pears' letters, which I have never seen.

James Walker, Esq., re-called; and further Examined.

2933. Mr. *Crawford.*] COLONEL PEARS gave certain evidence upon a former occasion in reference to the construction of a branch railway to proceed to the salt depôts of the Government at Madras; when was the proposal to lay down a branch to that salt depôt first made?—The case was referred by the Government to the Board of Revenue in January 1855. In the year 1856 plans were submitted by the railway officers, at the desire of the Government, for this branch; and finally, in November 1857, the Government approved a plan proposed by the Department of Public Works, and we were in hopes the construction would immediately have been proceeded with; but we were disappointed at finding that Colonel Pears had recommended that the branch should be laid down on a four-foot gauge, to which we very much objected.

2934. Your own gauge being what?—Five feet six inches.

2935. What is the length of the branch?—Our officers describe it as being 1¼ mile.

2936. Do you state that authoritatively?—I state it on the authority of our traffic manager, in his report on the subject.

2937. It has been stated by Colonel Pears that the length is not above 800 or 900 yards?—I think that may arise from Colonel Pears stating the length, irrespective of that part of the line that runs along the Salt Heaps themselves.

2938. Are you aware of any reason why the proposed branch line should be constructed of a particular gauge; is there anything peculiar in the nature of salt works to render the introduction of the broader gauge undesirable?—They are not salt works, but stores of salt stored up by the Government, and they would have no difficulty, I conceive, in carrying a 5 feet 6 inch gauge down the middle of them, if you could carry one of four foot.

2939. Colonel Pears stated that the object of this was to save the frequent loading and unloading, so that the small dealer in salt might not be impeded in his arrangements by the operations of the large dealers?—I do not see how that effect would be produced. I consider that uniformity of gauge would facilitate every dealer's operations very much; and, as to the loading and unloading, it is quite clear that, having two gauges, you have, after bringing your salt on the narrow gauge, to unload and to reload it at the broad gauge. That would be saved by loading it at once at the heap on the proper gauge line of the railway.

2940. Were the rails to have been of the same weight on the branch line as on the main line?—I do not know whether they would be or not.

2941. If they were of the same weight, there would be no additional expense of any magnitude?—I should mention that the railway company were not to make the branch, but the Government were to do it. I should, of course, think it better to lay down the same weight of rails for the facility of working locomotives.

2942. Did the Government propose to use locomotive power on the branch line?—They have not told us what their intentions are on that subject.

2943. If locomotive power were used, it would be necessary to have a different sort of locomotive?—Yes; but I should not think that they contemplated locomotive power on the narrow gauge, probably animal power.

2944. Was it intended that the railway company should work the branch?—They offered to do so.

2945. Has it been made yet?—It has not.

2946. It is still under discussion?—At the last advices.

2947. What is the present extent of salt traffic from Madras along the railway?—The last return we have is to the end of March, and in that month they had sent 1,140 tons, being nearly at the rate of 40 tons a day; we understand that the traffic from Madras in salt is equal to about 50 tons a day; it does not yet all go on the railway, and we anticipate that when due facilities are given, the salt traffic will increase enormously.

2948. I suppose you could afford to send a locomotive down to the salt works at least once a day for 50 tons?—We could send down a locomotive to bring it every day.

2949. It would be worth your while to bring 40 or 50 tons?—Undoubtedly; it would be about 10 waggons.

2950. In answer to question 2532, Colonel Pears stated that he thought "the agent on the spot had not sufficient authority, in consequence of there being a

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Railway Board, as a sort of Court of Appeal, behind him; if any blame is cast upon the officers, they look to the court at home." Have the Government ever pointed out to you in what respect the authority vested in the company's agent should be modified?—No, I am not aware that they have; I do not see what more authority the agent could have than he is already invested with.

2951. What is the nature of his authority over the company's officers?—He has the power of suspending and recommending for dismissal any officer of the company.

2952. It was also stated by the same witness, in answer to question 2336, "That he considered the railway company as a body acting in subordination to the Government; in fact, that they were merely agents to carry out their intentions; and that was the expression of the Honourable Court of Directors itself." Are you aware that this view of the relations of the railway company to the Government has ever been expressed by the Court of Directors?—I find, in the 22d paragraph of the financial railway despatch to the Governor-General in Council, dated the 17th of August 1853, a statement to this effect: "Considering the relative position of the East India Railway Companies and the Government of that country, the former can only be regarded as agents for carrying out and executing the wishes of the latter." And they go on at the same place to say, "We certainly do not perceive the necessity of employing a greater number than is consistent with the convenience and advantage of the public service." It appears to me that the opinion here expressed by the East India Company has been a little misinterpreted by the Government at Madras, and has led in some degree to the extent of interference of which we have been complaining. The Court of Directors, in making this statement, meant to say, I think, that they had entrusted or delegated the construction of railways in India to railway companies, and that in that sense they were their agents; whereas the Government of India seem to have read it as if the railway company were merely agents and servants of the Government; and it appears that many of their proceedings throughout have been a good deal influenced by such opinions; it has led in some cases, for instance, to their speaking of the railway company's losses as the losses of the Government; I may mention one instance to show the effect of this on the mind of the Government: there was a small loss on goods sustained by the railway in their traffic, and the consulting engineer of the Government, in reference to it, writes to the agent to request a more full explanation of loss of property on the railway, "for which Government are now called upon to bear a loss of *Rs.* 58. 5. 9." It is quite clear that that would have been the loss of the railway company; but this idea which here finds expression has pervaded the views of the Government very much in their dealings with the railway company, and I think it has led in some degree to the Government of India ignoring the substantive existence of a body of shareholders, a railway company, and a board, which was bound to represent and watch over their interests.

2953. Mr. *Crawford.*] Do you mean the Government of India, or the Government of Madras?—I mean both; in that way some of the rights of our shareholders under the contract have, I think, been ignored. In respect to settling the tariff, the contract provides that the tariff of rates is to be submitted by the railway board to the East India Company for their approval, and, subject to their approval, it is to be adopted: we submitted a tariff of rates accordingly for the sanction of the East India Company; the East India Company expressed, to a certain extent, their approval, and authorised us to send the tariff to our agent for adoption, with the sanction of the Madras Government; the Madras Government, instead of adopting this, substituted a tariff prepared under their own directions: there was a good deal of discussion on this subject, and reference was made to the Government of India on the subject by the Madras Government, and in their reply the Government of India enunciate this principle: "The Government of India has hitherto desired to establish the lowest tariff on which a small margin of profit could fairly be expected, and is prepared to support the Government of Madras in following the same principle." We contend that that is in opposition to the spirit of the contract, which intended to give to the shareholders a return for their capital from the revenue of the railway to the extent of 10 per cent., and we protested against a trial of an experiment of that description at our cost.

2954. Colonel *Sykes.*] Has there been any remonstrance on the part of your Board

Board of Directors against the opinion you have just read from the despatch of the East India Company?—As I read this despatch I do not see any thing to object to, but I think it was misconceived in India.

2955. Has there been any remonstrance by the Madras Government against that interpretation being put upon the letter of the Court?—Not with reference to this letter.

2956. Mr. *Crawford.*] What is your opinion upon the general question of the system of Control as understood and pursued at Madras by the Government?—I have just explained that I think the system prusued by the Government at Madras has been based on an erroneous interpretation of this despatch of the Court of Directors; and I also think that it rests on a mistaken assumption, which is, that the officer whom they select as consulting engineer should be possessed of every scientific and practical knowledge in detail, of a railway manager, traffic manager, locomotive superintendent, as well as a railway engineer; a combination of qualities which I do not think the Government have a right to expect.

2957. Are the relations of your agent and the officers of your company in India with the officers of the Government in a more satisfactory state now than they were?—Very much so. I have great pleasure in reading an extract from the report of Captain Johnston, to which I referred in my last day's examination: "I have merely further to observe, that the progress of the works generally throughout the line is most satisfactory, and that the engineers, one and all, show the greatest interest in the undertaking. They were most ready to give me every possible information I could require; and I consider that the railway company have much reason to congratulate themselves in having secured the services of so efficient a body of executives." And Government, in their minute on this report from Captain Johnston, add, "Government have derived much gratification from the concluding observations of Captain Johnston, on the zeal and ability displayed by the several engineers of the railway company."

2958. Have you any observation to offer in reference to the system of supervision practised in this country?—I think as it now stands the system of supervision in this country does not admit of much improvement, except by the authorities placing in their *ex-officio* director that confidence and power which I understand it was the original intention he should possess.

2959. You think the powers of the *ex-officio* director in this country should be enlarged, and that in point of fact the extent of those powers ought to be a question between him and those whom he represents?—It must necessarily be so.

2960. As I understand, the improved state of your relations with the Government in this country, is in consequence of the change recently made in the mode in which the supervision is exercised?—Yes; the removal of some of the causes of delay.

2961. You stated in your last examination, that the reason assigned by the court for declining to allow your company to go on with the Bangalore line was, that the main lines of railway should be completed before those of a subordinate character were entered upon?—Yes.

2962. Do you consider the line to Bangalore a line of secondary importance?—Quite the contrary; I think it a line of the first importance in a military, commercial, social, and I should imagine a political point of view.

2963. Bangalore is one of the largest military stations in the south of India?—It is the principal military station, and by the construction of this branch, it will be placed in communication not only with Madras, but with Trichinopolee, which is the head quarters of the southern division of the army.

2964. Are there not, at Bangalore, from the nature of the climate, a large number of European troops assembled?—Yes.

2965. Would the simultaneous construction of that branch impede the progress of your main line?—It would not; we are so far advanced in the accumulation of railway materials in Madras, that we should have no danger of delay in providing what was required for the Bangalore branch. We have about 390 miles of permanent way materials at Madras.

2966. From the general knowledge you possess of the state of India, do you consider the Southern of India line to be of greater importance than the Bangalore branch which you have not yet been permitted to make?—Certainly not.

2967. Is not the competition which naturally arises from the construction of

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two large lines of railway in a country having but one port of access for the supply of stores from this country, rather calculated to increase the demand for freight, and from the circumstance of that demand being in two different hands, to raise the price of freights?—It has that tendency.

2968. Do you not think that from there being two bodies at work in the same market in India, unconnected with each other, the same effect may be produced upon the supply and upon the cost of labour?—Undoubtedly, to some extent. The Court of Directors have recognised that in the despatch from which I have already quoted. They say, "We certainly do not perceive the necessity of employing a greater number (of companies) than is consistent with the convenience and advantage of the public service. Under this system we may hope that the usual beneficial effects of competition will be derived from vigilant Government superintendence; and the inconvenience which would probably result from the pressure of conflicting interests will be avoided. We are even now apprehensive that the competition for freight will create a difficulty, although the railway companies will send their materials to different ports."

2969. Did you take any exception to this new line being made in the Madras territory?—When the scheme was first brought before the public, two years ago, we addressed the court in reference to it, saying that the lines which this company proposed to make were lines that we had always had in contemplation; in fact they are referred to in our early letters, and we considered them as necessary complements to the trunk line which we were engaged in constructing; that we presumed the court would concur with us that the time had not yet arrived for the construction of these branches, although they would be useful, but that when it did we should be ready to undertake their construction.

2970. At what part of your line would be the junction with the Southern of Madras?—Salem.

2971. Have you heard anything further, since your last appearance in this room, of the contract for your North-Western or Bellary line?—I have seen our solicitors, who inform us that the objections that were taken on the part of the East India Company have been withdrawn, and that there is no difficulty now in having the contract completed as we proposed.

2972. Those were objections as to the terms of the contract in reference to the accounts being kept separate?—That was one, and the other was about the length of time within which the company should exercise its power to surrender.

2793. You understand that the Court of Directors have conceded the point in the same way as they have to the East Indian Railway with respect to its Jubbulpore branch?—Yes; and the contract is in its terms analogous to our previous contracts, which is what we have asked for from the beginning.

2974. Colonel *Sykes.*] I see upon the map, a line sanctioned from Vaniambady to Bangalore?—It is sanctioned, but not commenced.

2975. What are the difficulties?—We have applied often for permission to go on with it, but have not obtained it.

2976. Are you aware that on several occasions complaints have been made by the servants of the company in India of delay in getting money from the Government?—Yes.

2977. Did you find it necessary to remonstrate with the Government, or did you find the fault to lie with your own servants?—We brought the subject under the notice of the Court of Directors in that letter of the 15th December 1856.

2978. With what result?—Since that time we have had no complaint, to the best of my recollection.

2979. Were the complaints well founded?—No doubt they were well founded, so far that the funds were not supplied to the extent we required, and our operations were impeded for want of funds.

2980. My question is, did you find it necessary, on any of these occasions, to remonstrate with the Government, or did you find the fault to lie with your own servants?—We found that the fault lay with the Government, in the particular case to which we adverted in our letter to the Court of the 15th December 1856.

2981. When funds were wanting, you say they were not forthcoming from the Government?—Our servants applied for a certain amount of money, which they did not receive.

2982. Was that in consequence of their application being deemed beyond the necessities of the case; or what were the reasons assigned by the Government?—The reason assigned by the Government, in this particular case, which we made the subject of representation to the Court, was, that it appeared by the statement of our engineer that there were large balances in his hands for the particular districts.

2983. In fact, that there was really and properly, by the accounts, no ground for that complaint of a want of funds?—I do not admit that. These accounts did not represent the actual available cash; the statement could only represent the balance of previous advances, which had not been accounted for.

2984. Do you not think that it was quite right and prudent on the part of the Government, when they saw large cash balances apparently in the hands of of the servants of the company, to decline to make further advances, until they were accounted for?—In the case I referred to, no answer was returned to the application for nearly a month.

2985. By whom?—By the Government. The facts were these, and we requested that the Court would make inquiry into them: the agent, on the 21st August, addressed the Government consulting engineer with statement of receipts and disbursements on account of construction and workshops, requesting advances on this account, as specified, to the amount of three lakhs and 30,000 rupees; on the 27th of that month the agent urged an early compliance with that application, the money being wanted for several of the districts. On the 4th September, the agent again brought to their notice the urgent necessity of an advance to prevent the works being stopped in districts 4, 5, and 6, and begged that, under any circumstances, an immediate advance of 10,000 rupees for each of the districts might be granted. On the 6th September, the agent addressed the chief secretary of the Government direct, with copy of his last letter to the consulting engineer, requesting, in the emergency, and to prevent the works being stopped for want of funds, that Government would pass an order for 30,000 rupees on account. This small advance was sanctioned by Government on the 9th September, under the emergency of the case. On the 16th September the agent again addressed the Government consulting engineer, requesting a further advance of three lakhs and 70,000 rupees on account of construction and workshops, in addition to that applied for on the 21st of the previous month, which he again begged might be sanctioned as early as practicable, great inconvenience being experienced for want of funds, as by copy annexed of a letter to him from the chief engineer. On the 22d September an advance of three lakhs of rupees, balance of the amount applied for on the 21st August was received, as was on the 25th of the same month the further sum of three lakhs and 70,000 rupees on the same account, showing, as the Board considered, the exhausted and embarrassed condition into which the previous unexplained delay must have reduced the Company's agent and executive officers in point of funds, and the arrear into which their payments, due for labour and materials, must have been driven in consequence.

2986. What was the reason assigned by Government for refusing to comply with your request?—The reason assigned by the Government consulting engineer was, that it appeared from the statement furnished by the engineer that there were large balances standing to the debit of some of these districts, but the Board were aware that those balances were only apparent, and that they really represented merely the difference between the amounts received in advance and those accounted for up to that date by the engineer in charge. They say, "It is therefore quite intelligible, that with an apparent large balance in hand an actual want of funds might and did co-exist on the occasion in question. The Board are rather surprised, indeed, that this view of the case was not present to the mind of one so conversant with the subject as the Government consulting engineer must be taken to be."

2987. When the outstanding balances were accounted for, the Government made up the advances that were asked for?—They made, in the end, all the advances that we asked for.

2988. Before the outstanding balances were accounted for?—Before the second payment was made they had the statement of the succeeding month; in the end we got within three days the money that had been applied for for the two months.

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2989. Were the works actually stopped during that time?—I do not know that they were stopped, but it has been repeatedly the subject of representation by our engineers. I think once they said they were obliged to stop altogether, and they have repeatedly represented that they were impeded for want of funds, and it was the recurrence of those representations that induced the Board to address the Court of Directors upon the subject.

2990. The extreme delay was a month?—In this particular case one month elapsed.

2991. Were there any other instances of delay?—I do not know that there were instances of so long a delay.

2992. Have you not had frequent occasion to find fault with the irregular transmission of papers and accounts from India, and of the defective character of the information transmitted, with requisitions for stores, &c.?—We have had occasion to find fault.

2993. And from your own officers?—They all come from our own officers.

2994. Did you receive complaints from your agent at Madras of inattention on the part of the chief engineer, or other officers subordinate to him, to his orders and references?—The agent has complained that he did not receive the information so speedily as he should have done, and wished to do.

2995. Mr. Bruce has observed that the supply of certain pumps from England was delayed an unreasonable time. Do you remember the cause of this delay, and was it attributable to any delay or interference on the part of the Government?—No, I explained that case at full length on my last examination. I made no charge against the Government.

2996. You have lately, I believe, appointed a new agent and manager at Madras?—We have.

2997. Has that agent expressed in his communications with yourself or to the Board any opinion of the state of accounts in your engineer department?—He has expressed himself generally as anxious that the accounts should be brought up more closely than they are.

2998. Then, in fact, they are not brought up closely?—Not so closely as is desirable.

2999. Or as they ought to be?—It is difficult to bring them close up; the engineer's accounts can only be made up when the accounts from the stores and workshops are completed, because every article furnished to the engineer from either of these departments must be brought into his accounts, and, therefore, any delay on their part involves a delay on his part. A delay also by any one of the many subordinate engineers in completing his accounts, unavoidably delays the general account.

3000. Have you had your accounts brought up better since the appointment of your new agent?—I do not know that he has had much time for improvement; he is exerting himself, and every department is exerting itself to meet the wishes of the Board in that respect. I believe they will succeed in doing so.

3001. Has he expressed any opinion upon the expediency of increasing the European subordinate agency from England?—He mentioned in his opinion that it would be an improvement to have an accountant from England for the engineering department.

3002. Has that been sanctioned?—It has not. The chief engineer has not expressed his opinion that such is necessary. As a general rule, we send nothing out to India that is not applied for from Madras with the sanction of the Government there.

3003. Mr. *Crawford.*] It has been stated by Colonel Pears, in his evidence, that the prospects of the Madras Railway are such as not to encourage an expectation that any higher dividend than 5 per cent. will at any time be realised. Have you any observation to make in reference to that?—I do not coincide in that opinion, and I form my conclusion from these considerations, that, in the first place, with its very imperfectly developed traffic, the portion of the line now open and at work has been yielding a net return of about 4 per cent., that is after deducting the working charges, but not the charge for maintenance of way, the incidence of which has not yet been determined; the date at which the maintenance of way falls upon revenue is a matter not yet determined. The railway has only been open about a year and a half, any part of it. We have in evidence, in some of the Blue Books, that coincident with this amount of traffic upon the railway, the traffic upon the western road, which runs

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parallel with it, is greater than ever. There have been differences of opinion as to the propriety of the rates for goods traffic upon the line, but it is not contested that those rates are lower than the rates paid on the common road, and Colonel Pears has admitted that eventually the whole of the road traffic, at all events, must go upon the railway, whatever further extension it may have; I have shown the extension in the case of the salt traffic, which, from being in the early months some 20 or 30 tons a month, has now reached, by the last monthly return, 1,140 tons carried on the line. We are informed, and have every reason to believe, that the amount of salt which leaves Madras in the direction of our railway, is equal to 50 tons a day, which sooner or later must go on the line, with an indefinite extension. The number of passengers on the line, although limited, from causes which I cannot enter into before the Committee, has gone on steadily increasing. It has been stated in Colonel Pears' evidence, that the portions of the railways now open are the best portion of them, on account of the local traffic; but in the case of the Madras railway, I can show that that is not so, by the evidence of the mileage of the passengers we carry: the average mileage of all classes of passengers carried while 65 miles only were open, was 37 or 38 miles, showing clearly that it is no local traffic. It has been also expressed by various authorities, among the rest by Colonel Pears himself, I believe, that the limited extent of railway yet opened, is not calculated to give any indication of the amount of goods traffic that will go upon it. We consider that the traffic has been impeded from other causes, which, as I said, I cannot enter into; but I think I have stated sufficient to show that there is every reason to expect a very great increase of traffic, both in goods and passengers, and in consequence that the Madras railway, and in my belief the other Indian railways also, will pay considerably more than the guaranteed rates of interest.

Mr. *Thomas R. Watt*, called in; and Examined.

Mr. *T. R. Watt.*

3004. *Chairman.*] YOU are, I believe, the Secretary of the Great Indian Peninsular Railway Company?—I am.

3005. How long have you filled that office?—For four years, three of which were passed in Bombay.

3006. Will you state to the Committee when the Great Indian Peninsular Company was formed?—It was originated in the spring of the year 1845; but the company did not succeed in obtaining an Act of Parliament until August 1849.

3007. Who was the originator of the scheme?—Mr. John Chapman.

3008. In the year 1845?—He had been working at it for some years previously; but it was in the year 1845 that he first brought it to a point with the projectors of the existing company.

3009. When was the Act of Incorporation obtained?—In August 1849.

3010. An agreement, I believe, was then entered into between the East India Company and the railway company for the construction of an experimental line?—It was, under the date of the 17th August 1849.

3011. How far was that experimental line to go?—From Bombay to Callian, a distance of 33 miles.

3012. What was the amount of capital the railway company were authorised to raise?—£. 500,000.

3013. What was the guarantee upon that?—Upon a guaranteed rate of interest of 5 per cent.

3014. When was the first sod turned?—On the 31st October 1850.

3015. When was the line completed and opened for traffic?—The line to Tanna, which is 22 miles out of the 33, was completed and opened for traffic in April 1853.

3016. Subsequent to that, when was the remaining portion of the line, as far as Callian, completed?—In May 1854.

3017. What was the system adopted by the company for the construction of a railway; did they work it themselves, or through the medium of contractors?—The whole of the railway has been constructed by means of contracts with competent contractors.

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3018. Have you found generally the contractors fulfilling their engagements satisfactorily?—We have no instance of their not having done so.

3019. What is the whole extent of line for which you have received the Government sanction, and upon the capital for the construction of which you received the guaranteed interest?—The whole extent of the railway sanctioned down to the present time is 1,235 miles.

3020. What is the amount of capital?—The amount of capital that has been sanctioned at present is 8,000,000 *l.* of share capital, and 333,300 *l.* have been raised by loan.

3021. What is the full extent of your borrowing powers under the Act?—The full extent of the borrowing powers is one-third of the 8,000,000 *l.*

3022. Will you describe to the Committee shortly your main line and its branches?—The main line extends from Bombay, in a north-easterly direction, to Jubbulpore, a distance of 605½ miles. There is a branch which leaves the main line at Bhosawul to Nagpore, a distance of 263 miles. The south-eastern extension leaves the main line at Callian, 33 miles from Bombay, and extends to the River Kistna.

3023. It is in contemplation, I think, that your line eventually shall join the Madras line at some point not yet fixed upon?—It is.

3024. What will be the probable ultimate length of that branch from Callian to the Kistna?—From Callian to the Kistna is 358 miles.

3025. There is a portion of the south-easterly end of that line which, I believe, is at present in abeyance?—That is so; it is the piece between Sholapore and the River Kistna, being 110 miles.

3026. Describe the difficulties which have arisen in regard to that portion of the line, and explain why it is that the point has not been already fixed upon where it is to join the other line?—Our company has experienced no difficulty, and we have on two occasions expressed our readiness to go into the question with the Madras company, with a view to settle the point at which the two lines should meet; but down to the present time they are not prepared to go into that inquiry.

3027. You have two herculean works in the course of construction, namely, those portions of the line in the direction of Jubbulpore, and the other line in the direction of the Kistna, which is the line across the line of Ghauts: to take them in order, describe the nature of the works under construction for the passing of the Thul Ghaut; describe the altitude you have to surmount, and the cost, &c.?—The incline commences at a point called the Rotunda Nullah, and terminates at Egutpoora.

3028. What is the distance between the two points?—Nine miles is the length of the ascent; the total rise in that distance is 972 feet.

3029. What is the maximum gradient that you propose to attain in the most difficult and steepest parts of that line?—The steepest gradient is 1 in 37, for a distance of 4 miles and 44 chains.

3030. What is the estimated cost for the construction of that nine miles?—The estimated cost is 49,988 *l.* per mile.

3031. Is the tunnelling very heavy?—There are 1,962 lineal yards of tunnelling, and 614 yards of viaducts.

3032. These being works of a difficult character, I presume they are entirely in the hands of your own inspectors and servants?—They are being constructed by contract under the superintendence of the engineer and his staff.

3033. Have you experienced any difficulty in obtaining the skilled labour necessary for the inspection and superintendence of works of that nature?—Not for the superintendence and inspection.

3034. Do you employ exclusive Europeans for that purpose?—No; we employ also natives; termed maestries in India but they are in the capacity of foremen of bricklayers or carpenters; the superior offices are all filled by engineers.

3035. What is the name of your chief engineer?—Mr. James Berkeley.

3036. He has been at the head of your works from the beginning?—He has.

3037. Will you give us a short account of the other great work in the south-easterly direction over the Bhore Ghaut; what is the point at which you there commence the ascent?—The point is Padusdhurnee, and it terminates at Lanowlee.

3038. What

3038. What is the distance?—The total distance is 15 miles and 68 chains; the total rise in that distance is 1,831 feet; there are 2,535 yards of tunnelling, and 888 yards of viaducts.

3039. What is the highest gradient upon this 15 miles?—One in 37 for a mile and 38 chains, and the estimated cost is 48,188 *l.* per mile.

3040. Have you not experienced on the works of Bhore Ghaut some difficulty in obtaining labour?—The works of the Bhore Ghaut are being executed by a contractor; for a time they were in a backward state, and one of the reasons assigned by the contractor for his works being backward was the difficulty he experienced in obtaining labour.

3041. What was the cause of that difficulty in obtaining labour?—The site where the works are being carried on is very unhealthy, and he found great difficulty in inducing labourers to come forward to execute the works upon that district.

3042. What is the nature of the ground; is it jungle?—Altogether, over the Ghaut, at certain seasons, of course, it is more unhealthy than at others.

3043. What is the rate of wages you usually pay?—We do not employ that labour, so that I am unable to give you any information upon that point.

3044. Are your contractors Europeans or natives?—One native has executed some works for us; but the other contractors are all Europeans, who have gone out from this country.

3045. What portion of the line is in the hands of the native contractor?—A native contractor constructed the portion from Perseek Point to Callian, a distance of eight miles.

3046. That is a portion of the line already open?—Yes; the same contractor executed also the part from Callian to Wassind, the extreme point to which the line is now opened in a north-easterly direction; and he is now constructing the line from Wassind to the Rotunda Nullah, at the foot of the Thul Ghaut.

3047. What is the name of the native contractor?—Jamsetjee Dorabjee.

3048. Is the native contractor a Parsee?—He is.

3049. Have you had reason to be satisfied with the mode in which he has fulfilled his contracts?—Perfectly so; Mr. Berkeley, the engineer, speaks in the highest terms of the manner in which he has always executed his works.

3050. Speaking generally, have you had reason to be satisfied with all the contractors with whom you have dealt?—Yes.

3051. You have given us the estimated cost for these leading works; I wish to know what the average estimated cost over the whole line at present in hand is?—I have not with me, and I cannot give you, the figures applicable to the sections of the railways that are now in progress; but the average of the whole of the railway, inclusive of the two Ghauts, is about 6,500 *l.* per mile.

3052. Swelled by those two very expensive works?—To some extent.

3053. As compared with other railway works under construction in India, would it not appear from that, that you are constructing many portions of your line at cheaper rate than almost any other railway company?—I do not know what the experience of other companies has been; but upon the portion of the railway opened, 88½ miles, the estimate of the cost, including 33 miles of double line, is in round numbers about 9,000 *l.* per mile.

3054. I presume that you have not had to contend, as some other companies have had to do, with heavy bridging works over those portions?—Yes; there are some heavy bridges upon the line opened.

3055. Give us the names of the rivers you cross, and the nature of the bridging works over them?—I am not competent to give you an engineering description of them, but the first is the Tannah River.

3056. Do you know the length of it?—That river is crossed by two viaducts; one of nine arches of 30 feet span; the other of 14 arches of a similar span, with an iron girder opening in the navigation channel of 84 feet span, raised to a height to give a clear headway of 30 feet above spring-tide level.

3057. What is the next?—The Oomrah Viaduct. Then there are the Oolassa Viaduct, the Kaloo Viaduct, and the Basta Viaduct.

3058. I presume these works are constructed with a view to laying down a double line of railway?—There is a double line over the Tannah and over the Oomrah, and the rest are constructed for a double line.

3059. Who is the Government consulting engineer upon your line?—Lieu-

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tenant-colonel Crawford acted from the commencement of the undertaking in India down to April or May 1856, when he was obliged to come to England, and he was succeeded for the time by Captain Rivers. Captain Rivers is still acting, although Colonel Crawford has returned to India, and is superintending engineer of the railway department; at present Colonel Crawford is acting mint master.

3060. Of course you are subjected, as the other lines are, to an amount of Government supervision. I wish to know whether you have found any undue amount of interference exercised over your works, and the action of your engineers?—Not during Colonel Crawford's time; but when he was away in England a correspondence originated, which has only recently terminated, that certainly bears the character of interference with the company.

3061. Have you not had a case in which the Government interference has been unduly exercised in regard to certain crossings and culverts upon a portion of the line in the neighbourhood of Callian?—That is the case to which I allude.

3062. Describe to the Committee what the extent of that interference has been, and whether any delay has been caused to the works in consequence?—No delay has been occasioned in the construction of the railway, because the interference has been upon a portion of the line which was finished, and at work.

3063. Have you had any difficulty in obtaining the sanction of the Home Government to your extension schemes at any period since the formation of the Company?—There was great delay in sanctioning the construction of the North Eastern extension to Jubbulpore.

3064. When was that extension of the line first applied for by your company?—In September 1852.

3065. It did not form, I believe, any portion of your original scheme?—No; the original scheme was confined to an experimental line, as it was termed, between Bombay and Callian. The Act of 1849 permits of any number of miles of railway being constructed in India, with the concurrence of the East India Company.

3066. When did you first apply for the extension?—When the experimental line was being constructed, the engineer entered upon surveys of the country beyond, in a north-easterly and in a south-easterly direction, and in September 1852 he submitted his report upon the surveys of the line from Callian in a north-easterly direction to Munmar, on the western border of Candeish, 123 miles by way of Thul 'Ghaut; upon consideration of that report, the railway company urged Government to permit them to proceed forthwith with the construction of the line to Munmar. Government, instead of authorising our entering upon the construction of that line at once, required us to enter upon the execution of surveys beyond Munmar, in the direction of the Ganges Valley, and it was not until November 1855, upwards of three years afterwards, that we obtained sanction to construct the line that we were prepared to construct and were anxious to construct in 1852.

3067. Had you the means, when you first made the application for that portion of the line extending to Munmar, and were you at once in a position to proceed in the execution of those works?—It would have been necessary to raise capital for the purpose; but the Board did not apprehend that they would experience any difficulty at that time in raising the amount of capital necessary for the construction of that line to Munmar.

3068. Will you describe what the character of the country is, whether it is a very productive country through which you propose to carry that 123 miles of line?—The country which adjoins the railway is, I believe, not very productive; but it is the direct route to the great cotton-producing district of Nagpore. We must go to Munmar to get to Nagpore.

3069. What is the point at which the Nagpore branch leaves the main line?—Bhosawal.

3070. How far is Munmar from the point at which the Nagpore branch leaves the main line?—From Callian to Munmar is 123 miles; the whole distance from Callian to the point at which the Nagpore branch leaves the main line is 240 miles.

3071. Do you know anything of the population of Munmar?—I do not; but it was the point selected by the engineer up to which to carry the surveys at the time.

3072. Was this portion of the line selected in reference to engineering considerations, or upon commercial grounds?—Upon engineering considerations, looking forward to the ultimate extension of the railway in the north-easterly direction.

3073. Mr. *Crawford.*] Did you not risk any difficulty in obtaining the sanction of the Government in reference to the south-eastern line?—The report of the engineer to which I have referred embraced also surveys of a line in the south-eastern direction, to Poonah, *viâ* the Bhore Ghaut, and the railway company urged Government to permit them to go on with the construction of that line; the result was that Government sanctioned our going on with the construction of about 20 miles, to a point called Narel, but stopped us there, requiring that the Syhadree range of ghauts should be further carefully examined, with a view to see that no better means of access to the Deccan existed than by way of the Bhore Ghaut; that examination was made, and in reporting again in favour of the Bhore Ghaut, the chief engineer called attention to another Ghaut, the Kussoor Ghaut, which was in a more direct line, but the difficulties of which were such as to induce him to recommend us to construct the line by the Bhore Ghaut, the longer route. Government were not satisfied with the examination which had been made of the Kussoor Ghaut, and required a further examination to be made of it in detail, which again occasioned delay.

3074. What was the extent of the delay so occasioned in point of time?—The survey was laid before Government in August 1853, but in consequence of those further examinations that we were required to make, the construction of that line could not be proceeded with until the commencement of the year 1856.

3075. Did you meet with any difficulty in the final determination of the means by which you were to ascend the Thul Ghaut?—We did.

3076. What was the nature of the delay you met with?—The contractor was in India, and on the ground, prepared to commence operations at the commencement of the working season, November 1857, and the engineer, Mr. James Berkley, reported upon a line on that ghaut, advising that it should be placed in the hands of the contractor for construction; he necessarily brought under observation at the same time an alternative line, which had been surveyed, but the reasons in favour of the line which he recommended to be constructed were so strong that he urged the company and the Government not to hesitate, but to proceed with the construction of that line at once. The company acquiesced in Mr. Berkley's views, and urged them on the Government, but Government not being satisfied, required the question to be referred home to this country for decision, and consequently that occasioned delay in the settlement of the case for about five months.

3077. *Chairman.*] Although the views of their own engineer and your engineer had coincided?—No; their engineer did not coincide with the company's engineer.

3078. Who was their engineer?—Captain Rivens.

3079. Mr. *Stephenson.*] The original recommendation of Mr. Berkley had been acquiesced in, so far as to induce the company to let the contract?—Certainly.

3080. The engineer proceeded with his staff to the ground, and also his plant?—Yes.

3081. It was then, I understand, that the alternative line, which had been condemned by Mr. Berkley, was revived again?—He had not previously reported upon that alternative line.

3082. He had reported upon what he considered the best line?—He had examined the ghaut, and had laid before the company a route which he advised them strongly to adopt; and upon proceeding to stake out the line for the purpose of construction by the contractor, an alternative line was suggested, the disadvantages of which, as compared with the original line, he pointed out in the most forcible manner, showing that it would cost upwards of 200,000 *l.* more to construct; that it would be upwards of three miles longer; and that the very shortest period longer that it would take to construct would be two years.

3083. Mr. *Crawford.*] Was there any difference in the gradients?—It modified the gradients by reducing them from 1 in 37 to 1 in 60.

3084. Mr. *Stephenson.*] You should state the length in conjunction with the gradient?—It was upwards of three miles longer.

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3085. Mr. *Crawford.*] Which line has been since adopted?—The line which Mr. Berkley in the first instance advised us to adopt.

3086. I understand that, as regards delay arising from the sanction which it was necessary the Government should give to you to proceed, it has been of a twofold character; there has been first the delay arising from the Government taking time to consider the general direction of the railway; and subsequently there has been delay arising out of the difficulty presented by the two ghauts?—Decidedly so.

3087. In the case of those two ghauts, it may be presumed that the country had been sufficiently examined to enable the railway company to select the best line that could be found?—We had a positive certificate, if I may use the term, from Mr. Berkley, that having examined the whole range of ghauts within a reasonable distance to the north and to the south-east, no better ghaut existed for access to the Deccan than the Bhore Ghaut on the south-east and the Thul Ghaut on the north-east.

3088. Supposing the time taken for the examination of the range of ghauts was no more than was necessary, and the result to have been the ascertainment you have now selected of the best line, the time taken can hardly be considered as wasted?—I think it might have been ascertained in a much shorter time.

3089. Within what time did the engineer ascertain it?—He reported on the Bhore Ghaut in August 1853, and his examination then had been of such a nature as to leave no doubt on the minds of the Railway Board that no better route could be obtained by further delay or examination; they would probably, if it had rested with them alone, have proceeded then vigorously with the construction of the line.

3090. Have the company taken into its consideration, during the time you have been connected with them, the propriety of proceeding by Mr. Chapman's original line into the Deccan, the Malsej Ghaut?—Not during the time I have been connected with the company, but that route was carefully examined by Mr. Berkley, and one of the objectionable features in it, as brought to our notice by him, was, that one tunnel upon it would have taken 17 years to construct.

3091. This Committee is appointed to inquire "into the causes that have led to the delay that has occurred in the construction of railways in India." Now in the case of the Great Indian Peninsular Railway Company, are there any causes of delay to which you wish to draw the attention of the Committee?—No, I think not. I can only mention the fact of the delay.

3092. Do you admit that any delay has taken place beyond that which has been alluded to?—I think not.

3093. You do not admit that any delay has occurred in the construction of the railway?—No; when once the route was determined, and authority was given to the company to proceed with the construction, there has been no avoidable delay, and the works have been constructed in the shortest period.

3094. The system of Government superintendence did not in the case of your line interpose any serious cause of delay?—I think not, owing, I believe, to the system which was adopted of constructing the railway by means of contracts, because it was incumbent upon the Government to settle the plans for the construction of the line previous to the contract being let, and the contract being let, it remained alone with the railway company's engineer to give orders to the contractor as to the manner in which the works were to be constructed.

3095. The consulting engineer to the Government did not interpose any difficulty in the way of minute supervision or interference?—Certainly not. From my personal experience of the mode in which Colonel Crawford invariably conducted the business of his office, we at all times received the greatest facilities from him; and the control exercised through him, whilst being strict, was never vexatious.

3096. *Chairman.*] Then the inference that the Committee may fairly draw from the statement you have made in regard to the construction of your line is this, that the extent to which the Government superintendence is carried is unquestionably less when the work is constructed by contract than when the works are constructed by the railway company themselves?—I think there cannot be a doubt of it.

3097. Mr. *Crawford.*] I think you stated that, with one exception, the contractors are all Europeans?—Yes.

3098. Were

3098. Were those Europeans found on the spot, or had they the opportunity of tendering for the construction of the works given to them in this country?—They were all Europeans found in this country.

3099. What was your practice with regard to affording contractors in this country the opportunity of tendering for those works?—The practice has been, to invite tenders for the construction of the works both in India and in this country, upon contract drawings and specifications completely prepared by the engineer, and we furnished the contractors in this country with all the information in our power as to the character of the country through which the railway had to be constructed, the materials, and so on.

