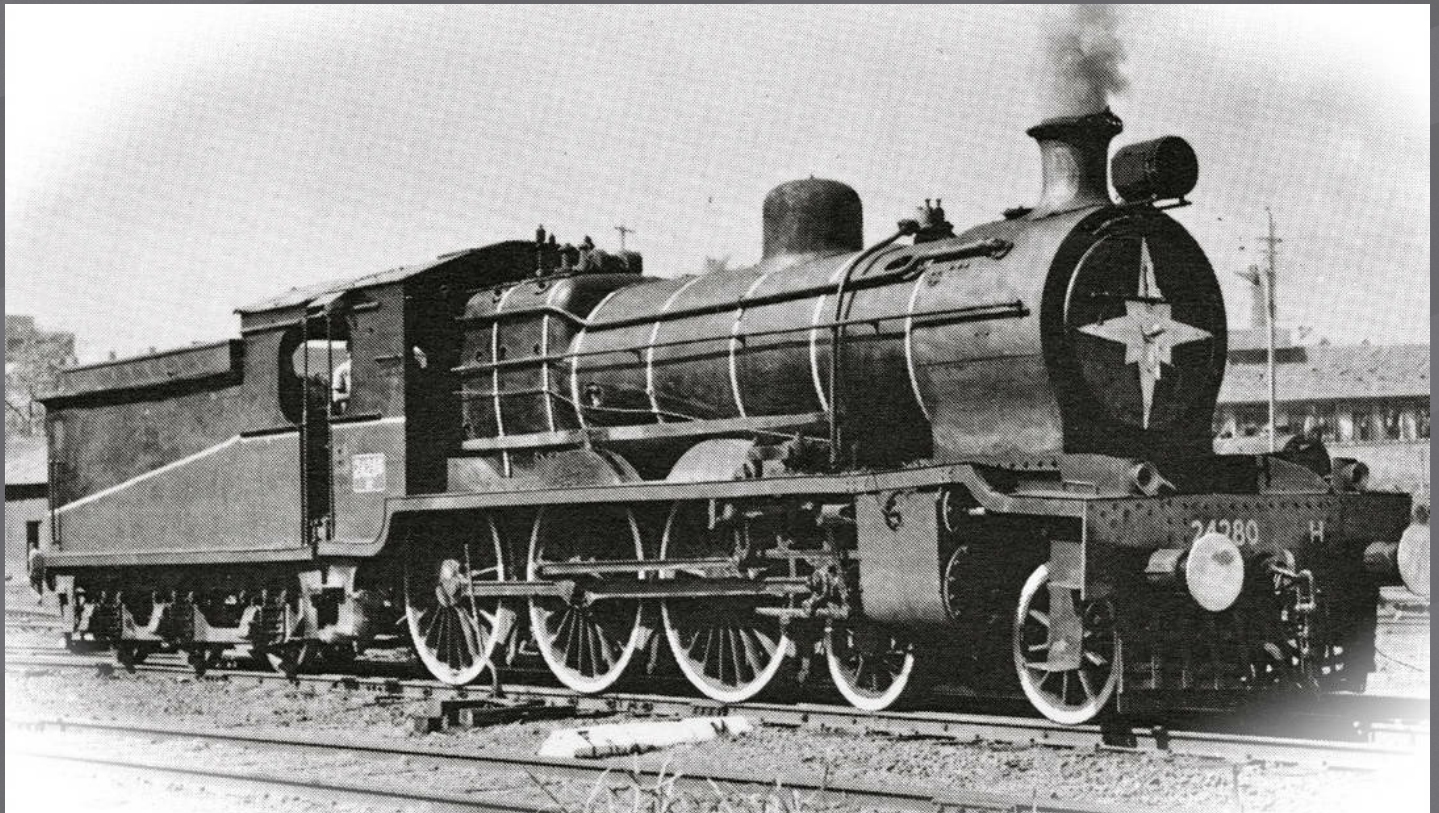


On The Completion of the Railway System of the Valley of the Indus

W. P. Andrew, (1869)



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Sani H. Panhwar

ON THE COMPLETION OF THE
RAILWAY SYSTEM OF THE VALLEY OF THE
INDUS.

A LETTER TO
HIS GRACE THE DUKE OF ARGYLL, K.T.
(SECRETARY OF STATE FOR INDIA IN COUNCIL),
ETC., ETC., ETC.,
WITH APPENDIX.

BY
W. P. ANDREW, (1869)

(CHAIRMAN SCINDE, PUNJAB, AND DELHI RAILWAYS, &C., &C.)

*"IT IS A SOLECISM OF POWER TO THINK TO COMMAND THE END, AND YET NOT TO
ENDURE THE MEANS."*—

BACON'S ESSAYS OF EMPIRE.

REPRODUCED BY

SANI H. PANHWAR (2018)

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INDIA AND RUSSIA.

THE
SCINDE RAILWAY COMPANY:
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BY
HARDY WELLS, C.E.,
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**TO
HIS GRACE THE DUKE OF ARGYLL, K.T.**

SECRETARY OF STATE FOR INDIA.

MY LORD DUKE,

The views contained in the following pages are not submitted by me for the first time to the Secretary of State for India in Council. Several of your Grace's predecessors in Office did me the honor of taking into their consideration the subject which I now desire to bring to your notice; namely, the completion of the Railway system of the Valley of the Indus. The arguments which I advanced on former occasions have since been confirmed by the very highest authorities on Indian affairs; and daily events, such as wars and rumors of wars on or beyond the frontier; famine and its attendant evils; the Russian successes in Bokhara—not to dwell with too much emphasis on the immense extension of the Russian railway system, and the persistent presence of Russian influence in Persia and Central Asia,—all have combined to concentrate public attention upon this subject, the vast political, social, and commercial importance of which it is impossible to overrate.

In order that I may lay a clear and comprehensive view of the facts of the case before your Grace, I will proceed at once to state what has already been done, and what yet remains to be accomplished, to perfect the communications on the North-West frontier of our Indian Empire.

The Scinde Railway, 109 miles in length, connects the seaport of Kurrachee with Kotree, on the Indus, opposite Hyderabad, the ancient capital of Scinde. From Kotree to Mooltan, a distance of about 600 miles by the river route, the traffic is conducted by means of the Indus Steam Flotilla. Mooltan, on the Chenaub, an important civil and military station, and an entrepot for the trade with Central Asia, is the lower terminus of the Punjaub Railway, which proceeds thence between the Chenaub and Ravee, and the Sutlej to Lahore, the political capital of the Punjaub, and terminates at Umritsur, the sacerdotal capital and one of the great commercial centres of Northern India. The Punjaub Railway, from Mooltan to Umritsur, is 246 miles in length, and, like the Scinde Line, has been for some time in operation. The Delhi Railway, when finished, will be 314 miles in length.

Commencing at Umritsur, it crosses the rivers Beas, Sutlej and Jumna, and has its terminus within the walls of Delhi; forming a junction with the East Indian Railway at Ghazeeabad, opposite the old Imperial City. As your Grace is aware, Lord Lawrence, the late distinguished Viceroy and Governor-General, opened an important section of

this railway before leaving India; and, from the satisfactory progress which is being made with the works, there is every prospect of the entire line being opened for traffic in 1870.

The completion of the Delhi Line will place Kurrachee, on the Arabian Sea, in steam communication with Calcutta, in the Bay of Bengal, on the opposite side of the Peninsula.

I have said that from Kotree to Mooltan the communication is maintained by means of the Indus Steam Flotilla; but in spite of all the efforts which have been made to render this mode of communication with the upper provinces as perfect as possible, the shallow, shifting, treacherous nature of the river Indus, makes it inefficient, uncertain, unsafe, costly, and—even under the most favorable circumstances—quite inadequate to accommodate with punctuality and dispatch the requirements of Government, the necessities of commerce, and the demands of an important Railway system.

It is therefore evident that the Scinde and Punjaub Railways, in the absence of a communicating link between them of a capacity equal to their own, are placed at a serious disadvantage, and, it is to be feared, will remain a burthen to the revenue, until the "missing link" be supplied.

The "missing link" is that line of rail which, running through the Valley of the Indus, will connect Kotree with Mooltan, whence Lahore, and Peshawur, at the Khyber Pass, the gate of Central Asia, will be quickly reached on the north; while by Umritsur, Umballa, Delhi and Allahabad, Calcutta will be equally accessible on the South.

It is to this line from Kotree to Mooltan, 480 miles in length, which would place Kurrachee, the European port of India, and the converging point of the telegraphic systems of Europe and India, in direct railway communication with Lahore, Umritsur, Delhi, and Calcutta, that I would first call your Grace's attention. Nearly every authority of eminence in India has borne official testimony to the importance of this line on political, strategic, and commercial grounds.

The second extension of the railway system of the N.W. frontier, which for many years I have advocated — happily, not altogether in vain—and the early completion of which I would now urge upon the Government, is that from Lahore to Peshawur, about 290 miles in length. It is scarcely possible to exaggerate the importance of this line in a strategic point of view, as it will afford to the great military stations of North Western India the means of speedy access to the frontier at the Khyber Pass; thus materially increasing the security of that portion of the Indian Empire which is most liable to disturbance and aggression.

After the completion of the main line of railway communication from Peshawur and Delhi to Kurrachee, in order to perfect the railway system of the Valley of the Indus, a branch line will be required from Sukkur, *via*, Shikarpore and Jacobabad, to Dadur, at the southern entrance to the Bolan Pass, a distance of 160 miles. This branch has been advocated by several distinguished Indian authorities, including Colonel Sir Henry Green, late Political Superintendent on the Scinde frontier.

Having thus briefly placed before your Grace the three extensions which are required to complete the railway system on the N.W. frontier, (from Kotree to Mooltan, from Lahore to Peshawur, and from Sukkur to Dadur,) there remains to notice a line which has been strongly recommended by the local authorities in India, from Hyderabad, *via* Oomercote, to Deesa, and which would connect the Railway system of the Indus with Bombay, by means of a junction with the Bombay, Baroda, and Central India Railway; thus affording to Scinde, the Punjaub, and North-Western India the advantage of access to an additional port on the Western Coast.

Of all the proposed extensions which I have thus brought to your Grace's notice, by far the first in importance is the "Missing Link" between Kotree and Mooltan, by which means the great railway arch connecting Calcutta, in the Bay of Bengal, with Kurrachee, on the Arabian Sea – the back-bone of the railway system of India – will be completed.

In consequence of the admitted importance of establishing unbroken railway communication between the vast and land-locked territories of the Punjaub and the port of Kurrachee, the Secretary of State for India in Council at my urgent and repeated instance authorized the Scinde Railway Company, in the year 1863, to engage a staff of engineers for the, purpose of surveying the country between Kotree and Mooltan, in order that the best route for the proposed railway might be determined.¹

The routes which present themselves for selection are three in number.

1st. Entirely on the left bank of the Indus.

2nd. Entirely on the right bank.

3rd. On the right bank from Kotree to Sukkur, (about half of the whole distance) and, crossing the river at Sukkur, thence to Mooltan by the left bank.

In forming an opinion as to the relative merits of these routes, it is necessary to consider firstly their political aspects; secondly, their commercial, and, thirdly, their engineering features.

¹ Vide appendix. Letters of Instruction from Chairman, Scinde Railway Company, to Agent and Chief Engineer.

With regard to the political considerations, I will only observe that safety to the line of Railway would be more certainly secured by the adoption of the left bank route; as the interposition of the river would afford a strong source of protection against the frontier tribes, whose lawless and unsettled character would always threaten interruption to the traffic, and depredation and danger to the line, if carried along the right bank of the Indus. In the event of aggression of a more serious nature, it would be of the utmost importance to have the railway retired behind the river.

In comparing the commercial features of the respective routes, it must be observed that the local trade does not greatly differ on the two banks of the river, and must in either case be entirely subordinate to the through traffic. I will only remark here, therefore, that the through traffic would be more effectively conducted by the route on the left bank; that route being shorter, as well as safer, than the route by the right bank.

The engineering aspect of the question is intimately connected with its commercial bearings, inasmuch as it affects both the cost of constructing the railway and the subsequent expense of its working. The engineering difficulties have been found to be greater on the right than on the left bank; consequently, the mileage cost of construction would be higher on that than on the left bank, where not only is the distance shorter but the gradients are easier.²

Having so far demonstrated the superiority of the left bank route over that by the right bank for the Indus Valley line, it becomes necessary to consider whether it might not be desirable to combine the two; taking the right bank from Kotree as far as Sukkur, and the left bank thence to Mooltan, as suggested in the third route. An argument of considerable weight in favor of this course is to be found in the fact that the facilities for bridging the Indus are stated by some authorities to be greater at Sukkur than at Kotree, for at Sukkur there are rocky foundations on either side of the river, and an island fort, also on rocky foundations, in the middle of the stream; whereas at Kotree, the foundations, although perfectly reliable, are said to be of not quite so favorable a character.

And here I may call attention to a circumstance of some importance which supplies a further argument in favor of the adoption of the right bank route for the southern portion of the undertaking. I have already stated that a branch line has been projected from Sukkur, *via* Shikarpore and Jacobabad, to Dadur, at the entrance of the Bolan Pass.³ This branch has been strongly urged by the most eminent military men and civilians connected with India, both on political and commercial grounds, and I cannot but think that indications are furnished by current events which point to a time not far distant when its construction will become a pressing necessity. Now, assuming that this

² Vide Reports of Chief Engineer on the Indus Valley Survey. (See also appendix, letter from Mr. Brunton to Chairman, dated 1st Feb., 1869).

³ See map of Indus Valley Railway system annexed.

branch will eventually be made, it is obvious that if the left bank of the river should in the meantime have been selected for the Indus Valley Railway, and the river crossed at Kotree, it would be necessary in constructing the branch to Dadur to recross the Indus at Sukkur, in order to connect the branch with the main line; whereas, if Sukkur were selected as the spot where the Indus Valley Railway should be carried across the river, one bridge would suffice for both purposes.

I will only add that, while I admit that the arguments which have been adduced in favor of adopting the right bank for the southern half of the undertaking are deserving of grave consideration, I am myself of opinion that on the whole the balance of advantage is in favor of adopting the left bank route for the whole of the distance; the more especially as a comparison of the levels taken at various points on both banks of the River⁴ would appear to show conclusively that a line on the left bank would be less liable to injury from the frequent floods which form one of the most serious engineering difficulties with which a railway in India has to contend.