3100. I suppose some of the contractors took an opportunity of proceeding themselves, or of sending persons in whom they had confidence, to collect information as to the price of labour, materials, and so on?—That was done, particularly by Mr. Wythes, who is now constructing the Thul Ghaut, and the 190 miles beyond the Thul Ghaut; he constructed four miles of the line from Tanah to Perseek, upon which the work across the Tanah River is, and on which there are two short tunnels; and he, in the first instance, sent out to India a gentleman, who is now his partner, Mr. Jackson, and it was upon the information that Mr. Jackson obtained in India that he tendered for the construction of that work from Tanah to Perseek. The line from Bombay to Tanah was constructed by a firm of the name of Faviel & Fowler, neither of whom had been previously in India. Mr. Faviel, having completed the line and returned to England, afterwards tendered for the construction of a line on the Bhore Ghaut, and for the 40 miles beyond the ghaut to Poonah, and he competed successfully with others, obtaining the contract; the line from Poonah to Sholopore, 160 miles, is being constructed by Mr. Joseph Bray, who had previous experience in India upon the East India Railway.

3101. Have these contractors employed sub-contractors under them?—I believe so.

3102. What is the class from which these sub-contractors are taken?—I think they have constructed the earthworks, principally by letting off small quantities to a headman of a gang of labourers, the lowest order of coolies.

3103. What order of men are the sub-contractors?—There are instances of Parsees sub-contracting and also of Hindoos.

3104. There are no European sub-contractors?—There may be, but I am not aware. I believe on the Bhore Ghaut Mr. Faviel has sublet a portion of the work to a European in India.

3105. Probably the effect of this system of letting large contracts in this country, and the contractors subletting them to natives in India, will be to create a class of men, who will themselves be able very materially to assist in the construction of railways in India, by themselves taking contracts by-and-by?—That is certainly so, because recently the Board have received from two natives, one a Hindoo and the other a Parsee, tenders for the construction of the works beyond Bhosawul to Jubbulpore, and one of those men I have reason to believe has had experience as a sub-contractor.

3106. With regard to the materials which the country supplies, you have at Bombay, I believe, a large and continuous supply of serviceable timber?—There is a considerable supply of timber, but the railway company have never had all the benefit of that supply which the circumstances lead us to believe we ought to have had. Difficulties have been thrown in our way in the procuring of that timber by the conservator of Forest's Department; and only by the last mail we received accounts of the works upon the line above the Thul Ghaut having been suspended, in consequence of an order of the Mamlutdar of Kolwan, probibiting timber being cut nearer than three miles on each side of the railway, although the railway proceeds through a jungle, practically preventing the timber being made use of.

3107. Have you made a representation of that circumstance to the Government?—The circumstances were immediately brought under the notice of Government, and they as immediately ordered the first assistant of the collector at Tannah to proceed to the spot, and investigate the circumstances, and so it stands.

3108. You have an unlimited supply of stone, have you not?—We have.

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3109. In fact your difficulty is to get the stone out of the way?—Just so.

3110. So that you meet on the Bombay side with none of the difficulties experienced in other parts of India from the want of bricks or other building materials of that character?—None.

3111. Your company is differently constituted from the other railway companies in this point, I believe, that its interests are represented in Bombay not by an agent appointed by the railway company in this country, but by a deputation of the Board of Directors sitting in Bombay?—It is so.

3112. Who are the gentlemen who generally form that deputation of the Board in Bombay?—Colonel Melvill, the Secretary of Government in the Military Department, is the chairman; Lieut.-Colonel Swanson, stipendiary member of the Military Board; and Lieut.-Colonel Barr, the military paymaster, are the three European directors at present on the committee; there are two natives, Jugonath Sumkersett, a Hindoo banker, and Cursetjee Jamsetjee, a Parsee, and the eldest son of Sir Jamsetjee Jeejebhoy, Bart.

3113. Is it not your opinion that the system which you have described of representing the company in India by a Board, is superior to that of appointing a single agent?—I think so; I believe it carries more weight with it in the eyes of the Government.

3114. And do you not by that means acquire a large amount of individual experience in the service of the company?—Certainly.

3115. Have you not by the presence of those gentlemen whose names you have mentioned on your Board, access to sources of information of all kinds and of every character?—Decidedly so.

3116. You find the presence of the native gentlemen upon the Board useful in many respects?—Certainly.

3117. In carrying on communications with the natives and others?—Yes.

3118. I believe you have a register for the transfer of shares in Bombay?—Yes.

3119. And you have a considerable number of shareholders in Bombay, both European and native?—Yes.

3120. Do you not think that the presence of those native gentlemen upon the Railway Board was the effect of inducing many natives to become shareholders in the railway who otherwise would not have been so?—I have no doubt of it.

3121. *Chairman.*] Will you state precisely the position of your railway at present, that is to say, the precise number of miles under construction, with the respective periods at which the various sections will be completed?—There is at present open 88¼ miles; there is under construction, to be completed by December 1858, 105 miles; by September 1859, 100 miles; by November 1859, 25 miles; by June 1860, 190 miles; by February 1861, 13½ miles; by December 1861, 9 miles; there is about to be let, to be completed by March 1862, 595 miles, and there is in abeyance 110 miles; making a total 1,235 miles, the whole of the company's undertaking.

3122. That includes the works required for the completion of the ascent of the ghauts?—Yes.

3123. Now state to the Committee the amount of capital you are authorised to raise, the amount you have already raised, and the amount that you have already paid into the hands of the East India Company, with the interest thereupon?—The amount of share capital, including two millions which has just been created, is eight millions, which gives borrowing powers to the extent of 2,666,666 *l.*; the amount paid up on shares is 3,348,938 *l.* 3 *s.* 1 *d.*, and a call has been made upon the two millions, to which I referred, to the amount of 200,000 *l.*; there has been raised on loan 333,300 *l.*, making the total paid up to the present time 3,682,238 *l.* 3*s.* 1*d.*, out of a capital of eight millions. I am not prepared at this moment to give you the exact figures of the interest we have received, but in round numbers it is about 460,000*l.*

3124. Is that capital of eight millions the amount which it is estimated is sufficient for the completion of the whole 1,200 miles of railway?—It is thought possible that something further may be required, but not of any great amount; possibly another million.

3125. In regard to that portion of the line which is opened, can you furnish the Committee with a tabulated statement of the amount of receipts, and likewise

wise of the amount which has been repaid to the Government in payment of interest upon capital expended upon that portion of the line?—The repayment to the Government is not in respect of interest advanced upon the particular section of railway opened and at work, but generally on account of interest advanced by them.

3126. What is the total amount that you have repaid to the Government out of your receipts?—About 70,000 *l.* out of 460,000 *l.*

3127. Mr. *Stephenson.*] Is that towards redeeming the interest they have paid upon capital spent upon the line already opened?—Something beyond that; it is capital generally.

3128. *Chairman.*] Have the receipts upon those portions of the line already opened equalled the estimate of traffic originally formed?—I believe they far exceed it, for this reason, that the original estimate was based upon the goods traffic of the country, and left out of account the passenger traffic; the receipts upon the line opened have arisen in a very large proportion from passengers alone, the company not being in a position to command the goods traffic of the country until they have extended the line further into the interior.

3129. Can you give a statement of the half-yearly returns since the opening of the line?—I will furnish it.

3130. Can you state generally that the actual amounts received on account of passenger and goods traffic have exceeded even your sanguine expectations?—Certainly.

3131. And do you observe a fair increase upon each succeeding half-yearly report?—Certainly; taking the cost of the railway open, at an average of 9,000 *l.* a mile, the net earnings upon the line open for the year 1857, were equal to 4¼ per cent., close upon the amount of the guarantee; they have not reached the guarantee as yet.

3132. Is the neighbourhood of Callian a producing country?—Not at all.

3133. So that you have not yet reached a point which enables you to judge what the ultimate traffic will be?—We have not reached a point which would secure to us the traffic which flows down to Bombay for export; the carts bringing down the traffic have to go on to Panwell, a place 22 miles beyond Campoolee, the termination of the railway, for the purpose of getting a return load of salt, and we find that no reduction we make in the rates is sufficient to induce them to leave their goods at Campoolee, because they would still have to go on to Panwell to get their return load of salt and fish.

3134. Mr. *Cheetham.*] What is the length of line from Bombay now open?—Eighty-eight and a half miles.

3135. Will not the carts deliver the goods at the commencement of the 88½ miles?—Panwell is the point to which carts take their loads to get a return load of salt, and it is directly opposite Bombay; it is 22 miles from Campoolee, while to reach Campoolee we make a detour of 70 miles.

3136. Do you know in what mode cotton is conveyed from Nagpore to Bombay?—Such as comes down is brought in carts, about 8 cwt. in a cart.

3137. Do you know the cost of transit?—I do not.

3138. Do you anticipate that you will be able to secure that traffic?—I have no doubt of it. The cotton brought down was taken to a port called Bewndy, and shipped from there to Bombay; the railway intercepts that cotton about 12 or 15 miles to the eastward of Bewndy, and the dealers now are delivering cotton at the point at which they reach the railway for the railway company to bring it to Bombay, instead of carting it on to Bewndy and sending it by boat to Bombay.

3139. You are taking a portion of that?—A portion of the cotton that comes down; the quantity that comes down is comparatively very small.

3140. Do you know whether it goes down on the other side of the peninsula?—I am not aware.

3141. Mr. *Stephenson.*] Reference was made this morning to a system which is followed in the Presidency of Madras, of publishing correspondence which takes place between the Government and a railway company, either with reference to the officers or other matters of business. Is the same system followed in Bombay?—The practice of placing Government documents in the

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reporters' room of the secretariat, for the use of the newspapers, is followed in Bombay.

3142. Do you not consider the publication of letters reflecting on any one, without first waiting for some explanation, an act of great injustice?—Certainly; and in our case it had the effect of making the engineer feel that he was unfairly treated.

3143. Is it calculated not only to extinguish the zeal of the engineer, but also to make him discontented with everything around him?—I think so.

3144. *Chairman.*] I presume the object that the railway company had, in at once laying down a double line at the point of bifurcation at Callian, was to meet the heavy traffic that may be expected there to unite from the two great branches?—It was so; the railway in the first instance had been constructed as a double line as far as Tanna, and it was thought that it would be better to complete the double line to the point of bifurcation, so as to have a double line when the railway was completed.

3145. What is the general character of the tunnelling work on the two Ghauts; is it difficult?—Particularly difficult in some parts; sometimes they come across a dyke of rock, which is extremely difficult to penetrate.

3146. Were the two works commenced at the same time?—No; the Thul Ghaut works were only commenced this season, that is in February last; the works on the Bhore Ghaut were begun in the year 1856.

3147. Are the same complaints made of the unwholesome character of the country upon the Thul Ghaut, as upon the Bhore Ghaut?—Generally speaking, it is considered much more unhealthy down on the Ghaut itself, than on the top of the Ghaut.

3148. Have you experienced a similar difficulty in regard to labour for the works upon the Thul Ghaut as upon the Bhore Ghaut?—We have scarcely had any experience on the Thul Ghaut, the works have been commeneed so recently.

3149. So far as you have advanced with the works upon the Bhore Ghaut, have you found that your rate of progress has agreed with the estimate you formed?—As I mentioned before, the works were backward; the progress made on them was not what Mr. Berkeley considered ought to have been made, but latterly the contractor has succeeded in making better progress; the actual progress of construction has not come up to our expectation.

3150. Mr. *Crawford.*] Have you any observation to make in reference to the system of supervision as administered in this country?—I think not; the alteration which has been made, giving the *ex-officio* director authority to concur in the granting of indents from abroad, is well calculated to prevent delay arising.

3151. Do you not think that it would expedite business if the *ex-officio* director were empowered to consent at the Board to the proceedings of the Board?—No doubt of it; the reference to the Court necessarily involves a delay, the average of which, in our case, is, I think, about three weeks.

3152. *Chairman.*] Have you any other observation you wish to offer to the Committee?—No.

Lunæ, 14° *die Junii*, 1858.

MEMBERS PRESENT:

Hon. H. G. Liddell.	Mr. Cheetham.
Mr. A. H. Baring.	Mr. Crawford.
Mr. T. G. Baring.	Mr. D. Seymour.
Mr. C. Bruce.	Colonel Sykes.
Mr. H. A. Bruce.	

HONOURABLE H. G. LIDDELL, IN THE CHAIR.

William Patrick Andrew, Esq. called in; and Examined.

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3153. *Chairman.*] YOU are the Chairman, I believe, of the Scinde Railway Company?—I am.

3154. Will you inform the Committee when that company was first formed?—I might premise by stating that the railway was surveyed by a very eminent engineer in the Bombay service, Lieutenant Chapman, in 1853; these surveys made by him were approved of by Colonel Turner, the superintending engineer of the province. I introduce that to show that before any step was taken here, it went through all the investigation upon the spot that appeared necessary.

3155. By whose instructions was that survey undertaken?—By the instructions of the Bombay Government, on the recommendation of Mr. Frere, the commissioner in Scinde.

3156. By the instructions of the Government unconnected with any private company?—Entirely; the surveys were approved of by Colonel Turner, the superintending engineer of the province; by Mr. Frere, the commissioner; and also by Major Crawford, the consulting engineer to the Government of Bombay.

3157. What was the whole extent surveyed at that time?—At that time the whole extent was 110 miles between Kurrachee and Kotree, which is exactly opposite Hyderabad.

3158. When was your company formed?—All these reports came home to this country; and, on the basis of those reports and surveys, a company was formed in December 1854.

3159. When those surveys were sanctioned by the Government, was there any intention on the part of the Government of constructing the line themselves?—I believe so.

3160. Was any offer or advance made by the local Government to place the construction in the hands of a private company?—None whatever; the information was sent home, and I was requested by the authorities here to undertake the construction of it by forming a company. I was privately requested; and on that private request made to me, I made an official application on the 10th January 1855.

3161. When did you obtain your Act?—The Act of Incorporation was granted on the 2nd July 1855.

3162. I presume the same course was pursued as with regard to other lines; you obtained the Government guarantee, to what extent?—We had the Government guarantee of 5 per cent. on the amount required to complete the line, and permission to commence with a capital of 500,000 *l.*

3163. Was that the amount of capital estimated as sufficient to complete the works?—No; I believe the Government engineer estimated the capital at 600,000*l.*; our engineers did not concur in that, but thought 750,000*l.* would be required, being half as much again as we received the guarantee upon.

3164. When did you turn the first sod?—The line was commenced on the 29th April last.

3165. Will you explain to the Committee the cause of that considerable delay which

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which seems to have occured between the obtaining of the act of incorporation and the actual commencement of the works. I should like to know first when you sent out your staff?—The survey of the line commenced in June 1855, so that no time was lost on our part, and all the surveys were completed in August 1857; we surveyed eleven different routes.

3166. You have made a great many surveys from the points named, Kurrachee to the Indus?—Eleven surveys altogether.

3167. Explain who called for those surveys and why so many appear to have been rejected?—The Government of Bombay, on the recommendation of the acting consulting engineer, Capt. Rivers, and others, required the different surveys; soon after our surveyors went out, all the local authorities, both in Bombay and in Scinde were changed; Mr. Frere came to this country, and also Major Crawford, and the result was that a number of new officials were the parties who had to decide on the matter, and they were aided in the confusion that was created.

3168. I believe Mr. Freer has been throughout completely favourable to the scheme?—Undoubtedly.

3169. Complete your history of the survey?—One of our own engineers wished the railway to go to Sehwan.

3170. That is a point much higher up the Indus?—Much higher up. One Government officer, I believe, did not desire the railway at all. He wished the Indus turned into an old channel or route; but I do not think it right that I should mention all their crochets, as they all came to nothing: each had a project of his own; and the result was that our time was frittered away and our money lost, and they seemed to forget that we had executed a contract for a particular line to go from Kurrachee to Kotree on the Indus, but no other line. The local Government had every authority to interfere, and to say how we were to connect these two points, but they had no authority to compel us to deviate from these two termini, because the contract was executed, and the whole matter had been investigated on the spot, and approved of by the then existing authorities.

3171. Do I understand that these conflicting propositions and various schemes were mooted and discussed in the absence of Mr. Frere and Colonel Crawford?—Yes; in the absence of both those two gentlemen.

3172. What was the course taken by the Home Government?—The Home Government have never had the slightest hesitation in adhering to the plan as originally agreed upon. They have given us uniformly every facility possible, and they sent out, at my request, most stringent instructions to the Government of Bombay that our original plan should be adhered to.

3173. Mr. *D. Seymour.*] Was it not a misunderstanding of the orders originally sent out by the Home Government to the Government of Bombay that led to the delay?—I think it was partly owing to that; but also in some slight degree to their apparently not being aware of the fact that we had made a contract for a particular line; if they had recollected that single circumstance, they could not, whatever their wishes might have been, have desired our people to make surveys which were not contemplated.

3174. *Chairman.*] When two points were laid down, Kurrachee and Kotree, and a railway sanctioned to be made between those two points, how could any misunderstanding take place?—The local authorities appeared to consider our railway staff as their servants, and they very much at first ignored us, and they were aided in that view by the circumstance of one of our engineers having previously been in the employment of the Government; he affected still to be under the protection of the local authorities, and to look to them rather than to us; it came to such a point that it led to his removal, and to our sending out the most stringent orders to our local agent there, that he was to take no instructions from any quarter except from ourselves.

3175. In fact, the delay originated partly on the part of one of your own servants, who, although in your employ, still professed to consider himself in the employ of the Government?—Partly so; but it was principally owing to the Government ignoring the contract into which we had entered.

3176. Is the line now in the course of construction between these two points, the identical line which was originally sanctioned?—Exactly

3177. There has been no deviation whatever?—No; we would not allow any whatever.

3178. What is the exact amount of time that has been lost in commencing the line?—I should say 18 months.

3179. In what state are the works at present?—They are just commenced.

3180. Are they being constructed through the medium of contractors, or by the railway company?—Through the medium of English contractors, Messrs. Bray.

3181. Have they undertaken the construction of the entire line?—They have undertaken the construction of the entire line, we finding the permanent way materials; they construct all the masonry and embankments.

3182. I believe you have recently sent out 30 miles of permanent way, in addition to 30 miles already sent some time back?—Yes; it is all either out now, or in the course of shipment; we have, I think, 80 miles of permanent way at Kurrachee, the whole distance being 110.

3183. Does the character of the country afford facilities for railway construction?—It is extremely favourable.

3184. Have you much difficulty in obtaining material for ballast?—I think not.

3185. What do you get there?—It is stone.

3186. On the spot?—On the spot.

3187. This line of railway is in connexion with a very large scheme of river steam navigation, is it not?—It is.

3188. I believe that extends from Hyderabad to Moultan?—It does, but that is comparatively a recent arrangement.

3189. Describe to the Committee generally what the whole scheme of construction of the Scinde Railway Company is with its extensions?—The Scinde Railway proper is from Kurrachee to Kotree on the Indus, a distance of 110 miles. I had better state that we have received orders to survey a branch from Hyderabad to Oomerkote, to unite with the Bombay and Baroda Railway at Deesa; an extension of that line is contemplated from Ahmedabad to Deesa. Before going to the steam navigation I had better state that, at the same time, we were requested to survey a line from Sukkur towards Dadur at the mouth of the Bolan Pass; that survey we have partly accomplished, and we find the country remarkably easy. Then, before speaking of the Punjaub, I had better describe the communication proposed to be established between the Scinde Railway proper and the Punjaub; this communication was proposed in the first instance to be by steamers of light draught towing cargo barges.

3190. Is the state of the river such at all seasons of the year that the steamers can work between these two points?—At all seasons of the year.

3191. What is the whole distance from Hyderabad to the point you have named, Sukkur?—About 200 miles.

3192. What is it to Moultan?—Moultan is 570 miles from Hyderabad.

3193. Have you any further extension schemes in view?—The Punjaub Railway begins at Moultan, and has been surveyed from that point to Lahore and Umritsur.

3194. Is the Punjaub Railway in the hands of the same company?—It is.

3195. I believe you have a still further extension from Lahore to Peshawur?—We have been required to survey from Lahore to Peshawur, and that has been proceeded with.

3196. By whom have you been ordered to survey the line?—By the local authorities, Sir John Lawrence in the Punjaub, and Mr. Frere in Scinde.

3197. At whose expense are the surveys made?—Some at the expense of the Scinde Railway Company, the money being kept in a suspense account until it was decided who made the railway ultimately, but in other cases, the Government have found the money themselves.

3198. What is the whole amount of capital upon which you have received a guarantee for the purpose of railway construction?—For the Scinde Railway, one million, and for the Punjaub Railway, one million and a half.

3199. What is the precise limit of the Scinde Railway?—The Scinde Railway proper merely extends from Kurrachee to Kotree.

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3200. You do not include the line from Sukkur to Dadur?—That is a branch.

3201. Those lines are not yet sanctioned of which the surveys have been called for?—Certainly not.

3202. In regard to the river navigation, which forms so important a part of this scheme, is that being carried on under a guarantee?—That is being carried on under a guarantee similar to the guarantee given for the railways.

3203. Of the same amount?—Similar in nature; it is a guarantee of 5 per cent. on 250,000 *l.*

3204. Has that navigation scheme actually come into practice yet?—That has been beset with considerable difficulties, and the proper navigation of the Indus is a problem still to be solved. The authorities, soon after my proposition was agreed to, appointed a commission to go to the Danube and Rhone, and other rivers in Europe, to collect information with regard to the latest improvements, and to assist us to arrive at a conclusion as to the kind of boat we had better build.

3205. Was Colonel Crawford a member of that commission?—Yes, with Captain Balfour of the Indian Navy, and a marine engineer; they recommended a boat 400 feet in length, and drawing two feet of water. We received at the same time from India, reports from our own engineers, and letters from the local authorities there, cautioning us in the strongest manner against using a boat beyond 200 feet in length, which was the exact length which we had ourselves recommended before the appointment of this commission; a boat on that principle, drawing two feet of water is now in the course of construction as a model boat.

3206. Colonel *Sykes.*] Is that without joints?—Certainly; without joints.

3207. *Chairman.*] Beyond the delay which you have described in the commencement of the works, have you since experienced any difficulty or embarrassment from the Government superintendence?—We still feel that we are unduly fettered by the minuteness of the Government supervision in India; there is a Government deputy consulting engineer at Kurrachee, who is amenable to the consulting engineer at Bombay of Government, who corresponds with us at Kurrachee, and the Commissioner in Scinde has only limited power; we have these two authorities, who must refer to a superior authority at Bombay; so that the difficulties we have experienced from Government supervision have been greater I apprehend than probably those of any other company; I foresaw it as soon as I formed the compnay; and if the Committee have no objection, I should like to read an extract from a letter, which I addressed to the Court on the 3d August 1855 on this point: "I would respectfully suggest to the consideration of the Honourable Court the desirableness of vesting the necessary supervision and control to be exercised by the Government over the proceedings of the railway company in some of the Government officers in Scinde so to save time and correspondence with Bombay as much as possible." The East India House were good enough to write in reply to that letter, that they would communicate with the local Government, and direct them to carry out to some extent my suggestion. This was their answer received from Mr. Dickinson, and dated 13th August 1855: "I am commanded to inform you that the Court of Directors of the East India Company see no objection to the proposed letter of instructions to the Scinde Railway Company's agent in India, submitted with your letter, No. 28, dated the 3d instant. I have also to state with reference to the concluding paragraph of your letter, that the Bombay Government will be instructed to adopt measures for the efficient and expeditious exercise of the supervision on behalf of Government."

3208. Mr. *H. A. Bruce.*] Were the two subordinate authorities the commissioner, Mr. Frere, and the deputy consulting engineer?—Yes, one subordinate to the Government of Bombay, and the other to the consulting engineer of the Government of Bombay.

3209. *Chairman.*] When you addressed that letter, in 1855, to the Court of Directors, and received that answer, that letter was communicated to India?—Exactly.

3210. I wish to know what steps, if any, have since been taken in consequence of that letter?—Several modifications have been made in the supervision in Scinde in consequence of our remonstrance; but more particularly in consequence of a strong remonstrance addressed by Mr. Frere to the Government of Bombay.

3211. Has the practical result been that Mr. Frere has been invested with larger powers than he previously possessed?—Certainly; but not to the extent we wish.

3212. You are not even now satisfied with the freedom of action of the Commissioner?—Certainly not.

3213. The railway works having by your showing only been commenced a month, it is necessary that you should explain in what mode you have still felt, notwithstanding the remonstrances made, the embarrassments and obstructions consequent upon the limited powers possessed by the Commissioner?—Although the railway has only been officially commenced in last April, the engineers have been at work for several months in clearing the ground for a station, and for bungalows, and works of that description, and in making provision for the landing of stores. I will give you one illustration out of 100: they had an opportunity of purchasing a locomotive for constructing a portion of the line at a reasonable rate, but the Commissioner could not sanction it, and before they got the sanction of the Bombay Government, it was gone.

3214. Where was that locomotive obtained?—It happened to be for sale at Bombay.

3215. In consequence of the system pursued, the opportunity for the purchase was lost?—Yes, in consequence of the routine; they had not the power of getting a bucket or any trifle without applying to Bombay for it.

3216. I presume you have submitted your plans and sections to Government?—They are referred to the Bombay Government.

3217. Possibly some delay has occurred in consequence of that?—I am not aware of it.

3218. Have you made any representations since 1855 to the Government upon the difficulties which you have experienced from their superintendence?—I have. I will, with your permission, give an extract from a letter which I wrote to Sir James Melvill, on the 30th May 1857, explaining the nature of the supervision: "Having foreseen, at an early period after the formation of the company, the absolute necessity of avoiding reference to Bombay, with a view to the saving of time and an unnecessary expenditure of the funds of the company, I ventured, in the concluding paragraph of my letter No. 28, dated 3d August 1855, to express myself to the following effect, viz.: 'I would respectfully suggest to the consideration of the Honourable Court, the desirableness of vesting the necessary supervision and control to be exercised by the Government over the proceedings of the railway company in some of the Government officers in Scinde, so as to save time and correspondence with Bombay as much as possible.' The Board having had under their frequent and anxious consideration the view expressed in the foregoing, hope that the Court will concur with them in the necessity of empowering the provincial Government of Scinde to come to a decision on all matters submitted to them by their agent and representative, and thereby avoid the recurrence of the delays and inconveniences which have hitherto retarded the progress of this company. In conclusion I beg to express my conviction, that should Mr. Warren, the agent, be permitted to carry out the views of this Board, as sanctioned by the Honourable Court, without the intervention of any further obstacles, the necessary documents upon which the contracts for the construction of the line can be let will be received by the Board, so as to ensure a commencement of the works during the ensuing cold season, and the completion of the line within two years. But in the event of a continued misconstruction of the views of the Honourable Court, or other circumstances beyond the control of this Board, or of their representative in India being interposed in bringing the present survey to a termination, a third year will have elapsed before the initiative can be taken in an enterprise of increasing political and commercial importance, for which was anticipated a speedy and favourable development, and for the furtherance of which I had the personal assurance of the Governor of Bombay of the cordial co-operation and support of the local authorities. I avail myself of this opportunity to request that you will be good enough to convey to the Honourable Court the best acknowledgments of this Board, for the facilities they have hitherto extended to them for pressing forward the execution of the important undertaking committed to their charge." I thought it but fair to read that as I read the former one, showing that while the local authorities have delayed us by vexatious and minute supervision, the home

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authorities both in the India House and in the Board of Control have given us every facility. The reply of Sir James Melvill was to the effect, that instructions had been sent out, and would be again sent out.

3219. I do not understand you to complain of any delay at home, nor do I understand you to complain of the Government supervision in India, provided it is not carried to too great an extent?—No; I should desire above all things the Government supervision, if it were confined to settling great principles; but I do think that a railway company should have the power and responsibility of carrying out the works after they are once decided upon.

3220. I understand you to say that the greatest amount of delay has occurred in consequence of the continual references that have to be made from the Commissioner to the local Government of Bombay, he not having sufficient power to forward the works to which he is himself eminently favourable?—That is so.

3221. Mr. *Crawford.*] The Committee understand that the whole of the communications by the Valley of the Indus are placed in the hands of the company with which you are connected?—They are all in the hands of the same company.

3222. The Scinde Railway and the Punjaub Railway?—Yes.

3223. And the Flotilla Company?—It is not a company; they are all under the Scinde Railway Company, and incorporated by the Scinde Railway Company's Act of 1857.

3224. Have you separate guarantees for each of these undertakings?—We have.

3225. So that the profits upon one branch of the undertaking will not be taken to make up for any deficiency upon the others?—The capital accounts and the revenue accounts are kept distinct; they are three separate undertakings under the same management, having no financial connexion whatever.

3226. What is the amount of capital required to complete the Scinde Railway to Kotree?—We think about 800,000 *l.*

3227. And you have a guarantee to the extent of 1,000,000 *l.*?—Yes.

3228. How much is required to complete the communication between Hyderabad and Moultan by the river?—We think 250,000 *l.* would be sufficient.

3229. You have that guaranteed?—We have.

3230. How much do you estimate will be required to make the railway from Moultan to Lahore and Umritsur?—Two millions and a half.

3231. You have that?—No, we have only a guarantee on one million and a half.

3232. In point of fact, for the general purposes of your company, you still require a guarantee only of one million more?—Yes, for those already sanctioned.

3233. Any saving there may be upon the guarantee of one million you would apply to the line between Kurrachee and Kotree?—Just so.

3234. Mr. *C. Bruce.*] Do you consider that a guarantee was absolutely necessary to enable you to raise the funds?—Yes.

3235. Mr. *Crawford.*] You surveyed for a line between Hyderabad and Deesa?—It is authorised, but we have not surveyed it.

3236. You have no detailed knowledge of that line?—No detailed knowledge.

3237. Have you made any surveys from Lahore southward in the direction of the East Indian Railway Company?—Not as yet, we have not been authorised to make any surveys in that direction.

3238. Have you any view in contemplation for improving the harbour of Kurrachee, as a part of the enterprise of the company?—No; the East India Company are about to do it, and probably I may mention that the subject was referred to Mr. Walker, the eminent harbour engineer, who sent out a civil engineer under his direction to suggest the necessary improvements; that gentleman has come home, and he has formed a very favourable opinion, I understand, of the harbour.

3239. When did Sir James Melvill join your Board as *ex officio* director?—It was on the 13th March 1855.

3240. You say you consider Government supervision desirable?—I do.

3241. But subject to the conditions you attach to it?—Exactly.

3242. Colonel *Sykes.*] You stated that the company had made a contract with

with the East India Company to carry a line from Kurrachee to Kotree direct?—Yes.

3243. And that you entered into a contract with the Court for that purpose?—Yes.

3244. What was the date of that contract?—4th January 1856.

3245. What was the date of your turning the first sod?—The 29th April last.

3246. In the time that has elapsed between the date of the contracts and the 29th April last, you have attributed the delays that have taken place to projects of various parties for diverting the railway from the line specified in the contract?—Yes.

3247. Did any of these projects for the deviation originate with the Court of Directors or with the Government in India?—With the local authorities; certainly not with the Court of Directors.

3248. What do you mean by the local authorities?—They originated with the acting consulting engineer of the Bombay Government, and the deputy consulting engineer at Kurrachee, and with the acting commissioner, and also one of our own engineers.

3249. Then, in fact, these conflicting projects were in subversion of the contract already entered into?—Entirely foreign to the object of the contract.

3250. And which contract you might have commenced upon immediately in 1855?—In the early part of 1856.

3251. Do you expect any delay on the part of the superintending authorities, now that you have commenced your operations?—I do.

3252. On what ground?—From the continual reference that is necessary from Kurrachee to Bombay.

3253. You have said that orders have been twice sent out by the Court of Directors to the Bombay Government to invest the Commissioner in Scinde with extended powers?—I have.

3254. Then how can you say that the continual references will necessarily obstruct the progress of the works?—Because, although the Commissioner in Scinde has had extended powers given to him, still they are not extensive enough.

3255. The extended powers, I suppose, are to enable him to act upon his own authority with regard to trifling details, which do not involve matters of principle or any large outlay?—Exactly.

3256. Upon all other matters he has now the power to decide by his own authority?—He is still quite dissatisfied with the limited authority given to him.

3257. What is the limitation?—There is no end of things that he ought to decide upon with the consulting engineer on the spot, and which are still referred to Bombay; the building of bungalows, and a variety of details that he cannot decide upon without a reference.

3258. All that must be included in the latitude now given?—It is very limited still.

3259. So far as supervision goes, I do not see that there is likely to be the least delay on the part of the Commissioner in Scinde, with the extended powers conferred upon him?—But whose powers are still very limited; that is the misfortune. I have a letter addressed by Mr. Frere to the Governor of Bombay, from which I will read an extract with the permission of the Committee: "But I would respectfully submit that there can be still less question that the orders now given will not carry out the wishes of the Honourable Court, as expressed in their despatch on the subject. The Railway Company had urged that a larger amount of the controlling power reserved to Governor should be vested in the Commissioner in Scinde, and the Honourable Court thereupon remarked, 'With reference to the concluding paragraph regarding the control of the proceedings of the Railway Company in Scinde, while we are not prepared to remove it from your supervision, we are desirous that all unnecessary delay should be avoided in the mode of exercising the Government control, and that the settlement of all details connected with the affairs of the railway should be effected without imposing upon your Government the task of deciding upon each particular question, and without creating that delay which the distance of Scinde from the seat of your Government must entail. We request, therefore, that you will consider what plan would best suit the circum-

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stances of the case in point, and that you will acquaint us with the arrangement which you may make for delegating to the Commissioner in Scinde, to such extent as you may think advisable with regard to details, the control which is secured to your Government by the deed of contract." This letter is dated the 4th February last.

3260. The fact is, that so far as the home authorities were concerned, the difficulties and obstructions you pointed out, were ordered to be removed before you commenced your works?—Certainly.

3261. What am I to understand by your communications with the Board of Control and the Board of Directors; had you any direct communications with the President of the Board?—Frequent.

3262. Did the two bodies equally approve of the instructions sent out?—When I received a communication from the Court of Directors, I knew that it carried with it the approval of the Board of Control.

3263. Was not your steam navigation project to connect Kotree with Moultan of comparatively recent date?—It was recently made public, but almost as soon as the Scinde Railway Company was formed, I had an interview with the President of the Board of Control, Mr. Vernon Smith; and he asked me what I would recommend as the best mode of opening up communications from Kurrachee by the Valley of the Indus. I said, I considered it would be premature to have a railway all along the valley, and that I thought it would be advisable to establish steam communication from Hyderabad to Moultan, and then to begin the railway from Moultan to Lahore, and ultimately to Peshawur. He was so pleased with that, that he wished me to put it in the form of a memorandum; I did so, and soon afterwards Major Hamilton, the Commissioner of Moultan, came to this country; he approved of the plan, and I requested he would go with me to the President and tell him so; he told the President of the Board of Control that it was the very thing that India required, and that all the authorities on the spot would approve of it. The President to the Board of Control desired me to bring it forward officially, which I declined, as I had sent the memorandum out to Sir John Lawrence, Mr. Frere, and other eminent persons, for their advice and assistance, and any suggestion they might make; but instead of making any alterations, Mr. Temple, the Secretary to the Punjaub Commissioner, said they entirely approved of my suggestions, and had adopted them.

3264. What was the date of your official communication to the Court to sanction the project?—The date of the application to the East India Company was the 14th March 1856, and for the guarantee the 5th January 1857.

3265. Were you not aware that a previous project for the navigation of the whole Indus up to Lahore, had been partly sanctioned by the Court of Directors at the time you made that application?—It was subsequent to my memorandum.

3266. I am speaking of the official application?—I think it was made about the time I applied for the guarantee. I was perfectly cognisant of Mr. Bourne's plan, but to that plan I attached no importance.

3267. Were you not aware that several years ago, a reference had been made to India upon the subject of his plan?—Not of the Indus.

3268. But of the Ganges?—Yes.

3269. The principle being the same for every river?—I was aware of that.

3270. Your steam flotilla merely connects two termini?—Two termini.

3271. It does not embrace the whole navigation of the Indus?—No.

3272. Do you consider that the commerce of the Indus is likely to be able to support two navigation projects?—I should say so, most certainly.

3273. Mr. *Cheetham.*] Have you informed the Committee when the first correspondence arose between yourself and the East India Company's Directors?—My official correspondence about the flotilla did not begin until the 14th March 1856.

3274. When was your correspondence with respect to the railway first commenced?—In the early part of 1855.

3275. When did you get the guarantee upon the capital to be expended in railways?—In the early part of 1855.

3276. In the descriptive book of your scheme, which I have before me, I observe that the most prominent arguments in its favour are held to be those for military purposes?—In a commercial point of view, I think it is very important; but in a military point of view, it is of infinite importance.

3277. Did

3277. Did your scheme originally embrace a line of railway from Hyderabad along the river banks?—No.

3278. You propose, then, to use the river?—To use the river.

3279. Is there any navigation there now, except by private parties?—The East India Government have a steam flotilla on it now.

3280. Is that used for any purposes of commercial traffic?—They more than require all their steamers for their own purposes.

3281. Is there a considerable number of private boats?—There are large numbers of the native craft. In answer to the question that Colonel Sykes put to me about the commerce, I may mention that, as regards the commerce, both Major Hamilton, from Moultan, and Mr. Frere, from Kurrachee, told me that goods were often laying at both ends continuously for months and months, waiting for a steamer to carry them, and Mr. Frere said that he had known instances of goods at Kurrachee being sent to Bombay, and ultimately to Calcutta, and then from Calcutta up the valley of the Ganges to go to the Punjaub; that was for want of means of transport.

3282. You have no doubt, then, as to the flotilla part of your scheme being remunerative?—None whatever.

3283. You were asked a question regarding another plan proposed for the same object, Mr. Bourne's plan; are you aware whether that has also been sanctioned by the East India Company?—They have granted a subsidy to it.

3284. You are not aware when the application for that was made?—I am not aware of the exact date, but I think it was about the same time as the application which I sent in was made for the guarantee of the flotilla.

3285. That has no reference to any railway?—It has not.

3286. Colonel *Sykes.*] I believe the Government steamers take merchandise when they have the opportunity?—Certainly.

3287. Mr. *C. Bruce.*] Do you consider that the local means of transport by the country boats is exceedingly imperfect, and not to be relied on?—I think it is very imperfect, but I think it would be very much improved when they are relieved from the navigation of the Delta.

3288. You were asked about plans being laid before the Directors of the East India Company for the improvement of the navigation of the Indus and of other rivers, can you tell us with whom those plans originated, and by whom they were first brought before the notice of the East India Company's Directors?—Private parties have had steamers on the Ganges for many years, following the example of the Government.

3289. Have not the engineer officers of the East India Company pressed upon the Government the advantages of improving the navigation of the great rivers of India?—Very much so, particularly Colonel Cotton.

3290. That object has occupied the attention of the Court of Directors?—Very frequently.

3291. Has anything been done in the direction of improving that navigation?—Nothing has been done to the rivers themselves, but by granting a subsidy to Mr. Bourne for introducing his mode, and giving a guarantee to the Scinde Railway Company for introducing their steamers, the East India Company are doing all they can do to encourage the introduction of steamers.

3292. Mr. *Cheetham.*] Do you not propose to use the river between Kurrachee and Hyderabad?—Certainly not, except to carry up our stores until the railway is open.

3293. Are all the productions of the country that come from the north to be unshipped at Hyderabad upon the railway to go down to Kurrachee?—Certainly.

3294. Do you not then submit that traffic to a considerably increased expense?—We do; but we consider that is better to pay than lose boats by the dangers of the Delta.

3295. Mr. *C. Bruce.*] That is analogous to what takes place in the Ganges in avoiding a detour?—It is just the same, only in a lesser degree.