Subjoined is a short statement of the probable cost of the two routes between which the choice would appear to lie, as estimated by Mr. Brunton, the Engineer under whom the survey was taken.

Route.	Distance.	Cost per Mile. (at ls. 10d. per Rupee.)	Total cost, bridges and rolling stock included.
Left Bank	480	£ 10,464	£ 5,022,720
Right Bank from Ko-tree to Sukkur, Left Bank from Sukkur to Mooltan	515	£ 11,898	£ 6,127,170
Difference in favor of Left Bank	35	£ 1,434	£ 1,104,750

It will be observed that a saving of 35 miles in the distance, and of £ 1,104,750 in the cost, would be secured if the left bank route were adopted.

Military men are well aware that the Indus Valley Railway is essential to the peaceable possession of our Indian Empire: day by day it is felt by all classes to be a more pressing necessity; the Indian press has urged it on the attention of Government with a rare unanimity, and pointed out in the strongest terms the possible consequences of apathy

⁴ Vide accompanying map showing proposed route of the Indus Valley Railway.

and delay. The Chamber of Commerce of Kurrachee, and the native bankers and merchants of the great commercial city of Umritsur, have not ceased to press the importance of the undertaking, and some time since presented an address to the Agent of the Punjaub and Delhi Railways at Lahore, expressing in strong terms their opinion as to its urgent necessity—an opinion entirely shared by the Proprietors in the several undertakings of the Scinde Railway Company, who in March, 1866, passed a formal Resolution to the effect that they considered the construction of the Indus Valley line of the highest importance, and essential to the general interests of England and India; adding that it was desirable that the Secretary of State for India should be moved by the Directors of the Company in regard to the importance of prompt steps being taken towards its realization.

The following Resolution, which was passed at a Meeting of the Shareholders of the Scinde Railway Company, held on the 30th March, 1869, in connection with the question of a proposed amalgamation of the Company's undertakings, affords more recent testimony to the importance which the Shareholders attach to the Indus Valley line, as essential to the success of the several existing sections of the great trunk highway of communication in the hands of the Company:—

"That this Meeting, believing it to be of the utmost importance to the Company's existing undertakings that early steps should be taken to unite the several sections of railway in the Company's hands in one continuous line, are of opinion that as soon as the Amalgamation Bill now before Parliament shall have become law, the Directors should take the earliest opportunity of convening a Meeting of the Proprietors, for the purpose of considering the propriety of exercising the powers to be conferred by the Bill, with the view of placing the Company in the best position for obtaining an early concession for the line between Kotree and Mooltan."

The greatest disappointment has been felt both at home and abroad at the silence which Government has hitherto observed on this vast and most important subject, and the more so that the fact of the Government having authorized the surveys in 1863 had raised the hopes of all interested in the projected undertaking.

It is to be deeply regretted that the statesmanlike policy which was the motive power of the important steps then taken, should not have been adhered to, and that a work which had already been too long delayed should have been thus further deferred.

"It cannot be necessary for me" said Lord Dalhousie, in reference to the railway system of India, to insist on the importance of a speedy and wide introduction of railway communication throughout the length and breadth of India. A single glance cast upon the map, recalling to mind the vast extent of the Empire we hold; the various classes and interests it includes; the wide distances which separate the several points at which hostile attack may at any time be expected; the perpetual risk of such hostility

appearing in quarters where it is least expected; the expenditure of time, of treasure, and of life, that are involved in even the ordinary routine of military movements over such a tract, and the comparative handful of men scattered over its surface, who have been conquerors of the country and now hold it in subjection; a single glance upon these things will suffice to show how immeasurable are the political advantages to be derived from a system of internal communication which would admit of full intelligence of every event being transmitted to the Government under all circumstances, at a speed exceeding five-fold its present rate, and would enable the Government to bring the main bulk of its military strength to bear upon any given point in as many days as it would now require months, and to an extent which is at present physically impossible.

"And if the political interests of the State would be promoted by the power which enlarged means of conveyance would confer upon it, of increasing its military strength, even while it diminished the numbers and cost of its army, the commercial and social advantages which India would derive from their establishment are, I truly believe, beyond all present calculation. Great tracts are teeming with produce they cannot dispose of; others are scantily bearing what they would carry in abundance if it could only be conveyed whither it is needed. England is calling aloud for cotton which India does already produce in some degree, and would produce sufficient in quality and plentiful in quantity, if only there were provided the fitting means of conveyance for it from distant plains to the several ports adapted for shipment."⁵

The magnitude of the results already achieved by the introduction of railways into India, and the importance of pushing onward towards completion the works already begun, were forcibly illustrated in an able and interesting speech delivered by the late Viceroy in October last at Umballa, on the occasion of his officially opening the Umballa and Meerut section of the Delhi Railway. "The section of railway," said Lord Lawrence, "which I am now about to open, forms an important portion of the Delhi Railway. That undertaking commences at Ghazeeabad, near Delhi, and unites that city and the East Indian Railway with the great city of Umritsur, the entrepot of the Punjab, as well as with Lahore. The distance between Ghazeeabad and Umritsur is just 302½ miles. When this distance has been completed throughout, we shall have a continuous line of railway for upwards of 1,300 miles, from Lahore to Calcutta. Portions of the Delhi Railway on two sides, besides this section, have been already opened, and the whole will be finished in eighteen months. When this has been accomplished, the Punjab will be firmly united to the seaport of Calcutta by a railway passing through many important towns, and a number of large military stations, situated in fertile provinces, inhabited by industrious races, among them the energetic and warlike tribes of Northern India. And again, when the construction of the missing link between Mooltan and Kotree has been accomplished, the centre of the Punjab will be in easy and rapid communication

⁵ Minute by the Most noble the Governor-General of India, 20th April, 1855.

on two sides with the ocean; on one side with Kurrachee, southwards by the valley of the Indus; on the other side eastwards with Calcutta by the valley of the Ganges. The Delhi Railway in its course of 302½ miles, besides frequently crossing various branches of canals, spans three large and celebrated rivers—the Jumna, the Sutlej, and the Beens, and one great mountain stream, the Gugger. I recollect in the height of the struggle in 1857, we lost nine horses of a single Battery of Artillery on its way to Delhi, in this torrent. The aggregate waterway required for these rivers amounts to eleven thousand three hundred and forty feet, or upwards of two miles. These works will prove a lasting monument of the skill and resources of English engineers, and cannot fail to impress the people of the country with profound astonishment. It is well worthy of commendation that there has been no collision, no ill-feeling between the contractors employees and the people; but that on the contrary the work has been carried on to their mutual satisfaction and benefit. The railway has given abundant employment and good wages to thousands of laborers of all classes, and has served to train and improve the skill of many industrious artisans.

"The great social, commercial, and political importance of railway communication is now universally admitted. In no country, and to no Government are such advantages more patent and more valuable than in India. I recollect the time—it was in the year 1831—when with much trouble and vexation I managed to reach Delhi by palanquin post in fourteen days from Calcutta, and it was considered a very rapid journey. In those days, and indeed for many years afterwards, people were allowed six months to reach Gurmucktesur Ghat on the Ganges, near Meerut, from Calcutta. Boats and servants were engaged, and provisions laid in, as if for a voyage round the Cape from England to India. But while railway communication is doing so much for the country, we ought also to bear in mind the cost of this advantage. It is therefore very desirable that while the State insists on good work and suitable designs, we should do that which may be practicable to insure careful and economical expenditure of the capital devoted to such purposes. The Delhi Railway is expected to cost about £15,000 a mile when completed, which is considerably below the average in India."

Mr. Juland Danvers, the Government Director of Indian Railways, in one of his official Reports, remarks that although it will be some time before the Government receive back the sum advanced to the Railway Companies on account of guaranteed interest, "in the meantime, the State obtains, both directly and indirectly, a return which fully compensates for the liability which it has incurred. In the form of direct gains may be reckoned the free conveyance of mails, a great reduction in the expense of moving troops and public stores, and an increased revenue from salt; while the indirect advantages are incalculable, whether we regard as such the greater security to the country which railways afford, the impulse they give to commerce and agriculture, or the extent to which they promote general prosperity and individual comfort."

If there be any line more important than another in respect of the "greater security to the country" which it would afford, it is surely that which stretches from the sea at Kurrachee to the great military stations in the Punjaub and Northern India, passing through that part of the country which would form the basis of operations in the event of any aggression instigated by Russia, the only power whose presence on the frontier of the empire need give rise to any apprehension.

"A complete Indus Railway," writes Lord Lawrence, "would admit of troops being rapidly brought up from Kurrachee to Lahore, or of being similarly concentrated at any spot all along the line opposite to the frontier. This is a point of primary importance. If a railway from Lahore to Peshawur would produce a beneficial effect at Cabul and in Central Asia, a complete line from Lahore to the sea ought, at least, to have an equal effect, while the additional material strength it would give us would, I submit, be greater."⁶

That "the Mooltan and Kotree line would appear to have, at the same moment, both great military and great commercial importance" is the opinion of the Hon. H. S. Maine, of the Governor-General's Council. Mr. Maine observes that "it will connect with the sea by an easy line of access, a series of provinces of which some are growing in wealth more rapidly than any other part of India."⁷

"I have not," says Sir Bartle Frere, in his statesmanlike Minute on the Indus Valley Railway, "discussed whether the line should take the right or left bank of the Indus between its two terminal points: I myself consider the balance of advantages to be in favor of the left bank line; but if the right bank be considered to have stronger claims, by all means let the Railway be on the right bank. All I would strongly urge is, that the Punjaub and Scinde Railways should be connected by a line of rail on the one bank or the other as soon as possible.

"Nor will I discuss whether the northern section from Mooltan to Sukkur, or the southern from Sukkur to Kotree should be first taken in hand. I would urge that both sections be taken in hand simultaneously, attention being first directed to those points which, like the great river and canal crossings, will take longest to complete. As regards the military and political importance of the Indus Valley line, it is sufficient to say that it connects all the garrisons of the Punjaub and of its northern and western frontier with their most natural sea-base at Kurrachee. I cannot doubt but that sooner or later, and I fervently trust at no distant period, a line will be made from Lahore to Peshawur, and it will then be possible, with the help of an Indus Valley line, to send in a few days troops and material from the sea to the Punjaub frontier, instead of occupying whole months as they do at present. It is quite impossible to exaggerate the enormous importance of

⁶ Extract from a Minute by the late Governor-General of India (Lord Lawrence), dated 18th December, 1886.

⁷ Minute by the Hon. H. S. Maine, Member of the Governor-General's Council, dated 8th November, 1886.

this additional facility, whether in view to the operations on the sea coast, or on the Punjaub frontier and Northern India."⁸

Sir Charles E. Trevelyan, in a letter published in the "*Times*," on the 20th January, 1868, wrote as follows:-

"Kurrachee, at the mouth of the Indus, has become a great entrepot for our piece goods and the other staples of our export trade. A guaranteed railway system has been successfully matured, and it is proposed to complete the Indus Valley Line, and to extend the Punjab Railway from Lahore to Peshawur. These lines ought to be vigorously prosecuted as Imperial works, and branches should be made from them to the extreme limits of British territory at the mouths of the Bholan and Khyber Passes, and, perhaps, to one or two other points on the frontier."

Major-General Sir Henry Durand, R.E., Member of the Governor-General's Council, in an official Minute on the subject, has added his valuable testimony to the importance of the Indus Valley line. "The importance," says Sir Henry, "of bringing the Punjaub and the whole line of the Indus frontier into easy communication with the sea-board seems commercially, politically, and militarily, of extreme moment. I think the line of railway should be on the left bank of the Indus. I regard a line of railway from Lahore to Attock, on the left bank of the Indus, as part and parcel of our Indus frontier railway system, and should certainly consider it as only second in importance to the Mooltan and Kotree line. To my mind it is an integral and necessary part of the Punjaub railway system, which would be seriously incomplete without it. The whole of these Indus frontier railways should, if possible, be under one management and one company."

Having thus placed before your Grace the opinions of various eminent authorities as to the imperial necessity of the Indus Valley line, and having urged its importance from a political and military point of view, which alone would justify its immediate commencement, irrespectively of its prospects as a remunerative undertaking, I will now add a few words bearing more directly on the commercial features of the question.

Notwithstanding the vast extent of India, and the numbers of its inhabitants, the harbors on its coasts are few in number, of very inferior capacity, difficult of access, and, in some cases, liable to most disastrous storms, while the accommodation and facilities offered to commerce are utterly insignificant. The difficulties and dangers of the Calcutta and Madras harbors are too well known to need more than a passing notice. Bombay, indeed, affords great natural advantages; but until a considerable outlay has been made in the shape of docks, &c., its convenience as a port during the prevalence of the S.W. Monsoon will be much restricted from want of shelter.

⁸ Minute of His Excellency Sir Bartle Frere, K.C.B., Governor of Bombay, dated August, 1866, on the Indus Valley Railway.

The port of Kurrachee, at the mouth of the Indus, is obviously destined to take rank as a most important centre of eastern commerce. Not only is it the sole outlet of the countries drained by the Indus and its tributaries, and the only possible harbor for several hundred miles along the coast in either direction, but it is also the Indian port nearest to Europe. By the existing overland route it is 205 miles nearer than Bombay, and during the S.W. monsoon virtually 735 miles nearer; this estimate of the relative distances being taken from a report to Government by a committee of naval officers.

Sir Charles Napier's ready genius and eagle eye immediately recognized the importance of Kurrachee as a harbor, and foresaw the commanding position to which the place he found as a village was destined to rise.

"*The Calcutta interest*," writes Sir Charles Napier, "may writhe and twist at the growing trade of Kurrachee; but the whole commerce of the countries N.E. of Scinde will finally descend upon Kurrachee, and the march of Alexander the Great from the Beas to the Ocean, with the voyage of Nearchus, marks the coming line of European trade with India. The time is not far distant when it will be adopted. The Indus, the Jhelum, the Chenaub, the Ravee, the Sutlej, the Nerbudda, and railroads, will unite to give the ascendancy to Bombay and Kurrachee."⁹

From the last official report of Mr. W. Parkes, Consulting Engineer to Government for Kurrachee Harbor, it would appear that the works now in progress for the improvement of the harbor have already been attended with the happiest results; and it is stated that the capacity of the harbor has been virtually trebled.¹⁰

Had the works designed by that eminent authority the late Mr. Walker, and now at length being carried out under the advice of Mr. Parkes, been prosecuted with greater vigor and without the interruptions occasioned by frequent changes in the executive, there is no doubt that the prosperity of Kurrachee, rapidly as it has advanced, would have been much greater at this moment. Such delays as those which have been allowed to take place can only tend to swell the ultimate cost of the works; and now that the opinions put forward by military engineers, who must be regarded as amateurs in harbor engineering, have been set aside in favor of those of such practical authorities as Mr. Walker and Mr. Parkes, and it has been determined to proceed with the original designs, it is to be hoped that no motives of present economy will be allowed to retard the progress of a work with which the prosperity of the whole of North Western India is so intimately associated.

⁹ "*Life of General Sir Charles Napier*." John Murray, London.

¹⁰ Twenty-fifth Report of the Directors of the Scinde Railway Company.

The following return, obtained from the Collector of Customs, shows how the shipping frequenting the port of Kurrachee is increasing: —

Year.	Square-rigged Vessels and Steamers.			
	Arrivals.		Departures.	
	Number.	Tonnage.	Number.	Tonnage.
1856-57	52	24,024	54	24,493
1857-58	87	49,830	75	41,450
1858-59	96	52,927	101	56,554
1859-60	101	60,994	101	60,033
1860-61	109	61,589	101	56,929
1861-62	110	56,829	115	58,094
1862-63	128	62,161	129	58,843
1863-64	155	74,252	155	75,019
1864-65	71	46,247	64	41,687
1865-66	118	66,377	116	66,280
1866-67	120	76,808	113	73,553
1867-68	170	111,648	171	111,798

It is scarcely possible to estimate the impulse which the proposed Indus Valley Railway would give to trade, by supplying a certain and unbroken communication between important producing districts, and a port which is capable of great development.

"The Indus Valley line," says Sir Bartle Frere, in his admirable Minute already alluded to, "is the natural line; the shortest by many hundred miles; the easiest and most direct line between the sea, and at least 20 millions of people, British subjects, or their allies, or immediate neighbors, and customers. These 20 millions of people are mostly (for India) of very spirited races, intelligent and enterprising, but docile, and at present fairly peaceable, industrious agriculturists, and persevering traders.

"The Indus Valley line touches the sea at the port of Kurrachee. In twenty-two years, from 1843-44, the sea-borne trade of Scinde rose steadily from £122,000 to 4¾ million sterling in value, and the exports from almost nothing at all (about £1,000 value) to little short of 3 millions, and there is every prospect of a steady increase. Twenty years ago no cotton or sheep's wool was exported from Scinde; in 1864-65 nearly 25 millions of pounds of cotton, and 18 millions of pounds of sheep's wool were exported, of which four-fifths were exported direct to Europe. When it is considered that 450 miles of Railway, from Kotree to Mooltan, along an alluvial country, without a hill a hundred feet high throughout its whole course, would connect 20 millions of cultivating and

trading people with their nearest sea-port, it seems to me superfluous to attempt to prove that such a Railroad must pay."¹¹

The Punjaub has been described as the *Bulwark of British India* behind which all other provinces may repose in comparative safety so long as it is impregnable. It comprises within its borders an area of nearly 200,000 square miles, with a population of 22,000,000 subject to our rule or influence, very nearly equaling in number the inhabitants of England and Wales. The trade of Umritsur, the chief emporium for the commerce of the Punjaub and Central Asia, has been officially valued at £ 3,500,000 per annum. Its merchants have relations not only with Chinese Tartary, Cabal, Candahar, Herat, Ispahan and Constantinople, but also with London, Paris, and other European capitals. The city contains a population of 120,000 souls, and is the religious, as it was the commercial capital of the lately dominant race.

Of the commercial importance of railway communication between the Punjaub and Kurrachee, some idea may be formed from the following extract from a Government Report written during Sir John Lawrence's tenure of office in the Punjaub.

"Already some 5,357 tons, or 150,000 maunds per annum of Punjaub produce find their way with difficulty down the Indus, and this will, it may be hoped, become the nucleus of a mighty traffic. That the Punjaub must be producing more than it can consume is easily calculated. The cultivated area has been returned at 12,751,151 acres. Some three-fourths of this area are certainly grown with articles of daily food, namely, wheat, barley, and Indian corn, maize and rice. At an ordinary average of production per acre, namely $6\frac{1}{4}$ maunds, some 80,164,616 maunds or 2,863,022 tons may be produced annually. There are thirteen millions of souls; at an ordinary consumption per annum of about $4\frac{1}{2}$ maunds or 360 lbs. to each person, they would consume 59,000,000 maunds or 2,107,143 tons in a year, which, deducted from the aggregate produce, leaves a surplus of 777,481 tons, which surplus, though attained by a rough calculation, will give some idea of the actual state of the case. What is to become of this surplus? If possible, it should not be allowed to fill our granaries and glut our markets, causing derangement of prices and embarrassment to the agriculturists, yet it cannot be exported to Burrachee, unless the communication shall be improved by steam or rail, or by both.

"That this can be effected, there is happily reason to suppose, as will be seen in one of the following sections, (IV). In this place, therefore, it is sufficient to urge that the measure is of the very last importance to the agricultural interest and to the future prosperity of the Punjaub, and that until something of the kind be effected, there must always be some anxiety regarding our land revenue. Let means of export, the great desideratum, be once supplied, everything will follow. There are known to be nearly six millions of culturable acres yet to be brought under the plough. There is a population,

¹¹ Minute by His Excellency Sir Bartle Frere, G.C.S.I., K.C.B., on the Indus Valley Railway, dated August, 1866.

prolific to increase, hardy and industrious to labor. There are vast supplies of water in the rivers and facilities for excavating canals. Then money will be abundant, prices will recover their standard, and the land revenue will flourish."

"The traffic may be already considerable and promising, but it is now as nothing compared to what it would become, with the advantage of Rail. In the chapter on land revenue the enormous and increasing production of cereals beyond the present consumption, the probable surplus produce amounting to a quarter, perhaps half a million of tons annually, the quantity of unreclaimed land capable of production, the great productive power of the people, were demonstrated. Wheat of excellent quality is grown, and this is eminently a corn producing province. Sugar cane of first rate quality is already grown."¹²

Another official Report on the Administration of the Punjaub—that for the year ending 30th April, 1861—contains much valuable information regarding the trade of Central Asia, as well as on the growth of cotton, flax, silk, and other products. It appears that 44,399,720 lbs, of cotton were grown, and 13,773,950 lbs, exported to the neighboring countries; not 4,100,000 lbs, reaching the sea on account of the expense of transport, although the local price was only about ½d. per lb. The Government tea plantations produced 26,532 lbs, and distributed 103,156 lbs, of seed among 22 Europeans and 375 natives.

In official returns furnished by the Collectors of Scinde, the average annual agricultural produce of the right bank of the river is given at 324,140 tons, and that of the left bank at 270,000 tons. Of this it is estimated that the surplus produce available for export amounts to 198,000 tons on the right, and 177,000 on the left bank of the river; exclusive of that of the Khyrpore and Bahawulpore territories, which may safely be taken at 10,000 tons.

The northern portion of the Indus Valley line would pass through Bahawulpore, of which district Sir Bartle Frere, Sir Henry Durand, and the Political Agent, Captain Minchin, give most favorable accounts.

This State comprises an area of 2,483 square miles, of which 1,781 square miles, or a little more than two-thirds, are cultivable. Of this, 1,111 square miles are now in a state of cultivation; about 537 square miles being irrigated by canals, and 168 by water supplied from wells. The population in the cultivated part of the State is estimated at 147 per square mile. The State contains nine fair sized towns, and upwards of 2,000 villages. Subjoined is a statement taken from an official Report by Captain Minchin,

¹² Extracts from Report on Administration of Punjaub, from 1854 to 1856.

shewing the different crops grown in this territory in 1866-67, the number of acres under cultivation, and the yield in maunds.¹³

So far back as 1860, Mr. Danvers, in his Annual Report to the Secretary of State for India in Council, remarked, in allusion to the undertaking of the Scinde Railway Company, that "the great object contemplated in these combined undertakings is the establishment of a sure and speedy means of communication between the port of Kurrachee, in Scinde, and the Punjaub; as well as the connection of Lahore and the north-west frontier of India, with Calcutta on the one side, and the western coast on the other."

Without the Indus Valley Railway, however, the object contemplated, and thus concisely stated by Mr. Danvers, can never be attained, as the Indus Steam Flotilla, although it has done valuable service to the State, and to the Company who established it, has proved quite incapable of maintaining "a sure and speedy means of communication" between Scinde and the Punjaub.

There are reasons, as I pointed out many years since, why it is highly desirable that in the first steps towards the introduction of railways into a new country, advantage should be taken, where the opportunity exists, of organizing a means of transport by river steamers. This arrangement is in some instances a positive necessity, as without the assistance of river steamers it would in many cases be necessary to delay the commencement of the large bridges, and other railway works, whose construction occupies a long period of time; until the completion of each separate section of railway from the sea inland should afford the means of conveying the heavy materials required. The Indus Steam Flotilla furnishes a case in point, as it is not too much to say, that the Punjaub and Delhi Railways would have been as yet scarce begun, but for the assistance afforded by the river steamers on the Indus.

River steamers, however, do not at the best afford a satisfactory or reliable means of communication, and, where the navigation is not exceptionally easy and safe, they should be regarded as only temporary, and as destined to be eventually superseded by

¹³ Autumn crops rice, 1,37,865 acres, 8,00,000 maunds; *jowar* and *bajra*, 93,170 acres, 5,50,000 maunds; indigo, 2,226 acres, 6,000 maunds; sugar-cane, 329 acres, 3,000 maunds cotton, 2,219 acres, 12,000 maunds, *mung moth* and *mash* (vetches), 3,574 acres, 14,000 maunds; and till, 2,391 acres, 7,000 maunds. Spring crops:—wheat, 72,500 acres, 7,50,000 maunds; barley, 3,768 acres, 28,000 maunds; gram (chick pea), 2,132 acres, 8,000 maunds; mustard, 987 acres, 4,000 maunds; tobacco, 383 acres, 1,400 maunds. On lands irrigated by wells the produce is either wheat, tobacco, or turnips; on lands irrigated by river inundation, the entire crop is wheat or vetches in the proportion of 3 to 1. The total exports consisting of grain, rice, ghee, oil, cotton, English cloth, country cloth, manufactured silk, indigo; as also spices and dried fruit, amounted to 2,13,000 maunds. These exports were made to Mooltan, Bikaneer, Jessulmeer, Fazilka, Sirsa, Ferozepore, and Sukkur. The imports into the territory comprised grain, rice, sugar, saccharine produce, ghee, oil, cotton, English cloth, country cloth, silk, indigo, and miscellaneous other articles, to the amount of 1,85,107 maunds. These imports collie from the direction of Mooltan, Bikaneer, Jessulmeer, Fazilka, Sirsa, Ferozepore, Sukkur, and Affghanistan.

the uniting together of the sections of railway, which they serve for a time to somewhat imperfectly connect.

The Indus may be said to approach that point at which river traffic becomes impracticable, for the purposes of modern commerce.

At all times difficult of navigation, it is at certain periods of the year subject to floods, which cause a rise of 20 feet, and a current of 7 or 8 miles an hour, while, at other times, it is so shallow, and so encumbered with shifting shoals, blind channels, sunken trees and other obstacles, as to render the navigation a matter of some danger and considerable uncertainty by day, and of impossibility by night. The result is, that the average time required for the passage between Kotree and Mooltan is $9\frac{3}{4}$ for the down and 20 days for the up trip, the latter sometimes extending to 35 days.¹⁴

It will readily be conceived how fatal such dilatoriness and uncertainty must be to the development of commerce.

Among other expenses and inconveniences, direct and indirect, which these delays occasion, they render the Flotilla useless for the purposes of the postal service, which is still performed at great cost by *dak*. Moreover, they divert a large portion of the legitimate traffic of the valley of the Indus to the longer but at present more certain route by the valley of the Ganges.

It is quite evident that the produce of a country will flow towards that quarter where it most easily finds shipment. Thus, the produce of the Punjaub, and of the districts round Delhi and the intervening country, would naturally seek an outlet by the river Indus and the Scinde Railway at Kurrachee. So long, however, as the present delays and obstructions on the route between Mooltan and Kotree are allowed to continue, the traffic from Mooltan and Delhi, and the intervening districts, which would naturally flow to Kurrachee, as the nearest port, will be drawn away to Calcutta and, perhaps, Bombay. The consequence is that the produce of the country is burdened with unnecessary charges from the increased mileage, while the receipts of lines already dividing a surplus are at the same time augmented at the expense of lines which at present earn less than the amount of the guaranteed interest. In this way, the Government suffers an actual loss; because when a railway which is already earning a net profit equal to the full amount of the Government guarantee has diverted to it, in addition to its own legitimate traffic, a traffic which should naturally take another route, the result is that of every £ 1 of surplus profit thus earned, only 10s. finds its way into the Government Treasury, the remaining 10s. being divided among the shareholders in the undertaking. If, on the other hand, the traffic be encouraged to take the course of a railway whose revenue is below the amount of the guaranteed interest,

¹⁴ Vide Appendix, (Extract from letter from G. P. Bidder, Esq., to W. P. Andrew, Esq., dated March 20th, 1808).

every additional £ 1 of profit earned is exactly so much gain to the Government, until the revenue of the undertaking reaches 5 percent on the capital, when the two cases cease to be on a different footing.

In other words, when a railway earns less than the guaranteed interest, the Government has to bear the whole of the deficiency, whereas in the case of a surplus, Government only participates to the extent of one half. It would appear, therefore, that the first object, financially speaking, which the Government should seek to attain, in framing its policy in regard to the railway system of the country, should be the development of those lines which have received the guarantee of the State, but which have not yet realized a revenue sufficient to relieve the State of the payment of guaranteed interest.