3296. Mr. *H. A. Bruce.*] You stated that in consequence of these letters addressed by yourself in 1855 and 1857 to the East India Government, some modifications have been introduced between the relations of the Commissioner in Scinde and the Government of Bombay to facilitate the transaction of business?—Yes.

3297. Have those modifications so far improved those relations that your engineers could now buy locomotives or other materials they may want without reference to the Government of Bombay?—No, I believe not.

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3298. Mr. *A. H. Baring.*] Do you think you have experienced any more delay on your line than the Bombay and Mirzapoor Company have?—I think we have experienced more red tape opposition, if I may call it so, than any other company, from the circumstance I have explained of our being under a provincial authority, without adequate powers.

3229. *Chairman.*] Under the terms of your contract with your contractors, Messrs. Bray, when do you anticipate the opening of the whole length of this line?—They are bound to complete it, and to have it in working order in two years and a half from the date at which they were put in possession of the land.

Colonel *William Erskine Baker*, called in; and Examined.

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3300. *Chairman.*] I BELIEVE you are a Colonel in the Bengal Engineers?—I am.

3301. Will you tell us what position you held in India?—In March 1851 I was appointed consulting engineer to the Government of India in the railway department, and I continued in that department for about four years; in March 1855 I was appointed Secretary to the Government of India for the Public Works Department; holding also the office of consulting engineer, and I remained in that position until November 1857, when I came away on sick certificate.

3302. Are the offices of consulting engineer in the Railway Department, and the Secretary to the Government of India in the Public Works Department, still held by the same person?—No; after I left India, but on my strong recommendation, they were separated; the two offices were too much for one man; and, in some respects, they were incompatible.

3303. What was the nature of your previous employment in India?—I have been employed chiefly in constructing irrigation works in the North-western Provinces, and in Scinde; for three years I directed the works on the Ganges Canal; and during two years and a half that I was at home, I paid a great deal of attention to the construction and management of railways. Mr. Robert Stephenson was kind enough to afford me facilities for seeing all the works in progress under him.

3304. What was the nature of your duties as consulting engineer to the Government of India?—I was the sole medium of communication between the Government and the railway company's agent. I had some discretion to dispose of smaller matters, and I referred the more important ones to Government, with a specific recommendation; I examined the line of country over which it was proposed to construct a railway. I examined all the designs and estimates; I reported on completed works, and audited all the expenditure.

3305. What are the ways in which reference is made to the several departments in Calcutta by the local Government, in regard to lines being constructed in their respective Presidencies?—It is only in very important questions that the local Government refer to the Government of India; reports are all sent up for the information of the Government of India, but the local Government do not ask orders from the Government of India, except in important matters.

3306. All the reports are furnished to the central departments for their inspection?—Yes.

3307. State on what general principle the Government check over the construction is exercised?—The desire of the Government, as I understood it, was to maintain a real check on all the operations of the railway company, with as much consideration as possible for the officers of the railway, that no delay should occur that could be avoided on account of mere formalites, and that interference should not be carried to such an extent, as that the railway officers should be relieved from their own proper responsibility in the matter.

3308. I understand the Government interference was intended to be confined to matters of importance, politically and commercially, and to matters involving a large expenditure, but not so as to interfere in any way with the free scope and action of the railway company in the construction of their lines?—So far as the engineer's designs and operations were concerned, that was the case, but with respect to the expenditure it would be difficult to exercise a check.

3309. Describe the proceedings of the Government of India, with regard to the enginering details of the railway?—In the first instance, I examined the country through which a projected line of railway is to pass. I accompanied the engineer of the railway company, and conferred with him on all the difficult points on the spot. He agreed with me as to the precise line to be staked out,

and

and when that was done, I saw the longitudinal sections of the line, and the proposed gradients which were arranged between me and the chief engineer. I then examined all the designs and estimates; finally the land plans and requisitions for land were submitted to me, and on my signature to those requisitions, the land was made over to the railway company without any further intervention of the Government of India.

3310. From your experience in the capacity of military engineer, have you had much difficulty in coming to terms with the civil engineers usually with whom you have been placed in communication?—On the whole, I have not; I always tried to discuss everything with the engineers as freely as possible beforehand in a semi-official way; if anything was brought forward publicly, and I had to dissent from it; there was always a great deal of difficulty in coming to an accommodation, but on the whole, I consider we agreed very well on general principles; in some instances, my opinion was deferred to, and in some I gave way, not always convinced, but still acting with certain deference to the railway engineers.

3311. I understand you to say, that you felt a certain amount of deference was due to the experience of the civil engineers, whose life had been spent in the construction of this sort of work?—No doubt, in some respects.

3312. Describe precisely to what extent you considered yourself responsible for the railway works?—To the extent of the advise I gave to the Government, I considered myself responsible to the Government; if I recommended anything that the engineers recommended, I considered myself responsible equally with them.

3313. If you had recommended any deviation of the line, or any alterations in the works devised by the railway engineers, you considered yourself responsible for that change?—If the Government adopted it; if they did not adopt it, I considered my responsibility to have ceased.

3314. Describe the proceedings of the Government in regard to the check upon expenditure?—No expenditure could take place by the railway company, except for contingencies, without the sanction of the Government given previously, on what were called indents; at first, all these indents were submitted to the Government and went round; there was then about a fortnight's delay in getting them sanctioned, but by degrees, the consulting engineer anticipated the sanction of the Government to a great extent, and as the Secretary of the Government of late years, I may say that four-fifths of the indents were sactioned by me without their going to Government previously.

3315. Do I understand you to say that all the indents, even when applied for from any other Presidencies than that to which your duties were confined, were submitted to the Supreme Government?—That is not so; no indents from the other presidencies are submitted to the Supreme Government. The consulting engineer has now leave to sanction, under his own authority, anything under 500 rupees, except salaries. I believe that extends to all the Presidencies.

3316. You have told us that it is only in cases of great importance the indents are submitted to the Supreme Government; what cases are they?—It would be in the case of large sums of money for establishments, or anything that would entail a continuous expense.

3317. What do you call an establishment?—It would include workpeople, or a staff paid continuously. Warrants, called pay bills, for paying money were submitted also to the consulting engineer for objects that had been sanctioned by the Government; he countersigned those pay-bills, and then they were paid by the railway company. These pay-bills were submitted afterwards to the accountant of the Government, with the monthly accounts of the railway company, in support of the several charges, and with the receipts of the people to whom the money was paid.

3318. What latitude was given to the railway officers, in regard to those expenses which you call "contingencies"?—It was very considerable. The contingent bills amount sometimes to between 3,000*l.* and 4,000*l.* per month. If the charge brought forward under the name of "contingencies" was proper in itself, and such as could not reasonably have been foreseen, it was passed without any reference; if not, explanation was called for.

3319. Colonel *Sykes*.] You mean that those sums have been paid on their own authority?—Yes.

3320. *Chairman*.] State the sort of expenses which would be classed under the term of "contingencies"?—It would include, in the first place, all travelling

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expenses, and anything, in fact, which it might be necessary to do at once without the sanction of the Government, even sometimes the taking of land, cutting down trees, or anything of that sort that they thought it necessary to do. The items of contingent bills were very miscellaneous.

3321. Do I understand that the railway officers have the power of sanctioning any expenditure they may consider absolutely necessary without an appeal to the Government in the first instance?—Yes.

3322. The amount being limited of course?—There is no fixed limit, but it is understood it is not to be very large; if it appears that they have incurred expenses without sufficient reason for not having applied for sanction previously, they would be censured.

3323. That only applies to the East India Railway?—To the East India Railway. I do not know what the contingent bills of the other railways may be.

3324. Does your memory serve you with any case in which the amount charged under the head of "contingencies" appeared large, and was objected to by you on that ground?—Not on account of its being large, but items have been objected to as being unnecessary, and being such as ought to have been forseen and sanction applied for in the regular way.

3325. Has much controversy ensued between you and the railway company in consequence of these objections on your part?—Only in the first instance; in Colonel Kennedy's time there was some objection as to the hotel charges (and afterwards also in my time), which caused a little soreness.

3326. What were the rules regarding the increase of numbers and salaries of establishments?—In the answer given to Question 794 a mistake was made; the establishments sanctioned in India by the Government of India, and entertained in India, were disposed of by the Government of India without any reference home; but questions that referred to establishments obtained at home were referred to the Board.

3327. The statement involved in question 794 is, "that no increase, however trivial, can take place in the staff without the matter going through the whole of the departments in India, and the whole of the departments in England, is not that correct?—It is not correct, certainly.

3328. What returns did the Government require to be furnished by the railway engineers?—The accounts of expenditure, and the progress report, were the only returns that were expected from the engineers; the progress reports were not forwarded so punctually as we thought they ought to have been, and that was frequently a subject of reference. In answer to question 632, it is remarked that the engineers were called upon for frequent returns, and it is with reference to that that I wish to correct the statement.

3329. I gather from you that the intention of the Government in carrying out the supervision under the terms of the contract, was to exercise an efficient check upon the expenditure, but as far as possible consistently with that check to leave the railway officials free action?—Yes; I always understood that that was the object of the Government, and I tried to act up to it.

3330. In regard to the hiring of labour, and the distribution of labour over the line, and all matters of that description, you do not interfere, provided it does not imply increased expenditure?—On those parts of the railway that are being constructed by the engineers of the railway there has been no interference with regard to the employment of labour.

3331. I will illustrate my question in this way; supposing the railway authorities thought that the employment of 5,000 additional hands upon one or two sections of the line was necessary for its completion within a certain time, that would imply an increased expenditure, but would the Government make an objection to it?—If submitted to them they would not, but it would hardly be submitted to the Government even in that case, where the work was being constructed by the railway company's engineers; Mr. Sibley in the Beerbhoom district managed the work himself altogether.

3332. What is your opinion as to the sufficiency of the check recommended by Colonel Kennedy by progress reports?—Reports of that sort are of extreme value, no doubt; but as an only check I do not think they are sufficient; they show the expenditure on the work, and the quantity of work executed, but they cannot be prepared until all the accounts are completed up to date; that involves some time, and the check therefore is not very prompt; the money expended

expended on incomplete works does not always show in the progress report of what has been done; until the work is complete you can hardly tell whether the expenditure up to any date is fair or not; and although it is important, in a high degree, to have returns of this sort, they can hardly be relied upon as the only check in substitution for every other.

3333. On what ground has the Government of Bengal stood out for one flat gradient, at a sacrifice, as some have stated, of economy in the first cost?—It has always been believed in India that we should have to conduct a very large and heavy traffic on a low scale of charges; and in order to do it, it is extremely important to observe the utmost economy in working charges by using full and heavy trains; and in order to obtain this we thought it expedient to have flat gradients, powerful engines, and a substantial permanent way; it was of the utmost importance on that account to keep down the gradients as much as possible.

3334. Have you found that the country in India adapts itself to easy gradients?—In some parts of our line it was found not possible to have such good gradients as we could have wished. In passing the Raj Mahal hills, for instance, it was not possible.

3335. The general country of India adapts itself to easy gradients?—Yes.

3336. Then you think the management of Indian railways, when once constructed, may be conducted on an economical footing?—I hope so, and I believe so.

3337. Mr. Sibley refers to a great saving which was effected by the adoption of a steeper gradient, to which the Government, after much discussion, were brought to consent; might not the discussion and delay have been avoided?—In his district it was found possible to have a gradient of one in 1,000, and it was arranged accordingly that one in 1,000 should be the steepest gradient, but on getting round the hills by Raj Mahal it was increased to one in 500, and we could not, without going to an extraordinary expenditure, get anything flatter than that. When we knew that to be the case, there was no objection, in my opinion, to keeping it down to one in 1,000 in the adjoining districts, because the trains must be loaded with reference to one in 500; and therefore I told Mr. Sibley that wherever he thought it expedient he might reduce his gradients to one in 500 throughout his district, where the works were not so far advanced as to render it unadvisable.

3338. Mr. *H. A. Bruce.*] There was not much delay in discussing and settling this question?—There was no discussion with Mr. Sibley about it.

3339. *Chairman.*] Do you assent to the course followed, on Colonel Kennedy's advice, of adopting the Ganges route in preference to the direct course originally proposed?—Yes. I agree generally with Colonel Kennedy's arguments on that point; and I believe if that line be adopted it will be worked more economically than the other: it goes through a more populous and rich country, and when completed it will be of equal political importance with the other, and of superior commercial importance.

3340. I believe the longer route had been sanctioned before you held office there?—It had, under Colonel Kennedy; the only order that was sent out to the Government of India was to select a line that should cost 1,000,000 *l.* It is admitted that the short line might have been earlier completed at a less cost, but it is a mistake to suppose that it would not have had large rivers to cross, in addition to the Soane, because there are six rivers, such as the East and West Barrackur, the Leelajun, the Morhur, the Boorya, and the Bootana. The difficulties in the long line are increased by the drainage of about 18,000 square miles, the drainage of which would not pass under the short line; and therefore, of course, we were prepared for a very much larger expense upon the longer line than upon the shorter one. I believe, however, that in the short line we should not have got by any means a gradient of 1 in 200, as expected by Mr. Sibley.

3341. Do you prefer the contract system to what is called the departmental method of constructing railway works in India?—At first I preferred the contract system, but after experience in the first sections of the line, I strongly recommended, in giving the Government my views as to the way in which the extended works should be conducted, that they should be carried out by the railway company's engineers.

3342. State the grounds of that opinion?—They are stated in a report to Government by the consulting engineer, dated 15th March 1853; he says, "The partial failure of the contract system with us (for such, I fear, must be confessed,

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as regards both economy and rapidity of construction) is attributable to causes, some of which are accidental and transitory, others permanent. The former are, principally, the novel nature of the work; the inexperience of the English contractors in the ways of India, and that of the Indian contractors in railway work; the absence of high professional standing as railway contractors of those engaged; and the want of capital, which cramps their energies, and renders them so dependent that no temporary suspension of monthly payments (as a penal measure) can be attempted by the railway company without risk of stopping the works altogether. The more permanent objections are the contractors' profit, and the greater expenses necessarily involved in the contract system, by the double establishment required by the contractor for supervising the work, and by the engineers for checking it; but these sources of expense would be dried up should the railway company determine to execute the work by their own engineers; and supposing that the latter were qualified to do justice to a task confessedly new to them in many respects, it is my own opinion that fit men might be found for the executive duties; but that those of account must be provided for separately and distinctly by the employment of clerks of the works, men who combine a qualification in book-keeping with a certain knowledge of railway work."

3343. In speaking against the contract system, you refer to the want of experience in contractors?—Yes.

3344. That, I suppose, is an evil which will cure itself as they gain further experience by remaining in the country?—It had cured itself in some measure with regard to the two contractors employed on the first sections of the line; the two contractors who did then execute their works successfully are still at work, and have not failed in their subsequent contracts.

3345. Upon the subject of contracts, I should like to have your own opinion in explanation of the very extensive failure of contractors which has taken place upon the whole extent of line of which we are now speaking; we have it in evidence that all but two contractors failed in their undertakings, and that the railway company were compelled to take the works into their own hands; to what do you attribute that failure?—To their inexperience and want of capital, to their want of agreement with the railway engineers, and in some cases it is owing to the disturbances that have lately occurred in consequence of the Sontal insurrection at first, and subsequently of the great Indian rebellion.

3346. Do you think that if those unfortunate occurrences had not taken place, these men would have been able to fulfil their undertakings?—I think many of them would not have been able to do so, because they had broken down before the mutiny commenced.

3347. You think that no great practical delay has ensued in consequence of the failure of those contractors?—I think very considerable delay has occurred in consequence; before the contractors failed there was a long pause, and it was still uncertain whether they could go on or not.

3348. Had not the events of the Sontal rebellion a prejudicial effect upon the operations of two, especially, of the contractors employed on that portion of the line?—It paralysed them very much, and I should say caused their failure.

3349. What was the whole extent of work which that firm had under their hands?—One hundred and twenty miles, I believe.

3350. Why did the Government prefer letting contracts in India to advertising for them in England?—It was not understood, so far as I know, that any express injunction had been received in India, as has been stated in some part of the evidence before this Committee, or that data were to be sent home to invite tenders in England. I had heard from Sir Macdonald Stephenson, and it is referred to in Mr. Nead's evidence, Answer 497, that an English contractor had sent out a man to India, and that his report had induced the contractor to declare that he would not have anything to say to Indian contracts; and in a communication from Sir Macdonald Stephenson to the Government in India, he also refers to it, because he says, "But it is not generally known that so far back as 1847 the railway company invited, and held out every inducement to, the principal of English contractors to embark in these works, but the objections outweighed the inducements." It was understood in India that it was no use to invite contractors in England, and we had not complete information of all the works on the line to submit to English contractors, and if they had tendered on such very imperfect information as we could then have given them, without considerable delay in getting more, they would have expected a very large margin for risk; and on the whole, taking all these

these things into account, I did not think it expedient to send home for the tenders, in the absence, as I understood, of express directions to do so.

3351. As a matter of fact, are there many natives who are prepared to undertake large contracts, and capable afterwards of executing them?—No native contractors in the Bengal Presidency are prepared to take a length of a railway, and construct it.

3352. The Government, in the construction of any works they may have in hand, are not, as I understand, in the habit of inviting native contractors?—They have native contractors for subordinate parts, such as the supply of materials, or throwing up earthworks, and even for the construction of any particular single work; but no native contractor would dream of undertaking 20 or 30 miles of railway, nor is he competent to do so.

3353. Do you find that the native contractor, when he has undertaken a work, is generally faithful and punctual in the execution of it?—No; it is always necessary to take security, and even then they often fail in the supply of materials, or any work of that sort they have to do, except earthwork; I believe in that they are more faithful and able to fulfil their contract than with respect to any other kind of work.

3354. It has been stated before this Committee that the native appears to have some objection to signing his name to a condition, or, in fact, to proceed by the ordinary process of tender?—I have not found that the case in my experience in Bengal.

3355. In reference to the letting of contracts in India, did you recommend the sanction of contracts which were actually agreed to?—Yes, I did, as an alternative to the railway company constructing the works themselves. It was understood by Sir M. Stephenson that I would have preferred the railway company constructing the work, and in a communication to the Government he expressed his willingness to try it, but at the same time said that he would prefer doing it by contract; on that the Government determined not to press it, and agreed to their having contracts; and as the tenders seemed to me to be proper in themselves, and the prices fair, and the parties said they had capital, and were prepared to go on with the work, I did not object to the contracts.

3356. When you recommended the sanction of the contract, did you suppose that they would be completed within the stipulated time?—I did not; I was quite sure they would not; but I did not see any objection to the early dates entered in the contract, as they gave me some power to stimulate the contractors to greater exertions.

3357. You foresaw the difficulty that these men would meet with in the prosecution of the works?—The time was too short, I thought, altogether; I knew they would not be able to do it within that time.

3358. Did you lay that opinion before the Government?—I am not quite sure wether I did or not; very probably I did.

3359. Has it not been stated that the interference of the Government was one of the causes of the failure of the contractors?—It was not alleged by the contractors who failed; the only contractor in India who has complained of the interference of the Government was Mr. Hunt, who has not failed. The only way in which they have complained of the Government interference is with regard to the advances on loan, and without interest, from the railway company, which were sanctioned by the Government of India to a considerable extent, but not always to the extent recommended by the officers of the railway company.

3360. Taking into consideration the fact that the Government sanction is required in all these contracts, do you not think that the Government are partly responsible for the failure of any contract to which they may have given their sanction, with the previous suspicion even upon their minds that the contractor was not able to execute it?—It is for the Government of India to answer that question; it is recorded in the book before me, that I had expressed an opinion that these men had not capital, and that the absence of capital would be in their way in the completion of their contracts.

3361. There was a certain amount of hazard which the Government undertook with their own knowledge?—Yes, to a certain extent; but the hazard was not that money would be lost; it was only with respect to the contractors being unable to fulfil their contracts.

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3362. I suppose, if you had not employed these men, there are no others?—There is no choice whatever.

3363. On what ground did you prefer a brick to an iron superstructure for the bridge over the Soane?—Because an arched bridge for two tracks would cost a considerably smaller sum than an iron bridge for one; that was one reason; and the Court of Directors had strongly enjoined us not to indent on England for anything we could find a substitute for in India, and on that account I preferred brick to iron, and also because the Railway Board here had strongly represented the difficulty they had in obtaining freight even for the quantity of iron required for the permanent way materials of the railway.

3364. When did the Court of Directors press upon you the necessity of only indenting upon England in case of absolute necessity?—They did so in two or three instances, of which I cannot recollect the precise date.

3365. There has been, you say, a sort of general rule laid down?—A sort of general rule. The story of the Soane Bridge is not quite correctly stated in the evidence; the chief engineer in India, Mr. Turnbull, proposed to the Government two schemes for the bridge over the Soane, one of brick and the other of iron, and gave the above-mentioned reasons for his own preference of the arched bridge of brick, and it was entirely coincided in by the Government of India, and reported home; soon after that Mr. Turnbull came home, and conferred with the company's consulting engineer in this country, and they then, in communication with each other, preferred an iron bridge; and after some correspondence I suppose with the East India Company, we were told in India that an iron bridge was to be substituted for the arched bridge that we had proposed in India. The Government of India did not attempt to disturb that decision, but only remonstrated against it, reiterating their own opinion that an arched bridge was the best.

3366. The railway company represented, I believe, that if they were to be compelled to construct this bridge upon brick arches, it would take ten years to get the bricks and materials necessary?—We had no discussion of that sort in India. After Mr. Turnbull returned to India, and after he had seen the facility of getting in the bridge foundations, he himself proposed to me to re-open the question; and it appears from that, that his own opinion was not in favour so decidedly of the iron bridge as might be supposed from the evidence given before this Committee.

3367. Have you yourself, in your own mind, any objection to an iron structure of this kind that you would wish to mention?—I have not the least objection to such a structure in itself; in some of the localities I have strongly recommended an iron bridge, as will be seen from the correspondence in this book; but in this case I thought, and still think, that a brick bridge would be cheapest and best.

3368. Do you not suppose that the difficulty of supplying bricks for such a structure would be almost insuperable?—I do not think so, because, in the case of the Ganges Canal, within the small space of four or five miles, more bricks were required and used than would have been required for the Soane Bridge; they were obtained by proper arrangement.

3369. In the construction of the Ganges Canal you have stated that you had less difficulty in obtaining bricks. Is that general throughout the Presidency; is there a great want of clay, or is it difficult to obtain the labour for making the bricks?—It was not owing to either of these causes, but it was owing to the scarcity of fuel in the province, and to the liability to failure from rain, and other causes of that sort. In this report, from which I have already quoted, I did point out that in all such operations the chief difficulty was in the preparation of a sufficient number of bricks. I could point out passages, in this report of mine on the extension of the railway to the North-Western Provinces, in which I have pointedly called attention to that.

3370. I understand you to admit the difficulty of obtaining large supplies of bricks in Bengal?—Fully; I have appreciated that difficulty; I pointed it out very early to Mr. Turnbull; he has always coincided with me in the belief that the tying point in the construction of any large works was the preparation of bricks. The paragraph to which I wish to call attention is at page 12 of this report: "The time required for the construction of the large works will regulate that for the completion of the whole undertaking; and half of this time will be devoted to the collection of materials. I would propose, therefore, that the line be permanently set out throughout its whole length; that the gradients be definitely fixed and the land taken; that the designs for all the principal works be prepared; that where timber or brickwork is to be employed in the construction,

struction, timely arrangements be made for the provision of the requisite material." Col. *W. E. Baker.*

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3371. Are you aware that the railway company blame the Government engineer for recommending a project which his experience would have taught him was impracticable, on account of the number of bricks required?—I infer from Mr. Noad's answer the other day that such is the case; but I do not admit the justice of the imputation, because I pointed out the difficulty of obtaining bricks. I do not believe it insuperable; and I can point out instances where the difficulty has been overcome; and I believe it might have been overcome in this case, because, on the Soane, wood fuel is obtainable at as easy a distance as it was in the neighbourhood of the Ganges Canal; and because, also, they can get any quantity of coal by the Ganges.

3372. On what ground did the Government hesitate to sanction a certain scale of engineering staff, proposed by Mr. Turnbull?—The scale proposed was in excess considerably of that on the Madras line, and on the Bombay and Baroda Railway, both of which were being constructed by the railway company's engineers, and that caused some hesitation on my part, to begin with. I talked it over with Mr. Turnbull very carefully, and agreed that his scale would possibly be required for lengths of line on which there were heavy works; but I pointed out to him that whereas there were long lengths of line, on which the works were light, I thought some deduction ought to be made on account, and in proportion to the extent, of the light works. When the indent came in, it was without any modification, and in sending it up to the Government I represented my own views; and they ordered me to return it to Mr. Turnbull, with these views expressed, requesting him to send in a slightly modified scale, which I expected he would do; but he had not done so before I left India; and I infer, from what he has said, that he has declined to do so altogether. It appears that he did not send in the modified scale, and gave as a reason for not doing so, that the Government had not specified the exact extent of modification they required.

3373. You referred to the Bombay and Baroda line; are the questions as to the increase of staff referred to the Supreme Government?—They are not referred; but the reports, as I explained before, all come up, and as a matter of interest I look at them all and study them, in order to get hints, and to compare the progress of the work on the different railways. I consider that part of my duty.

3374. In the event of a difference of opinion existing between the consulting engineer of one of the local Governments, and the acting engineer of a line under construction in any other Presidency, would you be called upon to act as arbitrator?—No such case has occurred, nor do I think it would; it would be referred home rather than to the Government of India.

3375. It is not the practice to resort to the Supreme Government as an appeal in cases of difficulty or dispute?—The only case I can recollect in which it was used for an appeal was from Madras, about the traffic rates; as to engineering questions, I do not recollect a single case.

3376. On what ground do you suppose that Government hesitated to sanction the construction of bungalows, as stated by Mr. Noad, in answer to Question 644?—It happened since my departure from India, and I can only suppose that the requisition was sent up without proper information regarding the bungalows, because no hesitation has ever been felt by the Government of India; on the East India Railway, expenditure for this object has been sanctioned on a scale much larger than on any other line, and I have always advocated the providing good accommodation for the engineers, to keep them in good health, as they were much exposed; it was to the interest of the company as well as their own that their health should be preserved, and very large sums have been sanctioned for engineers' bungalows; I do not remember any instance of a refusal, and I suppose that in this case it must have been for want of information.

3377. Can you explain why six pumping engines, which were required for Mr. Sibley's works, were not supplied for 21 months after they were asked for?—It was not in consequence of anything occurring in India; and I think it is unfair to cite that as an instance of the inconvenience caused by the exercise of Government supervision, because I do not, so far as I know, think that it had anything to do with it; I was very anxious that the engines should come out.

3378. Can you explain the cause of the delays that occurred in sanctioning an indent

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indent for the line referred to in answer to Question No. 1111?—I do not recollect the circumstance at all, but it happened, according to Mr. Sibley's account, in section B, a part of the line that was never under his care at all; I suppose he heard the story second hand, and was, perhaps, not correctly informed about it; it is a thing unlikely to happen, because when the railway company is constructing a line we do not interfere with the purchase of materials at all.

3379. Mr. *Crawford.*] If the delay occurred in this country in consequence of the Court of Directors taking a long time to decide upon the indent submitted to them, it may be mentioned as a fair cause of delay arising out of the exercise of Government supervision?—Yes, it might.

3380. Mr. *T. G. Baring.*] Do you know whether the delay did or did not occur from the management of the Railway Board itself?—No, I do not know.

3381. *Chairman.*] Do you confirm Mr. Sibley's answer to Question No. 1128, that almost all the works hitherto constructed in India have been executed by compulsory labour, or in the modified statement contained in answer to Question No. 1221, that the works hitherto executed in Bengal had been all, more or less, performed by compulsory labour?—My own personal experience, and the information which I have gained in the secretariat of the Department of Public Works, enable me emphatically and absolutely to contradict that statement. An Act has been passed lately in India enabling the Government to impress labour for particular works for the troops; and that shows, I think satisfactorily, that had we been in the habit of pressing labour before, such an Act would not be necessary.

3382. What were the relative rates of pay on Government works and on the railway?—The price of labour generally increased very much after the commencement of railway works over the country, owing to the increased demand for it; and as a rule, they paid higher rates on the railway works than on the Government works; but the price of labour has increased very much on both descriptions of works.

3383. Then the inference we may draw from that is, that the condition of the native is most materially improved by the extension of these great works in India?—Of that particular class which takes employment on the railway, no doubt it is so.

3384. Is it the fact that only a particular class of men take employment upon the railway?—All kinds of works in India pertain to particular classes; it is not customary in India for a man to transfer his labour from one trade to another; caste and custom interfere.

3385. What class of labourers are principally engaged in those descriptions of labour?—The low caste natives are employed on the earthworks; the artisans, carpenters, masons, and blacksmiths are of a more respectable caste; but it is chiefly the low caste natives who work at the spade.

3386. Then the question of caste extends itself to trades generally in India?—To a minute degree, and those which may be considered the mere manual classes of labour are performed by the lowest caste.

3387. Can you explain the cause of the hesitation to sanction the purchase of timber, as stated by Mr. Noad in answer to Questions 764 and 765?—It appears from the evidence, that the purposes for which the timber was required were not stated in the application for leave to purchase it; if any control is to be exercised, the Government should know for what object the timber is required. In the time of Sir Macdonald Stephenson he would probably have come to me with the indent, and explained to me the circumstances, which would have led to its being authorised at once.

3388. Mr. *C. Bruce.*] You were asked about the relative advantages of executing works by contract or by departmental work; have you considered whether, if Government had undertaken these works, they would have conducted them more efficiently and more economically?—They could not have conducted them more efficiently, I believe; but I suspect that they would have conducted them more economically.

3389. Do you think that the engineers in the service of the Government are competent to undertake these great works with such assistance as they might have commanded from England?—I believe they were competent, with such assistance as they might have commanded from England, but the staff in India was not sufficient for the purpose.

3390. A great many questions have been asked with regard to the general action of Government superintendence; do you consider that that was necessary

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for the satisfactory conduct of the works?—The control of the Government over expenditure I consider to have been necessary under the conditions of the contract between the railway companies and the Government, because they received interest on all they spent, and by giving six months' notice, they could hand over their works to the Government, and demand repayment of all that they had spent upon them.

3391. The absence of such control you think might have led to extravagance and want of economy in the construction of the works?—It might or might not; but, at all events, it was the duty of the Government to see that extravagance did not occur; and it was necessary also that they should know for what purpose the money was spent.

3392. In the case of your own superintendence, did you observe any disposition in the railway officers to be careless of the expense at which the works were constructed?—In regard to establishments I often had to dispute items with the engineers, and sometimes with regard to the designs; they thought stronger works or more precautions necessary than I thought were required; but it was chiefly in regard to establishments, and expenses of that kind, that there was an iinclination to spend more than I thought was right.

3393. Mr. *Crawford.*] You stated your dissent from an answer given to Question 794, which was to the effect that no increase, however trivial, could take place in the staff without the matter going through the whole of the departments in India and the whole of the departments in England?—Yes.

3394. That has reference only to officers selected in India for service in India?—The remark made in evidence is true only as to the officers appointed in England by the Board, and sent from England.

3395. Any officer required for the service of the railway company, and who must be sent out from England upon application, could not be sent out until the application had gone through all these preliminary stages?—No.

3396. With reference to the relations between the Supreme Government and the subordinate Government, has a general control been exercised by the subordinate Government in reference to the principles upon which railways were to be constructed?—It was not pressed, I believe.

3397. The Supreme Government passed its decision in reference to the direction of the line?—Yes; all imperial questions were decided by the Government of India.

3398-9. But the Government never interfered in the execution of the details of the line in any of the subordinate Presidencies?—I do not recollect any instance of their having done so.

3400. It has been stated in the evidence that the contract system has been very successful in the case of the Great Indian Peninsula Railway, and it was also suggested that the contracts had been entered into by men who had gone out from this country to embark in that course of enterprise; do you think there is any difference between the circumstances of the Bombay Presidency and the Bengal Presidency to account for that success in the one case and the want of success in the other?—The only difference I can think of is the facility of getting building materials at Bombay, which does not exist in Bengal. The point on which the contractors have broken down is the preparation of bricks, which is not necessary in Bombay.

3401. It is the fact, is it not, that a considerable portion of the East India Railway passes over alluvial soil, while the Great Indian Peninsula Railway passes over a rocky and mountainous country?—So far as the East India Railway is concerned it is so, and I believe it is so with reference to the Bombay Railway.

3402. In regard to the manufacture of bricks, I presume I am right in supposing that you require three ingredients, so to speak, of considerable importance; one is an abundance of the material out of which brick is to be made; secondly, an amount of practical skill in the preparation of the bricks; and, thirdly, the necessary amount of fuel for burning the bricks?—Yes, you require those three, but the first and the third are the most important; skill in making bricks is soon acquired even by common labourers.

3403. A brick that you would put into a railway structure, intended to last for a great many years, must be a brick of a superior character?—It must be well burnt; I do not care much about its shape, except for arch work.

3404. You stated that any quantity of coal might have been sent up the Ganges

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for the burning of bricks necessary for the Soane Bridge. Was not one of the great difficulties of the railway company that of sending permanent way materials up the river?—It has been, but I do not think it follows from that, that they could not have sent the coal; besides which, they can get coal from the Palamow mines, near the trunk road.

3405. With regard to sending coal up the Ganges, was not great difficulty felt in sending it up the country?—The Bengal Coal Company would have taken a contract to deliver any quantity up the Soane.

3406. Do you think the Bengal Company would have the means of forwarding it up the river if the railway company found it impossible to secure the means of sending the permanent way materials up the river?—I think they would.

3407. Have you experienced any delay from the want of a supply of permanent way materials from this country?—The only part that I can think of is between Cawnpore and Agra, where, I believe, the works are ready to receive the permanent way materials as soon as they arrive.

3408. The difficulty of procuring bricks having been so evident to your mind, how do you account for the sanctioning the contract which contemplated the construction of 1,000 miles of railway in two years?—I have explained that I did not expect, and had no reason to expect, that they would be constructed in two years, but I did not see any objection to having that term named in the contract, as it gave us power to stimulate the contractors to greater exertions.

3409. Supposing the railway contractors had been able to keep to the term of their contracts, and the railway company had not been able to send out the whole of their permanent way materials from this country within the two years, would not that have been a very great disadvantage to the railway company?—It would have been; but we did not contemplate the possibility of it.

3410. Then the contracts were entered into without reference to the supply of permanent way materials?—It did not enter into the contracts.

3411. Would not your having sanctioned such contracts, without explanation, rather have the effect of leading the public to suppose that the construction of a line within two years was possible?—I do not know that it would; I had not taken that into consideration, but perhaps it might have had that effect.

3412. If the expenditure now is so strongly controlled by the Government, what induces you to think that Government officers could have constructed the works more economically?—The establishments would have been much less; we have now complicated establishments; but the chief reason I give for it is, that I know what the Government works cost; the great Ganges Canal, which is as large a work as a railway, mile for mile has cost much less than the railway works have cost, even if they were executed at the contract rates.

3413. Has it not taken, comparatively speaking, a longer time to complete than you expected the railway would take to complete?—I think that, from the time the Government sanction to go on with the Ganges Canal works was unreservedly given, it has not taken longer time; but there was a long time during which the Government hesitated whether they would carry out the Ganges Canal or not, and we were waiting for two or three years without knowing what their determination would be.

3414. Is it fair to draw a comparison between the construction of the Ganges Canal and the construction of a railway?—Yes, I think it is a fair comparison; because, in each case, you have large earthworks, large brickwork, large bridges, and heavy foundations.

3415. Do you think that the comparison is to the disadvantage of the railway company?—As far as cost is concerned, certainly.

3416. And as regards time?—As regards time, without book I should not like to give an answer; but that is my impression.

3417. Was compulsory labour resorted to in the case of the construction of the Ganges Canal?—Not that I know of; it was not during the three years that I had direction of the work.

3418. Are the wages now paid upon the works of the railway company higher than those which were paid in the case of the Ganges Canal?—I think they are, on the whole, although we pay very high on the Ganges Canal, because we had to import labour from Oude; we had 10,000 labourers constantly employed on the northern division of the Ganges Canal receiving pay by the month, and those were all from Oude.

3419. That is a source of supply of labour, which is now, of course, cut off?—I am not sure of that.

3420. Do you suppose that the people of Oude will come down to the railway works to work upon them?—They never did come down to Bengal freely; they do not like the Bengal climate or the food; the tribes employed on the Bengal works were the Santhals, the Dhargurs, and the hill tribes. Before I left India, the Lieutenant-governor of Bengal was trying to enlist large gangs from the Ramghur district for the railway company, in the same way as we had large gangs from Oude for the Ganges canal.

3421. I believe the population of Oude is a wheat-consuming population?—Yes; they live upon wheat, barley, and other grains.

3422. Whereas the population of the other provinces live upon rice?—Entirely.

3423. *Chairman.*] Is the Oude labourer, generally speaking, a more efficient workman?—I think they are stronger men than the Dhargurs and Santhals generally.

3424. Making a comparison between the work done by the Oude labourer and the Bengalee, do you give a preference to the Oude labourer?—I think he is a stronger man, and perhaps even more intelligent.

3425. Mr. *Crawford.*] The object for which this Committee has been appointed, is to inquire into the causes that have led to the delay that has occurred in the construction of railways in India; are the Committee right in supposing that the political circumstances of India during the last two or three years, meaning thereby the Santhal insurrection, and subsequently to that, the great mutiny, may be looked upon as two of the chief causes of delay in the construction of railways?—No doubt they are two principal causes.

3426. To what circumstance do you next ascribe the delay?—To the failure of contracts.

3427. And in your opinion, the failure of the contractors is partly attributable to circumstances arising out of the Santhal insurrection?—Partly, but only partly.

3428. Did not one of the contractors employed upon the line between Burdwan and Rajamahal sustain great losses from floods carrying away the materials which he had prepared?—I believe so; that also occurred between Rajamahal and Patna.

3429. Do you remember the number of bricks which it was estimated would be required for the construction of the Soane bridge?—No; I compared it with the Solani aqueduct, and found it considerably less.

3430. What is the length of the Solani aqueduct?—It is about 2¼ miles long.

3431. What is the length of the Soane bridge?—About four-fifths of a mile. There is one thing I should say, that on the Ganges line the work has increased very much since the contracts were taken.

3432. From what cause?—In consequence of the defective information respecting the rise and extent of the floods from those rivers that flow into the Ganges from Rajamahal and Patna, which are liable to great inundations at intervals of about 30 years. We had not correct information as to those large inundations, because they had not happened within the recollection of the then existing generation.

3433. The high flood has taken place since the works were entered upon?—Yes. We obtained from the inhabitants of the country the flood-marks at different points, compared them together, and found that they tallied. We saw the villages themselves, and the substantial houses of the inhabitants on the high grounds bordering the rivers, and they also agreed with the flood-marks. The railway houses and bungalows were also built in reference to these flood-marks; but one of the extraordinary inundations occurred, and destroyed the villages, destroyed the bungalows, and upset all our calculations.

3434. *Chairman.*] Is the increased violence of the monsoon also in every 30 years observable all over India?—I do not think it is. I do not think that, in other parts in India, certainly not in all parts of India, high floods occurred simultaneously with those that upset our calculations on the railway.