If, as I believe, I have succeeded in showing that under present circumstances every ton of merchandize, which should naturally seek the sea at Kurrachee, but which is driven by the harassing delays of the Indus navigation, to take the route of the Ganges instead, represents an actual loss to the Government, the wisdom of completing the main line of railway through the Indus valley, as the only means of remedying so unsatisfactory a state of things, becomes at once sufficiently apparent.

"Of the present state of communication between Kurrachee and Mooltan," says Colonel Sir Henry Green, "nothing can be worse or more discouraging to the yearly increasing trade. The river navigation is so bad and uncertain that few merchants will trust their goods to the steamers, which take, at times, upwards of a month to make the passage between Kotree and Mooltan, and then when troops or Government material have to be carried, the trade by these is closed, and merchandise is left to find other means of transport, or to wait for another opportunity."

The vexatious consequences of the delays and uncertainty incidental to the navigation of the Indus will be readily gathered from the following extracts from a letter addressed to me by Mr. John Fleming, C.S.I., the head of the eminent mercantile firm of Smith, Fleming and Co.:—¹⁵

"My firm at Kurrachee complain much of the inadequacy of the means of transport on the Indus, and from the facts they have placed before me from time to time, it is evident that unless immediate steps be taken to remedy this, the growing trade of the Punjaub will be effectually stifled.

"The produce we are now shipping (from Kurrachee) has been bought nearly six months. Three months it lay at Ferozepore, and three months were occupied in its transit thence to our premises here. When we buy in the Punjaub we cannot

¹⁵ Vide appendix.

tell whether our purchases may reach Kurrachee in two or in six months; and it is this uncertainty which more than anything else paralyses our operations.

"The trade of the Punjaub requires through railway communication, and can afford to pay for it.

"I may state, that in my own experience, comparing the present means of transport by native boats with railway carriage, on valuable produce, such as cotton, the saving of interest and insurance alone would nearly pay the full amount of railway carriage."

Both Sir Bartle Frere and Major-General Sir Henry Durand, R.E., testify to the absence of physical difficulties in constructing the Indus Valley line. "The cost of construction," says Sir Henry Durand, who himself surveyed a great portion of the route in 1838, "should be moderate for obvious reasons, I think the left bank or eastern side of the river preferable in many respects, yet if the result of the survey were to establish a great superiority of advantage, by taking the line along the right, or western bank of the Indus, it might be adopted; but the advantages must be more weighty than any that I can anticipate that would warrant preference being given to the right or western bank of the Indus."

Whichever of the routes between which the choice would appear to lie may be the better of the two appears to me to be a question of very secondary importance; and I do not hesitate to declare, that under the urgent necessities of the case, it would be infinitely better that Government should accord the preference to a route not absolutely the best, than that the undertaking should be indefinitely delayed.

Before leaving this part of the subject, I will briefly advert to the Reports of two Committees appointed by Government, who recently met, one in Scinde, and the other in the Punjaub, to consider the question of the proposed extensions of the railway system in these provinces.

By a Resolution of the Bombay Government in the Railway Department, No. 650, dated the 23rd March, 1868, it was ordered that a Committee, composed of Sir William Merewether, Commissioner in Scinde, Major Lambert, Collector of Kurrachee, the Deputy Consulting Engineer for Railways in Scinde, and the Agent of the Scinde Railway, should be assembled to collect information, and to report to Government on the question of the Indus Valley Railway Extension generally, and especially with reference to the extension of the Scinde Railway to Sukkur, advocated by the Acting Commissioner in Scinde (Mr. W. H. Havelock), in a letter, No. 1053, dated the 24th December, 1867, to His Excellency the Governor of Bombay. By a subsequent Resolution of Government, No. 1361, dated 3rd July last, Mr. Newnham, engineer of the Scinde

Railway, Mr. Tyndall, of Messrs. Fleming and Co., and Mr. MacIver, merchant, of Kurrachee, were added to the committee.

This committee would appear to have regarded the question of the Indus Valley line from a local rather than an imperial point of view, and to have confined their attention almost exclusively to the southern half of the undertaking, attaching in my opinion a somewhat undue importance to the bearings of the question with respect to local traffic.

Notwithstanding this, however, the Committee report as the result of their deliberations, "that an extension of the Scinde Railway to Sukkur on the Indus is desirable, and that it will return a fair dividend on the capital expended." The opinion thus recorded as to the prospect of the undertaking proving remunerative is the more valuable for the very reason that the Committee regarded the question from a local point of view.

It is right to state that the Scinde Committee give the preference to the right bank of the river for the southern half of the undertaking. One of the chief arguments in favor of this preference, however, is entirely set aside, if the question to be considered is the construction of the whole line from Kotree to Mooltan. Regarding the southern half of the undertaking per se, the Committee were to a great extent influenced in their opinion by the circumstance that by selecting the right bank for that section, the expense of bridging the Indus might be avoided until such time as it might be decided to construct also the northern portion of the undertaking.

In concluding their Report, the Scinde Committee observe that they trust they "have shewn good and sufficient grounds to justify early steps being taken to proceed with the extension of the Scinde Railway to Sukkur, as a first section of what will be one of the great highways from the north-western frontier of India to the sea-board, most important in a political point of view, and which will tend to the development of trade from the facilities which it will afford for certain and quick transport of the products and manufactures of the interior to the port of export."

I attach greater importance to the Report of the Punjaub Committee, not so much because the conclusions arrived at by that Committee coincide more nearly with my own, as because the Committee appear to me to have taken a more comprehensive view of what is essentially an imperial question.

It is not to meet the demands of a purely local traffic that the Indus Valley line is urgently required. It is not on such a ground that I have for so many years advocated the undertaking, nor is it to such a source that I would look in the first instance for a direct return on the capital to be expended on it. I maintain that even if there were no local traffic whatever, the line would be not the less an urgent and imperial necessity. The Indus Valley Railway owes its importance to the fact of its being one of the links in

a great trunk line of railway communication, and the channel through which the commerce of a great part of Northern India, and of the vast regions of Central Asia will eventually flow, and I believe it will always derive its chief support from a through traffic. It is only by thus regarding it that a really comprehensive and statesmanlike view of the whole question can be obtained.

In order to give effect to the wishes of the Government of India, expressed in their Resolution, No. 1054, dated the 3rd December, 1867, the Government of the Punjab, on the 17th of the same month, issued instructions for the assembling of a Committee at Lahore, to consider the question of the Indus Valley line.

The Committee nominated by the Punjab Government consisted of Mr. Roberts, Financial Commissioner (President), Mr. Douglas Forsyth, C.B., Commissioner of Jullunder, the Commissioner of Lahore, and Mr. Harrison, the Chief Engineer of the Punjab and Delhi Railways, with Lieut. Conway Gordon, R.E., as Secretary.

I will not trouble your Grace with the details of the very able and exhaustive Report drawn up by this Committee; but I would ask your Grace's attention to the following extract from a letter addressed by the under Secretary of the Punjab Government to the Government of India, dated the 13th October, 1868, in which the Report of the Committee is reviewed, and in which the grounds on which the Indus Valley line "is deemed by all residents of the Punjab to be of vital importance," are thus summed up:—

"I.—That it is absolutely necessary as constituting what has been appropriately termed the "missing link," the fitting in of which alone can secure for the Scinde and Punjab lines, already completed, the prospect of becoming ultimately remunerative, and enable them to fulfill efficiently the object for which they were formed; the navigation of the River Indus having been proved to be wholly inadequate to the object in view.

"II.—That the existence of complete Railway communication between the Punjab and the Sea-board is, in the present advanced and advancing state of progress of the country at large, indispensable to place the commerce of the Punjab on a footing of equality with that of other portions of this Presidency, and to develop, as they admit of being developed, the resources of this Province, which the Lieutenant Governor feels convinced will begin to exhibit themselves so soon as through communication shall have been established, with a rapidity and vigor which will surprise those who may now feel less sanguine.

"III.—That the Indus Valley line is, if possible, still more necessary on political grounds. Each succeeding year shows more clearly that of all India the Punjab is the Province which it is most necessary to render strong, and, if possible, impregnable. The martial and impulsive character of its own population, and that of the population on its

borders, and the events now occurring, and constantly assuming increased importance, in the regions beyond the frontier, all alike lead to this conclusion, and nothing could well add so immensely to our strength here, as the knowledge that troops could, upon occasion, be conveyed in two days from the Seaboard to Lahore, and thence in another day to the extreme frontier.

"His Honor," the letter continues, "would therefore strongly recommend the construction of this line to be proceeded with at once, and simultaneously from both ends, *viz.*, from Kotree and from Mooltan. It would seem that about six millions sterling will probably suffice to complete and stock the line, which expenditure may be calculated to extend over six years in something like the following proportions:—

First year	$\frac{3}{4}$ million.
Second year	1 million.
Third year	1 $\frac{1}{2}$ million.
Fourth year	1 $\frac{1}{4}$ million.
Fifth year	$\frac{3}{4}$ million.
Sixth year	$\frac{3}{4}$ million.
Total	6 millions.

At the end of the fourth year, sections, both at the upper and lower ends, should be ready for opening for traffic.

"If the concession of a guarantee is sanctioned, it should be given to the Scinde Railway Company, and the construction be entrusted to one Chief Engineer, subordinate either to the Government of Bombay or to the Government of this Province, as the Supreme Government may be pleased to decide; but hereafter, to save the unnecessary expense of a double Agency, the entire system of the Scinde Railway Company from Kurrachee to Delhi, 1129 miles long, should be managed by an Agency with its head-quarters at Lahore."

With regard to the relative merits of the Indus Valley Railway, and of a proposed line from Baroda through the Rajpootana States to Delhi, which has been advocated in certain quarters, and which would be to a certain extent a competing line, it may be pointed out that the most eminent authorities who have given the subject consideration have almost unanimously recorded their preference for the Indus Valley Railway, as being the line most urgently called for, on military and political as well as on commercial grounds.

Thus, Lord Lawrence, in an official Minute, dated the 8th October, 1866, in which he contrasted the merits of the principal undertakings recently brought under the notice of Government, recognized the superior importance of the Indus Valley line in the following terms:—

"I consider that the line between Mooltan and Kotree is of more importance than that by Rajpootana, because it will, at a given cost, open up the sea-board to the Punjaub and Scinde. It will mainly run through British territory, and benefit our subjects; while the railway through Rajpootana will pass through independent States. Then, again, the former line appears to me of superior importance, as it will run parallel with the western frontier. Lastly, the Mooltan line is, in my judgment, much more likely to prove remunerative than the other. It is true that we have a great highway in the river Indus running down to the sea, but even with this advantage, I incline to think that this is the most important of the two lines.

"I place the Rajpootana line in every respect in the second degree of importance to the Indus Railway. We have not many troops in that country; the chiefs and people are well disposed towards the British Government, and the country is generally poor."

The Hon. H. S. Maine, in expressing his concurrence with the Viceroy, remarks that the Mooltan and Kotree line—"Is only second to the Lahore and Peshawur line in the addition it will make to the security of the north-western frontier; and it will connect with the sea, by an easy line of access, a series of provinces of which some are growing in wealth more rapidly than any other part of India; while nearly all of them, through their exclusive subjection to the British Government, possess a guarantee of progress which is wanting in most of the territory traversed by the railway which is to join Delhi with Guzerat."¹⁶

Sir Bartle Frere pronounces unhesitatingly in favor of the Indus Valley line, and says that—"The Rajpootana route must always be longer and more expensive for even those parts of the Punjaub which lie nearest to Guzerat and Bombay. No line, *via*, Rajpootana, can ever compete with the Indus Valley line for the traffic between the sea at Kurrachee and the Punjaub Proper, Central Asia, and Affghanistan, as regards cheapness of construction or working. By the Ganges Valley line the length from the Punjaub to the sea is as 5 to 3, compared with the distance by the Indus line."¹⁷

Sir Henry Durand also avows his opinion that a preference should be given to the completion of the Indus Valley system of railways, and expresses himself on the subject as follows:—

"However desirable the Delhi and Bombay line through Rajpootana, it is not, in my opinion, of equal importance with the completion of the Indus frontier group; doubtless it would be valuable; but lines passing through our own provinces, and linking these together in an efficient way, have certainly a preferential claim to construction with

¹⁶ Minute by the Hon. H. S. Maine, Member of the Governor-General's Council, dated 8th November, 1866.

¹⁷ Minute by His Excellency Sir Bartle Frere, G.C.S.I., K C.B., Governor of Bombay, dated 3rd August, 1866.

English capital. When the Indus group was complete, and the existing main lines to Calcutta and Bombay doubled, the Delhi and Bombay line by Rajpootana would be a proper undertaking."¹⁸

Having thus placed before your Grace the necessity and prospects of the most urgently called-for of the proposed extensions of the railway system of the Valley of the Indus--or, indeed, of any part of India—I will proceed to make a few observations in regard to the Lahore-Peshawur line, which is secondary only to the "Missing Link" in importance.

The country between Lahore and Peshawar was surveyed by the engineers of the Punjab Railway in 1858, with the sanction of His Excellency the late Governor-General of India, when Chief Commissioner of the Punjab. It has also been recently surveyed for Government by Mr. Lee Smith, an experienced engineer, who estimates that the railway will cost £ 19,000 per mile, the provision of the rolling stock being included in that sum.

It would appear that the Government of India; who have undertaken the construction of this line, intend it to stop for the present at the Jhelum, throwing a bridge over that river, and communicating with Peshawur by the common road. It is to be hoped, however, that the matter will be taken up in an enlarged spirit, and that no hesitation or timidity will be evinced in dealing with a work of such imperial moment. The good effects of what would otherwise be a sound policy will be sadly marred if it be not carried out with the vigor and certainty which should characterize the executive of a great empire, and if so pressing a work be allowed to deteriorate into a mere matter of budget. It would be most impolitic to stop short of Peshawur, at the Khyber Pass. The people of the interior of India, who are now accustomed to the "snort of the iron horse," and fully appreciate all the benefits which the Railway brings, at the same time fear the strength it adds, morally and physically, to the State. If the locomotive does not come up to the Khyber, the natives, to whom "might is right," will attribute our hesitation to timidity, and will assume that we dare not advance the symbol of our might and civilization to our frontier watch-tower at Peshawur; whilst it is undeniable that the value of all the military works in the Punjab, as a portion of the strategical system which is intended to be the bulwark of India, will depend entirely on the completion and perfection of our Railway system.

"I need hardly dilate," wrote Sir William Mansfield, in an official Minute dated the 2nd November, 1866, "on the additional strength it would give us on the Peshawur frontier, if we had a railway stretching from Lahore to our great garrison of Peshawur, and so connecting the latter with our system of military stations in the North-West Provinces. This additional strength would be felt in Cabul and in Central Asia beyond. It is certainly required for our general system of defence."

¹⁸ Minute by Colonel Sir Henry Durand, K.C.S.I , C.B., dated 13th October, 1868.

The moral effect produced on the native population by the introduction of railways into the Punjab was thus alluded to in a dispatch from the Punjab Government to the Government of India, No. 74, dated the 24th March, 1862.

"It is His Honor's" (*i.e.*, the Lieut-Governor, Sir Robert Montgomery's) "conviction that not only India in general will undergo a complete change through the earliest possible completion of the railway system, but that, more especially, the various nations and races of the Punjab, as well as the semi-barbarous tribes that girdle its frontier, will all the sooner succumb to its civilizing influence, if we may be permitted to augur such a result from the witness we have had on the late opening of the line to Umritsur, and almost daily since, of the excited demeanor and the unhesitating though wonder-struck submission, tendered as to a superior power or race of men, against whom in future it would be vain to contend, which the crowds of natives of all classes and countries then exhibited."

Although the Lahore and Peshawar Railway may be said to owe its importance chiefly to its extraordinary political advantages, the traffic already existing on the route is of considerable extent, and there is no doubt that it would be greatly augmented on the establishment of uninterrupted railway communication with the sea. "Considering," observed Sir William Mansfield, in his official Minute already alluded to, "that it runs through fertile and improving provinces, I believe on the whole that it will ultimately discharge the guaranteed rate of interest in the form of profits."

According to official reports timber would be an important item of traffic between Peshawur and Lahore; ghee and oil, salt, and possibly coal. Foot (the incense root used by the Chinese), wool, cotton and potatoes, and the rice of the Peshawur Valley, which is celebrated all over India, would seek this mode of transport. The fruit-growers of the mountains round Peshawur and Jellalabad, and of still remoter districts, would be able, by means of the rail, to send their best ripe, instead of unripe, fruit into the heart of India, and that in double and quadruple the quantity now exported. The construction of a Railway to Peshawur would make English piece goods a necessity, instead of an option, in Affghanistan, where Russian goods are now quite as common as English. It is not unimportant or uninteresting to note that when the late Sir Alexander Burnes was in Lahore, in 1831, he found English broad-cloth exposed for sale in the Bazaar, which had been brought, not from Calcutta, but from Russia; and when he penetrated further into Central Asia, he met at Bokhara a merchant who was "thinking of taking an investment of it to Loodhiana, in India, where he could afford to sell it cheaper than it was to be had there, notwithstanding the length of the journey;" and, speaking of the upper portion of the great Valley of the Indus, the same distinguished traveler observes: "There is, perhaps, no inland country on the globe which possesses greater facilities for commerce than the Punjab, and there are few more rich in the productions of the mineral, vegetable and animal kingdoms. Intersected by five navigable streams, it is

bounded on the west by one of the largest rivers of the old world. To the north it has the fruitful and fertile vale of Cashmere to limit its scepter, so placed that it can export without trouble its costly fabrics to the neighboring kingdoms of Persia and Tartary, China and India; situated between Hindustan and the celebrated entrepôts of Central Asia, it shares the advantages of their traffic, while it is itself blessed with an exuberance of every production of the soil that is useful and nutritious to man."¹⁹

I will now revert to the third of the proposed extensions; namely, that to connect Sukkur, on the Indus, midway between Kotree and Mooltan, with Dadur, at the entrance to the Bolan Pass.

Sixty miles of this route have already been surveyed by the engineers of the Scinde Railway Company; and it has been ascertained that the line would be both cheap and easy of construction.

"I am convinced," says Colonel Sir Henry Green, whose great experience and long residence of twenty-one years on the Scinde frontier and in the neighboring countries, entitle his views to the greatest respect and consideration—"I am convinced that the completion of the Indus line will tend more to open out the trade of Central Asia, than any one has yet imagined. At present, the two great commercial lines leading from Central Asia to India, are through the Khyber Pass to the north, and through that of the Bolan to the south. I know both these passes well. The first is a long and tedious journey through a succession of dangerous defiles, infested by numerous warlike and treacherous tribes, who can open or close the Pass at their will, and over whom we can exert no permanent control. Again, the facilities of this route depend upon our relations with the ruler of Cabool.

"With the Bolan Pass there are no such difficulties; the passage occupies five short and easy marches, and, with a little engineering skill, might be made available for wheeled carriages, whilst the tribes inhabiting the surrounding hills, are far less numerous and warlike than those of the Khyber, are in every way amenable to reason, and would afford an excellent matériel for police to guard the Pass. The country (Beloochistan) in which the Pass is situated, has also the advantage of being ruled by a prince who, since his accession to his present position in 1856, has never failed to exert his influence in every way to maintain the communication leading through his country free and unmolested; and, as an example of this, I can state, that during the past year, upwards of 20,000 camels, laden with valuable merchandise, passed through his country to and from British India, with the loss of only two camels by theft, and these were recovered, and the delinquents punished. With such advantages, all of which must be improved upon, I feel certain that if the Railway were completed, as suggested, with a branch to

¹⁹ "Sir Alexander Burnes' *Travels in Bokhara*," &c. &c.

Dadur, the Bolan Pass would gradually become the main channel for the import and export trade between Central Asia and the Indian Empire.

I calculate that, with Dadur and Kurrachee connected by rail, English goods might be placed *via* Egypt in the Candahar market within two months of leaving Manchester, and to the exclusion of all others; and that in return, the facilities offered for transmission would cause an increase in the wool trade, for the production of which article, the greater part of Central Asia is so very well adapted, to a very great extent. It is unnecessary to speak here of the advantages that must follow the extension of trade to civilization, by binding the semi-barbarous tribes of Beloochistan and Affghanistan to us by self-interest. Almost every man of these tribes is more or less of a sheep-owner, and on the sale of the wool they are dependent for food, and for any of the luxuries of life they may require, and are therefore individually interested in the extension of a trade on which they are dependent for their livelihood. I am speaking here advisedly, for, having lived amongst these tribes for years, I am well acquainted with their habits and ways of thought, and during a late attempt at insurrection in Beloochistan by some discontented chiefs, I was conversing with one of the armed Beloochees who were tending their flocks, and inquired why they had not joined the rebels? They replied, that their sheep had become far too valuable, on account of the wool, to allow of their joining any party. The attempt at insurrection totally failed, those few who persisted in rebellion were totally ruined by it, the Khan confiscating their flocks, by which they were reduced to beggary.

"I have given this example to show how, in an indirect manner, the increased demand for wool has acted on the semi-barbarous tribes of Beloochistan, and assisted in the repression of their violent habits; and there can be no doubt but that, as this demand is increased by the facilities of transport and other means, so will peace and civilization keep pace. This equally applies to the agricultural inhabitants of the countries beyond our frontier, many parts of which—such as the valleys of Peshawur, Sarawak, and Mustang, situated at the head of the Bolan Pass, as well as those of Sallee and Cutch Gundava, situated at its foot, all of which the proposed Railroad from Sukkur to Dadur would tap, produce during favorable seasons enormous quantities of grain, which for want of transport is allowed to rot on the ground. Even so lately as last year, I saw in the district under my charge, large quantities of grain wasted for want of a means of transport superior to and cheaper than the common cart of the country. In Cutch Gundava and in the countries about the Bolan, the same waste was occurring, while the State was paying high prices for grain to export to Abyssinia, and raising the price of food in the districts surrounding the seaports.

"I have mentioned two of the commonest commodities of the country, but there is no doubt that an equal impulse would be given to the Bokhara silk trade, to the carpet manufactures of Herat and Candahar, and to the cultivation of numerous and valuable dyes and all other trades, which would be saved a distance of five hundred miles of

camel transport, and, in time, at least two months, as well as the wear and tear and liability to damage entailed by constantly loading and unloading the camels."²⁰

If I have dwelt at some length on the prospects of these lines from a commercial point of view, and have taxed your Grace's patience with a somewhat wearisome length of detail, it has been that I might in some degree enter a protest against the disposition which has been shown in some quarters to look upon these undertakings as mere military and political extravagances, born of political and military ambition.

Of the fourth line from Hyderabad, on the Indus, at the inland terminus of the Scinde Railway, to Deesa, on the Bombay and Baroda line, I need only briefly remark, that it was recommended by the late General Sir Charles Napier, when Governor of Scinde,²¹ and more recently by Sir Bartle Frere, when Commissioner of the Province; that by its means the commerce of North-Western India and of Central Asia would obtain the advantage of access to both of the principal ports on the western coast; and that the great circle of railway communication in India would by it be completed.

I feel that in addressing a statesman of your Grace's experience and extended sympathies, it is unnecessary to draw attention to the more attractive side of the picture; to dwell on the humane effects and immense results which would accrue to our Indian Empire from a more enlightened policy than we have hitherto pursued, combined with that sympathetic anxiety which all interested in India must feel for the future welfare of that country. Countless thousands would be benefited by the message of civilization thus reaching them in their "outer barbarianism" from afar; social blessings, undreamt of now, might be theirs; and what humanizing effects might not be anticipated from the contact with civilization which would be almost forced upon these remote and lawless tribes, these warlike and restless peoples; whilst to the wandering shepherd, as to the patient trader and skilful manufacturer, from whose looms the most tasteful and costly woolen fabrics the world can produce now reach us in comparatively small quantities and with great difficulty, a future of possible opulence, of certain competence would be opened up. The statesman, the historian, the philologist, the naturalist and the philosopher have all an interest in the grand arena, which would by this means be thrown open to the learned and scientific worlds.

"A railway in India," said Sir Bartle Frere, on the occasion of his officially turning the first sod of the Scinde Railway, in 1858, "has, I believe, a higher function than that of a great military engine or a money-making and a money-saving appliance. I believe it to be one of the greatest of civilizers. When the most active and energetic race in the world crosses so many thousand miles of ocean, and establishes such a work of art at a cost as great as the whole value of our English trade with India one short century ago, surely

²⁰ Letter from Colonel Sir Henry Green, K.C.S.I., C.B., late Resident at Khelat, and Political Superintendent Upper Scinde Frontier, to W. P. Andrew, Esq., dated 5th October, MS.

²¹ *Life of General Sir Charles Napier*: John Murray, London.

great moral changes must follow. A railway always seems to me to bring out more strongly, those deeply-marked national characteristics which make our nation what it is, which have enabled us, a small and remote people, to bring our troops, with the trophies on their standards of many a fight on distant fields, to dominate over such a vast continent, and I feel sure that the execution of this railway will tend to impress more deeply on the native mind those great national characteristics which have won for us the respect of the natives, and have made us what we are. I cannot but hope that the grand result will be to bind this country closer to England, and to prepare, in a thousand ways unknown and unobserved by us, for that assimilation in interests and in faith which alone can render permanent our empire over so many millions of such different races and languages. It is with bonds like these that I would bind India closer to England."

No country in the world contains the elements of national prosperity in a greater degree than India. The annual revenue of the State has risen in fifteen years from £ 28,500,000 to about £ 50,000,000; and the annual value of the commerce has reached no less a sum than £ 100,000,000 sterling. In the year 1833 the total commerce of the three presidencies amounted to little more than £ 15,000,000. Fifteen years ago it amounted to about £ 50,000,000; and now it has reached £ 100,000,000, exclusive of merchandize landed and re-exported. Such a rise in the trade is, I venture to say, unprecedented in the history of any country in the world.

Judging, therefore, from the past—having regard to the improvements which have been effected with respect to the prompt and simple administration of justice; the sale of waste lands; the increased introduction of European capital and enterprise; the rapid means of intelligence by the telegraph; the prompt, easy, and safe communication now being established throughout the country by means of railways; the anxiety of the Government authorities, at home and abroad, to cooperate in promoting education and general enlightenment,—we may look forward to still more astonishing results in the commercial development of the country than any which have been yet realized.

The trade of Central Asia has excited great attention in the minds of British and other statesmen for many years. That trade has been hitherto almost monopolized by Russia. In spite, however, of almost impassable mountains and impetuous torrents; in spite of banditti; in spite of almost prohibitory duties imposed by native chiefs on the route; in defiance of all physical and moral opposition, it makes its way to some extent through the Passes to India; and it goes on increasing in the face of all these difficulties.

Who shall say how great a future awaits that trade, or who can estimate the humanizing results which will follow in the wake of its development! By the aid of British statesmanship, science and enterprise, as the rough paths are made smooth and the road made easy for the merchant, I believe it will become the means of not only enriching us, but of carrying the blessings of civilization into the heart of these distant

countries. By the spread of intelligence and the establishment of mutually profitable relations, we shall transform the wild tribes beyond our frontiers, from lawless barbarians to peaceable traders; from troublesome neighbors to good customers; and we shall thus subdue them by the force of their material interests far more effectually than by the employment of our statesmen and soldiers in devising means for their coercion or destruction.

"It has been satisfactorily shown," writes Mr. Douglas Forsyth, in an able paper on the routes to Central Asia, "that an easy, safe, and expeditious route free from obstacles exists, and can be used at once, between Yarkund and Ladak; and if a comparatively trifling expense be incurred, this road can be continued over the Pangbok Pass to British territory, and thus the passage of caravans between Hindoostan and Turkistan will be accomplished with at least as much ease as can be performed by caravans between Bokhara and Orenburg.

"Further, we have in our favor the openly announced desire of the ruler and people of Yarkund to trade with us, and their very urgent demand for tea, of which the nearest point of supply is reached much more quickly by the Mundee-Kulla route than by any other. Seeing that the Kangra tea plantations are only 55 days distant from Yarkund, where Rs. 4, = 8 shillings per lb., are readily given for inferior kinds of tea; whereas Calcutta is the next nearest point for China teas to be procured for the Turkestan market, it may be hoped that the Kangra planters will not be slow to avail themselves of the advantages now offered to them."

No one who writes or speaks of India at the present time can do so without some allusion to the influences which seem likely to affect her from without.