3435. Mr. *Crawford.*] Taking all these matters into account, I suppose I may say that the line of railway now being constructed by the East India Railway

Col. W. E. Baker. Company, presents engineering difficulties of no ordinary character to surmount? —They are of an extraordinary character.

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3437. *Chairman.*] Taking all those matters into consideration, how do you account for the fact, that several of the lines in India are being constructed at a much less cost than they could be in England?—From the cheapness of labour, and because we have not heavy law and Parliamentary expenses, rates, and other things of that sort.

3438. Is the Supreme Government satisfied on the whole with the progress that is being made throughout India in railway construction?—I do not think it is satisfied; perhaps it has not been able to lay its hand upon the exact point of failure, but there is no doubt about their having a general impression that the works might have been executed faster.

3439. Mr. *Crawford.*] Is not the Supreme Government a body rather difficult to satisfy?—Seeing the importance of having railways, particularly at the present time; they are more alive than ever to the inconvenience of delay in their construction.

3440. Mr. *A. H. Baring.*] Are you sure that as regards the indents, no delay has occurred in your office, and that therefore the delay must have occurred in this country?—I do not exactly say that, because everything has to be referred to my office, and if no reference were required the business would of course be disposed of sooner.

3441. Under existing regulations, you forward them as quickly as you can? —Yes.

3442. *Chairman.*] You have stated that the Indian Government is fully alive now to the importance of railway construction in India. Are you prepared to say, keeping that in view, that the Indian Government are prepared to do everything in their power, to exert all their influence to forward these works to their utmost extent?—I am prepared to say that, because even before this occurred, I believe the Government were prepared to use all their influence to expedite the works that had been authorised.

3443. And to remove, as far as in them lies, every cause of obstruction or delay that could be shown to exist?—Yes.

3444. Mr. *Crawford.*] Has not the Supreme Government recently been availing itself of the services of civil engineers from this country for the purpose of its own works?—Yes; I think 10 civil engineers have been sent out to each Presidency.

3445. Were they placed under your control?—Yes; they belong to the Department of Public Works, of which department I was secretary, and virtually the head.

3446. What was the opinion you formed of the proficiency of those gentlemen who were sent out?—Almost all turned out well.

3447. Perhaps it is hardly a proper question to put to you, as you are a military engineer. Do you not think that a civil engineering department of the Government would answer the purpose of control over railway construction better than a military department?—It seems to me that there are very great advantages in having the operations of the railway company viewed from a different point of sight from that which a regularly-trained civil engineer would see them from. The works are designed by civil engineers; and if they are reviewed also by a civil engineer, you would have the same train of thought brought to bear upon them; and in that respect I think there is some advantage in an engineer brought up in a totally different school having to pass an opinion upon them; and besides that, the civil engineer must be one trained in England, and the military engineer having been trained in India, has local knowledge and experience, which he can bring to bear with advantage on railway works.

3448. You think that at the present moment there is no civil engineer possessed of a sufficient amount of Indian local experience to enable him to supervise sufficiently and properly the construction of railways in India?—I do not know any such person, certainly.

3449. *Chairman.*] Can you not understand a civil engineer making it a fair cause of complaint that he should be controlled and clogged by the advice of a man not so intimately acquainted as himself with the works he has in hand?—

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He has taken his employment under the company with the understanding that they are to act under the control of the Government, in consideration of certain advantages they gained; I think he has no fair cause of complaint, that he has to carry out the conditions of his agreement.

3450. Are you aware that that cause of complaint has been repeatedly alleged?—I have no doubt he would prefer being left entirely at his own discretion. I admit I should.

3451. Mr. *A. H. Baring.*] I suppose a military engineer would have much more power of supervision, direction, and authority among the natives of the country than Mr. Rendel or any similar gentleman?—I do not think we exercise any power over the people of the country in carrying out the works.

3452. Do you not visit the works?—We do, in order to inform ourselves regarding them.

3453. Do you not think that you could have found military officers capable of constructing a railway without any help from civil engineers?—If they had had previous training in England.

3454. Not without that?—I should say not; the peculiarities of railway engineering are not very many, but still they must be learnt somewhere; the principal works, such as bridges, viaducts, and embankments, we should be able to construct as well as a civil engineer, but we should have to come to England for experience in building stations, engine-sheds, and things of that sort.

3455. Mr. *Crawford.*] As consulting engineer to the Government, have you reason to be satisfied, generally speaking, with the capability of the engineers who have been sent out by the railway company?—As a general rule, I do not say there are not exceptions; I am very well satisfied indeed.

3456. You consider that, as a body, they were able, intelligent, and honourable men?—Certainly.

3457. *Chairman.*] Do you think that anything like a feeling of jealousy has existed, or does now exist, in the minds of the Supreme Government in regard to the construction, by private companies, of these great public works?—I do not think so; it was strongly recommended by Lord Dalhousie in his minute; he argued the question fully on both sides, and deliberately preferred their being constructed by railway companies.

3458. You differ with the views expressed by Colonel Pears on that subject?—He speaks of the Madras Government; I speak of the Government of India.

3459. Mr. *A. H. Baring.*] You consider that the Government might have constructed the works with as much efficiency and at less expense?—I do.

3460. Mr. *T. G. Baring.*] I believe the Government of Madras differed from the Supreme Government with respect to the propriety of constructing railways by the Government or by private companies?—It seems so by the evidence; they did not, I believe, make any representation to the Government of India.

3461. Do I understand you to say that your own private opinion is, that the railways would have been more efficiently and economically constructed by the Government?—I did not say more efficiently, but more economically; at the same time I do not enter into all the arguments that might be adduced in favour of private companies. I agree with Colonel Pears entirely in thinking that the present arrangement is not enlisting private enterprise at all; the shareholders run no risk, because it is borne by the Government.

3462. Supposing the profits do not cover the expenses?—Whenever that occurs, they may throw the whole upon the Government, and require to be paid the whole of the capital expended.

3463. You consider it nearly the same as a loan?—As it affects the Government it is the same as a loan, except that they have a more expensive machinery to construct the railway.

Jovis, 17° die Junii, 1858.

MEMBERS PRESENT.

Mr. H. G. Liddell.
Mr. Crawford.
Mr. T. G. Baring.
Sir James Elphinstone.
Mr. Cumming Bruce.
Mr. Danby Seymour.
Colonel Sykes.

HONOURABLE H. G. LIDDELL, IN THE CHAIR.

Colonel *William Erskine Baker,* called in; and further Examined.

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3464. *Chairman.*] REFERENCE was made during the last sitting of the Committee to certain difficulties which had arisen in the case of the Scinde Railway, in consequence of the Commissioner not having full power and authority to give his sanction to railway arrangements. I believe that the East Indian Railway is divided into two distinct portions, the Bengal and the North Western portion?—Yes.

3465. What was the plan pursued by the Supreme Government in order to invest the Governor of the North Western Provinces with that authority and that power of sanctioning railway proceedings necessary in order to facilitate the progress of the works?—The Lieutenant-governor of the North West Provinces was empowered, on the recommendation of the deputy consulting engineer, to authorise all expenditure except on very large questions, and to act, in fact, in place of the Supreme Government in all minor affairs.

3466. Was there any maximum of expenditure fixed beyond which he had not power of sanction?—There was no maximum of expenditure fixed; it was chiefly in regard to establishments that his power was considered limited; it was in a great measure left to his own discretion what he would sanction, and what he would refer to the Supreme Government.

3467. Was it found that, having invested him with larger discretionary power, the works progressed readily and satisfactorily?—If he had not been invested with those powers, there would have been very much greater delay.

3468. Turn to the answer given by Mr. Danvers to Question 125: he was asked, "Is it the case that the railways are all constructed with single lines, but that the large works are all constructed so as to be ultimately adapted for double lines?" and he replied, "That is so; all the permanent works, the bridge works and tunneling, are made for double lines; the simple earthworks are for single lines only." Have you any observations to make upon that answer?—The reply given is not quite correct. The whole works are constructed for a double track, except ballast, permanent way materials, and the superstructure of such bridges as are to be constructed of iron; with those exceptions, everything is constructed for a double line.

3469. I understand that those bridging works of which the superstructure is in iron, are not constructed for a double line?—They are not; the permanent way materials and ballast are provided for only a single track; but every other arrangement is for a double track.

3470. In bridging works, I presume that the piers are constructed so as to enable the company to lay a double line of rails eventually, if it is thought necessary?—Yes, all but the iron superstructure.

3471. That, of course, is the immense expense attending it?—It is the heaviest expense, and can be added afterwards without affecting the works.

3472. Will you explain the meaning of iron girders?—An iron girder is an iron beam; generally speaking it is a constructed or trussed beam.

3473. The girder, I suppose, extends from pier to pier in an angular form to support the bridge itself?—It is not necessarily in an angular form; if it is for a long span, you must have some kind of truss.

3474. Something

3474. Something in the nature of a support?—Yes; the term "girder" is nearly synonymous with "beam."

3475. Now turn to Question 2421, which has reference to the great trunk road. A question was put with reference to the time occupied in constructing a simple road from Delhi to Calcutta, and as to whether 25 years had not been occupied in making that road under the supervision of the Government. Is that perfectly correct, or does it require any explanation?—It is true probably that it is 25 years since the construction of the road was commenced; but a small part only was sanctioned by the Government at first, and so far it was completed, and the road made available for traffic; improvements have been made in the road since, and are still going on.

3476. Is the Committee to understand that the entire road from Delhi to Calcutta is open for traffic in every portion?—Except two or three streams that are not yet bridged, it is complete in every portion, and throughout the whole length it is open for traffic.

3477. Now turn to Question 2953, which has reference to a very important matter which this Committee decided not to go into at any length, viz., in reference to traffic arrangements; that question appears to require some explanation, and therefore, if you confine yourself to an explanatory answer, the Committee will accept it?—The despatch from the Government of India referred to in that answer was not intended to interfere in any way with the profits of the railway company; but it was believed by the Government of India that it was the interest of the railway company, and of the country too, to keep the tariff as low as possible consistently with profit.

3478. The answer would seem to imply that the Government had wished to consult the native interest rather than that of the companies?—It was not intended to bear that construction.

3479. Mr. *T. G. Baring.*] Is it not the duty of the Government, to a certain degree, to look to the interests of the natives of India?—It is the duty of the Government, I conceive, to look to the interests of all, but not to that of the people of India more than that of the railway company; and I believe the Government did not intend to sacrifice the interest of the railway company to the interests of the people in general.

3480. I believe some general instructions were sent out with respect to the rate of profit which might fairly be allowed to the railway companies?—I do not remember any.

3481. *Chairman.*] Is it not the fact that under the terms of the contract the Government reserve to themselves the right, when the rate of profits exceeds 10 per cent., of remodelling the rates of fares and traffic charges?—Yes; I think there is such a condition in the contract; but, at the same time, the Government reserve to themselves the right to control the rates of traffic under all circumstances.

3482. In the first instance?—In the first instance, and under all circumstances.

3483. But having laid down those rates according to the scale they thought just, I presume they do not claim the right of interfering with them afterwards, until the rate of profit shall exceed that which I named?—I would not say that they would not claim that right if they thought that it was expedient, and if they believed it was for the interest of the railway company, as well as of the people, that it should be changed.

3484. In all the arrangements Government might suggest, the interest of the railway company would, you think, be consulted equally with that of the passengers and the producers of the country?—I think so.

3485. Sir *James Elphinstone.*]—Is it not the fact, that if Government wish to develop the traffic of the country, they must adapt their fares to the circumstances of the people?—Yes.

3486. Turn to Question 3096, which has reference to the two modes of construction, by contract or by departmental management. This question was put by the Chairman: "Then the inference that the Committee may fairly draw from the statement you have made in regard to the construction of your line is this, that the extent to which the Government superintendence is carried, is unquestionably less when the work is constructed by contract than when the works are

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constructed by the railway company themselves;" and the witness replied, "I think there cannot be a doubt of it." Do you wish to make any observation on that answer?—I merely wish to say that hitherto it has not been so in Bengal, because the contractors having got into difficulties, the references to the Government with regard to the works under contract have been more numerous than in regard to those works under construction by the railway company's engineers.

3487. That increased correspondence and reference to the Government has arisen from accident and the circumstance of the contractors having failed?—Probably it has.

3488. What I meant to ask was, whether, supposing those contracts to have gone on smoothly, and the contractors to have fulfilled their engagements, Government interference would have been experienced less than if the works had been immediately under the control of the companies themselves?—I am not quite sure that they would even in that case, but perhaps they might.

3489. When you say you are not quite sure, that seems to imply some doubt on your mind whether there would have been; explain that doubt?—There are questions that arise about the interpretation of contracts and extra work and payments for things not stipulated for exactly in the contracts, which call for the interference of the Government.

3490. When the Government are aware that a double arrangement, as it were, is implied by the company having sublet their works to contractors, would they not be more delicate in offering any interference or objection in such a case as that, when the interests of two parties are involved, instead of one?—They would not, of course, interfere with any of the conditions of the contract which they had themselves sanctioned.

3491. Simply, I suppose, for this reason, that they could not, because, I presume, that a contractor having undertaken a work upon certain conditions, would feel that the parties with whom he made those conditions were bound to adhere to them, and that the Government, whether they wished it or not, could not in justice make any objection when once those conditions were drawn up, and agreed to on either side?—That is the case, certainly; but it is true that innumerable questions do arise with the contractor which have to be referred to the Government, and which are not sufficiently provided for under the contract.

3492. Mr. *T. G. Baring.*] Can you inform the Committee whether the corps of engineers in your Presidency is very much employed upon civil works?—Yes, in time of peace almost exclusively employed on civil works.

3493. Consequently, although you are military engineers, yet your experience is principally, in time of peace, upon civil works?—Yes.

3494. Are you acquainted with the amount of wages paid by the railway company in Bengal to the labourers?—I cannot say exactly, without reference to the accounts.

3495. Do you believe the wages they have paid are fair wages?—Yes, I believe they are fair wages.

3496. Are they more or less than the ordinary rate of wages in the country?—They are slightly higher, I think, than those paid by the Government, but not to any great extent.

3497. Do you consider that the people in Bengal are under-fed in consequence of the low rate of wages?—Certainly not.

3498. What reason have you for not agreeing with that assumption?—Because a man can live according to the price of food, for the amount which he earns on the Government works, and also support his family.

3499. I suppose, then, the native of Bengal, if he had higher wages, would not spend it upon more food in that case?—I cannot say whether he would or not; possibly he might; the native officers in the army, for instance, always get very fat when they are promoted. It is almost an invariable rule, and therefore perhaps the labourers might live better if they had larger pay.

3500. You say that the rate of wages paid by the railway company on these works in Bengal is sufficient to feed a man and his family?—Yes.

3501. With respect to the Government supervision, do you consider that a simple audit of expenditure would be a sufficient supervision for the Government to experience over works?—I do not, because that must occur after the expenditure has been incurred, and if there were any excess, it could only be dealt with after the harm was done.

3502. The Government, then, could only remonstrate against an expenditure which

which had been incurred?—Yes; and therefore it is necessary that no expenditure should take place without previous sanction.

3503. I believe it was the principle upon which Government superintendence was originally laid down?—Yes.

3504. And which has been carried out ever since the first beginning of railway works in India?—Yes.

3505. A complaint has been made that too voluminous returns have been called for from the railway company. I suppose you were the officer responsible for the returns called for?—Yes, in Bengal.

3506. Do you consider those returns were more than were necessary?—No; I have already stated that we did not call for any returns from the engineers, except accounts of expenditure and progress reports.

3507. You consider those indispensably necessary?—I consider those indispensably necessary.

3508. Do you think that any delay has occurred in consequence of those returns being called for?—No, certainly not.

3509. Do you consider that the change in the line from the short route to Mirzapore to the Ganges Valley line has been productive of any delay?—It is probable that the direct line would have been constructed in a shorter time than the longer line.

3510. Do you consider that that delay has been, or will be, compensated by the greater value of the Ganges Valley line as compared with the short line?—Yes.

3511. Speaking generally, are you satisfied with the progress made by the East India Railway Company?—So far as the engineers are concerned, I am satisfied; but I am disappointed more or less with the general result.

2512. Do you consider, speaking generally, that that disappointment which you feel as to the general result, has been caused by the difficulty of obtaining proper contractors, and carrying on the works through their agency?—I have already explained the causes to which I attribute the delays that have occurred, the insurrections which have occurred twice, and the failure of the contractors.

3513. You mentioned that on one part of the railway, that between Cawnpore and Agra, the permanent way has not arrived, and that that has caused some delay?—I stated that if the permanent way had been on the spot, the works were prepared to receive it.

3514. Do you think that the railway company have taken every measure in their power to supply the permanent way in time to be ready when the earthworks were completed?—So far as I can judge, they have; their proceedings in England are beyond my official cognisance.

3515. My question referred to their proceedings in India in forwarding the materials up the country?—They have taken great pains, no doubt, in forwarding them, but I am not sure that they have employed exactly the best means, and we have had an inquiry on the subject in Calcutta; some changes have been recommended, which are in course of adoption.

3516. *Chairman.*] I should like to ask you what you consider the best means?—From the experience we have had, I should think that the best means would be for the company to have its own steam tugs, by which to take the materials up the country.

3517. Mr. *Crawford.*] Have not the Company recently taken measures to provide means of their own for sending the permanent way up the country?—When I left Calcutta, it was under discussion. I do not think anything was settled before I left.

3518. Were any suggestions made to the railway company by your department for improving the mode of sending the permanent way materials up the country?—There was a report by a committee, of which Captain Crommelin, deputy consulting engineer, was one member, and Mr. Roche was another; they recommended certain measures, which the Government approved, and which were in course of being carried out.

3519. Is it not the fact that the delay in sending the permanent way materials up the country has arisen, in a great degree, from circumstances connected with the mutiny, and the demands of the Government upon means available on the river?—It has been increased very much by those causes of late; but the system had broken down, I may say, before the mutiny occurred; the committee I have referred to sat before the mutiny occurred.

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3520. *Chairman.*] Is it not the fact that, four years ago, Mr. Turnbull recommended the construction of steamers for the purpose of the transport of heavy materials, and was not that proposition declined by the Government?—I do not remember any such proposition having come before the Government.

3521. Mr. *T. G. Baring.*] Such proposition if it had been made, would, I presume, have come under your notice?—Yes, but I speak without book; all I can say is, that I do not remember anything of the sort.

3522. Since you have been consulting engineer, have any applications been made by the company for an increase to their staff of engineers which have not been complied with by Government?—In my former evidence I referred to one instance, and explained why the Government hesitated to allow the full scale that Mr. Turnbull had proposed.

3523. Has your attention been directed to Colonel Kennedy's idea, that railways should be made upon the telescopic principle?—It has seemed to me that that would take a much longer time than to commence along the whole line and construct the line at once; but it would be done probably more economically.

3524. Taking the present state of the works on the East Indian Railway, do you think that anything like the present progress would have been attained if the plan recommended by Colonel Kennedy had been followed?—Certainly not.

3525. Do you think that it would facilitate the arrangement of matters, upon which there may be a difference of opinion between the consulting engineer and the railway company's engineers, if a Railway Board sat in Calcutta?—It would depend upon the constitution of that Board.

3526. I mean somebody appointed by the railway company, which should have more power than the agent of the company?—I do not see that there would be any advantage in that arrangement; I would rather have an agent with full powers to act.

3527. Has the agent, upon all occasions, had full powers to act?—He has, I think, had sufficient powers from his employers.

3528. Speaking generally of the East Indian Railway Company, do you think that the earthwork and bridges of the railway have been completed with equal rapidity to the power of supply of permanent way and rolling stock?—No; I should think on the whole they have not; that the permanent way materials have been generally ahead of the constructive operations in India.

3529. *Chairman.*] Have you in India at the present moment any college or colleges for the education of civil engineers?—Yes; there are two in the Presidency of Bengal, one in the North Western Provinces, and one in Calcutta.

3530. How long have they been established?—The one in the North Western Provinces has been going on more or less since 1848; the one in Calcutta has been established within about fifteen months.

3531. Is there any great disposition on the part of the natives to send their sons for education to those colleges?—On the whole the colleges have been very well attended; but those who are studying in the higher classes receive some sort of allowance from Government to maintain them while they are studying; without that, probably, they would not have been able to remain.

3532. Allowing a fair margin for the establishment and progress of education, have you calculated what is the probable supply of educated men who may issue from these colleges in the course of four or five years?—I can hardly answer that question without referring to papers.

3533. What is the largest number of pupils in any one college?—I cannot answer that.

3534. Mr. *T. G. Baring.*] Did the college at Roorkee supply more than were occupied on the Ganges Canal Works?—Yes; more than were necessary for the whole department of public works.

3535. *Chairman.*] You stated just now that almost all the officers were employed exclusively upon civil engineering works?—The officers of the corps of engineers.

3536. Are we to understand from that that the corps of engineers is not employed at all on military works?—There were no military works going on in India at the time I referred to.

3537. Is it not the case that extensive works are at this moment being undertaken by the Government, and mainly for military purposes?—I should explain that the Public Works Department includes the accommodation of troops, and the construction of barracks, which I include under the above head of "Civil Works."

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3538. Mr. *T. G. Baring.*] Was not Colonel Baird Smith, who distinguished himself at the seige of Delhi, one of your first civil-engineers in the Military Department?—Yes.

3539. *Chairman.*] Do we understand that the Government are not engaged at the present moment upon any large works of fortification?—I am speaking merely of the time previous to the mutiny; I do not know what they may be doing now.

3540. Sir *James Elphinstone.*] I shall be glad to have your opinion upon the direct line from Calcutta to Patna. I understand that the circumstances which induced the Government to adopt that route was the superiority of the gradients, and the expectation that, by a longer route, more traffic would be obtained. Is that the case?—Those two considerations influenced the Government in selecting the Ganges' Valley line.

3541. I suppose the question of gradients to be a considerable influence upon the decision of the Government?—They were one important element, no doubt, strongly insisted upon by Colonel Kennedy, on whose recommendation the conclusion of the Government was come to.

3542. Was his opinion in favour of flat gradients?—Yes.

3543. Has it not been found that in working heavy traffic over gradients of 1 in 100, what you lose in going up hill you gain in going down; so that, practically, those gradients are easier worked than flat gradients?—His argument referred to the limitation of the load of the trains.

3544. *Chairman.*] Have you any diagrams which you desire to put in?—I have some that I should like to hand in.

3545. Are they compiled from official returns?—Yes.

Sir *Macdonald Stephenson,* called in; and Examined.

Sir *M. Stephenson.*

3546. *Chairman.*] YOU are a Director of the East India Railway Company; and, until lately, represented the company as their agent in India?—Yes.

3547. Up to what time, and how long?—For 24 years; since 1835, when first engaged in carrying out steam communication with India.

3548. That is the length of time that you have been engaged on railways, or similar works, connected with India?—Yes.

3549. State the dates at which Indian railways received official encouragement, separating the different periods?—In 1840, the steam communication with India was secured. The next step of railway intercommunication through India was privately discussed in 1841; but I was informed that the East India Company could not entertain what then appeared to be a wild project. In 1842, I endeavoured to induce the East India Company's engineer officers to undertake these works, and afforded considerable facilities. In 1843, finding that, unless I gave personal attention to it, the measure would not be carried out, I proceeded to Calcutta, but until 1844 I could not impress the Government of India with the importance of the work. In 1844, I returned to England with the official assurance of the support of the Government of India, upon which the East India Company entertained the proposals of the East Indian and the Great Indian Peninsular Companies. Great objections and difficulties were raised, and in 1845 I went out to India with a staff of engineers to survey the proposed line, and to report upon the supposed difficulties. I had previously satisfied the chairman of the East India Company, Mr. J. Shepherd, that it was indispensable that the Government of India should have a practical and experienced engineer to advise them, to whom all railway questions should be referred. Mr. Simms was therefore sent out by the same opportunity in 1845, and by this means great dispatch was secured, inasmuch as the survey was completed in one cold season, and I returned with the results, which were most satisfactory, in 1846.

3550. Mr. *T. G. Baring.*] Do I understand you to say that in consequence of the course taken by the Home Government, every facility was given towards laying the foundation of establishing railways in India, up to that time when Mr. Simms was sent out?—The co-operation of the Home Government was not officially applied for until 1844; it is only subsequent to that, that any delay has taken place.

3551. You do not consider that there was any delay previous to that date?—No, not here.

3552. *Chairman.*] Continue your answer?—In 1847, arrangements were made for constructing a section in Bengal, and one in the Upper Provinces, and I returned

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returned again to India with a competent staff. In 1847-8, the European crisis occurred, the French Revolution followed, and put a stop to the company's operations. In 1848, the directors had reduced all the expenditure, and prepared to await more favourable times. In 1849, contracts were made, under which the railway company renewed active operations in 1850 (limiting the work to one experimental section), which have since only been interrupted by local causes. In Feburary 1855, the first section out of Calcutta, of 121¾ miles, was opened, while the works were under contract and in course of construction for about 800 miles more, as far as Delhi. In 1858, another 125 miles, the section between Allahabad and Cawnpore, will be opened. The other sections will be completed in succession, and the whole may be opened by 1862.

3553. Reference is made in that answer to contracts for works upon the East India line; will you state the grounds upon which the contract system was adopted in preference to the company executing the works themselves?—It was assumed as the result of all past experience that, upon works of considerable extent, such as a railway of from 1,000 to 1,500 miles, in the completion of which time was an important element, the contract system was preferable to the company executing their own works. The former secured the advantages of a division of labour, of enlisting the co-operation of qualified men, whose interests were identified with those of the company; and under the contracts referred to, the railway company had the power of pushing on the works with the utmost rapidity possible, while they were secured against contingencies arising from difficulty in transport of materials.

3554. Several of those contracts have been given up; how do you account for that?—The contractors were necessarily men of less experience than can be obtained in Europe; they were the best men the company could obtain. They had all previous practical knowledge of public works, and local experience, and their antecedents justified the expectation of their being able to perform what they had undertaken. The previous contracts had been found to answer remarkably well, and the same contractors were again employed. Others were encouraged and employed to keep down the otherwise excessive rates to be apprehended when no competition is expected. The contracts were framed with scrupulous regard to the company's interests, both in prices and time of execution, under the impression that with the fullest powers in their hands, the company would act in a just and liberal spirit, and as in European contracts, would aid the contractors in every reasonable way; and when difficulties arose, which could not have been foreseen, and were not attributable to any fault of contractors, that they would have been supported and enabled to complete their contracts. This course has not been adopted, and I am informed that the rigorously enforced observance of all the original conditions, without reference to altered circumstances, or to the spirit and intention of the contracts, has ruined contractors and retarded work. Full and sufficient securities were taken for all advances of money to contractors, to prevent risk of loss. It would have been unwise to insist upon security for due performance, which the company would have had to pay dearly for, while they had the more complete power of enforcement in their own hands. The time for completion of contracts was fixed at two years advisedly. The company had the fullest powers, and the contractors would, under the contracts, have been compelled to import any amount of European supervision which the company deemed necessary to secure dispatch of work. The Board thought they could not send out materials fast enough, therefore the alternative provided for was resorted to of an extension of time being granted.

3555. Then do I understand from that answer, that had a little more discretion been shown in relaxing the original conditions, it is possible that these men might have been enabled to go on?—I think there can be no doubt about it; the failure has occurred since my leaving India, but from the representations made, there is no doubt, I think, that had greater consideration been shown to them, and the practice pursued in Europe adopted, they would have carried out their engagements.

3556. Does your experience enable you to state that it is the practice on large works of this description to handle the contractors somewhat tenderly at certain times?—Unquestionably.

3557. And under certain circumstances?—Under those described.

3558. Was this, to repeat the phrase I have already used, of want of tenderness

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in treating the contractors, owing in any way to the Government supervision?—It was the compulsory act of Government.

3559. Do I understand you to say that the railway companies themselves, had they been free so to do, would have shown rather more consideration?—Unquestionably.

3560. Mr. *T. G. Baring.*] You mean by that, I suppose, that the agent of the railway company recommended less severe measures?—He did.

3561. Did he do it in writing?—Officially.

3562. *Chairman.*] Will you furnish the Committee at a future period with any correspondence that has taken place between the agent of the company in India, the Government, and the Railway Board in England?—I will.

3563. Mr. *T. G. Baring.*] Upon this point you cannot speak from personal knowledge. You were not on the spot when it took place?—No.

3564. *Chairman.*] These contracts were settled in India, I believe, without reference to England?—They were. The experience of the past had shown conclusively that a reference to England would have been tantamount to deferring the whole question for another year at the least; and as the local authorities, both of the Government and of the railway company, were of necessity the best judges on the subject, the contracts were made in India. The decision of the authorities in England on Mr. Jackson's tender was conclusive of what would be the result of a reference home, and no alteration in any of the circumstances had occurred to permit the expectation of other or more enlarged views being entertained.

3565. Would not contractors from England have been in all probability more successful?—They would; and in 1848, I applied personally to all the great English contractors, and used every possible exertion to induce them to go out to India, but in vain. One contractor alone, Mr. Thomas Jackson, entertained the proposal, and tendered for the execution of a first section of 70 miles, on very advantageous terms. His tender was approved and recommended by the Railway Board and the East India Company, but was rejected by the India Board. No other contractors would tender or send out until some years after, when Mr. Brassey sent over an agent, who, after ascertaining the nature and extent of the Government supervision, declined to have anything to do with the work, notwithstanding every exertion made by the railway company to alter his decision.

3566. What were the contractors' objections?—The minute and universal extent of the supervision of Government, and the conviction that the Government regarded the whole question in an insufficiently comprehensive view; that they thought of economising a few pounds here and there without regarding time and other considerations which are generally secured by the co-operation of great contracting houses, and that they would, therefore, never sanction the amount which would alone justify such houses in embarking in these undertakings.

3567. That is to say, I presume, that the Government had a certain jealousy or fear that the profits of these contractors would be too large; that probably weighed with the Government?—I should hesitate to ascribe a motive to the Government; I state the fact.

3568. That was a motive that might well weigh with the Government, who had guaranteed large rates of interest?—I presume so.

3569. Mr. *Crawford.*] Was not that one of the motives that induced the Government to hesitate giving their sanction to Mr. Jackson going out?—It was understood to be so.

3570. Mr. *T. G. Baring.*] The contractors were probably of opinion that they would not make a good thing out of Indian contracts, in consequence of the determination of the Government to keep down the expense?—Government objected to the tender as being too high; contractors would not go out, except with the prospect of making large profits. The Government said the work ought to be done at more moderate rates.

Lunæ, 21° *die Junii*, 1858.

MEMBERS PRESENT.

Hon. H. G. Liddell.	Mr. Cheetham.
Mr. A. H. Baring.	Mr. Crawford.
Mr. T. G. Baring.	Mr. Glyn.
Mr. C. Bruce.	Mr. D. Seymour.
Mr. H. A. Bruce.	Col. Sykes.
Mr. Campbell.	

HON. H. G. LIDDELL, IN THE CHAIR.

Sir *James Melvill*, K.C.B., called in; and Examined.

Sir *James Melvill*, K. C. B.

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3571. *Chairman.*] WILL you tell the Committee what office you hold in the Home Government of India; you were at first, I believe, secretary to the Government of India?—Until lately I held the office of secretary to the Court of Directors; I latterly resigned, and I now only hold the office of *ex-officio* Director of the Railway Companies, the Court of Directors having requested that I would continue to do so.

3572. When did you first undertake that office?—In 1849.

3573. You act, I believe, as *ex-officio* director at all the Railway Boards at present sitting in London?—I do.

3574. We have had it stated in evidence that your powers and authority have been considerably increased of late, but I should like to commence with the period of your first appointment as *ex-officio* director; will you describe the extent of your powers at first, and afterwards describe the enlargement of those powers?—At first I had no power, except that of exercising a veto; I had only to give information to the Court of Directors upon points upon which they might require it, and to act at the Railway Board as I best could, according to my judgment, to promote the success of the undertaking.

3575. Subsequently, I believe, there have been two distinct extensions of your powers at two different periods?—There has been an important one with respect to indents for railway materials.

3576. When was that given?—About three months ago.

3577. I believe it was in July of last year?—In March this year.

3578. You have stated that you were at first merely present at the Board to give encouragement to the proceedings by your presence?—Yes.

3579. When you first received the extended powers, to what extent did they go?—Authority was given to me to sanction all indents for railway materials which had received in India the sanction of the local government; these formerly used to be submitted to the authorities in this country, but that is not done now. I express my concurrence in the indent, and it is immediately complied with. That does not apply to indents for increase of establishment, but only to indents for stores.

3580. Do those indents for additions to the staff go through the same process that the indents for stores and materials formerly used to go through?—They do.

3581. Describe the process through which every indent formerly had to pass before you received the extended authority enabling you to give full sanction?—The indent first came from the railway authorities in India to the Railway Board in this country; the Railway Board then came to their decision upon it, and if they proposed to comply with it, they sent a resolution to that effect to the Court of Directors; the Court of Directors formed an opinion upon it, which was submitted

mitted for the concurrence of the Board of Control, and when that was given the decision was communicated to the Railway Board.

3582. Through your medium?—Through a distinct communication from the Court of Directors to the Railway Board.

3583. So that every individual indent had to pass through the two departments, and was accompanied by a letter of sanction from both those departments upon being returned to the Railway Board?—That was the case; the letter of sanction from the Board of Commissioners was addressed to the Court of Directors, and not to the Railway Board.

3584. That was necessarily productive in every case of a considerable amount of delay and correspondence?—It did occasion delay, and sometimes correspondence.

3585. Have you any case in your mind in which unusual delay occurred in receiving the sanction of the Board of Commissioners to any indent submitted to them?—I cannot immediately call to mind any very important case. There have been cases in which the Court of Directors have suggested that it was important to receive a decision as soon as possible, in reference to the state of the market, especially of the metal market; and others in which application has been made to obtain an earlier sanction than would otherwise be given for an increase of establishment.

3586. Describe precisely the extent to which your power of sanction of railway proceedings goes at the present moment; is it confined to indents entirely?—When the indent has been complied with, and tenders have been received for the provision of materials, I am allowed, if I approve it, to authorise the acceptance of the tender, without further reference to the Court.

3587. Was that extension of powers in your opinion a judicious step?—I think it was. It was not attended with any risk, the practice being always to resort to competition, and to obtain the opinion of the consulting engineer, who is generally a man of high repute, as to the price being reasonable. I think, those two things being attended to, there was no risk in allowing the *ex-officio* director to give his sanction.

3588. Is it your opinion that it would be desirable to invest you with any further powers than those you already possess?—I am not of that opinion; I think that the official director has sufficient power, and so long as the office is constituted as it now is, there being only one person, I do not see how the supervision could be complete and satisfactory if the whole power were taken away from the authorities, and left with the official director. What is to be done when the official director is necessarily absent? It strikes me that supervision, to be perfect, must be continous and complete; at the present moment all the proceedings, however minute, go to the Court of Directors, and nothing can properly escape observation. I do not see how that could be completely attained if the official director had all the power. I believe I have been as close in my attendance on these Boards as it would be possible for any other gentleman to be, but still there will be occasional illness, and absence from other causes.

3589. Taking into consideration your long experience and assiduous attention to railway matters, might not that amount of confidence be fairly placed in you as to give you, after communication with the Court of Directors to ascertain their views, the full extent of power which it has been desired should be given to you?—I have no doubt that the power might be given.

3590. I put that question merely with a view of ascertaining whether it would not facilitate to the greatest possible extent the progress of railway proceedings, and with a view of obviating delay?—I might mention that in the Ceylon Railway Company, which is a company administered by the Colonial Department, an official director has been appointed by the Government, and they have found it necessary to authorise the director, in the case of his absence, to appoint a person to act for him.

3591. Have you not, in the person of Mr. Danvers, a gentleman fully capable of undertaking your duties in case of absence or sickness?—Perfectly capable, but he has no authority to do it; our contracts with the railway company provide for the appointment of a single person only.

3592. But I presume it was never intended, when these contracts were entered into,

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into, that in the event of your being by illness occasionally absent, you should not have the power of delegating your authority?—It was not provided for; it was arranged that the Court of Directors and the Board of Control should exercise a power over everything, and therefore the official director had no power.

3593. Will you describe to the Committee when instructions are sent out from the Railway Board to their agents in India, what is the process gone through previous to forwarding those instructions?—The Railway Board prepares a draft of the instruction to its agent in India, and every such draft, without exception, is submitted to the Court of Directors, who, after expressing an opinion upon it, submit it to the Board of Control, and when both authorities are agreed the letter is returned to the Railway Board, with an intimation of the decision.

3594. All those instructions must receive the sanction of the two departments?—Yes.

3595. Have you found in practice much delay resulting from that?—There has been occasionally considerable delay, and we have been frequently urged by the Railway Boards to expedite the progress of the decision upon such letters.

3596. One or two cases have been brought before our notice; I refer particularly to very considerable delay said by Colonel Kennedy to have occurred in obtaining the sanction of your Government to that portion of the line from Surat to Bombay. I think you are acquainted with all the circumstances to which I refer?—Yes.

3597. The original portion of the line sanctioned was from Surat to Ahmedabad, but I think it has been stated that three years were lost in obtaining the sanction of the Government to the further extension of the line to Bombay. Have you any explanation to offer upon that?—When that line was first proposed, considerable doubts were entertained by persons acquainted with the country as to its practicability. It was a very difficult line to construct and I believe there was a difference of opinion among the local engineers as to how far it would be practicable, and still more, how far it would be desirable, to incur the large expense which must be incurred; subsequently there was a reference to the Government of India upon the subject, and a good deal of discussion arose in India between the Government of Bombay and the Government of India, and it is in that way that I account for the delay.

3598. Have any cases within your recollection occurred of a scheme having been recommended by the engineers, and sanctioned by the local Government of India, which has met with opposition on the part of the Government at home?—There was a proposal that the Madras Company should carry a line to Bangalore, which was opposed in this country.

3599. Upon what grounds?—Upon the grounds, if I remember right, that it was equally desirable, in a political point of view, and more desirable in a commercial, that the line should be formed to go by Cuddapah to Bellary. In that case there was difference of opinion between the Court of Directors and the Board of Control. The Court of Directors took the view of the railway company. They thought Bangalore was an important military station, and that the line from Bangalore to Bellary must be ultimately made, and that therefore it was desirable to allow the company to go on with it without interfering with the line by Cuddapah to Bellary.

3600. Was there not considerable difference of opinion between the Government of Madras and the Supreme Government with regard to that line?—I am not sure upon that point; I think Lord Dalhousie advocated the direct line.

3601. Has it often occurred that differences of opinion with regard to railway matters have existed between the Court of Directors and the Board of Control?—I do not think there have been any very serious points of difference, though occasionally there has been discussion.

3602. Is it your opinion that the mode adopted for railway construction in India, namely, by placing them in the hands of private companies, is preferable to the Government undertaking the works themselves?—That is my opinion; it is a point which has been very much controverted and discussed, but I am of opinion that the Government, with all its proper duties, ought to delegate such a work to private companies.

3603. The

3603. The Government undertaking to guarantee interest upon such large sums of money, must have a certain amount of supervision; is it your opinion that that supervision has been exercised in a way the least prejudicial to the interests of the railway company?—I think occasionally there has been too minute and perhaps a vexatious interference in India; at the same time, the circumstances were new, railways were altogether a novelty in India, the work was new to our officers there, and there were many other difficulties which will occur to every one's mind as inherent on the first introduction of the system in India. I think it is now beginning to work more satisfactorily.