Now, without wishing to attach undue importance to the advances of Russia in Central Asia, it must be conceded that the presence of so powerful a neighbor almost at the gates of our Eastern Empire, might, in the event of a European war, prove a source of very serious embarrassment to this country.

"The probability of an European invasion by way of Cabool, and by European forces," said Lord Dalhousie, "is so remote, as to be hardly more than a mere possibility; but the probability of an attack from Cabool under European instigation should circumstances arise elsewhere to recommend it, especially if foreign war or internal disorder should, concurrently with such circumstances, compel us to weaken our forces in the Western provinces, is by no means to be disregarded."²²

"There can be little doubt," says Sir Henry Green, "but that, however much we may try to conceal the fact, and a certain class of politicians, aided by a portion of the press, may

²² Minute, by the Most Noble the Governor General of India, 1852.

try to ridicule the idea of an advance of Russia towards our Indian Empire, still the fact remains; and the latest surveys proclaim the enormous strides which that power has taken within the past few years; and no political officer who has served on the N.W. frontier of India, can deny the effect which this advance has had upon the frontier tribes, and that the name and power of Russia are both known, and her future movements and their consequences discussed by every tribe along the border, who are made aware of all that passes long before the news reaches the British authorities. I have myself seen many Affghans who come down the passes during the trading season, dressed in the well-known grey great coat of the Russian army, whilst their merchandise finds an equally ready sale with ours in the markets of Candahar, Cabool, and Herat, and their coins are as plentiful and as current as the rupee. I have conversed much with both Affghans and Beloochees, high and low, on the subject of Russian advances, and they all say that they feel some day a tremendous struggle will take place in their country between Russia and Great Britain, in which they acknowledge they will disappear as independent nations. Their great surprise is, that we in no way prepare for it, but allow Russia to advance, overwhelming all in her progress, whilst we stand still and do nothing.

"Again, Persia has within the past two years taken advantage of the state of anarchy in Affghanistan, occupied the whole province of Seistan, and selected a strong position commanding the road between Mekran and Candahar, within 350 miles of the head of the Bolan Pass; by which route an army of 50,000 men could advance from the Persian border to that of Candahar, through a country well watered, and supplied with the necessities for a force of that strength. The whole of this route was carefully surveyed in 1856-57 by a Russian Colonel and a staff of twelve engineer officers. It is well known to all conversant with Eastern politics, that Persia, willingly or unwillingly, is no more than a vassal of Russia, and that a railway is in course of construction from Tiflis to the Persian frontier, by which means any portion of the magnificent army of the Caucasus could be thrown into Persia at any moment."

An accomplished writer in "Bentley" observes that "Russia has for years been silently and subtly advancing towards those rich and coveted lands which lie beyond her eastern boundaries. Untrammelled by the political dictation of other European Governments, the Czar has steadily pushed his lines beyond the ice-bound parallel of the Caucasus, and, thwarted in his designs on the Euxine and the Sea of Azof, he has covered the Caspian with his fleets, and the Sea of Aral with his merchantmen. Khiva the coveted is beneath his hand; at his feet lies prostrate Persia, sunk in a state of abject submission, and offering no opposition to Muscovite progress. Daily the territories are narrowing between the Czar and the Indus; and already the foot of Russian diplomacy, a diplomacy inspired by the traditions of a profound dissimulation, and characterized by a semi-barbarous and semi-oriental cunning, is already firmly planted on the soil. Russia's prestige demands that, her ambitious designs having been frustrated in the West, they shall find compensation in the East. Herat, formerly regarded as the gate of

India, is already subject to Russian influences; and it is a known fact that far beyond European limits, a new system of railways is projected, in the shape of a trans-Caucasian line, which runs from Poti, on the Black Sea, to Tiflis, whence it will be continued to Baku, on the Caspian. The Russian and Indian dominions are 1200 miles nearer to each other than before the invasion of Affghanistan. We objected to the Czar at Stamboul – how should we relish him at Teheran?"²³

Thirty-three years ago, when only a vague rumor began to reach India of the presence of Russians – somewhere – far away to the north, it was scoffed at by everyone, as it is now by the few who have adopted the term "Russophobia," in allusion to a policy which refuses to cry peace, when there is no peace. And she has crept gradually, but persistently onwards, and would perhaps have advanced with longer and more assured strides, had she not felt the importance of first establishing herself on the southern slopes of the Caucasus. The march of Russia is now plainly directed to Herat, and should Russian diplomacy gain its end, and Persia finally pass under the protection of the Czar, there is little doubt but that we should soon find a Russian fleet ready to dispute the command of the Persian Gulf with us. To many Englishmen the sum of Russian acquisitions in Asia will come with the effect of a surprise; and yet the position of Russia has not been suddenly acquired, but is rather the result of a series of steady and persistent steps forward.

"The contact of Russia with us in Asia," writes Mr. Grant Duff, "is a thing not of tomorrow or next day, but it is a thing to which we must look forward as extremely probable, and we must watch more carefully than we do, what kind of power Russia is becoming, before we can form a right judgment as to the frame of mind in which we should anticipate that contact. When Russia is fairly established in Bokhara, she will come into necessary connection with the little-known country which lies between Bokhara and the parts of Affghanistan with which we are familiar, and she will pass almost involuntarily within the domain of Indian politics. What" – continues Mr. Grant Duff, after considering the dangers which threaten us, "what then should we do?"

His answer is important, as bearing directly on the subject under discussion.

"We should strengthen our own position in India: above all, we should press forward our Railways towards the frontier, make Kurrachee a great port, and complete railway communication through the whole of the Indus Valley."²⁴

In the foregoing passages, Mr. Grant Duff alludes to a time "when Russia is fairly established in Bokhara." The "*Times*" of the 12th of January, 1869, publishes a Berlin letter, which would seem to imply that Russian occupation is a *fait accompli*. "The

²³ *London to Lahore*, by M. V. B., "Bentley's Miscellany," July, 1868.

²⁴ "A Political Survey," by M. E. Grant Duff, M.P. Ednionston and Douglas: 1868.

cession of the famous city of Samarcand and its territory," says a leading article in the same journal two days later, "has reduced the Emir of Bokhara, a potentate connected with a tragical episode in

Anglo-Indian history, to the condition of a Russian Viceroy. Russian citizens are beginning, according to their own boast, to feel themselves at last at home in Turkestan. Tashkend has its club, and its balls, and its musical soirees. Coal mines are being worked to a large profit, rival railway schemes are under discussion, and new applications of the water-communication throughout this vast region are projected. The Jaxartes and Lake Aral have long hail their flotilla of gun-boats. The Oxus and the Caspian are about to have them. Armed conquest preceded as the pioneer; but now commerce, which has been gradually but somewhat intermittingly increasing since 1850, has made a great stride onwards, and promises to consolidate the gains of war. The Emir has opened Bokhara to Russian merchants, whose goods are admitted by the last treaty at as low an ad valorem duty as those of the Mahommedans, and they are beginning to take advantage of their new liberties."²⁵

But, whether Russia's advances towards our N.W. frontier be made in a friendly or unfriendly spirit, without or with ulterior designs, the fact of those advances requires a parallel movement on our part; a prudent preparation, though certainly not a panic terror; a watchfulness which will find us ready for any emergency, and a foresight which will enable us to see not only that which is obvious and probable, but that which is possible and remote.

The interests of commerce, the immense and comparatively unexplored resources and ungathered treasures of Central Asia, her tea trade, her silks, her dyes, her carpets and shawls, her wool and cotton may lead from "*war* and waste to fruitful strife and rivalries of *peace*" between England and Russia; but still the peace, the prosperity of 180 millions of our loyal Indian subjects demands that we should not refuse to see the reverse of the picture, or longer turn a deaf ear to the appeals which have hitherto been so timidly responded to by the mother country. We should seek to pursue a policy which will at once maintain our prestige, inspire confidence in those we have undertaken to govern, and at the same time forward their social, commercial, and political interests. It were unwise to let our vassals point - the moral of another great power's policy to us as a policy we should do well to follow; and it should not be forgotten, that if our political position be weak, our commercial position must be weak also; that if Russia be allowed to absorb the trade of Central Asia, a mighty stream of commercial wealth, which would otherwise flow naturally towards the Indus, and thence to Kurrachee, must be entirely diverted from us to the hands of Russian traders.

²⁵ "Times," January 14th, 1869.

One of the last official acts of the late Viceroy was the opening of a section of the Delhi Railway between Meerut and Umballa, a part of the same trunk line of which he had turned the first Sod in the Punjab some ten years previously. The attention of the public has been called to the event by both the Home and Indian press, and it has been felt that by thus identifying himself in one of his latest acts with a work so calculated to strengthen our hold of India and to promote the peace and well-being of her people, Lord Lawrence has not only given a good augury for the future, but has left a grateful remembrance of himself in the past, to the people over whom he has so wisely and conscientiously ruled.

I cannot conclude this letter without calling your Grace's attention to the fact, that the Indus Valley Railway, important as it is, is only part of a still more important subject. I refer to the Euphrates Valley route, which involves a wider question than even that of our supremacy and control in India.

"Without yielding," says Sir Samuel Baker, "to exaggerated alarm, we must watch with intense attention the advances of Russia upon our Indian frontier, and, beyond all geographical enterprises, we should devote extreme interest to a new and direct route to India by the Euphrates Valley and Persian Gulf, thus to be independent of complications that might arise with Egypt."

The completion of the railway system of the Indus Valley and the commencement of the Euphrates Valley Line, are works not to be postponed. So long as the Indian Empire exists, the connection between England and our Eastern dominions must be kept up; for if that connection were to be interrupted during many months, the doom of our Eastern Empire might be practically sealed. England maintains her position in India by force of arms; and it is alike a principle of war, and of common sense, to take efficient means in order to keep open the lines of communication between the base and the field of operation. In the event of any serious complications on our western frontier, the Euphrates Valley Line would enable us to make Chatham and Southampton the bases of our operations as easily as Kurrachee or Bombay. It is impossible to magnify the disastrous consequences that inevitably must result if our communication with India should ever be cut off. "All Europe regards this interruption as one of the severest wounds that the enemies of England can inflict upon her power;" and it is not to be denied that the present route *via* Egypt might at any time be rendered unavailable by political combinations in Europe. Even at best, it is ours only by the sufferance of a powerful neighbor, and it is long, unhealthy, and indirect, as compared with the Euphrates Valley Line.

The Euphrates Valley Railway would save nearly 1,000 miles in distance, and nearly half the time now occupied on the journey between England and India. Its termini at Alexandretta and Bussorah being both on open seas would be easily defensible by England. It would enable us to land troops from England at Kurrachee in two weeks;

and, in conjunction with the Indus Valley Line, in two or three days more at Lahore, Peshawur, or Delhi.

The Indus and Euphrates are already united by a line of steamers, belonging to the British India Steam Navigation Company, who maintain a regular communication between Kurrachee and Bussora, at the Head of the Persian Gulf, under a subsidy granted by the Government of India. If the Euphrates Railway were constructed, from Bussora to the Mediterranean, the dangerous isolation of Persia would at once be at an end; a short, cheap, and easy outlet on the Mediterranean would be afforded to that country for her European trade in lieu of the present long, difficult, and expensive route by the Black Sea, which is entirely at the mercy of Russia.

The possession of the Euphrates route would give to England the first strategical position in the world; it would open up a mighty trade from Persia, from India, from Turkey and Arabia; the hundreds of thousands of loads of cotton which lie rotting on the ground for want of a means of transport would then find an easy mode of transmission; the great alluvial plains of Mesopotamia, the arable lands of Armenia, Babylonia, and Chaldea,—those-ancient granaries of the world—would again teem with corn: wool, spices, and dates, are there in fabulous quantities; and English manufactures—which now reach India through Russia—would be rapidly placed in the markets of Peshawur, Lahore, Umritsur, Mooltan, Delhi, and Calcutta.

It would be folly to dream of an attempt, or even to wish that an attempt could be made, to check the development of the Russian Railway system, for by civilization—and railroads are the surest and speediest agents of civilization—we also must profit. But we have a high position to maintain, and we should not lose sight of that position. Russia is making enormous progress year by year; we cannot be said to be keeping pace with her in any commensurate degree, and should she prove aggressive, as in the opinion of many eminent Indian statesmen and soldiers she eventually will, she will find us totally unprepared to resist her aggressions, both midway and on the Indian frontier.

Midway all depends upon the construction of the Euphrates line. It is the only safe, easy, and independent route.

At the Indian extremity, our security depends on the completion of the Indus Valley Line, and its extension branches from Lahore to Peshawur, and from Sukkur to Dadur. With these completed, our position in India would be unassailable.

The Euphrates Valley Line from sea to sea would be about 850 miles in length, and would cost from 8 to 10 millions.

The Crimean War, even if it be regarded as a necessary evil, cannot be said to have afforded very brilliant results, or to have essentially promoted the cause of peace or the interests of commerce. Yet it cost this country 90 million sterling, whilst the Indian Mutiny cannot have cost less than 40 millions. Shall we calmly expend 130 millions in carnage and warfare, and begrudge less than a tenth part of that sum in benefiting the condition of countless thousands in the Eastern and Western worlds?

The names of Lord Stratford de Redcliffe, of Sir Justin Shell, of Sir W. F. Williams, of Kars; of Major-General Chesney, and Sir John Macneill; of Rawlinson, Ainsworth, Baker, and of many other men of eminent note and ability, are well known as supporters of the alternative route to India; not to enumerate the Indian statesmen, financiers, and commercialists, who have urgently advocated its realization. All intelligent Europe has long ago recognized its necessity, but it would almost seem as though it would require some even more awful visitation than we have yet experienced, some more terrible calamity than has yet befallen us, before we could be startled from our apathy, or moved to stretch forth our hands and put our Indian house in order.

It is alarming to contemplate the magnitude of the future calamity, which shall suffice to teach us the lesson we have failed to learn from our sad and terrible experiences of the past!

The people of other countries have made enormous strides of late years in the prosecution of those public works by which, more than by any other means, the power of nations is consolidated and extended, their peace and prosperity promoted, and their resources developed. The present year will in all probability witness the completion of the Suez Canal; and only a few weeks since the telegraph brought us intelligence of the actual realization of a still more marvelous undertaking, the accomplishment of which is due to the spirit and enterprise of the people of the United States. The entire breadth of the American Continent is now crossed by a continuous railway from the Atlantic to the Pacific.