3604. Is it your opinion that the affairs of the railway company are best managed by means of Boards there, with powers delegated to them from the Boards in London, or do you think they should be managed through the medium of a single individual in the person of an agent?—I am in favour of a single individual; I think the responsibility should be undivided, as far as possible.

3605. Is it not your opinion that great advantage asises from the association of private enterprise and energy, with a control supervising the expenditure?—I think so, provided that the control is complete and sufficient.

3606. In order that the action should be united and harmonious, it stands to reason that the control must be exercised rationally and moderately?—Certainly.

3607. There is only one case I think, namely, the Great Indian Peninsular, in which the railway affairs are managed through the medium of a Board?—That is the case.

3608. Is it not the case that the works have been conducted more smoothly, with more harmony, and with more general success, than perhaps any other?—There have been complaints, but very few, with respect to the interference of the officers of the Government with the works of that railway. The members of the committee at Bombay, being many of them in the service of the Government, and officers of rank in the Presidency, it is very possible that that may have caused a sympathy between the proceedings of that committee and the supervising officer which may have caused it to work smoothly and beneficially; at the same time I think that the officers of Government have too much to do to give the attention requisite to the management of a great undertaking like that.

3609. Did not those complaints to which you have alluded, arise during the absence in this country of Colonel Crawford?—I think so; I believe it is since Colonel Crawford came to this country that there have been complaints.

3610. I believe no complaints have arisen in regard to the conduct of Colonel Crawford in the superintendence of the railway?—None that I remember.

3611. Mr. *Crauford.*] Are you satisfied generally with the manner in which the execution of the contract has been carried out by the railway company in this country?—Yes, I am.

3612. Have you ever had occasion to exercise the veto which by the contract is placed in your hands?—No, I have never exercised it, and my policy has been, not to call it into action. Whenever differences of opinion have arisen between me and the Railway Board, I have generally found that after a little discussion, I have either been convinced or the Railway Board has given way; I am, however, of opinion that the veto is a proper provision, and that its existence works well although it may never be called into action.

3613. Do you think there has been any unwillingness on the part of the railway company to submit to the supervision exercised by you?—No, I think not. I may safely say, that from the first the Railway Board and myself have worked with a common interest and a common object. I have felt that the Government interest and the railway interest were in a great measure identical, and that my principal duty was to work as an honest railway director would work to promote the interest of the undertaking. There are very few cases in which there is a conflict of interest between the Railway Board and the Government. There may be a few cases, and in those I have endeavoured to do my best for the interest of the Government.

3614. The Committee understand that you have, practically speaking, since the alterations to which you have alluded, power to confirm at the Board nearly all the important acts entered upon by the Board?—I have no power to confirm increases of establishment; I have no power, of course, to extend the guarantee; I have no power to approve a single letter that goes out to the agent. I do not think

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think that it is desirable that I should have the sole power to do those things, and I will explain why: all the letters that go from the railway Boards to their agents in India go now through the Court of Directors. The Court of Directors, with the approbation of the Board of Control, approves those letters, and, having approved them, communicates to the local Government copies of those letters. If the power were given to me, that process could not be gone through. The Court of Directors would not, of course, communicate copies of letters merely upon my approval, and the letters would lose the force of being sanctioned by the authorities. I am afraid the Government of India would not be so attentive as they are now to give effect to those letters.

3615. You have the power to give your consent to the execution of all indents received from India with the sanction of the local government?—All indents for railway materials.

3616. You have the power, sitting at the Board, to give effect to the consent of the Board to the execution of the indents?—Yes, for the acceptance of the tender.

3617. Have you power to give your consent to any purchases that may be originated at the Board, and which have not been indented for from India?—I think so. I have so construed the late arrangements as to give me a discretion in that respect.

3618. Mr. *Danby Seymour*.] If the power of sanctioning all the proceedings of the Railway Board were vested in you, Government could not undertake to be responsible for the expenditure of the money?—I apprehend they would, if the power were given.

3619. If they undertake to be responsible, they ought to know everything that has passed, ought they not?—I think so.

3620. It is the custom, is it not, with every other department of the Government that even the minute details should pass through the hands of the chief?—I think so, and it is a sound principle.

3621. Colonel Kennedy stated that, in his opinion, there was not the slightest risk if the guarantee were granted for railways in India to any amount of capital; what is your opinion?—I think that the Government cannot exercise too much caution and vigilance in granting guarantees.

3622. State your ground for that opinion?—I think that the first duty of a Government is the careful administration of the public purse, and, in the next place, I think there is a great limit to the construction of railways in India; I am not sure that we are not going a little too fast now, certainly we are going fast enough; there is a great tendency to competition; even in the money market here we see the effect of largely increasing the guarantees. There is also competition of labour, especially of skilled labour, in India, which is beginning to tell, and therefore I should be sorry to see too large and sudden an extension of the railway system, and I should be afraid that it would be prejudicial in the end.

3623. There would be a certain risk to the Government, would there not?—I think there is a risk; if you sanction a guarantee for a railway which is not profitable, the Government will have to pay.

3624. You look upon guarantee capital as a loan, do you not?—Practically, I have regarded it very much as public money.

3625. And with regard to the delays said to exist, are not those delays necessary in our very complicated form of Government for India?—I think there is too much complication.

3626. In India or in England?—In India, particularly.

3627. You think that might be relaxed?—I think there might be some relaxation.

3628. Considerably?—My idea is that the system in India ought to be very much the system that a railway company well administered in this country, would observe in controlling the works performed by a contractor.

3629. With regard to the India Peninsular Railway, do you not think that the natives in that part of the country are more advanced than those in other parts of India, that they have a greater number of educated natives there, and that any kind of public works make better progress there than in other parts of India?—It may be so, but it is from that part that we have had the great complaint of the want of skilled labour. Mr. Wythes, the large contractor in this country, and who has taken a large contract for the railway over the Ghauts, in Bombay, has

has urgently represented to us the necessity of limiting railway operations in India, so as to enable him to get skilled labour. He writes from experience.

3630. With regard to the Bombay and Baroda Line, do you not think that there might be grounds for the opinion that that line ought never to have been commenced at all?—It was commenced under the advice and recommendation of Lord Dalhousie.

3631. But that was with the intention, was it not, of making it a through line to Bengal?—I think he contemplated its going a little northwards, by Indore, to join the East India Railway.

3632. When the Great Indian Peninsular was sanctioned it became a matter of doubt, did it not, whether the other should be continued?—I think Lord Dalhousie sanctioned both.

3633. *Chairman.*] You have just been asked by an honourable Member about the through line into Bengal; I think the through line *viâ* Indore to join the East India Line at Agra has not yet been sanctioned?—That extension has not yet been sanctioned.

3634. Mr. *Danby Seymour.*] Was that for this reason that it was thought better it should meet the East India Line at Mirzapore?—No, I think latterly the Baroda Company have applied for leave to extend their line northward.

3635. Have the Bombay and Baroda Company ever applied for a line from Indore to Agra?—Yes.

3636. When?—During the last two or three years they have made repeated applications for survey of that line, and have recently been discussing the expediency of another application, but I dissuaded them from making it at present.

3637. *Chairman.*] Is it not a line promising great commercial advantages?—They think so; but I have not seen any reason to encourage them at present.

3638. Mr. *Danby Seymour.*] When did they make their first application for a line to go from Baroda to Indore?—Twelve months ago.

3639. Was it not the view of the Government at home that the trunk lines only should be made by guaranteed capital, and that Government should wait to see whether companies would come forward to make other railways which were wanted without guarantee?—That was the case.

3640. That has always governed the discretion of the Government at home, has it not?—I think so.

3641. The intention was to lay down a network of trunk lines, and to leave the others to provide lands?—Yes.

3642. With regard to Bangalore, there were two proposals, I think, of the Madras Company, one to go through Bangalore to Bellary, and the other for a branch leading to Bangalore?—That was the case. The Madras Company were anxious to have a line through Bangalore to Bellary; but finding that they could not accomplish that, and that the Cuddapah line was to go to Bellary, they contented themselves with constituting the line to Bangalore a branch line.

3643. I believe they were not refused, but were told to defer it until the main line was made?—Yes.

3644. Was the Bangalore branch included in the first contract?—It was.

3645. Do you approve of the Cuddapah line, which has been chosen instead of the other?—I think there is strong evidence in favour of the Cuddapah line, but I think that the Bangalore line ought to have been constructed also.

3646. In making railways in India, and in fixing the points at which a limited number of guaranteed lines should be made, ought you not, as near as possible, to serve equally every part of the country?—Certainly.

3647. If you had gone by Bangalore, would you not have left an important part of the northern district of the Presidency of Madras without any communication at all?—Yes; but the authorities determined to have the Cuddapah line. My opinion in favour of the Bangalore line is not that it was to be instead of the Cuddapah line, but in addition to it.

3648. Would you have constructed both lines?—I should have been in favour of the Bangalore branch as well as the Cuddapah line.

3649. If you made the through line to Bellary?—I would not have gone to Bellary; but I am convinced that when the line is made to Bangalore there will be a line from Bellary to Bangalore.

3650. To connect Bombay and Madras do you not think that there was strong

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evidence in favour of a line going through Cuddapah to Bellary?—I think so, many of the Railway Directors thought that it would be better to go from Bellary to Bangalore, and on to Madras that way.

3651. If you had a second *ex-officio* Director he must have a salary?—I suppose so.

3652. The Government of course wished not to spend more money in a superintending staff than was absolutely necessary, may not that have been the reason that a second official Director was not appointed?—I do not think the question was ever raised.

3653. Do you think that a second official Director is necessary?—I only suggested the necessity supposing it to be admitted that the whole power must be given to the *ex-officio* Director.

3654. Under present circumstances you would not advocate the appointment of a second official Director?—I do not advocate an extension of power, and therefore it is not necessary to advocate the appointment of another official Director.

3655. You think it is not required under present circumstances?—I think not, unless the power were wholly committed to the *ex-officio* Director.

3656. Are not the ordinary indents passed through the Court of Directors and the Board of Control without any delays at all?—There have been delays.

3657. What time do you consider it takes generally to pass an indent?—Indents have generally passed through the Court of Directors on the Wednesday following, their being received from the Railway Boards; but on an average they have remained for three or four weeks with the Board of Control before the decision has been communicated to the railway authorities.

3658. Where, in your opinion, has the delay occurred?—I do not mean that there was any disposition to the delay which must have occurred at the Board of Control, and I can account for it, as the Board of Control have not the opportunity of communicating with the official Director who has been an officer of the India House. The Court of Directors, when they want information, have it at once; but the Board of Control have not that information, and have to apply for it.

3659. Do you think that the delays are less now than they used to be at the Board of Control?—I think so.

3660. On the whole, with the improvement introduced of late, is it your opinion that the system of supervision of guaranteed lines of railways has worked well?—I think the system of supervision has worked easily in this country; but in India I think there has been a little jarring, especially at Madras. I do not think that the position of the railway authorities and of the Government authorities relatively to each other was quite understood at first; it is beginning to work more easily now.

3661. Do you think that that has been more a personal matter than arising from any fault in the system?—Yes; one man will work the system more easily than another; one man will take a different view of his duty, and of what his duty requires of him, than another.

3662. *Chairman.*] Have not instructions been sent out recently, pressing on the Government of Madras the importance of modifying to a certain degree their powers?—They have. A broad distinction is drawn between a railway in construction and a railway in action. When a railway is opened I think the general tenor of the instructions is, that the Railway Company should be left to manage very much its own affairs, the Government being parties to the rates of fares. Whilst a railway is in process of construction, every care is taken to limit the expenditure to what is necessary for the efficient construction of the work.

3663. Were not those instructions sent out in consequence of its being found that the system was not worked smoothly, consistent with the rapid progress of the works?—They were.

3664. Mr. *Danby Seymour.*] The alteration you wish to see is a greater amount of latitude in executing railways in India?—I think so.

3665. You think greater latitude might be given than exists at present?—I think so, but it depends very much upon the individual; I think if I were employed to superintend the proceedings in India, I should leave the Railway Company a little more to the performance of its own works than has been the case

3666. Do you not think it advisable to try it and see how it would work?—Yes, but you must be very careful in relaxing supervision.

3667. Colonel *Sykes.*] Would you include the disbursements?—No, I have drawn a distinction there.

3668. Mr. *Danby Seymour.*] Can you inform us why no large English contractor has undertaken the construction of Railways in India?—I do not know; an attempt was made two or three years ago to induce Sir Morton Peto and Mr. Brassey to go to India; I think they were extensively engaged on other works, and were unable to go; I believe there is an apprehension among some of them as to the nature of the Government supervision which may have deterred them: but with respect to the Bombay Railway we have found contractors to go out from this country.

3669. *Chairman.*] Was not an attempt made as far back as 1849, to induce Mr. Thomas Jackson to undertake some important contracts on the East India line?—Yes; when it was first considered, Mr. Thomas Jackson proposed to construct the whole line as far as Raneegunge, and offered to do so for 8,000 *l.* per mile.

3670. What was the cause of that contract or undertaking breaking down?—The Court of Directors proposed to accept his tender, but the Board of Control refused to concur; and, if I remember rightly, calculations were made at the Board and were communicated to the Court of Directors showing that it was an extravagant offer, and it was therefore declined.

3671. Mr. *Danby Seymour.*] Do you not think that it would be a great advantage to India to have gentlemen like Sir Morton Peto and Mr. Brassey, with their skill, experience and capital, to raise up a system of contractors under them for the execution of great works?—I have always been most anxious to induce contractors of that description to go to India, and I hope they may still do so.

3672. *Chairman.*] It has also, I believe, been a great object with the Government of India to develope, as far as possible, the energies and resources of native contractors?—It has; they have been anxious from the first that India should be resorted to as much as possible for the provision of the materials.

3673. The proceedings of native contractors have not, I believe, been such as to inspire you with much confidence in their power to fulfil their undertakings?—My disappointment has been always with European contractors found in India; there have not been extensive contracts in Bengal with native contractors, but at Bombay, I believe, there have been, and they have been satisfactory; with the railway contractors in Bengal the system broke down.

3674. Do you attribute that to a want of experience, or a want of means?—I think it was owing to a want of capital; they did not know what they were undertaking, and I think perhaps they depended too much, as everyone does in India, upon the Government.

3675. The native contractors who have undertaken contracts, and who have fulfilled their engagements, have been, I believe, chiefly confined to one class, the Parsees?—Yes.

3676. They are a different race of men to any other existing in India?—Yes.

3677. Colonel *Sykes.*] Was not the delay respecting the decision on the Surat and Bombay line, owing to well informed persons doubting, not only the prudence, but the practicability of the undertaking, except at a very unprofitable cost?—Yes; I have so stated.

3678. Can you give the Committee the dates of the arrival at their posts of the several officers on the East India and Madras lines?—That information can be furnished to the Committee.

3679. Can you state the cost of the iron laid down in constructing the permanent way on the first 60 miles of these lines?—It can be stated.

3680. Do you know the total first cost of constructing lines anywhere exclusive of rolling stock?—I believe an account of that kind has been rendered.

3681. On which of the lines do you consider that the superintendence on the part of the Government has been most strict and minute?—I think on the Madras line.

3682. Have not many instances of unnecessary expenditure by the railway officials in India come before the Boards at which you sit?—There have been some: there may have been an expenditure for bungalows, or something of that kind, but I am not aware of any instance of great expenditure.

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3683. Was it part of your duty to take action upon those cases?—I think if any such cases were reported to the Railway Boards, it would be part of my duty to communicate with them as to the best mode of dealing with the subject.

3684. And of disallowing the charges?—That would depend very much upon the nature of the case. If the Government of India had allowed them, I should feel great hesitation in disallowing them; it would be for the Court of Directors to communicate with the Government of India.

3685. In all these cases of reference, the individuals acting contrary to instructions, or upon their own authority, the loss has always been out of the capital stock, and has not been borne by themselves?—Yes, but I cannot conceive how the case could arise; the system, both in India and in this country, is that that only shall be paid for which the Government has sanctioned.

3686. Nevertheless, in the instances alluded to, which you admit have come before the Boards, expenditure has taken place without official sanction, and hence the reference home?—There may have been some few instances; I do not immediately call them to mind, except in that case of the bungalows; but there may have been some instances in which an expenditure has been incurred which the Government of India thought might have been avoided, and the Government of India in sanctioning it perhaps have reported the proceedings to the Court of Directors, and there may have been a correspondence with the Railway agent in India and the Railway Board here.

3687. Notwithstanding all this minute supervision these cases of expenditure have occurred?—Very rarely.

3688. A good deal has been said about the delay in the India railways, as compared with English lines. For instance, the East India Railway, 120 miles long, was opened to Raneegunge in four years and a half; are you prepared to offer an opinion upon that with regard to the London and Birmingham?—That took five years, and therefore the advantage would be in favour of India.

3689. With all the drawbacks of supervision?—I do not think that the supervision has caused much delay; it has caused jarring and vexation, but not much practical delay.

3690. In the case of the Great Indian Peninsula Railway, 88 miles were opened in five years and a half with all these difficulties, and the line to Bristol, 120 miles, took six years, so that the advantage would be in favour of the Great Indian Peninsula?—Yes, and with enormous difficulties in India; in addition to the difficulty of transporting almost every material from this country.

3691. The Madras Railway to Velore, a distance of 91 miles, was opened in four years; therefore that would have the advantage, in point of celerity, over the London and Birmingham and Bristol lines?—Yes.

3692. *Chairman.*] Have you not to set against these disadvantages the cheapness of labour, and the general facility in crossing the country?—Yes; but I doubt whether any railway works in Europe have involved a greater amount of difficulty than the works over the Ghauts.

3693. And the great bridging works, which are common to all?—Yes.

3694. But otherwise the general character of the country is easy?—On the table lands.

3695. Colonel *Sykes.*] You say you do not wish for any extension of controlling power on your part?—No.

3696. Without extension, delays and continual references are inevitable?—I think if the Government authorities were simplified in this country, the delay would be much less.

3697. If you had that power, there would be less delay?—It might save a little time, but I doubt whether it would save any time in construction.

3698. It would sometimes avoid a delay of three weeks, for instance?—It might save that time in the arrangements for the provision of railway materials, but we must always be beforehand with them.

3699. Hitherto a reference has generally caused about three weeks' delay?—Yes; that delay of three weeks is now avoided by the extension of power already given to me as regards indents.

3700. Mr. *T. G. Baring.*] I think you were secretary to the Court of Directors when the original projects for making railways were proposed?—I was.

3701. You are acquainted with the whole course that was pursued from that time until the first contract was entered into?—Yes.

3702. With respect to the control over the expenditure of the railway, I understand

understand you to say that the control should be complete on the part of the East India Company?—I think so.

3703. Do you think that merely auditing the accounts in India would afford a complete control?—No, not a complete control. I think Government must, in the first place, sanction the expenditure, and having sanctioned it, the auditor would see that it had been properly applied.

3704. I understood you to say that you did not think the supervision has occasioned anything like serious delay in the construction of railways?—I do not think it has caused much delay in the construction of the works; I think the delay was occasioned by discussions preliminary to the introduction of the railway system.

3705. A delay of three weeks before obtaining the sanction of the Home Government to any step would not necessarily throw the works back three weeks?—I think not.

3706. All these cases I presume are considered beforehand?—I think so.

3707. Did it ever occur to you that a united Board of the different railway companies in this country would be a good thing?—I do not see how it would be possible; I do not know what object would be gained by it.

3708. Have you ever found that one company has competed for freight with another?—There have been difficulties as respects freight, in consequence of the shipments of the Great Indian Peninsula and the Bombay and Baroda Company being to the same port, but as soon as a difficulty arose it was met by a friendly communication on my part with the two companies; that is one of the advantages of the present system of supervision, that the same person acting as official director at all the Boards, he is enabled to communicate what is good or what is bad in one system to the other Boards, and in that way I think it accomplishes great good.

3709. On the subject of delay, do I understand you to say that you think that the construction of railways has been satisfactory on the whole?—I can hardly say satisfactory, because there have been many difficulties which could hardly have been foreseen; the Santal rebellion interfered with the East India Railway, and that had scarcely ceased when the mutiny broke out; then there have been great impediments in the progress of the work in Bengal.

3710. Do you conceive that there have been any cases of delay which could have been obviated by better arrangement either on the part of the companies or the Government?—The contract system introduced in India was introduced rather hastily, and the failure of those contracts has caused delay; it has compelled the railway company to undertake the work themselves; and when a company is thrown into that predicament, it has to seek an extension of its staff, which, in the case of India, can only be done by appealing to this country. The failure of the contract system has certainly been productive of delay.

3711. Has there been great delay in engaging the services of competent engineers to go out to India?—Occasionally.

3712. *Chairman.*] Speaking generally, are you favourably disposed to the construction of railways by the contract system, or by what is termed the departmental system?—My impression has been in favour of the contract system, if you can get good contractors. Of course, I am aware that the contractor seeks a profit for himself, which profit it would be desirable that the railway company should possess; but, on the other hand, there are great difficulties in a railway company undertaking the work itself; it has to create a very large staff; and I think a contractor deals very differently with his staff from what a railway company would, however constituted; and I have a great apprehension, that if a railway company were constructing these great works, a huge establishment would grow up, which it would be very difficult hereafter to deal with.

3713. Mr. *T. G. Baring.*] Several complaints have been made of differences between the engineers of the railway company and the consulting engineers of the Government?—There have been differences.

3714. You, as official director, are cognisant of all the facts brought before the Railway Boards upon this point?—Yes.

3715. Could you inform us to which party you think blame attaches in these transactions?—I think, as I said before, that the relations of the Government officers with the railway company's officers have not been sufficiently understood until lately, and that perhaps the Government officers have regarded the under-

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taking too much as a purely Government work. Instead of aiding the construction of the work by the railway company, they have looked upon it rather as a work of their own.

3716. Do you mean that the fault rested with the consulting engineers of the Government?—Not entirely; I think there was equal fault on the part of the railway company's engineers, who equally misunderstood their position towards the Government.

3717. You think there were faults on both sides, arising from the new system being introduced?—I do.

3718. Do you believe that those relations are gradually being understood, and are being put upon a different footing?—I think that is the case.

3719. Mr. *C. Bruce.*] You have expressed a preference for the system of contracts over the other; is it your opinion that it is possible to do justice to the Government superintendence without the direct supervision of the Government engineer?—I think that the direct supervision is absolutely necessary.

3720. You think it is necessary, although it might occasion certain misunderstanding between the two parties?—Certainly.

3721. Mr. *T. G. Baring.*] You alluded to some instructions sent out to the Madras Government, in reference to Government supervision?—Yes.

3722. Did they refer to the interference with traffic operations, or to the construction of the line?—To both, but especially to the operations of the line when opened.

3723. You think there is a difference in the degree of supervision which should be exercised over the one and the other?—I do.

3724. With respect to the payment of monies by the railway company, are the monies on which the guarantee is given paid into the treasury of the East India Company?—They are.

3725. Is the sanction of the Court of Directors required to each payment?—It is.

3726. How are the payments made when sanctioned by the Court?—The railway company receives its accounts, it passes then under a system of its own, and they are then transmitted to the Court of Directors, with a request that a warrant may be passed for the payment of the amount. The Court of Directors see that the sums required are in respect of contracts that have been sanctioned and that the amounts tally with the charges involved in them, and when that is ascertained they pass an order for the payment of the amount.

3727. Are the payments made by cheques specially signed at the Railway Board?—They are.

3728. I presume there is, subsequently, an audit on the part of the Court of Directors to see that the payment is for some expenditure that has been sanctioned?—The audit takes place before the order for payment is passed.

3729. So that no irregular payment can take place?—No.

3730. The supervision as regards payments is a great protection to the share holders as well as to the East India Company?—I think so.

3731. In your own position, do you think it would be convenient if you had power to appoint a deputy in case of your absence?—It would be convenient, no doubt; it would have this advantage, of course, that when I was absent the supervision would not be interrupted.

3732. Mr. *H. A. Bruce.*] You say that there was an extension of your power about 12 months ago, and that that was with respect to indents for materials and not as to persons. I think you also added, that you did not think it desirable that your power of decision as to the employment of persons should be increased?—Yes,

3733. You are aware, I dare say, that it has been a cause of complaint, made frequently before the Committee, that delays and obstructions have arisen from the want of the speedy means of obtaining persons required by the local engineers in India?—A case of that kind occurred recently, but that was a case which would not have been affected by any alteration in the powers of the official director; Mr. Turnbull, the resident engineer of the East India Railway Company, proposed a large augmentation of his establishment in consequence of the contractors having failed, and the work being thrown on the hands of the Railway Company; the local government refused their sanction, and therefore the indent never came home, consequently that was not a case which the Railway Board were in a position to deal with; to this moment, I believe, they have not received the indent.

3734. Has

3734. Has it ever occurred to you to have to lay before the India Board objections to the employment of persons whose employment had been sanctioned by the Railway Board in England?—I have never seen any reason to object to any of the officers appointed. Those who go out to India are selected upon the recommendation of the consulting engineer in this country, who submits their testimonials and explains their especial qualifications to the Directors.

3735. With respect to the employment of materials, it was stated by Colonel Kennedy that he, as engineer of the Bombay and Baroda Railway, had strongly recommended the use of iron sleepers; that that opinion is confirmed by Mr. Stephenson, a member of this Committee, and the eminent engineer; and that the use of iron sleepers was refused to him on account of the novelty of the experiment; may I ask with whom that objection arose?—If I remember right the proposal was, that a system of iron sleepers connected with the rail, called Adam's girder rail, should be introduced upon the Baroda Railway; the Court of Directors, in answering that, said that it was not their practice to introduce anything that was purely experimental; that the thing proposed must have been tried in this country before they could sanction its introduction into India. After a few months had elapsed there came a requisition, sanctioned by the Government of Bombay, from the agent at Baroda, that a few miles of this description should be sent out; the Court of Directors, although maintaining their opinion, were unwilling to object to the Railway Company making the experiment, and therefore they sanctioned 20 miles of that rail being sent out. It has not yet gone, and Colonel Kennedy has been anxious to send a further quantity; but the Court of Directors have decidedly refused, because they had sanctioned experimentally the former quantity being sent out, and were unwilling to extend the experiment until information had been received as to the result.

3736. When was the sanction given to the experiment?—I should think about 10 months ago; the other iron sleeper sent out, not for the Baroda Company but for the Bombay Company, is the sleeper which has been used in the construction of the railway in Egypt; it was sent out experimentally by the Great Indian Peninsula Company, and they have latterly received a favourable report of the experiment, and 70 miles of it have been ordered within the last few weeks, upon a requisition of the Government of Bombay.

3737. Can you inform us whether within the last six months there have been any increased facilities in transacting the business, as between the railway authorities in this country and those in India?—I think the railway business is more quickly transacted in this country than it used to be, and there is less of jarring in India than there was. The subject has been better understood in the relations of the railway officers to the Government officers.

3738. There have been no organic changes in the system within the last six months?—I think not; the office of secretary to the public works department has been separated from that of superintendent engineer on the part of the Government in the railway department.

3739. You stated, in your opinion, that there were objections to the repeated increase of railways in India, and that you had already doubts whether we were not going on too fast; have you maturely weighed and balanced the advantages which every one must see would arise from the extension of railways in India against those disadvantages which you anticipate?—I think the advantages of a well considered railway system in India cannot be over-rated, and it is because I so highly value them that I should be sorry to see too great haste in the extension of the system.

3740. The disadvantages arising from the competition for money in the market, for instance, and leading to some increased expenditure, might be balanced by the advantages resulting from the development of trade?—No doubt that is the case, but there is not merely the difficulty as to money, there is the question of freight; and to this there seems to me to be a natural limit unless the Government or the railway company are prepared to go beyond the ordinary means, and to construct fleets of their own for the mere purpose of transporting railway materials; the difficulty of freight already meets us; it meets us in a rise of price, and sometimes by an inability to obtain a sufficient quantity of tonnage.

3741. Has there been any practical difficulty in obtaining a supply of skilled labour in this country for India railways?—I do not think there would be any difficulty, but the railway companies have not thought of sending out masons and people of that description, who come under the denomination in India of skilled

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labour, and it is there that the difficulty has arisen. It is in that description of skilled labour that we have found the difficulty, and not in the superintendence or inspection.

3742. *Chairman.*] Have you confidence generally in the administration by the railway Boards in this country, of what I may term the great public trusts confided in them?—I have; I have watched with the greatest anxiety the proceedings of the Railway Boards from the first, and with very few exceptions, I have observed nothing but the most straightforward desire to co-operate with me in the execution of those works to the satisfaction of the Government and of their proprietors.

3743. From all that we have heard it is quite evident that the harmony that appears generally to have existed at the Railway Boards has been mainly attributable to the discretion and tact exercised by the *ex officio* director; but is not the exercise of great discretion and tact absolutely essential to the carrying on of these complicated proceedings?—I think it absolutely essential that you should have the right man in that place.

3744. With regard to railway operations in India, are you on the whole satisfied with the exertions that have been made by the person employed by the Railway Company in that country, in the execution of those works?—Yes; I think so.

3745. I think we may gather from all that we have heard, that the railway works will bear a favourable comparison with works constructed in other parts of the world?—I should think so; I am told that the railway in Bengal is a work that will bear comparison with any similar work in the world.

3746. I have one question to ask you with regard to the contract and departmental system; keeping in view the economical execution of those works, would you set the profits of the contractor against the large expense consequent upon the growing up of establishments under the departmental system, and yet give the preference distinctly in favour of the contract system?—Yes, I think I would. I am not sorry, however, that the departmental system is being tried; it is in progress at Madras, and I think the result there will be satisfactory in point of expense, but I would rather see both systems at work with our experimental lines in India that we may judge by-and-by of the result.

3747. Is not the reason this, that in Madras and perhaps in other parts of the departmental system, there has been injury owing to the absence of persons of sufficient capital to undertake and fulfil contracts?—If we look only to India that is undoubtedly the case, but I think that contractors in this country are beginning to look a little more to India than they did. The Eastern of Bengal Railway Company, recently formed, hope to induce contractors to go from this country. With respect also to the Scinde Railway, we advertised publicly and we got an excellent contractor to undertake the execution of that work.

3748. Will you name the contractor?—I think it is Mr. Bray.

3749. Has he not executed one or two sections of the East India line?—I think Messrs. Bray & Elmsley were the only contractors who succeeded in Bengal.

3750. I believe he is the only contractor who has not broken down?—I think so.

3751. I have one question to ask you with regard to the Bombay and Baroda line. Will not that railway be in this position, that it will be a considerable length of line leading from a highly productive country to Surat, where there is no actual port of shipment in existence?—It is a bad port, but there is water communication; the cotton comes down from Surat to Bombay by sea.

3752. It hardly appears to be giving the railway company a fair chance if that large and important section of its line should be opened without the other; and in consequence of the delay that occurred in sanctioning the extension from Surat to Bombay, they would be placed in that position?—Yes, I think that is the case, though they have the opportunity of water communication.

3753. Mr. *T. G. Baring.*] Have you any recollection of the form of the original prospectus of the Bombay and Baroda Railway Company?—I do not recollect it.

3754. Was it the case that in the original prospectus the Company suggested as an alternative the commencement of the line from Surat, and not from Bombay?—I believe so.

3755. Colonel *Sykes.*] Considering the difficulties of a coast line and its probable

probable cost, do you think there are chances of its competing with the sea?—Some engineers think favourably of it, others do not.

3756. *Chairman.*] Has there been a strong objection felt to the existence of two large railway termini in Bombay?—A very serious objection.

3757. Was that upon the ground of expense?—The space is limited, and Government felt that it would be inconvenient, and they are most anxious that the terminus of the Great Indian Peninsular should become the terminus of the Baroda line.

3758. Has much difficulty been experienced there in coming to an arrangement between the two companies for the use of a common terminus?—It has not been settled.

3759. A line is contemplated to join the Great Indian Peninsular?—At or near to Callian.

3760. Are there not considerable engineering difficulties to that scheme?—That point has not been reported upon.

3761. At present, the line from Surat to Bombay is sanctioned?—It is; but the mode in which it is to enter Bombay is not determined. They are working from Surat downwards; and I think they have now commenced 30 miles.

3762. The question I understand is now rather one between the two railway companies?—It is one for the Government in the first instance, because the Government provides the land.

3763. The local government of Bombay entertain strong objections to granting the land necessary for two termini?—I think they do; land is enormously expensive in Bombay.

3764. In regard to the Scinde Railway, we have had it stated, I think, that no less than 11 surveys were called for, and that very considerable delay took place in consequence of the Commissioner of Scinde not being vested with sufficient authority to give direct sanction to the railway operations; is it your opinion that a great deal of controversy might have been avoided had he been vested with such powers?—I think it desirable that the Commissioner of Scinde should have extensive powers in the supervision; that it is important in every point of view that the supervisor should be as near the spot as possible.

3765. It is the fact, I believe, that after all the different propositions had been discussed, the original scheme suggested was adopted?—Just so.

3766. No better scheme has been propounded?—No.

3767. I have one question to ask with regard to the transport of heavy materials and permanent way. Is it your opinion, for instance, in the case of the East India line, that it would be desirable that the railway company should have a flotilla of vessels of their own, for the purpose of conveying their materials?—That point is now under consideration, and so far as I can judge, it is impossible, without some means of that kind, to convey their materials up the country.

3768. Was not a proposition to that effect made two or three years ago by the railway company themselves to the Government at home?—I am not aware of that; I do not remember it. The East India Railway Company attempted to make a contract for the conveyance of their materials up the country, but it broke down.

3769. You are distinctly of opinion that the vast amount of dead weight which will have to be carried will require some arrangement of that kind?—That is the great difficulty that meets the East India Railway Company at this moment; I believe they are obliged to have recourse to native boats and to other means of draught.

3770. Is it not the case that considerable losses arise to the company from boats occasionally stranding, and from their having to wait for the floods?—A great many losses of that kind, I fear, have occurred during the mutiny.

3771. There has been great difficulty in obtaining means of transport at particular times?—I think if we had had the means of transport, the Allahabad and Cawnpore line would have been opened long ago; the getting of the materials up the country before you have the means of railway communication upon the line, is one of the great difficulties.

3772. I believe only one scheme has been proposed for the construction of a line of railway without guarantee, which goes by the name of the Mutlah scheme; state to the Committee what condition that enterprise is in, and whether it is

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one in which they are unwilling to proceed without a guarantee?—They have not officially stated their unwillingness to proceed without a guarantee; the Government have promised the land, but whether the promoters will go on with it, it is impossible to say; it depends upon their competency to get money.

3773. They have experienced difficulty in getting money, I believe?—They have not got it yet, I think.

3774. Are their operations suspended in consequence?—They are not at present going on; I saw that there had been a meeting lately, and that Colonel Kennedy, as chairman, himself declared his unwillingness to be a party to any application for a guarantee.

3775. What is your prospective opinion in regard to the feasibility of constructing railways in India without a guarantee?—I think if the present railways were to become eminently successful and productive of profit we might hope to see a disposition on the part of the public to invest their money in schemes without a guarantee.

3776. Do you anticipate that the profit which will arise from railway traffic in India will fully come up to the estimates that have been formed?—I have strong doubts about it; I have always regarded it in this light; our expenditure for railways in India must necessarily be on a large scale; we have to transport everything, with the expense of freight, to India; we have European agency, the most expensive that can be used in India, and that must continue to be very largely the case even when the lines are opened; on the other hand we shall have enormous traffic, I have no doubt, but, to have enormous traffic, and to suit the rates to the capacity of the people, you must have very low rates of fares. Now we have these two things, European expenditure on the one hand, in the construction of the railway, and Indian rates on the other; and how you are to gain a large profit consistently with those two things is a problem I cannot see the solution of.

3777. Is it not the case, that the original estimates of the profits of railway traffic were based mainly upon the traffic arising from goods?—Yes.

3778. Has it turned out in practice that the passenger traffic has largely exceeded any estimate that was formed of it?—That is the case.

3779. Do you anticipate any probable limit, provided the rates of fare are kept at a moderate standard, to the amount of passenger traffic?—I think the traffic will be very large.

3780. Colonel *Sykes*.] Has not the system of large contracts at Bombay had the effect of preventing the occurrence of the causes of collision between the Government officers and the railway officers?—I do not know; there has not been much collision at Bombay, but I am not sure whether it is owing to the large system of contracts, because the contractors must be supervised, as well as the railway officers.

3781. Is the successful administration of the railway affairs at Bombay to be attributed to the system of contracts, or to the management of the authorities?—I do not think it is to be much ascribed to the difference of the system with respect to the mode of construction; it depends very much upon the judgment of the person appointed to supervise.

3782. It has been successful in the system at Bombay?—There have been complaints, but they have not been numerous at Bombay.

3783. Was not the construction of the Madras line left altogether to the railway officers themselves, without the employment of large contractors?—Yes; there were no large contractors at Madras.

3784. It was left to the railway officers?—Yes; the construction there is departmental.

3785. Has not the Commissioner in Scinde been now invested with powers of control, in consequence of the instructions from the Court of Directors?—With greater powers than he had, but still not with all the powers which the railway companies are anxious he should possess.

3785*. Is the Commissioner dissatisfied with the present arrangement?—I rather think he is now satisfied.

3786. Mr. *Cheetham*.] I think you stated that the question of railways was brought to the attention of the East India Company in the year 1844?—I believe so.

3787. But it was 1849 before you were appointed *ex officio* director?—Yes.

3788. At

3788. At this moment, I believe, there is no special railway department of the East India House?—The railway business is conducted in the financial department of the secretary's office.

3789. Has not that business been forced upon the East India Company without any previous decision upon the question?—The necessity existed for the formation of the department, no doubt, and it has been a most efficient department of the India House.

3790. Do you assent to this remark of Mr. Danvers: "We have not actually a railway department, but it so happens that it is a department which has grown into existence"?—That is the fact, because when the railways were undertaken, there was only one railway company; then the correspondence was managed in the branch of the secretary's office above named, and it has gradually grown into a distinct department.

3791. Do you think that a question of such magnitude and importance to India should be thus allowed to be forced by necessity upon the East India House, instead of its being gravely considered beforehand by the Government?—In the first instance it was only proposed to sanction two companies, and for that it did not seem necessary to create a separate and distinct department, but only to commit the duty to an intelligent officer, which was done.

3792. Since 1849, up to the present time, you do not think that there have been delays in the construction of the railways by reason of the want of such a department at the India House?—Certainly not; I believe there has been scarcely a delay in the India House in the management of the railway business; I believe that weekly almost it has been cleared off, and that every business that was required has been promptly carried forward.

3793. You have stated that, previous to the enlargement of your powers as *ex officio* director, delays arose in the transaction of business?—There were delays.

3794. But that since your powers have been enlarged, those delays have not arisen?—They have not.

3795. Have you any suggestion to make as to the advisability of still further enlarging your powers?—I think that any enlargement would render necessary an alteration in the constitution of the office.

3796. I understood you to say that letters upon every question of detail must pass through the Boards?—That is the case.

3797. Do you consider that essential in matters of detail?—The difficulty is in drawing the line.

3798. Would not the line be sufficiently drawn, by the Court of Directors on the one hand, and the Board of Control on the other, giving their assent to the survey of the country, and fixing the capital to be guaranteed?—In that case there would be no control over the expenditure. I cannot imagine any Government being justified in giving a guarantee for a large sum of money for a work to be constructed by a private company without taking care that the money was properly expended.

3799. Would not that supervision be exercised by you, sitting as *ex officio* director at the various Boards, and giving your assent to the various operations?—The authorities declined to delegate so important a power to any officer.

3800. Has not that occasioned delay?—The constitution of the office of *ex-officio* director would require to be altered materially if powers of that description were delegated to him.

3801. Would it not materially diminish the amount of delay?—I doubt very much whether any of the delay which has arisen, except in the first instance, has materially retarded the progress of the works.

3802. Colonel Pears has given it as his opinion, after a careful investigation and practical experience on the survey of the Madras line, that it would have been much better for India had the Government undertaken the construction of the railway works in that country; do you agree in that opinion?—I do not.

3803. Is it not the fact that India is almost devoid of communication even as regards roads and water communication?—That is the case.

3804. Are we not then necessarily restricted to the extension of railway communication?—I think so. It is of immense importance to India that railways should be judiciously extended.

3805. Is it not the duty of the East India Company as regards the two first modes of

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of communication, to undertake the construction of roads, and also to improve the navigation of the country?—It is the great duty of every Government.

3806. Then why should it not be their duty also as regards railway communication?—I think it is their duty to see that railways are introduced; and if it were a question whether there should be railways at all, or whether the Government should make them, the Government ought to make them.

3807. Could not the Government have constructed railways by means of a loan, in place of guaranteeing capital raised by private companies?—No doubt the Government could raise the money by a direct loan, as well as through the instrumentality of a private company.

3808. In that way would not much delay have been obviated?—The difficulties which the railway company experienced would have been felt by the Court of Directors.

3809. But not to the same extent?—Not to the same extent; but I do not think that any Court of Directors, when the Bank rate was 9 or 10 per cent., would have been mad enough to have recourse to the money market to raise money.

3810. Was not delay occasioned by the Board having to send out to India for the surveys?—I think not; the Government found it necessary to send professional men from the country to make inquiries and to report. We were in the dark with respect to railways, and the application of the system to India, and great and serious doubts were entertained, and the best engineer that could be obtained was sent to India for the purpose of inquiring, and it was those inquiries that caused a great deal of the delay.

3811. No practical result has ensued from those surveys, I think?—The practical result was this, that the Government obtained information which enabled them to decide upon several schemes.

3812. Each company had to survey its own line, after all?—Yes, to enable it to trace out the line.

3813. With regard to the construction of railways generally, had you made yourself acquainted with Colonel Kennedy's statement, as to the probable economy resulting in a military point of view?—I have seen his statement.

3814. Have you any opinion to offer upon it?—I think it all remains to be proved.

3815. You stated that there is a natural limit to the construction of railways in India?—I think there is a natural limit to the provision of freight, so long as India depends upon this country for iron.

3816. Do you think that that natural limit has been attained?—I am disposed to think it has, or nearly so.

3817. Do the facts bear out that opinion, when we find that, between 1849 and 1858, we have only 300 miles opened in that country?—You must look to what we have in progress. We have opened railways as fast as they have been opened in England, and I do not think it can be made matter of complaint that so little has been done in the way of opening lines, when the Committee looks at the amount of railway works now in progress.

3818. In nine years of practical action, we have only 300 miles of railway opened?—We have a great deal going forward to open.

3819. Mr. *T. G. Baring.*] The amount of heavy goods sent out to India would not be confined to those 300 miles which have been opened?—Certainly not.

3820. Therefore it is not a correct way of putting the point to judge of what you have sent out to India by the extent of line opened?—Certainly not.

3821. Mr. *Cheetham.*] Supposing that, in the construction of a railway, you had commenced at each end, and proceeded to make it right through, instead of opening one part and then another, would not greater facility as to time have been gained by that?—I think not, because of the enormous difficulty of transporting railway material up the country, a difficulty which is meeting us as regards the Punjaub Railway and the East India Railway; it is one of the greatest difficulties we have to encounter. The earthworks in the upper part of India now are in a state of great forwardness, but we are waiting for the permanent way.

3822. Mr. *Campbell.*] Has not that difficulty arisen from the opening of the line at different points?—I think the difficulty might have been increased by a desire to open a part of the line in the upper provinces, but, at the same time, I believe all railway contractors will tell you that even if you adopt the telescopic plan you must convey a quantity of your materials by other modes than the railway itself.

3823. Mr. *Cheetham.*] Have you formed any opinion as to the propriety of making tramways for the purpose of taking traffic down the main line?—I have seen a report by the Madras Railway Company as to the tramways, and that report is not favourable; they think it is better to have railways, but by and by, no doubt, tramroads may be useful, as feeders to the trunk lines.

3824. In the Bombay Presidency is not a large part of the country devoted to the growth of cotton? How is that to be encouraged?—When we get the railway to Nagpoor and Jubbulpoor, I hope there will be plenty of cotton brought down. When once you have a railway, I have no doubt people will look out for the produce of the country.

3825. Is it your opinion, as regards the whole of the East India Railways, that they have been sanctioned by the Government mainly, with regard to political rather than commercial views?—No; I think Government have looked to both; they have looked at what was beneficial to the country, and have attached importance also to commercial objects.

3826. *Chairman.*] Is it not the case that the whole question of railway communication in India was first privately discussed in 1841?—I believe it was.

3827. It was first started by Mr. Stephenson, I believe?—Yes.

3828. Through the medium of a new official communication to the Court of Directors?—I believe so.

3829. The Court, I think, treated it as a wild enterprise?—I think they were of opinion that India was hardly prepared for railways.

3830. So that we must date the first substantial prospect for the construction of any line of railway in India in 1844?—I think so.

3831. Sir Macdonald Stephenson went out, I believe, and obtained very accurate statistic information at a great expense of time and trouble, and returned to England in 1845?—I believe so.

3832. No actual railway works were commenced, no sod was turned, I believe, until 1850; will you state to the Committee your own opinion as to the main cause of that long delay, and whether you are of opinion that much valuable time was lost in the interval?—I think that the Government, having to consider the propriety of adopting measures involving perhaps an unprecedented system of support by means of guaranteeing a rate of interest upon large sums of money to be expended by private companies, might well be excused for pausing and hesitating, and afterwards for seeking the opinion of the Government of India upon the subject. I well remember that when railway enterprise, under a guarantee, was first thought of for India, the late Sir Robert Peel repudiated it in strong terms, as not only unprecedented, but very indiscreet. I mention this merely to show that the Government may be a little excused for having hesitated and delayed. Then the reference to India caused delay, and if my recollection serves me right, when we were prepared to act there came a crisis in the money market, which absolutely prevented the railway company from raising the money.

3833. But before we go to that, let me ask you this question; you sent out Mr. Sims accompanied by two engineers?—Yes.

3834. I believe Mr. Sims was sent out in 1845, and completed his surveys, and obtained the requisite information during the cold season, and returned in 1846?—Yes.

3835. Was not a distinct proposal made by the East India Railway Company in the year 1846, when if the project had been accepted the money might have been obtained upon easy terms almost immediately?—As it happened that is possible, but there were discussions between the two branches of the Government; the Court of Directors were disposed to give more liberal terms than the Board of Control, which wanted to limit the guarantee to 15 years; it was impossible to raise the money upon those conditions, but before these discussions terminated there came the crisis in the money market.

3836. You think that the great weight of the opinion, and the great sagacity of Sir Robert Peel may have operated upon the Board of Control, and it is possible to that may be attributed the alarm and apprehension as to a speedy determination of the question?—I think that the Earl of Ripon was president of the Board of Control, and Sir Robert Peel was in power, and of course his opinion upon a matter of that kind would have great weight, there being no experience to guide us as to the propriety of adopting what was proposed.

3837. I am right in supposing that the main objections arose with the Board of Control at that time, and not with the Court of Directors?—The main objec-

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tions certainly, that is to say the objection to grant those terms which would have enabled the Railway Company to obtain the money.

3838. It is the case that in 1846 the money might have been obtained on easy terms?—I believe that was the case.

3839. Then arose the commercial crisis of 1847?—Yes.

3840. Followed by the French Revolution of 1848?—Yes.

3841. Two circumstances which paralysed all commercial operations?—Yes.

3842. There were considerable difficulties, and a long controversy ensued during the year 1849, and the early part of 1850?—I believe so; there was, among other points, a question about dividend and interest, or something of that kind.

3843. I believe the Board of Control again hung back, and again frustrated a proposition offered by the Court of Directors?—I believe it was so.

3844. Can you state the precise date?—In August 1849 we had the contract, and therefore it must have been before that.

3845. Then do I understand that although in your opinion, valid excuses may be offered for the timidity shown on the part of the Government in sanctioning the guarantee upon these large sums of money, had less timidity been shown there is no doubt that railway operations might have been commenced some four years earlier than they were commenced in India?—If the Court of Directors and the Board of Control had jumped to a conclusion at once, of course it would have been so.

3846. Mr. *Campbell.*] Was there nothing in connexion with the position of affairs in India to induce the Government to come to a rapid conclusion upon the subject of railways from the year 1837 to the period of the Punjaub war?—I have no doubt there had been a great deal to make railways desirable.

3847. Was there not an enormous demand for supplies by the Commissariat Department?—No doubt, during the Afghan war.

3848. Would not the difference in the cost of the supply in Scinde and Bengal have paid all the cost of constructing a line of railway?—A railway would have been of immense advantage.

3849. Might not the famine of 1837 also have been materially mitigated?—Of course, railways would have facilitated the transport of food.

3850. Those matters were not at the time of sufficient importance in the opinion of the Government?—I do not think they had them under consideration at that time; but the home authorities did agree upon the expediency of introducing railways upon imperial and commercial grounds generally.

3851. Mr. *Cheetham.*] Do you think that the Bombay and Baroda Railway can compete successfully with the coasting vessels in bringing produce from Surat to Bombay?—Doubts may be entertained upon that point; but I think that a railway gets the better of sea transport.

3852. *Chairman.*] Especially when you consider how small a vessel must be to ply from Surat?—Yes.

3853. Mr. *Cheetham.*] Would it not be essential to carry the line into the province of Surat?—It may be important to do so.

5854. Colonel *Sykes.*] I see that one district of country between Nagpoor and the mouth of the Godavery is without any railway?—Yes.

3855. Is that a country of great agricultural produce?—I believe so.

3856. Mr. *Campbell.*] It is not your opinion that the profits will exceed the amount of the guarantee?—I have spoken very doubtfully; I cannot see my way clear to a large profit. Lord Dalhousie had the most sanguine expectations.

3857. You are aware that the land costs the company nothing?—Yes.

3858. And you are aware that no competing lines are allowed to exist?—I am not sure of that.

3859. Have any competing lines been sanctioned?—The Southern of Madras will, I hope, not be a competing line with the Madras line; but some persons apprehend that it may be.

3860. The law expenses that are so very heavy an item in English railways do not exist in India?—That is true.

3861. And in estimating the power of the people to pay fares, do you not make some allowance for the improved condition of the people affording an opportunity of enhancing those rates?—Yes; but still, for a long course of years you must have low fares.

3862. Do you attach importance to the difference of cost between a mixed establishment

establishment of Europeans and natives as compared with a European establishment?—Yes.

3863. Although a European establishment would be more costly, all the subordinates who are natives will receive a much smaller remuneration than subordinates in this country?—I am aware of that, but you must have a large amount of European agency even in the lower grades; there are very few things as yet with which you can trust the natives of India in the management of railways. The native pointsmen on the East India Railway, when they first saw a train approaching, ran away.

3864. The collection of tickets and money, you would not trust to the natives of India?—Not at present, but, I think, in time you might do so.

3865. Of course it will advance the moral and social condition of the natives?—Certainly; I think there is no limit to the advantages of railways in that respect.

3866. Mr. *T. G. Baring*.] Was there any practical proposal made to the Court of Directors for making a railway previous to 1844?—There was no practical proposal; I think there was a conversation, and that I saw Mr. Stephenson upon it.

3867. Are you aware whether Lord William Bentinck ever suggested the introduction of railways?—Not that I am aware of; his great system was steamboat navigation for the rivers of India.

3868. Do you agree with the opinion expressed by Mr. Noad, that it was unnecessary for the Government of the East India Company to make any inquiries in India previous to sanctioning railways?—I do not agree in that opinion; I think Government would have failed in its duty if it had not made those inquiries.

3869. Such an inquiry was directed by a letter addressed in May 1845 to the Government of India?—That is the case.

3870. Do you know the date of the answer that was received?—I think it was in 1846.

3871. Was it considered by a committee of the Court of Directors on being received?—It was.

3872. That took place in October 1846?—Yes.

3873. A difference of opinion between the Court of Directors and the Board of Control arose in consequence of the recommendation of that committee?—It did.

3874. That difference of opinion lasted from the end of October 1846, when the Court's proposal was sent to the Board, until July 1847, when the Board virtually gave way to the view entertained by the Court?—Exactly.

3875. What I gather from your evidence is this, that supposing the Board of Control had agreed with the Court at first, at the end of October 1846, the delay from October to July would have been saved?—It would.

3876. When the home Government of India agreed to the proposal in July 1847, what was the obstacle which delayed the contract with the Company until the end of 1849?—I think it was the money crisis.

3877. That was an obstacle which nothing could have averted?—It was.

3878. In the course of the negotiations with the company, did the Court of Directors propose to make the railways themselves?—I think there was a disposition at one time on the part of a majority of the Court of Directors to make the railways.

3879. Do you agree with Mr. Danver's statement; he says that on the 24th of January 1849 the Court resolved to terminate the negotiations, intending to propose that the Government should take the construction of the railway into its own hands?—Yes.

3880. The Board of Control differed from that decision?—Yes.

3881. And the result was the arrangement with the East India Railway Company?—Yes.

3882. Do you think that there was any greater delay than was almost inevitable in considering so important a question?—I do not, if the state of the money market is considered.

3883. The Government of India, I believe, thought that the granting of land was a sufficient inducement to railway companies to undertake the construction of railways?—They did.

3884. Lord Hardinge, who was Governor-general, I believe, differed from his Council; he was of opinion that railways should be still more encouraged?—Yes, he thought it would be a great saving in the military expenditure.

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3885. He gave much the same opinions as were subsequently entertained by Colonel Kennedy?—Yes; Colonel Kennedy is a little more sanguine than Lord Hardinge.

3886. I believe there were some other differences of opinion between the Court of Directors and the Board of Control subsequent to that first important difference of opinion?—With reference to the functions of the *ex officio* director.

3887. Have you any opinion to offer as to the difference of opinion upon the question of guarantee or interest?—The railway company were anxious that the guarantee should be one of dividend; but the Court of Directors said that they would only guarantee interest upon the sums placed in their hands. Then the shareholders took alarm, and said it would not be a sufficient guarantee, because there might be losses. That was compromised by the Court of Directors agreeing that the railway company should have the power at any time, upon six months' notice, to demand the return of their capital intact. That satisfied the railway proprietors, because they said, that if, when the railway was opened, they should find themselves subject to any losses, they had only to exercise that power; and therefore their risk would be of six months' interest, and no more. That was the arrangement made upon the question of dividend.

3888. Practically, it was very nearly a guarantee of a dividend?—Yes, it was only a difference of six months.

3889. Statements have been made to this Committee of delays which have taken place in sanctioning lines in other parts of India, the Bombay and Baroda line for instance; speaking generally, do you believe that the Government of India here has been ready to sanction all those lines as soon as they had sufficient information from India on the subject?—I think so. Their disposition has been not to sanction any line until the local Government had reported favourably upon it.

3890. In order to make railways pay, the question of gradients is, of course, an important one?—No doubt, because of the expense of management afterwards.

3891. And also the particular lines which were to be selected?—Yes.

3892. It would, therefore, be necessary, more especially in the commencement of railway undertakings in India, that all these points should receive grave consideration?—No doubt; and that was the object probably of securing to the Government of India the right of determining the line.

3893. The Bombay and Calcutta lines were sanctioned as experiments?—They were.

3894. Was not the whole subject afterwards referred to Lord Dalhousie?—Yes; but I think previous to that, sanction had been given to a line in the Madras Presidency.

3895. The Madras Railway was postponed in consequence of a difference of opinion between the Board of Control and the Court of Directors?—Yes; the Court advocated the construction some time before the Board assented.

3896. The subject having been referred to Lord Dalhousie, he wrote a very able minute upon railways?—He did.

3897. That being the foundation system of railways in India?—Yes.

3898. The views of Lord Dalhousie have been carried out?—They have.

3899. Do you agree with the views expressed in that minute of Lord Dalhousie?—I do as to railways in general; he may appear to some to be a little too sanguine.

3900. No man could have been found in this country better able to give an opinion than Lord Dalhousie upon a matter of that kind?—It is impossible, I think.

3900*. From his knowledge of the subject in England, and being able to communicate with all the railway engineers in India?—Yes.

3901. He was in communication with Major Pears?—Yes.

3902. And he had the assistance of engineers at Calcutta, and he had the correspondence from Colonel Crawford at Bombay?—Yes.

3903. So that his opinion was formed after a mature consideration of the whole question of railways?—It was.

3904. *Chairman.*] You stated just now, that generally speaking when a scheme had obtained the approval of the local Government in India, it received the sanction immediately of the Government at home; is it not the case that the extensive scheme of the Bombay and Baroda line to Bombay received the approval

proval of the Bombay Government nearly three years before it received the sanction of the home authorities?—I think it was necessary to repeat the reference to the Government of Bombay on the subject of part of the scheme. The Court was not satisfied with the first communication from India.

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3905. Mr. *Cheetham*.] Had they some doubts as to the probable result?—Yes, serious doubts were entertained all along with respect to the Surat branch of that line; the projectors of the Baroda scheme were content to undertake the line from Surat to Ahmedabad.

3906. It has been stated in evidence that the local Government reported favourably of the whole scheme three years before it obtained the sanction of the Home Government?—The Government of India had reported favourably on it, but a further letter was written on the subject, and there was great hesitation in this country in selecting it; that hesitation arose from the doubts I have mentioned entertained by engineers on both sides.

Colonel *Pears*, called in; and further Examined.

Colonel *Pears*.

3907. *Chairman*.] ARE you of opinion that a Government engineer when brought under the departmental system into contact with the railway officers, has greater difficulties to contend with than he would have under the contract system?—I think he has undoubtedly.

3908. Explain why?—Under the contract system the whole of the work is let upon certain covenants with the contractor, and he is bound under certain legal penalties to execute the whole of the work in good quality and upon certain terms. The engineers of the railway company have nothing to do but to inspect his work, and they are not responsible for all the details, whereas under the departmental system the engineers are in the position of contractors, and they are responsible for the expedition with which the work is executed, and for the quality of the work itself. This being done under the eye of the Government officer, they are much more sensitive to observations upon the work they have executed. The officers of the railway company are placed with regard to the Government officer exactly in the same position as the contractor's people are placed with regard to the railway engineers on the other railways of India, where there have been disputes between these two parties. Some misunderstanding and some irritation have been caused in the Madras Presidency, by the supervision of the Government officer over the railway engineer's own work.

3909. Have you any particular point to which you would wish now to refer, arising out of the evidence given before this Committee?—I am not at all acquainted with the opinion that the Committee may have formed upon certain points, but there are some questions in regard to which the Madras Government are charged with delay, for which I think I can show they are not responsible. First, with respect to the salt traffic, and then with regard to the advance of money, Mr. Walker's evidence seems to be on the latter point strangely at variance with facts officially recorded, and which I have before me.

3910. You refer to the construction of a branch line in immediate connexion with the Government salt depôt?—Yes.

3911. On which it has been stated that a different gauge was required by the Government to be laid down to that which is upon the railway?—I do not know whether the Government required it, because it was my final report before I left India, and their decision upon it was not communicated to me.

3912. Communications, I suppose, are still going on on that subject?—I do not know what they have done, but I must observe that the suggestion of a different gauge arose out of the fact that it was not a branch line as it is usually understood, and that it was not a line upon which the railway were to establish a station to receive goods, but a railway was to be constructed by the Government, which the Railway Company refused to work, except under certain conditions which would interfere with the freedom of the trade. I wish that to be clearly understood, because I know the inconvenience of what is called the break of gauge as well as any man.

3913. Colonel *Sykes*.] What were the orders from the home authorities to you when you were appointed consulting engineer to the Madras Government?—There were different orders at various times, but they all insisted upon close and strict supervision. I have an extract from an order to the following effect:

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"The Government officers should be required to exact the utmost economy consistent with perfect security and efficiency, in the original construction of the line, and in all buildings and works of every description connected with it. The line, when opened for the conveyance of passengers and goods, should in like manner be managed with the closest attention to economy in the working expenses, rather than with a regard to the high rate of speed and frequency of dispatch which are the practice on English lines."

3914. Was it considered your duty to exercise a general control over the proceedings of the Railway Company, and to audit their accounts?—Yes.

3915. Were your audits such as are understood generally in the Government service?—The duties of an auditor in India are to scrutinise the expenditure of the several departments under him, in minute detail, with reference to the orders of the Government, and to the vouchers produced in their support.

3916. What view did you take of your duties in that respect?—I considered my duty as auditor much the same as that of other auditors in the country; but that opinion was somewhat modified afterwards, and I laid down clearly my views, which I believe were pointed out in a report to the Government, which is in one of the printed volumes, dated some time in the latter part of the year 1855; in that I gave it as my opinion, that as the railway agent had a large establishment, he should be looked to to check the details, and that I should look to the general expenditure.

3917. *Chairman.*] You recommended those modifications in consequence of finding that the system of more minute supervision was not working well?—That was not my reason; but I found that the business was beyond my office, and that there was no reason why the Government should maintain a large office where the agent had one in which he could do all that work.

3918. Colonel *Sykes.*] I believe that the chief engineer complained that the works were delayed for want of funds, and that land was not made over to the Company without delay; did the Railway Board support him in any of those statements?—I think only in one case; that one case has been mentioned by Mr. Walker; but the facts, as stated by him, appear to be at variance with the official record. The advances asked for were not refused; they were delayed a few days in consequence of the Government officer being up the country, and off the post-road. In the next place, so far from the works being delayed at all, I have the declaration of the agent himself, to this effect: I wrote to him thus:—"It appears clear, from Mr. Collins' letter, that he has been hampered at one time by want of funds, and you are requested therefore to state whether this circumstance is to be attributed to the fact of any application from you for advances for that district not having been complied with." His answer is, "I am not prepared to state decidedly how far the want of funds adverted to by Mr. Collins is to be attributed to advances having been withheld by Government." Instead of the agent being hampered by the want of funds, he had an unusually large supply on hand at the time they were complaining of a difficulty arising from a want of funds; he had three lahks of rupees on the 1st of September, at the time it was said that the coolies were all running away from want of funds. Mr. Walker states that the information afforded by the Government officer did not appear satisfactory; it was not usual, I believe, for the Railway Board to see the explanations, but if the Committee will allow me, I will give a sort of summary of my explanation on that occasion. It appears from their own correspondence, and from their own reports, that whereas they stated that in district No. 4, they had had the greatest difficulty in collecting coolies on account of large public works being executed in North Arcot, and that on the 10th September they could not retain them for want of funds; they had 18,000 rupees in hand in district No. 4, on the 1st September. At the end of that month, the Board observed that we unhesitatingly sanctioned a second advance, showing the difficulty and necessity there must have been before, whereas, in consequence of my placing confidence on the agents' discretion they had in hand on the 1st October 800,000 rupees, the usual balance that they ought to be satisfied with being 200,000 or 300,000 rupees. I was up-country and out of the way when they sent a second demand, and I sanctioned it without the usual inquiry.

3919. Colonel *Sykes.*] Are you prepared to suggest any change in existing arrangements, whereby the affairs of the Company in Madras may be conducted in a more expeditious and satisfactory manner?—I think the only change I have suggested is, that of having some absolute authority on the part of the Railway Company

Company at Madras such as a Board, or it might be an individual with full powers.

3920. *Chairman.*] That is your view still, having heard the opinion of Sir James Melvill with regard to Boards, that he prefers the communications passing through an individual agent?—The fault I find is, in the individual agent being hampered by want of influence and authority; the best plan would be to have a body entrusted with full power, which should carry weight with the Local Government.

3921. To carry that out, would it be necessary to delegate a considerable portion of the powers possessed by the Board in London to the Board in Madras?—It would. It seems to work very well in Bombay, but how far that may be attributable to their having more power than our individual agents, I do not know.

3922. How far do you think the Board at home would be willing to delegate its powers to the Board in India?—I do not know.

3923. Would not the delegation of some of the powers possessed by the railway Boards in England, to the local Board in Madras, or other parts of India, imply a concession on the part of the Home Government of a portion of that supervision which they exercise over the railway proceedings by the presence of the *ex officio* director at the railway Boards in England?—It would.

3924. How far would they be willing to yield a portion of that supervision which they at present possess?—I cannot speak to that, but I think it would be well if the Home Government were to resign into the hands of the local authorities everything connected with the execution of the works, and with the management and detail of the railways in India.

3925. From all the evidence you have given, you appear to be eminently favourable to the exercise of a considerable amount of Government control over the railway operations?—Yes.

3926. Can you make the two plans accord one with the other?—I am speaking of their yielding to the local Government; it has been found that the Home Government notice all proceedings with regard to railways, as much as they do the proceedings in their own department; may approve or disapprove of every trifling matter; matters relating to the surveyors, European skilled labour, office servants, and all the proceedings of the local Government are brought under the cognisance of the Government at home, and sometimes overruled by them.

3927. Colonel *Sykes.*] Did the local Government or the Court of Directors disapprove of your proceedings in regard to the advances of money?—Never.

3928. Has the Court of Directors generally approved of the proceedings in the railway department at Madras?—Yes, with very rare exceptions indeed; I can remember but one exception, which was in the case of the suspension of the works near Salem.

3929. What were the principles which guided you in selecting works for publication in the annual report?—I took the orders of the Government, which were always kept on a file, and I marked off, to be copied, those that related to subjects of any importance; I handed them over to the manager of the office, with directions that he should prepare for the press every paper having reference to that particular subject.

3930. Were any of the letters of the Railway Board to the agent, reflecting upon the proceedings of the agent, published in the papers?—To the best of my information and belief they were not.

3931. Was there any suppression?—None; it was never thought of. As that subject has been touched upon, I should like to read a correspondence that took place. The Railway Board, in a letter that rather surprised me, referred to a letter of their traffic manager in these words: "In reply to the request made in your letter, No. 203, on the representation of the traffic manager, that the Government having published a part of the correspondence on the subject of the tariff of rates and fares, his letter to you of the 14th October last, in reply to Colonel Pears, should also be published." I think that implied a disposition on the part of the Government to withhold from publication that letter of the 14th of October. I merely wish to show how this charge of suppressing of correspondence was encouraged by the Railway Board without due inquiry. Being away from Madras, in September 1856, I had written to the agent to say that I was going to publish certain correspondence, and that if he had any reply to make to my last report it was but fair that I should have it before publication. The agent wrote to me in this form, demi-officially,

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officially, "I have had the pleasure to receive your note from Paulghaut yesterday, and think the better plan will be not to wait for any reply from either Mr. Fletcher or myself to your report upon the tariff rates, but to complete what is being printed; indeed the matter is in a measure taken out of our hands by the directors of the company." After that had been written to me we received this letter from the Railway Board, insinuating that that report had been excluded from publication by the Government.

3932. It was not the fact then?—It was not the fact. I do not think that the Railway Board knew it was not the fact; but there is an implication that there had not been fair play, which was far from my intention.

3933. Do you consider that the proceedings of the Railway Board were influenced by anything derived from your reports, or from their own agent?—They decided all their own affairs upon the reports of their agent; my reports, I have been told by the chairman, as a general rule, did not come before them.

3934. You took an interest in obtaining sleepers, did you not?—Yes; two years before the railway company began to work I had made a great deal of inquiry, and I gave all the information I collected to the agent.

3935. What was the system you adopted with regard to the proposed supply?—It was by advertisement and by contract.

3936. Did Mr. Sullivan, of the civil service, exert himself in this matter?—Very much.

3937. What induced him to do so?—Before the railway company commenced operations, I had frequently made inquiry of Mr. Sullivan, who was a man singularly conversant with the native languages and the people, who gave me great assistance in collecting information as to woods and sleepers; he began by collecting samples from the various jungles about him, and it ended in his exerting himself to make large supplies out of pure zeal for the undertaking; I believe he collected, up to the time I left India, between 30,000 or 40,000 of the best sleepers they had on the line.

3938. Should you have had any objection to the railway company doing the same thing by their own servants?—Not any; I proposed that they should have an establishment, and work certain forests near Salem. I did not propose it officially.

3939. You had no objection?—Not the least.

3940. Had you any objection to their purchasing sleepers offered for sale?—I had; it was tried one year and failed, and it seemed to me to interfere with the contract system. The engineer wrote to me to say that at the expiration of one year he had collected only about eight or ten per cent. of the supply found by the contractor. It was evident that the contracts were falling off, and I saw reason to believe that the two systems could not stand together.

3941. Was there not, for some time, a man employed by the railway company especially to provide sleepers?—There was.

3942. With what result?—It was a failure altogether.

3943. It did not succeed?—It did not.

3944. Was there delay in passing the tenders, or in the subsequent payment for sleepers delivered?—Never, so far as the Government officers were concerned.

3945. What was the ordinary system of transacting business in your office?—I generally disposed of the majority of letters that came up to me from the agent on my own authority. I should think nine-tenths of the business was so disposed of, and such as it was necessary to place before the Government were submitted with my report without any delay; all those cases which I disposed of myself were reported monthly to the Government in an abstract form and approved by them.

3946. Had you any arrears?—None.

3947. You had no arrears of correspondence?—None, except in a case of any long report I had to write upon any special subject.

3948. Had you cause to complain of delays that arose in the railway company's offices?—Frequently.

3949. Did their own Board in England complain?—I think they did.

3950. Do you recollect any delay connected with tenders for sleepers?—Yes, I remember in one instance I inquired the reason why a tender bearing a certain date was not received by me for about three months afterwards. I think there were other instances, but I only remember that one.

3951. Were there any complaints that the railway engineers could not make bricks

bricks for want of funds?—I do not remember any; but I remember that in the latter part of 1856 and spring of 1857, when the station buildings were standing still, an excuse was made that they could not get bricks. There was no complaint of a want of funds.

3952. Irrespective of statements furnished at the time of application, had you any means of knowing the exact state of their funds?—I had a balance-sheet; it was three or four months in arrear, because it could not be prepared until the accounts for the month were sanctioned by the Government.

3953. In the periodical statements recorded in your office for the last five years, does it appear that there was any instance of an insufficient balance in hand?—I do not believe there is a single instance of it.

3954. In your remarks on progress reports you frequently pronounced it on certain portions unsatisfactory, whilst you spoke in a more encouraging tone in your occasional inspection reports; do you observe any inconsistency in this?—Not the least. I was always glad to remark favourably when I found that upon the whole the progress had been good. I might have been led to speak in a more encouraging tone than I otherwise should; but, as a general rule, I think there was no inconsistency.

3955. Did not the Railway Board, acting upon the opinion of their consulting engineer in London, frequently remark on the inconvenience and delay arising from insufficient information being sent from India with the requisition for stores? Yes, they did.

3956. Have you been anxious throughout the conduct of your office to act with that suavity and gentlemanly bearing which was necessary to insure harmony, at the same time that it was necessary as a part of your public duty to exercise a strict supervision?—I hope I have. I think a reference to the annual reports will speak for itself, and that if there was any want of courtesy or consideration in the mode of writing, it has not been on my side.

3957. So far as you are yourself personally concerned, do you feel that you have always been actuated by that feeling?—Certainly I have.

3958. You are not aware that you have any cause for supposing that there was any personal feeling in the matter?—Certainly not; I was extremely anxious for the success of the work, whether it was the work of the railway company or of the Government.

3959. Have you always been on terms of cordiality with the railway officials?—Always.

3960. *Chairman.*] When you state that on the 1st of October the railway agent had three lakhs of rupees in hand, are you not aware that that was merely an advance to that date on account, and that the cash in hand may have been, and no doubt was, considerably less?—Nothing of the kind; it was the actual balance, they never made advances; I have it on their own report, which is framed after the Government have sanctioned the expenditure.

3961. You make that answer after a careful comparison of the reports subsequently handed in, with the amount of balance then in their hands?—Yes; after they have submitted the accounts from the agent, I send them to the Government, and the Government sanctions them; a part of my own system was that every month the railway authorities should be relieved from all anxiety upon the subject of accounts.

3962. How do you account for the discrepancy that appears to exist between the calculations and the actual accounts?—The agent had been told that when the money came into his hands he was responsible, but it was his practice to hand it all over to the engineer; he did what he liked with it, and he may have thought that he required more money in one district than in another. He put the whole of it in bills, and very often it was locked up in one place when he required it in another. In this particular case when they said the men were all running away, they could not give any satisfactory explanation; they said they had made advances to Mr. Sullivan.

3963. You admit that when the engineer left India the accounts were brought up to the smallest conceivable fraction?—I never had a doubt of that, but I had occasion to find fault with this, that it took eight months to render the accounts. I do not find so much fault with the chief engineer, as with the agent not doing what he undertook to do.

3964. It is quite possible that that may have occurred from the chief engineer having everything thrown upon him, even the duties of an accountant?—The

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chief engineer I always thought had more to do than he ought to have, but it was his own doing, as he centralised in himself the whole of the executive duties; a few months before I came away the agent persuaded the chief engineer to allow him to apply for several other engineers, in order to take the inspecting duties of certain districts off the chief engineer's hands; he consented to it, but upon certain conditions. I am told those conditions have not been fully complied with.

3965. The fact of the chief engineer undertaking that large amount of duty, more in fact than you think he is able to perform, is a strong argument in favour of increasing his staff?—Yes; there was no difficulty about his accountants, or any persons of that kind.

3966. Were not the letters of the Railway Board to their agent, containing censures on their chief engineer, published by the Madras Government in a volume entitled, "Despatches of the Court of Directors in the Railway Department"?—They were printed for the use of the department, and so far as my knowledge goes, never went out of the department; I believe 25 copies were printed, and to the best of my belief they have not been published to this moment.

3967. Are we clearly to understand that these despatches to which I have referred are not to be regarded as public documents?—They have not been published in any shape.

3968. They have been issued in a printed form?—They have been printed; but they have been published by the railway companies themselves.

3969. Mr. *A. H. Baring.*] I suppose the subordinate engineers never saw them?—I should think not; I believe there is a note at the foot of the title-page, that they are printed only for the use of the department.

3970. *Chairman.*] After the general experience you have had, and after hearing the evidence which has been adduced before us, showing the feeling of vexation that has existed in the minds of certain railway officials, do you think that if you were to return to your original office you could conduct the functions of the Government consulting engineer, maintaining an effective check over the expenditure, and at the same time in a manner which would conduce to more harmonious action than appears to have existed?—That is a question rather difficult to answer; but I will put the Committee in possession of my opinion on the subject; my belief is, that I have had the task, if I may use such an expression the better to illustrate my meaning, of putting the harness on. I believe that the officer who succeeds me is carrying out my system, and I see no reason why it should not work well hereafter. Upon first starting a system of that sort, we had about 25 engineers, all collected from different parts of the world, none of whom had had their proceedings subjected to this minute control; the carrying out of this constant supervision led to a great deal of vexation and irritation, but the system is working well, I believe, now. My injunctions to my successor were these, that I believed the system would work well, and that I hoped he would not change anything without mature consideration; but that, when he had considered the propriety of changing anything, he was not to abstain from doing so out of delicacy to me.

3971. You have used the phrase "minute control;" are you of opinion that minute control in matters of detail is necessary to protect the interest of the Government?—I believe it will be found I have stated in my reports that the possession of minute knowledge is necessary under our system in Madras to exercise a general control. I was in possession of minute details, but I did not check them. With the engineer's works I could not check their proceedings unless I had minute knowledge of all they were doing, but I did not often check the details. I will give an illustration of the system I pursued: when a bridge was being built, the chief engineer having estimated it at 100,000 rupees, I rarely made any remark while it was going on unless I saw that he was giving a great deal of money for his materials, and so on; when it was finished I had the details before me, and if he had exceeded the estimate I was able to show the Government in what he had exceeded it.

3972. The whole question before us at the present moment lies in two expressions; I object to the words "minute control," and I draw a distinction between minute and general control. What I want to know from you is, whether you think that minute control on the part of the Government consulting engineer is necessary to control the expenditure, and whether that minute control must not necessarily produce a certain amount of want of harmony?—I can only answer that

that question in this way, that a knowledge of details is necessary to exercise a wholesome control: but it depends upon the judgment of the officers concerned how far he shall interfere with minute details. If it appears that on some few occasions the Government officer has interfered with things that are too minute, it must be remembered that on 100 occasions he has passed over points for the very same reason.

3973. Mr. *C. Bruce.*] Is it your opinion that more minute control was exercised when this system was first started than is now necessary, and that all your past proceedings have tended to facilitate the entire action of inspection by the local government over the railway authorities?—I think so; both the agent and myself were agreed in this, that we should endeavour to get them all into a system of accuracy and economy similar to that pursued under the Government works.

3974. That could not have been done without, in the first instance, a minute control?—I believe not.

3975. *Chairman.*] You agree with me, that the general inference that we may draw is, that the railway companies have no objection to Government; we have their authority for saying it is valuable; but they object to their freedom of action being impeded by too great minuteness and details?—The railway company in the Madras Presidency has scarcely ever made any remonstrance; we have been in collision lately with regard to the traffic operations, and that has been the rock upon which we have lately split. I have reason to believe that the railway Board looked to the Madras Government almost entirely to exercise a control over their operations, but when we attempted to regulate the traffic operations they objected.

3976. Were you not aware before you came to England that complaints had been made of your supervision?—Only as regarded traffic operations. There are none that I am aware of in the engineer department, except the one remonstrance against the advances. The Committee probably do not desire to see them, but I must say our proceedings were, I considered, in accordance with the first instructions of the Court of Directors.

3977. Mr. *C. Bruce.*] After having heard the objections that have been made, your own opinion is that there was no undue interference that could have been avoided?—I think, in the early part of the proceedings there may have been two or three occasions upon which I might have erred, but in other matters I do not see anything brought forward that I have to regret.

3978. Mr. *Cheetham.*] The difficulty would arise to some extent from the fact of the engineering officers never having been subjected to such a supervision?—I think so.

3979. Mr. *C. Bruce.*] Do you think that the progress of the railways has been in any serious way interfered with by the supervision?—I do not think that in Madras it can be shown to have interfered with it for one hour, except in one case, where I sought to get better gradients on the line.

3980. Mr. *Cheetham.*] Before you were appointed to the office of consulting engineer in Madras, I believe you had been consulted with regard to the general survey?—Yes.

3981. Do you still think that it would have been better for the progress of railway construction in India that it should have been undertaken by the Government?—Yes.

Jovis, 24° die Junii, 1858.

MEMBERS PRESENT.

Hon. H. G. Liddell.	Mr. C. Bruce
Mr. A. H. Baring.	Mr. Cheetham.
Mr. F. G. Baring.	Mr. Crawford.
Mr. H. A. Bruce.	Col. Sykes.

THE HON. H. G. LIDDELL, IN THE CHAIR.

Mr. *David Innes Noad*, called in; and further Examined.