It is difficult to realize the magnitude of such an undertaking. The length of the line from New York to Sacramento is upwards of 3,000 miles, a distance greater than that which separates Europe and America; and the railway, which crosses the chain of the Rocky Mountains and the Sierra Nevada, bridges in its course a desert 1,700 miles in breadth.

It were well if we in this country were imbued with a little more of the public spirit which has reared these giant monuments of national enterprise.

If we had had the advantage of the Euphrates Valley route some years ago, one of the darkest pages of India's history need never have been written, nor need the silent looms of Manchester and Liverpool, or the commercial crisis of 1865-66 have desolated

thousands of hearths and homes. The massacres of '57, the cotton famine, the frightful history of the famine in Orissa, the continual reports of dearth and scarcity decimating whole districts, are surely pages in the history of the Empire which we should do well to pause upon and consider.

"If the triumphs of Great Britain are to be permanent," says Sir Bartle Frere, "they must be rendered so by a mutuality of interests, by the material and civilizing influences of expanding commerce. The great battle of the country for the tranquility of Central Asia must be fought at Manchester and Liverpool. If we would command Central Asia, that dominion must be established by opening up a ready market for their raw produce, and subjecting them by the force of their own material interests."

In thus expressing himself, the late Governor of Bombay re-echoes in spirit the wise and humane policy of Lord Dalhousie, "the great pro-Consul," who said that he went to India, not to elevate England by foreign conquest, but to elevate and enrich both England and India by sending home cotton.

"In the main," said Lord Salisbury, in his remarkable speech at Manchester in October, 1868, "the question of cotton, and the question of commerce in general, in India, is a question of conveyance. It is the opening of navigable rivers, and the opening of railroads, to which you must look. The Indian Government has made great progress in that respect. I think there is a very great desire on the part of the present Viceroy (Sir John Lawrence), and on the part of the authorities in London, to press forward the construction of Railways in India to the largest possible extent. But it would be a great fallacy if they were to limit themselves to those Railways which, in our phrase, were likely to pay. It by no means follows that Railways ought not to be constructed by a Government, though the Railway will not be able to pay the guarantee which the Government gives upon the capital advanced for its construction, because by scattering wealth all along its path, by stimulating commerce, by opening out the resources of the country, by bringing new ideas to increase the diligence and thrift of the natives of the country, it opens out to the Government new sources of revenue. It makes the people a more tax-paying people than they were before, so that through the hands of the tax-gatherer, if not on the surface of the Railway account, the Government will be reimbursed by the advances it has made. Therefore, Gentlemen, do not be satisfied with the answer that a Railway '*won't pay*.' The old days, when we thought that India was a mere field, on which we might gather booty for the benefit of England, are passed by; and now the only rivalry amongst us is, as to the best mode in which the welfare of the natives of India, in trust for whom we hold the Government of that country shall be promoted, and how the ideas that we entertain, the conquests which our intellects have made, shall be communicated to them. The triumphs which you win by carrying trade further into the interior of India are triumphs to which you may look back without finding them tempered by any of those reflections which attend our triumphs of another kind!"

The advantages of the proposed Indus Valley Railway, the most urgently called for of the projected extensions which I have advocated, may be thus briefly recapitulated.

It would complete the great trunk line of railway between Kurrachee, the Punjaub, Delhi, and Calcutta, on the opposite side of the Peninsula.

It would afford to a population of upwards of twenty millions, in addition to many millions beyond the limits of British territory, the advantage of a safe and speedy means of access to the nearest seaport.

By means of the proposed branches to the Bolan and Khyber Passes, it would afford an outlet for the trade of the vast regions of Central Asia.

It would save to the Government the expense of the postal *dak* between Kotree and Mooltan.

It would save the Government large sums expended in the transport of troops and stores.

It would bring an enormous accession of traffic to the Scinde Railway, and it would also increase to a great extent the traffic on the Punjaub Railway, by which means there would be afforded an early prospect of these lines earning a sufficient net profit to relieve the Government of further payments of guaranteed interest.

It would enable the Government to concentrate troops in the Punjaub about two days after their being landed at Kurrachee.

It would materially add to the security of the frontier, not only by the facilities which it would afford for the movement of troops, as already stated, but also by the civilizing influence, which could not fail to be exerted on the lawless tribes along the frontier by the extension of their commerce, which would ensue on their having the European markets placed within easy reach.

In most of these statements I am fully corroborated by the official testimony of the late Viceroy (Lord Lawrence), Sir Bartle Frere, and other Indian authorities of the highest eminence, as shown in the extracts which I have reproduced from official minutes and other documents, bearing testimony to the importance of the undertaking in all its aspects, political, strategic, and commercial.

Our rule in India can never be altogether wise or safe "while, as at present," in the words of the late Major-General John Jacob, "the undisturbed tranquility of this vast

Empire is dependent, not on its own mighty internal strength, but on the forbearance of our enemies or neighbors outside."

For fourteen years I have advocated the views contained in this letter, in various publications, and in official correspondence with Government, both in this country and in India. If my efforts have hitherto been attended with a large measure of success, much still remains to be accomplished, and I have therefore ventured thus publicly to bring to your Grace's notice the merits of the Indus Valley system of railway communication, in the hope that I shall thus hasten the completion of a work which is alike demanded on financial and commercial, as well as on strategic and political considerations, and one which, in the face of the eastward movements of other nations, cannot be much longer delayed without danger to the honor of England and the best interests of India.

I have the honor to be, with much respect, Your Grace's

Most obedient servant,

W. P. ANDREW.
LONDON, 5th June, 1869.

APPENDIX.

Letter from W. P. ANDREW, Esq., Chairman, Scinde Railway Company, to GEORGE RAWLINSON, Esq., Agent, Scinde Railway, Kurrachee, No. 1475, dated 11th November, 1863.

SIR,

With reference to paragraph 3 of my letter No. 10 of 1863, dated 3rd November, informing you that it had been determined to survey the country between Kotree and Mooltan, in order to ascertain whether it is desirable to connect those places by railway, I now enclose for your information copy of a letter addressed by the Board to Mr. Brunton for his guidance, on the occasion of his departure for India, to undertake the charge of the survey in question, and to resume the duties of chief engineer of the Scinde Railway.

2. As it is desirable that Mr. Brunton's chief attention should be confined to the prosecution of the survey, the Directors think it will be unnecessary to refer to him in fined matters of engineering detail connected with the Scinde Railway.

You will, however, obtain his opinion upon all such questions as you may deem important.

3. You will be good enough to take an early opportunity of communicating with the Deputy Consulting Engineer to Government, in order that you may have the benefit of any views which the Commissioner in Scinde or the Government of Bombay may entertain on the proposed extension of the Scinde Railway. His Excellency Sir Bartle Frere having at all times evinced a lively interest in the introduction of railway communication to the Province of Scinde, the Directors are particularly anxious that you should be in communication with Government as soon as possible, on the question of this important survey.

4. As it is the wish of the Directors that you should be placed in possession of what information they have been able to obtain, with reference to the comparative merits of tin merits of the two banks the two banks of the River Indus, as a route for the railway, which, it is thought, it may prove desirable to construct, I have to make the following observations:—

5. It would appear that there are portions of the country on both sides of the Indus liable to inundation.²⁶

6. In the neighborhood of Sehwan the line would pass for a considerable distance through a hilly country, whose natural drainage would have to be crossed. A tunnel through the Lukee range would also be rendered necessary, and several unfavorable gradients could not be avoided.

7. The route by the right bank, moreover, is of greater length than that by the left, and would be exposed to injury and depredation from the unsettled hill tribes on our frontier beyond the Indus.²⁷

8. The principal towns on the right bank of the river are Sehwan, Larkhana, Sukkur, Shikarpore, Jacobabad, Mittun Kote, Dera Gaze Khan. Larkhana is one of the chief grain marts in Scinde; and its commercial advantages are enhanced from its being situate on the great route from Southern Scinde to Cutch, Beloochistan, and Kandahar; Shikarpore, also, is one of the most important towns in the Province, from its commercial and banking relations with Central Asia.

9. The line, if carried by the left bank²⁸ from opposite Kotree to Mooltan, would ultimately involve bridging the Indus at the former place, but would have, it is believed, comparatively few other engineering works, with the exception of ample provision for waterway. It would also be much shorter than that by the right bank²⁹, and would pass along a level country, well adapted for cultivation.

10. The importance of the question of safety³⁰ cannot be over-estimated; and it would appear that this would best be ensured by a line along the left bank, which would possess the strategic advantage of having the river interposed between it and the wild hill-tribes of the western frontier.

11. The principal towns on the left bank are Hala, Khyrpoor, Roree, Khanpur, Ahmedpoor, and Bahawalpoor. They include Khyerpore, the capital of Upper, and Hyderabad, the ancient capital of Lower Scinde, and Bahawulpore, the chief town of the large independent territory of the same name, which stretches from the banks of the Sutlej nearly as far south as Sukkur; and that portion of it likely to be traversed by the railway is rich and well cultivated.

²⁶ Both banks liable to inundation, Right bank tunnel and gradients.

²⁷ Route by right bank longer.

²⁸ Route by left bank. Few engineering works, except water way.

²⁹ Route by left bank shorter.

³⁰ Safety from unsettled hill tribes.

12. An intermediate course, which has been suggested, for carrying the line on the right bank from Kotree to Sukkur, crossing the river at that point, and then proceeding along the left bank to join the Punjab Railway, would possess the great advantage of bridging the Indus at the most favorable point, and would be shorter than if continued further up the right bank, but longer than the line entirely on the left bank, and would involve engineering works of magnitude and difficulty between Kotree and Sukkur.

13. It would appear, therefore, as the Board³¹ is at present advised, that the balance of advantage is in favor of the left bank for a trunk line for through communication, as the safest from interruption, the shortest and the easiest and cheapest in construction.

14. It is the earnest desire of the Directors that the important question³², as to the best route for the railway, and they have only placed the above remarks on record, in order that the several points therein raised may not be lost sight of when a final decision is being come to, after a complete survey of both banks of the Indus, and a careful examination of the grave considerations involved.

15. Mr. Brunton³³ has been instructed to furnish you with monthly reports of the progress of the survey, and when these contain matters which you consider of importance, you will have the goodness to communicate them to the Government.

I am, &c. &c.,
(Signed) W. P. ANDREW,
Chairman.

³¹ Balance of advantage appears in favor of left bank.

³² Route must be thoroughly and impartially investigated.

³³ Chief Engineer will furnish a monthly report of progress.

Letter from W. P. ANDREW, Esq., Chairman, Scinde Railway Company, to JOHN BRUNTON, Esq., Chief Engineer, No. 1,476, dated 11th November, 1863.

SIR,

As you are now about to proceed to India to resume the duties of Chief Engineer of the Scinde Railway, and as it has been determined by the Board to entrust to you to charge the survey of the country between Kotree and Mooltan, with the view of ascertaining whether it is desirable to extend the Scinde Railway so as to form a junction with the Punjab Railway, I am to furnish you with the following instructions for your guidance:-

2. The engineering staff detailed³⁴ will be placed under your orders to aid you in the survey in question.
3. Arrangements have been made for the passage of yourself and staff by the steamer leaving Southampton on the 12th November.
4. Upon reaching Kurrachee you will report yourself to the Agent, and resume charge of the Engineering Department. It is, however, the wish of the Board that your chief attention should be confined to the survey which you are now about to undertake; and the Agent will therefore be instructed only to refer questions of importance for your opinion.
5. You will bear in mind that the primary object of the of the survey entrusted to you is to fix, in as short a time as possible, upon the route best adapted for a railway between Kotree and Mooltan.
6. The Directors have long been in possession of the views of those well acquainted with Scinde and the Punjab; and they are of opinion that in order to obtain the most complete and accurate information relative to the natural features of the country, and its adaptability to the formation of a railway, it will be necessary to survey both banks of the Indus.
7. Three routes present themselves for selection.

³⁴ Three First Class Engineers—Mr. James Collins, Mr. Henry Stone, Mr. R. Brunton. Six Second Class Engineers—Mr. R. J. George, Mr. T. W. Pearson, Mr. R. Fisher, Mr. W. Steel, Mr. C. S. Baylee. One not yet appointed. Two Third Class Engineers—Mr. H. C. Graham, Mr. J. T. Jarvis. Four Surveyors—Mr. J. E. Fraser, Mr. T. W. Grant, Mr. E. H. W. Barry, Mr. F. J. Waring.

Firstly, —From a point opposite Kotree, proceeding up the left bank of the Indus, and crossing the Sutlej, above the confluence of that river with the Chenab, near Jelalpore. It should be mentioned that the route from Mooltan as far south as Jelalpore has recently been surveyed by the engineers of the Punjaub line, who report that the country is admirably adapted for the formation of a railway.

Secondly, —From Cruggur, a point on the Scinde Railway, following the table-land between the hills to Sehwan; thence passing along the Kutchee plains, lying between the foot of the western hills and the inundated Valley of the Indus, as far northward as the ancient town of Mada; then turning eastward to Larkhand and Jacobabad; thence onwards in a north-easterly direction as far as Kusmore, and along the foot of the Belooch hills, through the Derajat division of the Punjaub towards Dera Ghazree Khan; crossing the Indus at the most proximate point to the Mooltan line.

Thirdly, —An intermediate course has also been suggested for carrying the line from Kotree up the right bank; skirting the base of the hills, and passing by a tunnel through the Lukkee Spur to the plain near Sehwan; thence *via* Larkhana to Sukkur; crossing the river there, and continuing up the left bank to meet the Punjaub Railway.

8. In determining the most advisable course for a line, regard must be had, not only to the physical characteristics of the right and left banks of the river, but also to their relative political and commercial importance, and their strategic advantages.

9. Your attention will first be directed to such portions of the country, as, in your judgment, form the key to the engineering points of the question, in order to obtain, as early as possible, materials for your report on this part of the subject.

10. The commercial and political considerations include the accommodation in the most safe, economical, and efficient manner of —

First, —The through traffic from the Punjaub and north-western provinces to Kurrachee, and the facilities which would be afforded for the transmission of troops and Government stores between Kurrachee and the important military stations of the north-west.