Mr. *D. I. Noad.*

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3982. Mr. *T. G. Baring*]. IN your answer to Question 330, there occurs this paragraph: "Mr. Stephenson returned to England in June 1846. We immediately communicated this circumstance to the Court, and again expressed an anxiety to enter into a due discussion of the question. On the 5th July 1846, having heard nothing from the Court, we proposed distinct terms upon which we should be prepared to undertake the work." Are you aware of a letter written by the secretary to you on the 30th June 1846?—I am aware of that letter, and in giving that answer I should have added, "having heard nothing of a practical character." I wish to correct my evidence to that extent.

3983. The letter acknowledging the receipt of yours, states, "that the Court have reason to expect at an early period to receive from the Government of India a report of the result of the investigation which, under the Court's instructions, has been instituted with respect to probability and best means of providing for railroad communication in India, when the Court will lose no time in taking the whole subject into consideration?—That was the letter.

3984. So that the delay arose in consequence of not having received an official despatch from India, containing the report of the Government upon Mr. Sims' report in India?—Their hesitation to enter into a discussion of terms with us at that period, no doubt, was owing to their not having received the official report of that commission.

Sir *Macdonald Stephenson*, called in; and further Examined.

Sir *Macdonald Stephenson.*

3985. *Chairman.*] ON the last occasion we were entering upon the question of Mr. Jackson's tender in 1848, and I wish to proceed with that. What would have been gained by the acceptance of Mr. Jackson's tender in 1848?—The completion of the first section by March 1851, instead of February 1855, nearly four years gained in time, and the consequent earlier completion of the entire line.

3986. That is your decided opinion?—It is.

3987. Who made the contracts?—They were fully considered, in all their bearings, by Mr. Turnbull the chief engineer, who prepared all the plans and specifications, by Colonel Baker, the Government engineer, by Lord Dalhousie, who gave much attention to the subject, and by me, and amended, until we were all satisfied of their being such as we could recommend and accept.

3988. Some little apprehension may exist in the public mind in consequence of an answer given by Sir James Melvill the other day. There is only one contractor, I think, who has not failed upon your line. I should like to know his name?—Three are still employed who have not failed.

3989. What are their names?—Messrs. Hunt & Elmsley, Messrs. Norris & Co., and Messrs. Burn & Co.

3990. I had put that question to you to prevent any misapprehension which might arise in consequence of answers given by Sir James Melvill to Question 3749 and 3750, in which it is stated that Messrs. Bray & Elmsley are the only contractors who have not failed in Bengal. There is an inaccuracy, I believe, in that statement?—There is; and it is due to the other contractors to mention that.

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3991. Had the railway companies' engineers generally any practical knowledge of contract work, so as to have executed it themselves without the intervention of contractors?—Certainly not; they had not been selected with such expectation, and though unexceptional as civil engineers, and in all respects able and qualified men; they had, except in one or two cases, never been contractors' engineers, or engaged on contract work.

3992. Then you preferred to act upon the experience of European practice rather than to try the experiment, which has usually failed in this country, of a company being their own contractors?—Undoubtedly.

3993. What were the views of the Railway Boards upon the question of those contracts?—Acknowledging the inseparable delays of the home-supervising machinery—aware of the fact that no English contractors would send or go out except on the certainty of very large profits—aware of the Government view from the experience of the rejection of the first moderate tender submitted, viz., Mr. Jackson's—they had fully approved of a similar course adopted by me on a former and similar occasion. The refusal of English contractors to send out to India previously rendered it scarcely possible for them to tender in England for works of which they had had no personal knowledge, either of their own or of their agents, even if the opportunity had been again offered them, while the delay in any case would have been serious. Within the last few days another Indian railway company has received tenders from English contractors, and rejected them all, the prices being so much above what the authorities would sanction.

3994. I asked Sir James Melvill (3746) whether considering the profits of the contractor, and the large expenses likely to arise from the growing up of establishments under the departmental system, and setting one against the other, he would still give the preference in favour of the contract system. He said he thought he would, but that he wished to see both tried. Do you agree in that opinion so expressed that the expense arising from the large establishment, necessary when a railway company construct their own works, would in the end lead to even greater expense than the profits of the contractor?—I did try both plans, and the particular case in which we did it ourselves, in the North West Provinces, was certainly by no means successful; the person employed being one of the Government's own engineers, the Government were anxious to see it tried upon those works. In Bengal, Mr. Sibley has been successful.

3995. Do you consider the guarantee principle to be financially onerous to the East India Company?—It is in no way onerous to the East India Company, and the explanation is given fully in Mr. Freshfield's letter, dated 20th January, and addressed to Colonel Sykes, the Chairman of the Court of Directors.

3996. Mr. *Cheetham.*] Does that letter upon the subject of the guarantee enter into the comparative mode of raising money by way of loan and otherwise?—There was a question raised as to whether the East India Company were not compromising themselves by the guarantees, and Mr. Freshfield wrote the letter to remove misapprehension.

3997. *Chairman.*] What is your opinion of the relative advantages of the Ganges Valley line over the short line as originally proposed?—I recommended the direct or short line with branches, in preference to the circuitous line, for the following reasons: saving of 100 miles of carriage of all goods beyond Benares. Greater expenditure and heavier works on the circuitous or long line. The gradients of the direct line were not such as to warrant the preference of the circuitous line, the only steep gradient, 1 in 61, being limited to 2 ½, 1 ½, and 4 = 8 miles with levels between, of ½ and ⅝ miles on a line of 450 miles,—on a trial survey, and as far better gradients were sure to be found. Branches could be made less expensively than the trunk, and according to the traffic. The company yielded the point to get something done and avoid delay, as the circuitous line will be equally remunerative, and a direct line will be made hereafter. The tunnels are 1 of 1 ¼ miles, 1 of 2 ¾, in all 4 miles (section of line submitted); the summit level is 1,280 feet above Calcutta. The authorities both at home and in India, in their anxiety to do what was best, were sometimes misled by strongly expressed opinions of parties who, not being conversant with the engineering view of the case, advised on too limited information. One of them declaring the circuitous line to be so easy of construction, and to present so little difficulty that engineers would scarcely be required to construct it.

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3998. What was the steepest gradient on the Ganges Valley line?—One in 163, I think.

3999. Did you experience great difficulty with inland transport of materials for your railway?—It is attended with great difficulty. With a desire to use the means of the country, and to economise the cost of transport, native boats were employed, almost any number are available, and contracts were made with one of the most respectable and energetic houses in Calcutta, who had great experience in river transport, and agencies at every 20 or 30 miles along the river, to aid or change stranded boats. I always intended to have used steam by the hire of local vessels, when the time arrived at which, if sufficient materials had not reached the Upper Provinces, it would be indispensable. My illness, and leaving India, interfered with this course, but it is now desirable that no time should be lost in providing steam transport, and arrangements are in progress.

4000. I gather from that answer that you endeavoured to employ the labour and materials of the country as far as was practicable?—Invariably. For timber and sleepers I encouraged the opening up of the forests of Assam, of Gorruckpore, of Rangoon, of Moulmein, of the Mahanuddy, and Balasore, and induced contractors to undertake to supply the company from whatever other sources could be made available. Much good timber was obtained, much useful information acquired as to the resources of the country, and the relative value of the woods. The manufacture of iron also received all possible encouragement, and the results will be apparent in a few years. Producers of native iron were urged to supply whatever they could make of a description the company could use, and one house obtained a grant of land on the line between Mirzapore and Jubbulpore, and undertook to establish ironworks there. I gave them a conditional contract for all the chairs required on that line, the quality to be as good as obtained from England, and price about half what imported iron would cost us.

4001. Your duties were onerous. Were you supported by the authorities?—The company had one line of 121 miles in active operation, and extensions of about 700 more in course of construction, besides surveys of further extensions in progress; and every transaction connected with the whole of these operations passed through my hands. I never permitted a day's delay in the office; systematic arrangements and a willing and able staff will always prevent it. I have acknowledged the co-operation of the authorities invariably. I feel assured that the wishes and intention of the Court of Directors, of the Board of Control, and of the Government of India, and of their representatives, have been unimpeachable, and that their endeavours have been uniformly directed to doing what they conscientiously believed to be for the best, but the spirit of the contracts with the railway companies has been in the supervision disregarded, and a more correct interpretation of this clause in the contracts, is what is now most required.

4002. What is your opinion as to the expediency and policy of extending the railway system as regards probable cost and returns?—That every inducement should be offered to direct surplus capital to the construction of Indian railways; that their average cost, one with the other, will not exceed one-third the average of all the English lines, and that there is not one of the Indian lines of those already sanctioned, and of those proposed, which will not return far more than 5 per cent. guaranteed.

4003. I should like to ask you upon what you base that opinion in regard to the profits. Do you base it upon the statistic information you have yourself derived in India?—I do.

4004. And which, I believe, you compiled with great accuracy and great labour?—It would take up too much of the Committee's time to go into details, but I am perfectly satisfied with the result.

4005. I believe you obtained that information on your first visits to India previous to 1844?—I did.

4006. I believe it was mainly upon the result of an examination of those statistics that the guarantee was given in the first instance by the Government?—Entirely.

4007. We may look upon you, in fact, to a great extent as the father of Indian railways?—As one of many co-operating in a good cause.

4008. The East Indian has cost about 12,000 *l.* per mile, I believe?—The actual cost of the line has not exceeded 8,500 *l.* per mile. The rolling stock,

second

second line of rails, creosoting apparatus, ferry boats, coke ovens, workmen's-houses, fencing, government duty, and terminal station, arrangements for the extended line are all provided in the larger sum.

4009. What is meant by the item of Government duty?—It is the Government duty upon materials, I believe they paid about 8,000*l.* to the Government as import duty.

4010. Mr. *Cheetham.*] To what extent of railway construction does that answer of yours apply?—It applies to the line now in active operation, 121 miles.

4011. *Chairman.*] Do I understand that the whole of that 121 miles is laid with double rails?—Seventy-four miles only; as far as the junction.

4012. As far as Burdwan?—A little beyond that to the junction.

4013. Do you consider the telescopic principle of railway construction a sound principle?—If time is not an essential element it would be admissible; but on long lines the extra cost of transport is more than balanced by the earlier return of traffic upon the distant and unconnected sections, which being easiest of construction have been earliest opened.

4014. Do you remember any particular cases of delay which you can distinctly trace as arising from the Government supervision?—I have no papers or documents of any kind to show what has been so generally felt and acknowledged, but it can scarcely need demonstration to prove what must be the tendency and effect upon the progress of works for every detail to be submitted to several tribunals before being acted upon. It was not the occurrence of individual cases, but the normal state of the entire arrangement. It permeated every transaction. With the permission of the Committee I will read an extract from a private letter received from Mr. Turnbull, dated 9th April 1858: "Affairs as regards Government control seem to assume a more prominent aspect; I say seem, only, for in point of actual working we have the same wearisome delays and criticisms, and returns called for, and orders of Government as to the size of platelayers' bungalows and suggestions as to the proper position of urinals at stations, &c., &c. Nevertheless Major Strachey and others admit that they think the Government interference has been too great." My remedy was soon taken, but was irregular and could not be always adopted. I removed the offices to next door to Colonel Baker's, put up a door in the partition garden wall, and gave him a key; we met daily and as often as necessary, and settled in a very brief period the several questions which required it; I acted upon them at once, leaving them to go through the official routine of references afterwards.

4015. To what cause do you attribute the delays which have occurred, and what do you consider to be the remedy for them?—A large and comprehensive measure insufficiently understood and appreciated—divided opinions of the several ruling authorities—divided opinions among themselves—the novelty of the subject—distraction arising from opposing views of different writers—varying money market—misapprehension of the relative position of the contracting parties—delays in prompt decision, and eventually misconception as to the intention, spirit, and practical course to be pursued in the exercise of the supervision both home and local. The intentions have been in all cases excellent, and are not impugned. The results have been affected by the causes stated. The remedy is simple and effectual. Place the supervision upon a rational basis, and all minor difficulties will speedily disappear. If the Committee will permit me, I will put in a memorandum which, I think, will simplify very much the working of the supervision.

4016. Do you agree with the opinion expressed by Colonel Pears that the Indian Government could have executed these works quicker and cheaper than has been done by the Railway Company?—Certainly not; it would be at variance with the practice of the last fifty years. It is a simple assumption; in no single instance borne out by past experience, which is conclusive, if the past is any criterion of the future.

4017. I do not understand you to complain of the Government, or of individuals, but of the system itself, as one necessarily entailing delay?—I know from personal communication that the authorities, both here and in India, have done all in their power to promote these works; that they have individually devoted much time and labour to understand the subject, with this single object; and that in India Lord Dalhousie regarded these works as essential to the carrying

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out of his political arrangements, and gave them all the support in his power. The Government engineer, Colonel Baker, than whom a more upright, honourable, and hard-working man cannot be found in the service, did all he individually could (under an unavoidably wrong system) to forward the works. No complaint can be made of any individual; the system alone is to blame.

4018. The mass of information you acquired was, I believe, submitted to the Supreme Government in the first instance?—It was; and it induced them to publish in the "Gazette" the correspondence, with an intimation that it was a subject of so much public interest that they desired the greatest publicity.

4019. Mr. *Cheetham.*] In communicating that information to the Indian Government, did you add your opinion that it was better to construct the railways in India by the aid of private companies rather than by Government?—I did.

4020. Have you had any experience in the public works in India; have you been attached to the Board of Public Works?—No, I am not in the service of the East India Company.

4021. You said that, contrasting what had been done on public works, you would come to the conclusion that it was better to hand over the construction of railways to private companies rather than to the Government?—The comparison was instituted between what Government could do, and what railway companies have done. I object to a comparison which cannot fairly be made, but I compare the amount of money which Government have expended on public works within the last fifty years with what we have done in three or four years.

4022. You consider that the progress made by Government on public works has been dilatory as compared with that upon private enterprises in this country?—It has been acknowledged in the House of Commons.

4023. Have not Government been compelled to enlist the aid of private companies by the offer of a guarantee?—They were not able to obtain their assistance without a guarantee.

4024. In what respect does that guarantee differ from the raising of a loan directly in the name of the Company?—Perhaps the raising of a loan would be simpler and better; but they cannot raise a loan under their charter in this country. If an Act had been passed enabling them to borrow money, they could have borrowed it probably on easier terms; but the conditions in the contracts, which were not understood by the public for some years, induced people to hesitate in embarking their money in railway undertakings in India.

4025. Have you had your attention drawn to the amount of revenue received on lines which have been opened?—All that I ever anticipated has been realised to the letter.

4026. Is it not the fact that the Madras line has not paid the guarantee?—At present it has not done so, but being only a portion of a line it can scarcely be expected. I have no doubt in my own mind that the Madras line will pay remarkably well, as soon as there is a sufficient length of line opened.

4027. That line and the East India line are the only two opened?—The Great Indian Peninsular have a portion opened.

4028. Does that section of the Great Indian Peninsular pay its expenses?—I do not think it pays five per cent.; but I am speaking without personal knowledge upon the subject.

4029. How does the line from Calcutta, of 121 miles, pay?—It is paying about seven per cent., and it carried last year upwards of a million passengers. The natives are carried in third-class covered carriages with comfortable seats, at the rate of three-eighths of a penny per mile, which is unparalleled in any part of the world.

4030. Can you state at what comparative rate goods are carried upon that line?—From one penny per ton upwards, according to description. Coal under a penny a ton.

4031. From your long experience, and your observation of the lines so far opened, is it your opinion that, notwithstanding the opinion of Colonel Pears given before this Committee that railways would not pay the guarantee, they will pay?—I feel perfectly satisfied that all the Indian lines which have been selected with ordinary care and judgment will pay more than the five per cent. guaranteed.

4032. Mr. *T. G. Baring.*] You stated, in your last examination, that previous to 1844, when distinct proposals were made to the Government, you would not say

say that any delay had occurred in reference to conceding to companies the right of making railways in India?—Certainly not, as regards any company then formed.

4033. Do you consider that it was necessary for the Government, when that proposal was made in a distinct form at the end of the year 1844, to make any inquiry in India as to the practicability of making railways?—The information obtained and brought home in 1844 was so full and sufficient, that had Government felt disposed to do so they could have acted upon it.

4034. You think they could have determined upon a subject of such magnitude upon the information you offered, without sending out Mr. Simms to report?—Yes, without waiting for him to confirm their practicability.

4035. You differ with Sir James Melvill on that point?—I have not read his evidence.

4036. Mr. Simms having been sent out, his report was sent home, I believe, by the Government of India in May 1846?—Yes.

4037. The Court of Directors considered the report in 1846, and made their proposal to the Board of Control, I believe, on the 4th November 1846?—My memory will not serve me with reference to dates.

4038. There was a difference of opinion, I think, between the Court of Directors and the Board of Control with reference to the terms, which lasted until July 1847?—We have reason to believe that the disagreement between the Boards rather tended to occasion delay.

4039. It is in evidence that, until July 1847, there was a difference regarding the guarantee?—I cannot speak to dates.

4040. Do you think that six months is a long period for a department to take to form their opinion upon the establishment of so gigantic a system as the railway system for India?—I am accustomed to exercise great dispatch myself, and I am particularly anxious not to charge any individuals or Boards with delay, but to attribute the evils especially to the system, and to secure dispatch for the future, by its amendment.

4041. The commercial crisis in 1847 and 1848 was, I assume, the real cause of delay between July 1847, when the terms were agreed upon by the Board of Control and the Court of Directors, and 1849?—Undoubtedly.

4042. It would have been impossible to raise money at that time?—It would have been very difficult.

4043. You said, I think, that considerable time would have been gained if Mr. Jackson's tender had been accepted?—Yes.

4044. Is not that opinion of yours given on the assumption that Mr. Jackson would have executed his contract within the time in which he proposed to execute it?—Mr. Jackson's character, and the works he has already executed, led us to believe that what he undertook would have been carried out; we felt satisfied that he could have done so.

4045. It was on the assumption that he would have completed his contract within the time?—Yes; he would have been under penalties to execute it within the time.

4046. You took also securities from the contractors you employed in Bengal?—For all advances made to them.

4047. If a contractor fails in a work of that kind from unavoidable causes, of course you cannot be very hard upon him?—We ought not to be.

4048. You say you contemplated entering into contracts for a large supply of chairs; have the parties with whom you have proposed to contract done anything towards establishing iron works?—I believe that the grant of the land has been withdrawn from them.

4049. How long were you the Company's agent in Bengal?—Since 1845.

4050. You were there in 1853?—In 1853.

4051. Are you aware of the opinion of Lord Dalhousie, with respect to the working of the supervision system?—I do not recollect it.

4052. In his minute upon Railways, he makes the following observations:—"On the other hand, it does not necessarily follow that because the Government has become a party to the undertaking by guaranteeing a certain interest upon the capital expended, and has thus gained a right to closer interference with the operations of the railway company than usually or properly is allowed to a Government, that it will therefore interfere vexatiously or obstructively. It is not difficult to conceive that the Government by its officers may exercise a

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close and vigilant check upon the proceedings of the company without giving any just cause of complaint. Experience of the working of this system in the Presidency of Bengal justifies the opinion I have expressed. The consulting engineer is placed in direct communication with the railway company, and has authority to settle all matters of detail or professional questions, unless they should be of great magnitude, without previous reference to the Government. Every precaution is taken to obviate delay in those cases in which the action of the Governor-general in Council is needed. I have every reason to believe that these measures have been successful, and that while the consulting engineer, directly and indirectly, exercises upon behalf of the Government a very wholesome control indeed over the proceedings of the railway company, neither obstruction nor vexation, nor delay, can be justly attributed to the existence of a power of control in the hands of the Government." You entirely disagree with that opinion of Lord Dalhousie's?—I found an unworkable system and made it workable, by assuming responsibility which I ought never to have been called upon to assume, but which I was not afraid to do because I was the managing director of the company as well as the agent; for that reason I did not shrink from it.

4053. I understand you to say that the system did not work ill on account of your having taken upon yourself to make it work well?—In consequence of my having assumed a responsibility which I ought not to have been called upon to do.

4054. Which was that you did everything by means of personal communication?—Yes.

4055. In all matters of business is not personal communication the best means by which to carry out business, and then to place it upon record?—No doubt.

4056. Why should not your successor have pursued the same course?—I believe he does so, and I think it is a system desirable to introduce generally.

4057. Although it may be necessary to receive in writing the sanction of the Government on a great many matters of minute detail, yet by means of personal communication between the agent and the consulting engineer, might not that be reduced entirely to a form?—It is not every one who feels disposed to assume a responsibility which is not exactly charged upon him.

4058. You yourself, in communication with Colonel Baker, found no difficulty in working the system?—I have already mentioned the course adopted.

4059. *Chairman.*] From your own personal experience and knowledge of these matters, are you of opinion that it is desirable to employ military engineers to superintend and control the action of civil engineers employed upon great public works of this description?—It is so much a question of persons that I would rather not answer that; but there can be no question of the annoyance which the civil engineers felt, as a general rule, on being controlled by military engineers.

4060. Mr. *T. G. Baring.*] Can you make any suggestion to the Committee as to how it would be practicable to send out from this country civil engineers of sufficient weight and authority in their profession to control the railway works in India?—I think it is better for the Government to solve their own difficulties than for me to say how they should do it. I should think there would be no difficulty if they desired to do it.

4061. Supposing Mr. Hawkshaw, Mr. Rendel, and Mr. Stephenson, or men of that class, to be sent out merely to superintend, would it not be the case that in four or five years they would be less experienced in recent improvements than a gentleman sent out from this country four or five years after they left it?—You do not require that class of men.

4062. What class of men would you take?—Such men as our own civil engineers; our own chief engineers would answer equally well, and there would be no jealousy in consequence of one acting under another.

4063. Take a man of the same position as your own chief engineers in India to act as the Government superintendent of engineers upon railway operations, supposing him to be there for 10 years, and engineers to be sent out from England with much later knowledge than he had upon engineering matters, would there not be the same difficulty as you speak of with regard to military engineers; would not those sent out at a later period consider themselves superior to the engineer who had been in India 10 years?—The proximity of India to England is such now as to admit of all parties coming over every three or four years to inform

inform themselves; qualified civil engineers would watch, and regularly inform themselves of the progress of engineering works at home.

4064. Would that be sufficient?—For men acquainted with the subject it would be; and men are not deteriorated mentally, although they are physically, by a residence in India.

4065. Is it your opinion that civil engineers should be sent out from this country to assist the Government?—I am perfectly satisfied that civil engineers could be obtained at a sufficiently moderate expense if the Government wished it.

4066. Colonel *Sykes.*] Are you not aware that most of the engineers in the three Presidencies have had personal experience of railway engineering in England?—Without any disrespect to them, I say that they have had a smattering of it.

4067. They have had the opportunity of inspecting works in England?—The liberality of the Court has assisted them in that.

4068. Are you not aware that the departments of public works are supplied with civil engineers who have been sent out by the Court of Directors?—I am aware of it.

4069. Therefore the military engineers, although they might be incompetent themselves to give instruction in the details of railway engineering, would always be enabled to avail themselves of the knowledge of those subordinates sent out by the Court?—Drawing upon our subordinates for information which we ought to possess ourselves is an imperfect mode of meeting the question.

4070. *Chairman.*] Do you consider that the amount of knowledge that a man upon furlough can obtain by visiting the factories of such men as Mr. Stephenson and Mr. Rendel, and visiting railway works on his passage through the country, or passing even a certain number of months under the roof of a civil engineer, can give him that acquaintance with the subject which a long course of education such as that pursued by a civil engineer enables him to acquire?—Certainly not.

4071. Do you expect satisfactory results from the establishment of engineering colleges at Calcutta and Roorkee?—I cannot overrate the importance likely to result from them.

4072. Have you visited those establishments?—I have, but it is many years ago.

4073. Mr. *C. Bruce.*] Is it not supposed that the natives have a peculiar aptitude for acquiring knowledge of that kind?—For the execution of public works they have, from their past habits.

4074. I mean in the science of engineering generally?—They are quick imitators; they will copy plans and drawings, but they can never design.

4075. *Chairman.*] Has the native in himself that zeal and energy, and that power of obtaining influence over other men that would lead you to think that he will ever take a prominent part as the originator of great engineering schemes?—Certainly not; there is no reason why the endeavour to teach them should not be continued; it must produce beneficial results.

4076. Mr. *C. Bruce.*] Were there not, previous to our rule in India, works of great magnitude constructed by natives?—By natives, but designed by foreign artists from Italy and elsewhere. It is clear, from the remains, that they have been executed by foreigners.

4077. Colonel *Sykes.*] Do you say that the dome of the Tajh at Agra was lifted up into the air by foreigners?—It was a foreign head that conceived, and native hands that worked it.

4078. What is your authority for that?—My opinion from observation.

4079. Do you know that the East India Company possess records of the building?—I give my replies with great deference to Colonel Sykes' very superior knowledge. They are subjects to which he has paid great attention, and I have given but little, and therefore my opinion is but of little importance.

4080. Mr. *Cheetham.*] Is it not the fact that there are the remains of large works of irrigation existing in India?—No doubt.

4081. In your opinion, were those the constructions of native talent?—Very probably, as they are simple.

4082. In the colleges to which you have referred, are there men training who would

Sir *MacDonald Stephenson.*

24 June 1858.

would be competent to take the management upon these railways, and to be drivers of engines?—I hope for such results from the beneficial measures which the East India Company are adopting to train them; at the present moment, it is found that neither East Indians nor natives are to be trusted to drive a locomotive engine.

4083. Have they begun to place under Englishmen natives for training?—In all the workshops every endeavour has been made to introduce and instruct them.

4084. In the course of a few years we may expect to see natives employed as drivers of engines, and in other practical operations connected with the lines?—I hope to a greater extent than is the case at present.

4085. Colonel *Sykes.*] Are you aware that the natives have recently, in the course of the mutiny, contrived to manufacture detonating powder?—And infernal machines, as I am informed.

4086. Are you aware that they have had that chemical knowledge?—I am not.

4087. *Chairman.*] Are there any remains of native engineering works that you have ever seen which are to be compared to the Ganges Canal?—Certainly not.

Mr. *H. B. Bruce,* called in; and further Examined.

Mr. *H. B. Bruce.*

4088. *Chairman.*] I REFER you to Questions 3918 and 3951, of the last day's evidence, and I ask you whether you have any observations to make upon the statements of Colonel Pears in the answers to those questions?—Colonel Pears, in his answers, calls in question my assertion, and also that of Mr. Walker's, that we were repeatedly short of funds, and especially alludes to one case which was brought before the Committee by Mr. Walker, to which I did not refer in regard to the state of the funds in September 1856. Colonel Pears says that the works were not stopped from want of funds, and says that there was no complaint of a want of funds. I would just refer, in the first instance, with regard to the complaint, to an extract from a letter which I read to the Committee on a previous occasion, dated August 1856, in which I say distinctly that we had no money during six weeks or two months of the brick-making season, and in consequence lost the greater part of the weather suitable for making bricks in 1855. That is one of the many complaints made with regard to the want of money. Colonel Pears alludes to this very circumstance in his answer to Question 3951, when he says that we complained we could not get bricks, but did not complain of a want of funds. The complaint was that we could not go on with the works, and could not get the bricks, because we had no funds. Then he says that Mr. Collins, at the time the complaint was made, had a balance of 18,000 rupees. I happen to have a copy of Mr. Collins' letter upon that subject, he being the engineer to district 4; he says, "In reference to a statement made in a letter from the chief engineer in September last, to the effect that the coolies had deserted this district from our having no funds in our hands to pay their wages, I beg to inform you that the statement is perfectly correct." He says, "On the 4th of that month, September, I wrote to the chief engineer, stating that I had only 900 rupees in my cash chest, and that the works must stop." From a letter of Mr. Beattie, the acting chief engineer to district 4, you will see that although the consulting engineer for the Government thought there were 18,000 rupees in the cash chest of that engineer, he was actually without funds and partly in debt.

4089. There is only one other point, and that is in reference to the Colleroon Bridge; have you any statement to make in regard to the cost of that bridge?—Colonel Pears stated that the Government could do the work in 50 per cent. less time, and with not much less saving of money; and quoted in proof of that the Colleroon Bridge. He gives us the length of the bridge, and the cost of it, quoting that in support of his answer with regard to the cheapness with which Government could have executed the works; but if you go into that, you will find that it cost about 60 rupees per running foot. Our bridge, regarding which evidence was given, cost about 70 rupees per foot; but we have it in the Blue Books, upon Colonel Pears' own evidence, that our bridges are one-half wider than the Government bridges, so that the bridge, making it the same width as ours, would be 90 rupees per foot, and it consequently follows that the Colleroon Bridge, which has been

been quoted as a special instance of cheapness, stands in the proportion of nine to seven as regards cost.

4090. Mr. *T. G. Baring.*] Do you know the breadth of the Colleroon Bridge?—Not that bridge especially; but I know that Colonel Pears, in comparing the price of our bridges with the Government bridges, always went upon the assumption that our bridges were one-half wider than the Government bridges. With regard to time, our bridge over the Poincy took 18 months to build, but the bridge over the Cortilliar took only one year to build.

4091. Mr. *H. A. Bruce.*] What is the length of the Poincy bridge?—About the same as the Colleroon. Colonel Pears also stated that my estimate was 15,000 rupees per mile, and the actual cost 30,000 rupees; but the fact is, that the estimate was about 16,000 rupees, and the cost, including all extra work, was 18,000 rupees.

4092. Mr. *Crawford.*] Are you the consulting engineer in this country to the Great Southward of Madras line?—Yes.

4093. Mr. *H. A. Bruce.*] You stated that the cost per mile, which was estimated at 16,000 rupees, was actually 180,000, including some extra works?—Yes, it included all those extra works which always arise in the execution of a railway.

4094. Exclusive of the permanent way?—Yes; it included also the maintenance of the embankment, and things of that kind, not included in the original 16,000 rupees.

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APPENDIX.

Appendix, No. 1.

PAPERS delivered in by *T. R. Watt*, Esq., and referred to in his Evidence, 10 June 1858. Appendix, No. 1

GREAT INDIAN PENINSULA RAILWAY COMPANY.

PRESENT POSITION OF THE UNDERTAKING.

	Miles.	Total.
Open.		
Bombay to Callian, including Mahine Branch	34½	
N. E. Extension:		
Callian to Wassind	16½	
S. E. Extension:		
Callian to Campeolee	37¾	
Total Open		88½
Constructing.		
S. E. Extension:		
Bhore Ghât; to be completed, June 1858	2½	
Ditto February 1861	13¼	15¾
Bhore Ghât to Poonah; to be completed June 1858	89½	
Poonah to River Bheema; to be completed December 1858	68	
Bheema to Sholapore; to be completed September 1859	100	
N. E. Extension:		
Wassind to Rotunda Nulla; to be completed November 1859	25	
Thull Ghât; to be completed December 1861	9	
Thull Ghât to Bhosawul; to be completed June 1860	190	
Total Constructing		442½
To be Let.		
N. E. Extension:		
Bhosawul to Nagpore; to be completed by March 1862	268	
Bhosawul to Jubbulpore; to be completed by March 1862	332	
S. E. Extension:		
Sholapore to Khistna; in abeyance	110	
Total to be Let		705
Total Miles		1,236¾

3, New Broad-street, E. C., London,
15 June 1858.

Thos. R. Watt,
Secretary.

Appendix, No. 1.

GREAT INDIAN PENINSULA RAILWAY COMPANY.

STATEMENT of Receipts and Working Expenses, Revenue Account, 18 April 1853 to 31 December 1857.

DATE.	Miles Open.	Receipts.			Expenses.			Net Profits paid to the Hon. East India Company in Reduction of Interest advanced.		
		£.	s.	d.	£.	s.	d.	£.	s.	d.
18 April 1853 to 30 June 1854	34½	14,252	3	8	7,129	19	6	7,122	4	2
1 July 1854 to 31 Dec. 1854	- - -	6,634	8	4	4,345	13	10	2,288	14	6
1 Jan. 1855 to 30 June 1855 -	- - -	7,932	7	1	6,449	9	-	1,482	18	1
1 July 1855 to 31 Dec. 1855 -	51	8,252	6	3	4,914	11	11	3,337	14	4
1 Jan. 1856 to 30 June 1856 -	51 for 4 months 88½ for 2 „	15,191	9	-	7,115	9	4	8,075	19	8
1 July 1856 to 31 Dec. 1856 -	88½	24,555	9	1	9,646	17	1	14,908	12	-
1 Jan. 1857 to 30 June 1857 -	- - -	33,610	9	5	14,695	5	4	18,915	4	1
1 July 1857 to 31 Dec. 1857 -	- - -	32,867	11	8	15,396	6	6	17,471	5	2
	£.	143,296	4	6	69,693	12	6	73,602	12	-

3, New Broad-street, E. C., London
15 June 1858.

Thos. R. Watt,
Secretary.

Appendix, No. 2.

Engineers' Memorial.

To the Chairman and Directors of the Madras Railway Company.

Gentlemen,

We, the undersigned, engineers engaged on the Madras Railway, beg to call your attention to the enclosed extracts from the Minutes of Consultation of the Madras Government Financial (Railway) Department, No. 44, dated 14th February 1856, and to the accompanying letter from Mr. Bruce, the chief engineer, dated 23 April 1856, and to protest against the censures therein contained as wholly undeserved and uncalled for.

You will observe that our proceedings are said to have been marked throughout by a "deliberate disobedience of orders." This we most emphatically deny.

During the whole time we have been in your employment we have used our utmost endeavours to carry out all the orders of your chief engineer, and it has been no small gratification to us that he has more than once borne testimony to our zeal and perseverance.

In the case of the bungalows mentioned in the enclosed extracts we have equally obeyed his orders, the plans according to which the bungalows were built having been sent to us by him.

But it is said, "the Government cannot but view the sum spent on these buildings by the railway engineers as a reckless expenditure of the Company's money;" we should feel much regret if any grounds existed for so grave a charge, and believing as we do that it is utterly without foundation, we cannot quietly submit to a censure alike injurious to our honour and professional reputation.

We acknowledge that the expenditure has exceeded the sum sanctioned by Government. So it has in many other cases, while in others again the expenditure has fallen far short of the sum sanctioned. We have, in this instance, as in all others, endeavoured to execute our work as cheaply as was consistent with efficiency and despatch, and as we are acting in the capacity of engineers, not of contractors, nothing more can possibly be required of us.

Government too must have been well aware that the sum sanctioned for building these bungalows (rupees 350) would probably be far exceeded, for their own engineers have, to our knowledge, expended as much as *Rs.* 1,200 for the same purpose in connexion with works of very inferior magnitude to ours.

It should also be borne in mind that many of these bungalows have had to be erected in places where there existed the greatest difficulty in obtaining labour and materials, and in short we are convinced that any person really acquainted with what was required and done would at once acquit us of the charge of reckless expenditure.

We submit then that it is most unjust for Government to refuse "to comply with the request of the railway agent that the whole expenditure should be passed." Still more so that they should direct "that with respect to those districts in which the buildings have not already been commenced, the authority to expend money on engineers' temporary bungalows be considered cancelled."

Apart from the manifest injustice of making all suffer for the alleged excessive expenditure by some, we would remind you that we were informed that bungalows would be allowed us, and we submit that to deprive us of them will be totally at variance with our engagements. We would call your attention to the fact of our subordinates (inspectors and East Indian apothecaries) being allowed houses, as affording evidence that Government consider them essential, and we appeal to you whether it can be for the interest of the Company that in order to save a few pounds your engineers should be exposed in such a climate, and in all seasons, to the danger and inconvenience of living in tents.

We submit that such an arrangement is incompatible with the efficient superintendence of the works, and that instead of a saving to the Company, it must lead to a very considerable pecuniary loss, as it only can be carried out at great sacrifice of time, health, and possibly life. It cannot for a moment be entertained that we on a short engagement, and subject at any time to removal to other districts, should adopt the alternative of providing at our expense buildings which are in reality necessary for the transaction of the Company's business.

Appendix, No. 2.

We take this opportunity of expressing our earnest hope that you will interfere to prevent the repetition of the unmerited censures to which we are constantly subjected by Government, and which are published annually in the Blue Books, and frequently in the public prints, while our replies and observations are withheld at the discretion of the Government consulting engineer, so that we have not the means of setting ourselves right in the eyes of the public.

It is difficult for a person at home to form a correct estimate of the onerous duties that have to be performed by an engineer on the Madras Railway; but when it is considered that the superintendence exercised in England by skilled mechanics and good tradesmen, has here to be entrusted, unless in one instance (Poiney Bridge), to discharged soldiers, untrained Europeans, or East Indians, and ignorant and untrustworthy natives, few of whom, if any, have ever before seen a railway or been engaged on works, and all requiring to be instructed in the simplest details; when we add to this, that the Madras Railway Company are, as it were, their own contractors, the system of large contracts not having been adopted, and that nearly the whole of the line is constructed by day labour, many of the engineers having frequently from 4,000 to 6,000 people daily paid by tickets, and weekly by cash; when it is considered that the engineer has not only to give his constant personal attention to all the works on his district, but has also to design and construct a great portion of the tools and plant he requires, and even materials, such as lime, bricks, &c. have to be made by the engineer; that the districts are about 25 miles long, instead of 10 or 12, as is usual in England, and that all the accounts have to be examined, checked, and even occasionally made out by the engineer, who thus combines in his own person the resident engineer, the contractor, the manufacturer of materials, and the accountant; and that moreover we have had the disadvantage of having the whole native officials against us, and had to break through the tyrannical system of impressment and advances hitherto used by Government, it might be supposed that every encouragement would be afforded us, and every allowance made for the difficulty of our position; such, however, is far from being the case.

In the Railway Department, Blue Books of Government censures on almost every engineer engaged by the Company are to be found, and the periodical receipt of these unfavourable observations is most discouraging to us, feeling as we do that we have done our best to merit approval. In our humble opinion the effect of these censures has decidedly "tended to retard rather than to facilitate progress."

The complaints by Government of delay in the progress of the work are particularly unreasonable; for in almost every instance where delay has occurred, which has certainly not been so frequently as might be supposed from the language of the Blue Books, it has been caused either by Government withholding the necessary funds, or from our not being able to obtain possession of the land. We have been repeatedly stopped by want of money. With all this, it is somewhat remarkable that the result of the only complete inspection of our works which has been made by the Government engineer since the commencement of the year 1854, was an expression on his part of great satisfaction with their state and progress, a favourable review on the part of Government, and an intimation of your satisfaction and approval.

This, we think, sufficiently shows that the previous censures and discouraging remarks were unfounded, and we believe that further investigation will show that those directed to us subsequently have been equally undeserved.

We are well aware of the right of supervision over all departments of the railway enjoyed by Government, but we protest most emphatically against the mode in which that right is exercised. If our works were subjected to the inspection of professional men possessed of a practical acquaintance with railways, we should not object to meet their criticisms, but it cannot be wondered at that we who have been educated as engineers, and have had in most cases experience of the duties, and the freedom from undeserved censures of engineers on works at home, should be impatient of the censures of men, who, however worthy of respect in the profession to which they belong, have shown that they are destitute of that peculiar knowledge which would fit them for the supervision of the details of railway construction.

We believe we have double the length of line entrusted to the charge of the Bengal engineers, who are moreover exempt, unless perhaps in exceptional cases and under peculiar circumstances, from the duties of contractors, and making tools and materials which, as already stated, devolve upon us. We submit, therefore, that we are entitled to equal allowances for bungalows, &c., and to equal freedom from petty interferences on the part of Government.

We trust that you will not on account of these remarks consider that we are dissatisfied with our position as regards you or your chief engineer. On the contrary, we received with the greatest satisfaction the approval of your Board already referred to, and willingly bear testimony, not only to the uniform kindness and consideration we have received from Mr. Bruce, but to his excellent mode of supervision, his indefatigable zeal for the Company's interest, and his high professional attainments.

We

Appendix, No. 2.

We must, however, earnestly request your early and active interference to protect us from these unjust censures, which endanger our professional reputation and future prospects, and question our honour as gentlemen.

We have, &c.

(signed) *Bryce M'Master*, Resident Engineer, Districts 1, 2, 3.
James Collins, Resident Engineer, District 4.
H. B. Hederstedt, Assistant Engineer, District 5.
George Latham, Assistant Engineer, District 6.
Wm. Henderson, Assistant Engineer, District 7.
Alex. Beattie, Resident Engineer, District 8.
Thos. Lovell, Assistant Engineer, District 9.
Vacant, District 10.
Alex. Bryce, Acting Resident Engineer, District 11.
Alex. H. Macnair, Assistant Engineer, District 12.
A. D. Rose, Assistant Engineer, District 13.
D. Parker, Resident Engineer, District 14.
Robt. C. Rowlands, Assistant Engineer, District 15.
Chas. J. M. Dixon, Assistant Engineer, District 16.
Geo. Howard Fenwick, Resident Engineer, District 17.
Robt. Paton, Assistant Engineer, Madras Terminal Station.
Wm. Geo. Smart, Resident Engineer, Cuddapah Survey.
A. Stein, Assistant Engineer, Cuddapah Survey.
Chas. E. Purdon, Assistant Engineer, Cuddapah Survey.
T. M. H. Johnston, Assistant Engineer, Cuddapah Survey.

(A true copy.)

(signed) *Ja. Walker*,
Managing Director, Madras Railway Company.

7 May 1856.

CIRCULAR.

My dear Sir, Madras, 23 April 1856.

I ENCLOSE an extract from the Minutes of Consultation of the Government, showing the views they entertain regarding the expenditure on the bungalows on your district above the sum sanctioned for that purpose.

The agent and manager has desired me to carry them into effect.

Yours, &c.

(signed) *Geo. B. Bruce*, Chief Engineer.

(A true copy.)

(signed) *Ja. Walker*, Managing Director,
Madras Railway Company.

(No. 44.)

Financial (Railway) Department.

EXTRACT from the Minutes of Consultation, dated 14 February 1856.

* * * * *

Para. 2. The Government entirely concur in the views expressed by Colonel Pears in paras. 5 to 7, of his review of this expenditure, and are of opinion with him that Mr. Bruce, the chief engineer, is greatly to blame in these proceedings of the railway engineers, which have been marked throughout by a deliberate disobedience of orders. These orders, as justly observed by Colonel Pears, are very clear and decisive, and there could therefore be no misunderstanding; considering the temporary object for which the bungalows are required, that not one of them, as remarked by Colonel Pears, can be regarded as a permanent structure, and that they are all built of inferior materials, the Government cannot but view the sum spent on these buildings by the railway engineers as a reckless expenditure of the Company's money.

3. Entertaining these views, the Government cannot consistently comply with the request of the railway agent, that the whole expenditure should be passed, and they resolve to call his particular attention to the total disregard of their orders by the railway engineers; and to inform him, that the Government look to him to see their instructions obeyed, and expect that he will vindicate his own authority, and that of the Government, by suspending any officer of the Company who shall in future deliberately oppose himself to their orders.

Appendix, No. 2.

5. The Government further direct that with respect to those districts in which the buildings have not already been commenced, the authority to expend money on engineers' temporary bungalows be considered cancelled.

6. The Government also resolve to instruct the railway agent that money to the extent already sanctioned for that purpose, may be expended on temporary bungalows for inspectors, sub-inspectors, and apothecaries, and that when such temporary buildings are required in connexion with any particular work of magnitude, they be provided out of the contingencies for that work, and so entered in the accounts.

(True extract.)
(signed) *Robert Paton*, for Chief Engineer.

Madras Railway, Chief Engineer's Office,
23 April 1856.

(A true copy.)
(signed) *Ja. Walker*, Managing Director,
Madras Railway Company.

EXTRACTS from a Letter of *G. B. Bruce*, Esq., Chief Engineer, Madras Railway, dated 2 October 1855, addressed to the Agent of the Railway Company at Madras, and forwarded by the Agent under date the 8th of the same month to the Government Consulting Engineer, in compliance with Mr. Bruce's request.

(No. 284.) Madras, 2 October 1855.

* * * * * * *

10. As to the charge, disregard of orders, and not supplying information, I can only say that I have never intentionally disregarded any orders; and if ever I have deviated from the strict line of official routine, I have been led into it by no other feeling than too intense a desire to forward the work.

11. As to the non-supply of information and plans, I can say conscientiously that I have never in one single instance withheld information which I possessed, or failed to endeavour to get it when required.

12. It is my most anxious desire to supply all papers, documents, and information called for, and when I fail in this, or the delay is greater than could be wished, it is owing entirely to the very limited staff placed at my disposal.

13. When drawings are not forwarded, it is only from the physical inability to get them done.

14. Compare for a moment this line with that in Bengal; there each engineer has about 12 miles, with surveyors and draughtsmen under him, as well as highly-paid inspectors from England. Besides all this, he has a contractor to do the work, who in turn has his engineers and superintendents.

15. The staff employed is as four to one, both in the office and the field.

16. I plead guilty to the charge of not having supplied either Government or our directors with information and drawings so fully and speedily as was desirable, and no one has deplored this more than I have done; but with my present small staff I cannot hope for much improvement.

17. It is probable I have myself to blame for having tried to keep down the expenses of the engineering establishment as much as possible, perhaps below the standard of efficiency, and have in consequence incurred your displeasure, and that of Government.

18. If Government and our directors will by increasing the staff of engineers, lighten their labours, and give me a more efficient office staff, upon a footing proportionate to the work, I shall not fail to satisfy all the requirements of Government.

19. I beg to repeat that I have not disobeyed the orders of Government, inasmuch as the Goriathim Bridge has not been begun. I regret the delay which occurred in sending the particulars required; this was partly accidental, partly unavoidable, but very far from being designed or intentional.

20. It is due to me that this letter should be forwarded to Government, and that the notice of the Board of Directors should be specially called to it.

(signed) *G. B. Bruce.*

(True extract.)
Ja. Walker.

Appendix, No. 3.

Suggested Amendment of Supervision Clause of Indian Railway Contracts, 1858. Appendix, No. 3.

Memorandum.

All general plans, designs, and estimates to be submitted for approval of the Government engineer as at present.

The designs and estimates once approved, the carrying out of the work to be left to the engineers of the railway company.

The designs not to be varied in principle or in their essential character, and the sanctioned estimates not to be exceeded.

The work as completed to be reported to the Government engineer, who will inspect and certify to its being in accordance with the approved plans, and within the sanctioned estimate.

Certificates to be paid as at present on monthly measurements of work, and fortnightly on account, on approval of the railway engineer, who is responsible for the work executed corresponding with the payments.

Advances of funds upon security of mercantile houses, of plant, or otherwise than upon materials on the ground to be specially sanctioned by Government engineers. Advances on delivered materials to be made on the certificate and responsibility of the railway engineers.

On questions on which the Government engineer disagrees with the railway engineer, the locomotive superintendent, or the traffic manager, the subject should be considered in a committee of the Government engineer, the railway agent, and the railway officer whose department is affected, in order that the benefit of that experience and special qualification which the railway company's officers possess, may not be entirely neutralised and lost; that no avoidable delay shall take place in supplying the funds, or the engineering or other assistance, when required, and applied for by the railway companies. That the home supervision should be so far simplified and amended, that on all the usual business of the company, the sanction of the official director shall suffice, without increasing the delay by a reference upon minor details to the India House and the India Board, but that such reference to the supreme authorities should be limited to broad principles, and important questions exclusively.

The advantages over the existing plan are these. The responsibility is imposed, felt, and accepted by those on whom it at present virtually rests, and the check will be the more effectual from the fact of the responsibility being defined.

The decision upon all important questions is reserved to the Government engineers, who sanction and certify the due execution, at an approved cost, of all the works, while the responsibility of the details, and the observance of the conditions rests, where it ought to rest, upon the railway engineers.

The evil of the present practice may be concisely defined.

The railway engineers have the real responsibility, divested of the element which imparts the chief security—the acknowledgment of their responsibility, and the check is now really less effectual than it will be under the amended arrangement; the delays are alike injurious and unavoidable. The Government powers of selecting the route, and direction of the line, their financial audit, their approval of the whole of the designs, plans, and estimates of every portion of the work, and their complete control of all the expenditure remain undisturbed.

There is no alteration in the principles or conditions of the contract with the railway companies, it is only the amended interpretation or definition of one clause, which the practice and experience of several years have shown to be indispensable.

Appendix, No. 4.

Appendix, No. 4.

To Colonel *Sykes*, Chairman of the Court of Directors of the Honourable East India Company.

Dear Sir, London, 20 January 1857.

On the recent occasion upon which I had the honour of waiting on you, at the instance of, and accompanied by, a deputation of the directors of the Oude Railway Company, I advanced the position that the arrangements between the East India Company and the various companies formed for making railways in India, embodied in the guarantee of interest, had not up to this point involved present burthen on the revenues or resources of India, and that the experience of the working of the railways (unfavourable as up to this time it must have been, as a fair test of their prospects) was sufficient to dispel the apprehension that there would be any ultimate charge on those revenues and resources resulting from the guarantee.

The fact which I assumed as the basis of the first proposition was that the East India Company had always hitherto (by reason of the stipulation contained in the contracts that all the capital of the railway companies, as called up, should be paid into their treasury) been in possession of a much larger amount of the capital of the railway company than it had ever been called upon to disburse in the form of guaranteed interest.

You appeared to doubt the correctness of that assumption; and, in reply, I ventured to express my conviction that, if the accounts were examined, it would be found that the East India Company had now in their hands several millions of the railway capital contributed by the various railway companies, and that even if from that sum were deducted the aggregate of interest paid by the East India Company to the several companies under their guarantee, there would still be a large residue.

You intimated surprise at this statement, and I had, of course, not the means at hand of following the matter further.

Neither have I since had the time necessary to collect the materials for precise information on the point. I have, however, felt it due, both to you and to myself, to make so much of inquiry as was necessary to enable me generally to test the accuracy of the views expressed; and I have been led by a sense of the importance of the subject into some further considerations, which I shall take the liberty of bringing under your notice.

To make my statement intelligible, it is necessary that I should premise a few facts connected with the early negotiations which led to the principle of arrangement between the East India Company and the railway companies, which is embodied in the contract between them.

The first suggestion of the introduction of the railway system into India originated, as you are no doubt aware, with Sir Macdonald Stephenson, so long ago as the year 1844, towards the latter end of which year a few gentlemen met in London, at his invitation, to discuss the subject on public grounds. The result of their deliberations was a conviction that the introduction of railways into India would be attended by incalculable advantage to the empire in every point of view, but that the inducements for the employment of capital in such an enterprise in India were not of a character sufficiently certain to afford the prospect of success in an attempt to raise money for the purpose, without the guarantee of a certain minimum rate of interest. These views were represented to the East India Company, accompanied by a proposal to enter upon the undertaking, provided the Court of Directors would give the guarantee. The Court of Directors, after considerable discussion, first upon the adaptability of the railway system to the Indian Empire, and subsequently on the policy of committing them to individual enterprise or undertaking them on their own behalf, and also on the question of which was the most important line on which to commence, ultimately entertained the proposal of the East Indian Railway Company, which had been formed in 1845 in anticipation of this decision.

It is unnecessary, and would be irksome, to follow the course of these proceedings and negotiations, which occupied a period of four years.

It will be sufficient for the present purpose to say that, in September 1848, after having, as the promoters of the movement supposed, adopted the principle of a guarantee, the Court of Directors eventually proposed to the East Indian Railway Company (who were the pioneers in the great movement) an arrangement by which they were to advance interest at 5 per

5 per cent. on the capital necessary for the construction of an experimental line from Calcutta to Burdwan, on the route to Delhi. The interest was to be guaranteed for 99 years; but it was expressly stipulated by the Court of Directors that if the receipts of the railway did not pay its expenses, the railway company must bear the loss. It was pointed out that such an arrangement implied no guarantee, and amounted to no more than the railway company could do for themselves out of their own capital; but the East India Company were inflexible.

In this conjuncture the railway cause had almost succumbed—one of its earliest and staunchest advocates and adherents, the first chairman of the company, Sir George Larpent, had been compelled from circumstances to withdraw from it—the sympathy of others of its supporters had grown cold, and the hearts of all had become sick from hope deferred. Fortunately there still remained a few indomitable spirits, who regarded the cause as worthy of a more protracted struggle, and eventually, after much negotiation, conducted mainly by the late Mr. Aglionby, the then chairman of the company, and Mr. Wilson, then Secretary of the Board of Control, the difficulty was met in the way of compromise. An arrangement was proposed to and accepted by the railway company, by which, while the East India Company's obligation was limited to the guarantee of interest, the railway company were to have the liberty, if dissatisfied with its working prospects, to deliver up the railway at any time, after it had been at work for three months, to the East India Company, and be entitled to receive from them the capital expended, either in money or an annuity. This arrangement embodies the principle common to all the existing railway companies, and is adopted and viewed by the public as a practical guarantee of a dividend, with the qualification only of the possible loss of interest for the period intervening before the railway could be surrendered. The effect of this qualification, and of the complicated provisions of the contract, has however been, as you will readily understand, to render necessary the payment of a higher rate of interest than would have been requisite if the arrangement had been one of simple guarantee of a certain return, with the contingent prospect of some addition to it. I pointed out this inevitable consequence at the time, and even suggested that the East India Company, in return for the unqualified guarantee, might stipulate for one-half of the net profits, after payment of the guaranteed rate, which would have been a very beneficial arrangement for the East India Company; but the proposition did not meet with favour.

In addition to this unsatisfactory feature in the arrangement, the East India Company stipulated for an absolute control in all the arrangements of the railway companies, extending both to the selection of the route and to the mode and cost of construction of the railway; the rate of fares to be taken; the number of trains to run; and numerous other restrictive provisions; which stipulations were necessarily attended by the consequence of withdrawing from the enterprise the element of reasonable calculation of return from inherent merit. It was impossible to estimate the profit of a railway—the course, the cost, the working, and the fares of which, were all to be prescribed by an external authority whose interests must in many respects be at variance with those of the company.

Another stipulation embodied in the contract, at the instance of the Court of Directors, and forming a leading feature in the arrangements, was, that the East India Company should be at liberty to appoint an ex-officio director at the Board, with a veto on the proceedings of the railway company. This condition was understood at the time to imply the appointment of an officer of high reputation and ability, who should aid the councils of the Board, and carry with him the weight of the authority of the East India Company; and in this view of it the stipulation was not objected to. But it was assumed that the ex-officio director thus appointed would impersonate their views; and it was never contemplated that the proceedings of the Board, at which he sat, would have to be submitted, first, to the Court of Directors, and afterwards to the Board of Control, and be approved by both authorities before they could be acted upon. Nevertheless, such has been the system adopted; and to this cause must be attributed much delay and complication which has necessarily attended the progress of the various undertakings in course of execution.

Among the other provisions in the arrangements with the East India Company were these: that the whole of the capital of the railway companies should, as called up, be paid into the treasury of the East India Company, who should also have custody of all the revenue of the companies when their lines were opened. The net receipts of the railways were first to be applied in relief of the East India Company's guarantee, in payment of the current interest, and any surplus to be appropriated, one half towards repaying the aggregate of interest advanced by the East India Company with interest, and the other to be the property of the railway company.

I have touched thus slightly on these points in the history of the Indian railways, because a knowledge of them is necessary to enable you to understand and to account for their past course and present position.

Under this system three principal companies grew up, one in each of the three Presidencies. The East India Railway Company, the contractors for the railway from Calcutta to Delhi and Lahore, in the Bengal Presidency; the Great Indian Peninsular Railway Company, the contractors for the line from Bombay to the Kristnat, to Nagpoor, and to Jubbulpore, in the Bombay Presidency; and the Madras Railway Company, the promoters of the line from Madras, across that Presidency, to Calicut, on the coast of Malabar.

These companies have now progressed so far on their course, as each of them to have completed and opened for traffic a section of their lines, one in each Presidency.

Of these, the Bombay line is at work for about 70 miles, but its course is such as hitherto

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to afford no fair test of its prospects. The Madras line is also open for about 70 miles, but it has been in work too short a time to admit of any opinion being formed of its results. Both these sections have, however, from the first more than paid their expenses, with evident capacity for a return in a short time exceeding the rate of guaranteed interest. The first section of the East Indian Railway to Raneegunge, about 120 miles, has been in work since February 1855, and though short in length, and by no means fully organised, has already not only paid its working expenses, but furnished from its traffic the means of repaying some 60,000*l.* on account of current interest to the East India Company, and its net receipts are understood at the present time to exceed the rate of guarantee of 5 per cent.

Besides these undertakings, the East India Company have entered into contracts with two other companies, the Scinde and the Baroda Railway Companies, but neither of them have any portion of their lines in operation.

From returns made to Parliament in the last Session, it appears that up to the 30th of April last, after deducting the interest paid to the railway companies, there remained in the hands of the East India Company the sum of 1,705,087*l.* 7*s.* 11*d.* of the railway capital.

My time has not permitted me to refer to the earlier returns (if such there be), nor to ascertain the present position of the two more modern of the five railway companies above enumerated; but, from inquiries I have made, I believe that the following propositions will be found to be substantially correct as to the three great lines, namely, the East Indian, the Bombay, and Madras companies (and the principle, I have no doubt, will extend to the other two railway companies), namely:—

1. That the East India Company (under the stipulation by which all the capital raised by the railway companies has been, and must be, paid into the treasury of the East India Company) has always been in possession of a much larger sum than the aggregate interest advanced by them under their guarantee.

2. As to the East India Railway Company, that the East India Company have now about 1,250,000*l.*, or thereabouts, of the capital of that company in their hands, while the aggregate amount of interest paid to that company does not exceed 600,000*l.*, or thereabouts.

3. As to the Bombay Railway Company, that the East India Company have now in their hands about 2,000,000*l.* of the capital of that company, while the aggregate amount of interest paid to that company does not exceed 220,000*l.*, or thereabouts.

4. As to the Madras Railway Company, that the East India Company have now 1,000,000*l.*, or thereabouts, of the capital of that company in their hands, while the aggregate amount of interest paid by the East India Company to that company does not exceed 150,000*l.*

5. During all the time that the railway capital has lain in the hands of the East India Company, it has been employed at interest, or with equal advantage, for the purposes of the East India Company.

Consistently with this state of facts, it is quite clear that, up to this time, not only have the railway companies not been a burthen on the revenues or resources of India, but that the East India Company has actually, during the period of seven years which has intervened since their establishment, been in possession through means of their capital, of considerable, not to say large sums, over and above the sums advanced for interest, which have been available for their own purposes. This state of things will continue at all times, so long as the capital of the railway companies is in course of subscription, and until their capital accounts are closed. The railway companies are always ready and willing to call up capital, in order to secure the guaranteed interest, and the East India Company, as their self-stipulated bankers, have at all times the control and use of the money subscribed.

These facts sufficiently bear out the first position which I assumed in my interview with you. The other proposition, viz., that the railways in India will not at any future period form a burthen on the revenue or resources of India, is one on which the existing evidence is not, from its nature, so decisive.

The only line hitherto open which has afforded anything like the approximation to a test of its results, is that of the East Indian Railway Company.

Taking the experience of the first section of that line, the revenue already realised will more than pay the guaranteed interest on the cost even of the first section, and that notwithstanding that hitherto the traffic on that section has been but little developed, the rolling stock has been limited, the arrangements imperfect, the working expenses comparatively heavy, the trade comparatively small. When the line is further advanced, and communication is open with the Ganges and the commerce of that vast district, there is no doubt that it will increase to a vast extent. But that is not all. The increase of revenue will be in a ratio much larger relatively to the cost than the increased distance, while the fixed expenses will relatively decrease, and this will be the case as each section opens. Moreover, the charge for interest on capital unproductive, while the railway is in course of construction, will also diminish in proportion as it opens. If the receipts of the first section pay the current interest, the receipts of two continuous sections will do more, and as the traffic developes by each extension, the revenue will extend not only to pay the current interest, but to accumulate a fund

fund towards repayment of the interest already paid. For example, while the Bengal line is only open to Raneegunje, the whole of the capital not employed in that section is unproductive, and the interest paid is a dead charge upon it. Thus, at present, the productive capital does not much exceed 1,000,000 *l.*, while the unproductive is 5,000,000 *l.*; but, as soon as the line is open to Rajmahal, the capital productive will be raised to 3,000,000 *l.*, while the capital unproductive will be reduced to 3,000,000 *l.* It is true that, by that time, further capital will have been expended, and the proportion of productive and unproductive capital may not therefore have become materially changed, but this will not continue, because as the completion of the work advances the productive capital will gradually absorb the unproductive. But as the traffic developes on the extended line, it is only a reasonable and natural conclusion based on the experience already attained, that the revenue increased by the increasing traffic, with the expenditure reduced by being wider spread and by improved arrangements, will not only supply the current interest, but will provide a surplus above the guarantee, which at first as to the whole, and hereafter as to a moiety of it, will be immediately applicable by the East India Company, as a fund to repay the interest already advanced. This operation will be repeated as each section opens; the dead capital will decrease as the productive capital increases, and while the current interest will be provided out of the capital as heretofore, the surplus receipts will be accumulating in the hands of the East India Company (as the interest made on the surplus capital will or should have done), towards defraying any dead charge of interest advanced in excess of that receivable from the profits of the railway.

Thus the working of the arrangement between the East India Company and the railway companies is this. The East India Company grants a conditional guarantee, by means of which the capital is raised. In return for this guarantee, it stipulates for the custody of the railway capital. Out of this capital, it provides for the current interest, employing the balance for its own purposes; and it repays itself the money thus advanced, with interest, out of the revenues of the railway.

In discussing the subject, however, the possible contingency must not be excluded from view, that in the case of some or one of the railways, when completed, and in work throughout, the revenues from traffic may not, at the first opening, realise more than sufficient to pay the current interest. It is not reasonable to contemplate their falling short of this, because, the lines having been selected by the East India Company, and worked under their direction, they are not likely to be so worked as to be burthensome. Assuming the case contemplated to arise, and the capital account of the railway to have been closed, whatever sum shall have been paid by the East India Company up to that time, in the shape of interest, will form an advance by the East India Company to the railway company. Even in that case, however, the East India Company may be protected from actual pecuniary advance by an arrangement with the railway company, to leave in their hands, at interest, such a sum as may be necessary to cover the amount of interest paid. Or assuming that arrangement to be open to any objection or difficulty, the principal sum might form a portion of the money borrowed by the East India Company on loan. It is not probable that the amount would be large, and if the railway receipts develope as rapidly as the experience hitherto renders probable, the surplus above the guaranteed rate will probably more than provide the interest necessary on the dead charge, regarded as money raised by the East India Company. Let it be assumed, for instance, that the line to Lahore is completed at an outlay of 15,000,000 *l.* sterling, the capital account closed, and the railway company unwilling to allow the surplus capital raised to remain on loan, and that the money advanced for interest amounts to the improbable sum of 1,500,000 *l.* If the revenues of the railway should realise only 6 per cent., one-half of the surplus above 5 per cent. would be appropriable by the East India Company in repayment of back interest; and that sum would amount to 75,000 *l.*, or 5 per cent. on 1,500,000 *l.*, the debt assumed to be incurred on the account of that railway. But if the railways proceed on the scale of which the interests of India admit, and seem to render desirable, the great trunk lines in the three Presidencies will have opened and been in full work long before the supplies of capital constantly being paid to the East India Company on account of other railways in progress will have ceased. These funds will always be in excess of the drafts on them for the current outlay (as those of the present trunk lines have been and are); and will always extend to meet a large aggregate advance of interest on account of those companies whose capitals are closed. In the meantime, the traffic on the lines open will have developed, and the surplus receipts above the guarantee will form an available fund to provide the interest on a loan, if it should be found necessary to raise it, for railway purposes.

But while this is the immediate financial view of these transactions, there are broader and larger considerations involved in them, which sink the mere pecuniary question into insignificance. Let it be assumed that the construction of the trunk lines of railway in the three Presidencies should leave the East India Company with a dead charge of the large sum of five millions sterling, composed of interest advanced on capital unproductive during their construction.

The numerical force (if I am correctly informed) of the armies of India does not fall short of 300,000 men; the yearly cost of the military establishment considerably exceeds ten millions sterling.

Can it be doubted that the direct saving to the East India Company in the economy of their military and administrative arrangements, through the introduction into the country of a system of locomotion, which would enable the East India Company to concentrate their forces on any one or more point at a rate of speed of 400 miles a day instead of 10, would far

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far more than redeem a charge of 200,000 *l.* or 250,000 *l.* paid in annual interest on five millions sterling thus expended.

I do not enlarge on this point, because my knowledge on subjects of Indian finance, and arrangements generally, is not sufficient to entitle me, and the limited time at my disposal does not allow me to do so; while your information on all these subjects is consummate. But even if the economy thus involved were less certain and extensive, can it be doubted that, on a large view of the resources and revenue of India, both would increase under the influence of the railway system, to an extent which would far more than outweigh any moderate increase on the actual expenditure?

The fixed debt of five millions, which I have assumed, presupposes the outlay of capital imported into India from Great Britain, amounting to thirty millions and upwards, and laid out on that class of works most promotive of trade and commerce, viz., public highways. Can it be doubted that the revenues of India would be increased to the extent of interest on the smaller sum of five millions? But, if so, the great object will have been attained of attracting British capital into India to the amount of thirty millions sterling, at no present cost to the Indian revenue, with the ultimate certainty of great resulting advantages to the country.

But even these are narrow views of the subject. The East India Company derive an annual revenue exceeding twenty-five millions sterling from India; and surely it is not too much to expect that they should lay out some portion of that money annually in public roads, and not look for the means wholly to capitalists in Great Britain, accepting their assistance only to an extent that can be proved to involve actual pecuniary profit.

I now pass on to the question which was more immediately involved in the object of the interview sought with you by the Oude Railway Company, viz.:—Whether the East India Company ought to be called upon to extend the principle of guarantee to other companies than those embraced in their present arrangements?

It appeared to be considered as matter of doubt on the part of yourself and your colleague whether future railways should not be left to their own inherent prospects. I have given much consideration to this question, and my own mind has arrived at two main conclusions bearing on this point, which I may thus state shortly, viz:

1. That the railway companies, as individual enterprises, would be better without the guarantee of the East India Company, if its absence would secure them immunity from the control and restrictions imposed in the contract, and submitted to for the sake of the guarantee, assuming always that the capital could be raised without a guarantee.

2. That the East India Company derives a large benefit from the guarantee through the conditions which it enables the Court to impose upon the railway companies, and through the means which it affords of obtaining the necessary capital, and that it is neither their interest nor their policy to resign it.

In arriving at these conclusions, I assume that the restrictive stipulations in the contract submitted to by the railway companies are the price of the guarantee, and that if the guarantee were not given those conditions could not be exacted, but that the railway companies must be, as in England, free and unfettered.

I assume further that the interests of India require that the railway system should have full scope in that country, at the earliest period, and that there is no class of public works there which is of such primary importance as the establishment of roads through the country.

It is not necessary here again to examine very critically the cost of the guarantee to the East India Company.

I have already explained its nature; that it extends simply to an advance of interest by the East India Company, pending the unproductiveness of the railway; that the means of its payment have hitherto been found in the railway capital lying in the treasury of the East India Company; that this will always be the case until the railway in respect of which it is paid is completed; and, supposing that climax attained, so long as the capital of other railways to a sufficient amount is in the treasury of the East India Company; that immediately the railway is productive, its first receipts are to be appropriated in discharge of the obligation of the East India Company to pay currrent interest; that one moiety of the surplus receipts above the guarantee are also thenceforth applicable to payment of the interest theretofore advanced, and that that interest is to be repaid with interest.

It is obvious that there is nothing in these provisions, viewed as the price of the railways, burthensome to the East India Company, unless in the contingency of the revenues of the railways not paying current interest. That risk is undoubtedly undertaken by the East India Company, and is involved in the guarantee; but, in assuming that the railways are a work of corresponding advantage to India, I assume also that, if not constructed by a company, they must have been undertaken by the Government. But if the Government had undertaken the work on its own account, it must have provided the funds for the purpose, and, if so, it must have raised the money by loan, and found interest for the money so raised. Would the Government have been better by such an arrangement? In that case the East India Company, as the Government of India, would (if they could have raised the money) have had to provide the interest either out of capital raised directly for the purpose, on their own account, or out of the revenues or resources of India. Under the present arrangement, it is provided for them out of capital raised by others during the construction

struction of the line, and the first receipts of the line are no less charged with its payment now than they would be if the railways had been in their own hands.

It is true that the rate of interest charged against the railway is higher in respect of money raised through the machinery of the railway companies, than it would be if raised by simple loan; but that is a result due to the complex and artificial character of the guarantee, and which might be removed at any time by adopting a simple guarantee.

It must also be admitted that if the East India Company had decided on constructing the railways on their own account, their position would have been better in the event of the railway paying more than the guarantee, because in that case they would have been entitled to the whole, instead of a moiety of the excess. But this view has no bearing on the inquiry as to the burthensome quality of the guarantee to the East India Company under the existing arrangement. The surrender of the moiety of the surplus profits is a sacrifice by the East India Company if the line produce them, but it is only by the adoption of a principle of personal construction which they have repudiated on grounds of policy that this benefit could have been realised.

The cost of the guarantee to the East India Company therefore lies only in the risk of the railway not paying that sum in revenue. That is a risk which the East India Company must have borne if they had undertaken the work themselves. All the other provisions of the contract are to their advantage.

Let us now see the effect of the stipulations exacted by the East India Company from the railway companies, and examine how far they involve benefit to the East India Company, corresponding with the burthen of the guarantee, and how far on the part of the railway companies they amount to an adequate consideration for the guarantee.

The first stipulation secured by the East India Company is the choice and direction of the line and route of railway to the exclusion of competition, and the adoption of their own interests in preference (when they may happen to differ), to those of the railway company. This privilege has been considered in foreign countries so great as to induce the French and other governments to concede a guarantee of interest, or to give other equivalents, in return for it. In India the object is still greater, because it has enabled the Government to select political rather than commercial lines. But this is only a small feature in the restrictions imposed on the Indian railway companies. In the construction of the works the East India Company reserve the power to direct the most costly and most permanent material and work, instead of that which the more immediate interests of the existing speculators might prescribe. They secure the possession of the capital subscribed, and the revenue as received, and stipulate for a right to charge interest on all money, even though advanced out of the railway capital. They stipulate for the right to prescribe and regulate the fares of the railway, bargaining for themselves that their mails shall be carried free of charge, and their troops and stores at the lowest rates. They stipulate for the right to regulate the number of trains to be run, and the rate at which they shall travel; for the repair and maintenance of the road and works, and for the supply of such a plant as they may consider necessary, and for the liberty to execute the repairs themselves, and charge the railway company with the cost of them, if not executed when required, and to their satisfaction. They stipulate for the right to regulate and audit the whole of the railway expenditure—to prescribe the charges that shall appertain to revenue, and to allow only such expenditure as they shall certify. They secure all these provisions by the appointment of an ex-officio director, and assume and exercise a right of supervision and control both in London and in India, not only by the Home and Local Government, but by officers representing them in both places. Finally, they stipulate for the right to purchase the railway at the expiration of 25 or 50 years from the date of the lease either for money or an annuity.

It is obvious that these stipulations not only involve great advantage to the East India Company, but leave the railway company tied and bound in their hands. The power in all things is in the will of the East India Company; the executive only, in the hands of the railway company, as the agents, to do their pleasure. Could the East India Company substantially have had more power if they taken the construction of the railways upon themselves? Could they have obtained the money more easily, or have paid a less price for it? Finally, could they by that or any other mode have attained the outlay of so many millions of British capital, under a simple obligation to repay it in the form of an annuity for 99 years?

On the other hand, is it possible that any association of capitalists could be found to undertake the construction of such works at such a distance, and under such circumstances, without a clear and satisfactory guarantee, independent of all risks, of such a rate of interest as would be an adequate return for the capital so employed. The ingredient of estimated profit is by the nature of the arrangements withdrawn from the undertaking. What remains but the guarantee as the inducement, not to say the justification, for the venture? It is true that there is an expectation of profit beyond the rate of guarantee, because the parties investing in the undertaking trust to the East India Company as a government, to exercise their power with reason and equity, and to the prospects of the railways, as possessing inherent merit, ensuring profit, even under unfavourable circumstances. But it would be unreasonable to expect that the confidence of any shareholder in the East India Company, or the railway system, or both, would be sufficient to induce him to risk his money in an undertaking every productive element of which was under the control, and in the hands of a body whose interests were not only not identical with his own, but on some points absolutely conflicting with them.

Upon all these grounds, and many more that might be stated, it is clear that it would be unreasonable

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unreasonable to expect that railways in India should be undertaken on the scale and subject to the conditions which appear to be considered desirable, without the guarantee. It remains to say a few words upon the question, whether the East India Company should be prepared to relinquish the control and stipulated advantages embodied in the existing system; and whether, if willing to do so, capital for future railways could be raised without a guarantee.

The first proposition thus enunciated is one peculiarly for the Court of Directors. Assuming companies willing to embark in railways in India without a guarantee, it might be well worthy of the consideration of the Government whether they should not be permitted to do so. If they did, it must of course be stipulated that the companies should be free to select their own lines and route; prescribe their own mode of construction; stipulate for their own rates of fare; be paid alike by the Government as by individuals for the carriage of mails, troops, and stores; receive their land free of cost; and be the guardians and comptrollers of their own capital and financial arrangements.

Assuming the East India Company to be willing to leave the railway companies free on all these points, provided the railway companies would relinquish the principle of a guarantee, would the railway companies be better or worse by the arrangement? In considering this question, let us see what the railway companies gain by the guarantee. The guarantee secures them a certain rate of interest until the line is open, with power then and thenceforth to relinquish it, and receive back their capital. But no association of capitalists would be found to subscribe their capital for a railroad in India without first satisfying themselves that it would yield a much larger rate of interest than any guarantee hitherto conceded. There exists no authority sufficiently certain to satisfy the British public of such inherent prospects in any line of railway in India, and therefore it must be assumed that the project of obtaining money without the guarantee must at once be abandoned. If the fact could be established, it is obvious that the company would in every respect be better by the withdrawal of the stipulations of the contract. Having selected a profitable line, they would then invest their capital as paid up (calling it up only as the necessity arose); they would pay the current interest out of the capital so invested; they would execute the line with all rapidity, and on the result the interest advanced pending construction would be a simple and not a heavy addition to the capital; they would construct their works and conduct all their arrangements on the simplest and least expensive principle; and they would work the line in such a manner, and at such rates, as regard to their own interests prescribed.

In all these respects their position would be far better than it is at present. The line would be constructed much more rapidly; the cost would be reduced greatly; and the whole control of their own interests would be in the hands of their own administration.

But it is in vain to speculate on this point, unless the money necessary for the purpose could be raised without the guarantee, and a little consideration will show that this cannot be accomplished. The capital for Indian railways is required on a large scale, and with promptitude, independently of the periodical fluctuations of the money-market. Under the present arrangements it is derived from a class of persons who are not essentially speculators. The stock has for some time been sought for permanent, in many cases for trust, investment, and this is increasing daily. It is the guarantee that produces this effect.

The portion which would be subscribed by speculators without the guarantee would, under any circumstances, be insignificant; while, on the other hand, that obtainable, if free scope be given to the disposition to treat the stock as in the nature of a government security, is almost unlimited. The Government of India, therefore, if the railways are important to them, are the parties most interested in giving the guarantee, as, without it, it would be vain to hope that money would flow from England into India as it has done, and is at present doing, as freely as it is called for.

But it may be urged, that the time has not arrived for considering the necessity of encouraging further railways in India. The three trunk lines are not complete, and there are two others in progress; these will require a large outlay, and it has not yet been ascertained with certainty that they will be profitable.

If there were any risk of the new railways interfering with the subscription of the capital for those under contract, it would be matter of grave doubt whether they ought to be now encouraged. Or, if there were any serious doubt of a value in the railways to the revenues and resources and material interests of the Indian Empire equal to the burden of the guarantee, the same considerations would arise. But the time is past for the former, and I assume that there is no doubt, in reference to the latter point, that there are numerous lines of railway the construction of which, whatever their immediate results to the companies undertaking them, would have the effect of enhancing the revenues and resources of India to an extent far beyond their cost, in the form of an annual guaranteed interest. As to these, it appears to be a most desirable object to secure the capital while it can be procured, and to employ it to the extent, first, of making the necessary surveys and arrangements, and afterwards at such rate of speed as is consistent with the progress of the existing trunk lines now in hand, in the construction of the new lines. The advantages of such a course appear to be beyond a doubt. Already, even under the adverse circumstances of a rate of interest hitherto unexampled, there is a disposition to invest moneys freely in distant and uncertain speculations. Undertakings in which Great Britain has no interest, but which are likely to be attended with results menacing to her welfare, are only awaiting a fall in the money-market to absorb our resources. Contracts have been entered into for railways in Russia, at an outlay of some thirty millions sterling. France is about, in the course of the year, to enter

enter upon an outlay of eight to ten millions sterling for further railways in that country. English capitalists have in immediate contemplation railways in Austria, to the extent of many millions. In Spain and Portugal large outlays of a similar nature are alike in preparation. Expenditure amounting to many millions is under immediate discussion for banks and railways in Turkey; and similar works in our colonies and other distant countries are in contemplation. Nearly if not all these undertakings are encouraged by the prospect of a guaranteed interest, and most of them will be greedily sought by British capitalists, so soon as money becomes more plentiful. Can it be doubted, that it is the policy and interest of the nation and of the East India Company, to anticipate these proceedings by taking up all money which can be profitably employed in our own Indian empire on works of manifest public importance, rather than to allow it to be absorbed in undertakings of questionable value to the speculators, and still more questionable result to the interests of the nation? But even still stronger grounds exist for this policy in the state of political events affecting our Indian dominions. It is said by some persons, that India in its internal position is free from risk of events making the existence of first-class roads essential. Recent experience has proved the contrary. But if it were otherwise, the events of the last few months show that her territories are liable to be menaced from without. It is unnecessary to enter on the contingency which may make the power of moving and concentrating troops with rapidity a most momentous object. Experience has shown that the people of India, however quiet in time of peace, are ready for an outbreak under any menacing state of external appearances. Who can say how soon such a state of things may develope, or what may be the value of lines of railway traversing and intersecting the country?

It is for the East India Company, as the Government of India, to consider whether they should be backward in undertaking and encouraging these great works, and lose the opportunity of securing the capital for the purpose, while it is open to them.

I have to apologise for troubling you at so much length, and have only to plead the vast importance of the subject as my excuse for doing so.

I have, &c.
(signed) *Charles Freshfield.*

P.S.—I propose to send a copy of this letter to the directors of the Oude Railway Company.