Secondly, —The local traffic of the Valley of the Indus, which now exists, or which may be developed by the formation of a railway.

Thirdly, —The traffic from Central Asia.

11. With reference to the Central Asian traffic, it should be remembered, when considering the different routes for the trunk line, that it may be desirable ultimately to construct, in connection with it, a branch to the Bolan Pass, by way of Shikarpore and Jacobabad. This branch has already been partly surveyed by this Company, and, if made, it would no doubt enhance the commercial and political importance of the through line.
12. The element of safety is one of primary importance, and in determining the most advisable course for a railway it will be necessary to consider by which route the risk of injury and depredation from the unsettled hill tribes on the western frontier would best be avoided.
13. To enable you to perform the responsible duty entrusted to you with as little delay as possible, you are authorized, with the sanction of the Local Government, to avail yourself of any native assistance which you may find necessary. The Board, however, rely upon your earnest endeavors to economize in every way the cost of these surveys and investigations, so far as is consistent with their efficient performance.
14. You will at intervals of a month report the progress of the survey to the Agent of the Scinde Railway at Kurrachee, for the information of the Board.
15. Your particular attention is desired to the question of the ruling gradients which will prevail on the respective routes you will have under investigation, as influencing the economy with which the concentrated traffic of the Punjaub and north-western India may be conveyed to the port of embarkation at Kurrachee.
16. As, on several occasions, the actual cost of railways in India has greatly exceeded that originally contemplated by the engineers, occasioning much disappointment and regret, the Directors trust that you will use every care in framing your estimates, giving due consideration to circumstances calculated to influence the labor market, and, in short, to every contingency likely to arise, as the relative cost of the different routes will, of necessity, form an important element in coming to a decision.

I am, &c. &c.,
(Signed) W. P. ANDREW,
Chairman.

*Letter from JOHN BRUNTON, Esq., M. Inst. C.E., F.G.S., F.R.G.S., late
Chief Engineer in charge of Indus Valley Survey, to W. P. ANDREW, Esq.,
Chairman Scinde Railway Company.*

London, February 1st, 1869.

I have the honor to submit some remarks which occur to me upon the perusal of a report made to his Excellency, Sir Seymour Fitzgerald, K.C.S.I., Governor of Bombay, by a Commission appointed by him "to collect certain information, and to report to Government on the question of the Indus Valley Railway Extension generally, and specially with reference to the extension of the Scinde Railway to Sukkur, advocated by the Acting Commissioner, Mr. W. H. Havelock, in his letter No. 1053, dated the 24th December, 1867."

2. The facts and opinions thus called for are clearly divided into two distinct portions, the first calling for a general and broad view of the imperial question, whether or not it was advisable, and in what way, to open up Railway communication between the land-locked province of the Punjaub and its natural port, Kurrachee.

The second portion requiring an opinion upon a mere local scheme, advocated by the late Acting Commissioner in Scinde.

3. It appears to me that the full consideration of the first of these subjects, of such vast imperial and commercial weight, would have supplied a very conclusive answer to any points that could possibly arise upon the second.

4. I find, however, upon a careful perusal of the Report of the Commission, that the second, and minor subject has absorbed all the thoughts and attention of its members to the exclusion of any but a very cursory, and almost apologetic notice of the grand question made in paragraphs 24 and 25.

5. Some very interesting, useful, and satisfactory statistical returns are appended to the Report, but they are all confined to the local, not the imperial question.

The constitution of the Commission, embracing as it does only members having chiefly local interests and local knowledge, may in some measure account for this somewhat startling and disappointing feature of the document.

6. Having in view the acknowledged necessity of connecting the termini of the Punjaub and Scinde lines by a Railway, and bearing in mind the fact, that the uncertain, slow, and costly nature of the navigation of the River Indus is a barrier to its ever becoming a satisfactory means of achieving this connection,—I would remark, that the

construction of any portion of such a line of Railway, without reference to its best adaptation for the conveyance of the ultimate through traffic is manifestly in every point of view unwise, to say the least of it.

Further, if circumstances should require that such a line be executed in Sections, it would evidently be more politic to select for execution that one which would supersede the navigation over the worst and most dangerous portion of the river.

In recommending the construction of the Section between Kotree and Sukkur, the above important point has been either lost sight of or ignored; the portion of the River Indus above Sukkur being unquestionably more difficult of navigation than that below.

7. The extension, suggested in paragraphs 24 and 25, through the Derajat to Dera Ghazee Khan, and thence across the Indus and the Chenab to Mooltan, would be a gigantic blunder, in my opinion -

1st. *Commercially*—for it would pass through a desert the whole way beyond Kusmore, and would leave the highly cultivated districts of Upper Scinde and Bhawalpoor on the left bank, and opposite, without any improved mode of communication with Kurrachee.

2nd. *Strategically*—for the line would be exposed to the damage, which at any time, might be caused by an inroad of the wild tribes across the frontier, close along which such a line would run.

3rd. *In an engineering point of view*—for immediately on leaving Sukkur, and between it and Kusmore, a distance of 80 miles, the line would traverse a country annually flooded to a very great extent.

This point is conceded in paragraph 25, but with a remark, that a left-bank line would have a similar objection, which I emphatically deny, provided the line I have selected on the left bank be adopted.

Again; and this remark applies to the whole of any right-bank line, that to place it between the watershed of the mountain ranges, and the river which receives the periodical torrents which flow from it, when a line of country free from such sources of immediate cost and palpable danger is open for choice, would be contrary to all that is sound in engineering practice. Here I would beg reference to the lithographed map of the country between Kurrachee and Mooltan, accompanying this communication, on which are shewn the courses of the annual flood waters, both from the hills and the Indus; likewise, in red ink, the lines I surveyed and reported upon, full detail plans and sections of which are in your possession.

8. Referring to the contents of paragraph 21 of the Report, in which "the relative advantages and disadvantages, in an engineering point of view, afforded by the districts of the right and left banks of the river for the construction of the line are shown in juxtaposition," I would refer you to my various reports made to the Board during my survey of the Valley of the Indus, in which all the points now mooted were discussed in detail, and with an entirely different result, when their merits were weighed, as affecting the grand question of completing a great trunk-line to open up the communication between the Punjaub and Kurrachee, its natural seaport.

9. I would only remark, that the fact admitted in No. 4 of these comparisons in favor of a left-bank line; *viz.*, that "the country over which the line will pass is secure from inundation floods throughout its length, except at Hillanee, near the northern boundary of the Hyderabad Collectorate," is a feature which has such weighty bearing upon the general question, both as to the first cost and future safety of a line of Railway, that in my humble opinion it deserved more consideration than has been given to it, when balancing the merits of what are termed the salient points under this head, where it appears as a mere unit in the calculation.

On the other hand, the Commission have appeared to ignore or under-rate the difficulties which would certainly be met with in the attempt to cross the districts liable to inundation, both from the river and the hills.

10. In confirmation of this, I quote the following extract from a Report made to Government by Lieutenant, now Colonel Phillips, at present Collector of Hyderabad, but then Deputy Collector of Sehwan and Kotree, on the subject of the formation of a road up the right bank of the Indus:—

3. On the other hand the obstacles are great, and in one or two cases formidable. They may thus be briefly detailed:—

1st. The liability of portions between Kotree and Omurpoor, and between Futtahpoor and Rookun, to inundation, both from the river and the hills.

2nd. The Lukkee Pass, a range of hills which cannot be avoided, and about 6 miles in length, greatest height—say 1,000 feet.

3rd. The following large hill streams, and rivers requiring bridges.

1st. The Mohun, a hill stream with deep sandy bottom, near Sunn, Talooka, Mahajunda, and about 400 yards wide.

2nd. The Arul River at Sehwan 100 yards wide, never dry.

3rd. The Phitta Canal in two places, the first requiring a bridge of 85, and the second of 65 feet waterway.

4th. The Futtahpoor and Rookun depression, about 6 miles long, always inundated to a depth of from 4 to 6 feet, and requiring an embankment the whole way; minor water channels, canals, &c., are of course not mentioned.

11. I would call particular attention to the fact mentioned in the last paragraph; *viz.*, the Futtahpoor and Rookun depression always inundated from 4 to 6 feet for a length of 6 miles. The result of my surveys at this place shows that Colonel Phillips, instead of exaggerating, had considerably under-rated the difficulties to be encountered at this place. Such being the case, how can we account for the statement made in item 4 (right bank), "that the greatest depth of water, and that only in a few places, is not more than 3½ feet deep?"

12. If the further statements in this item 4 (right bank) are correct, I would ask, how is it that the towns of Larkhana, Nusseerabad, and Meher, are surrounded by bunds, and that within the last few years their annihilation by the floods of these districts has become several times threatened?

13. I would now call your attention to the conclusions arrived at in paragraph 14; *viz.*—"That possessing the same advantages with respect to through traffic as the extension line along the left bank of the 'Indus to Rohree,' the line along the right bank would have the prospect of nearly twice the amount of local traffic; besides, it presents superior facilities for throwing out a branch to Jacobabad and Dadur, to intercept trade from Central Asia."

In the first place, for the accommodation of through traffic a right-bank line to Sukkur involves either its extension up the right bank through the Derajat, and across the Indus and Chenab to Mooltan, as recommended by the Commission in paragraphs 24 and 25, or a crossing of the Indus at Sukkur, and so taking up the left bank line, as proposed by me. This latter alternative has been entirely ignored, although so obvious an one, and one discussed so fully in my surveys and reports which were, I presume, before the Commission when considering the subject.

14. I can only account for this by supposing that my facts and arguments with regard to the magnitude and cost of an Indus crossing at Sukkur were unanswerable and conclusive.

15. In the second place, when contrasting the probable local traffic of a through right-bank line with a through left-bank line (the through traffic from Mooltan being the

same in both cases), it would manifestly be only fair to have brought into the equation the local traffic of Upper Scinde, Bhawalpoor, and the 50 miles of cultivated country, lying between Adam Wahan on the Sutlej, and Mooltan, and comparing it with the certainty of no local traffic of any importance between Sukkur and Dera Ghazee Khan.

16. Had this been done, I am persuaded that the balance of local traffic upon the whole line would have been in favor of the left-bank line, more particularly if the confident anticipations of the Deputy Collectors, given in Appendices A, B, and C, of my Report No. 312, dated 18th June, 1864, had been taken into account; *viz.*, that should Railway stations be established at certain of the navigable canals on the left bank a very large quantity of produce would find its way to the Railway from the Larkhana districts, by crossing the Indus and entering those navigable canals.

17. With regard to the statement made in the last sentence of this paragraph 14; *viz.*, that "the right bank line presents superior facilities for throwing out a branch to Jacobabad and Dadur to intercept the trade from Central Asia" —

I submit that the only difference between the right and left bank schemes in this respect lies in this: that in the former, the branch would start from a station at Sukkur; in the latter, the Central Asia traffic would have to be taken across the river to a station at Rohtee by a steam ferry above the Sukkur Pass, as proposed by me.

18. Here, again, I must challenge the correctness of the statement put forward — that the only available Rohree river-station is on alluvial deposit, and liable to erosion.

19. The spot selected by me for this purpose is on rock, and with little trouble or cost could be made perfectly safe from any chance of silting up. On this subject, I beg to refer you to the special plans, sections, and observations on this point, submitted by me in my Report No 312 of 1864.

20. Finally, I respectfully and fearlessly claim a close and impartial examination of the plans, sections, reports, and other documents furnished by me while honored with the charge of the Indus Valley survey.

The facts therein given, the opinions expressed, and the conclusions arrived at, were the result of the most careful surveys, and the intimate personal inspection and study of every locality, both on the right and left banks of the Indus, where any engineering difficulties presented themselves.

A glance at the accompanying map will show at once the great extent of information which is embraced by my surveys, and I confidently submit that the full investigation I challenge, will prove them to have fulfilled their primary object, as expressed in the instructions I received from you in Oct., 1863, *viz.*: "to supply, sufficient information for

the Board and Her Majesty's Government to arrive at a conclusion with regard to the best route for a line of Railway up the Valley of the Indus."

In the meantime, I beg to call your special attention to the facts disclosed, upon a comparison of the relative heights of various points on each bank of the Indus, given in this map.

These levels are either obtained from the Trigonometrical Survey of India, or have been referred to and checked by the heights of the Bench Marks established by that Survey, and are, therefore, unquestionably accurate.

The result of this comparison will show that invariably throughout the whole distance between Kotree and Mooltan, the surface of the country on the left bank is considerably higher than that on the right bank, and while the former is above the flood level of the river Indus, the latter is below it.

This important fact furnishes, what appears to me, an unanswerable argument in favor of the choice of the left bank as the course of the "Missing Link," and forms a striking confirmation of the views of the Board as expressed in their letters to the Agent and myself, dated 11th November, 1863.

21. I summarize my observations upon the Report under review as follows:-

1st. The Commission, in treating the subject placed before them by the Resolution of Government, under which they acted, have almost lost sight of the imperial question, as to the best mode of completing the great trunk line down the Valley of the Indus.

2nd. That all the facts and statistical information collected and submitted, while valuable in themselves, are entirely confined to a local scheme, and have only a partial bearing on the general question.

3rd. That the comparison drawn between the merits of a right and left-bank line to Sukkur and Rohree respectively, when viewed with reference to the grand scheme of uniting Mooltan and Kotree, loses much, if not all, its weight.

4th. That with reference to the engineering points, too little weight has been given to the manifest importance of placing any line in the Valley of the Indus, beyond the influence of the floods and mountain torrents.

5th. That there is no evidence to show that the cost of a right-bank line would be less than one on the left.

On the contrary, it would appear that leaving out the cost of the Indus crossing (at Kotree or Dera Ghazee Khan,) which would be common to both through lines, the comparison of cost between a right and left bank line, as far as Sukkur and Rohree respectively, would result considerably in favor of the latter.

22. Before concluding this letter, I beg to submit a few remarks upon the comparative merits of the two crossings of the Indus at Kotree and Sukkur respectively. I consider it the more necessary to do this, as I have heard that the safety of the right bank of the Indus at Kotree has been called in question. To this point I address myself in the first instance.

23. During the flood season of the year 1857 the current of the river, for some unexplained reason, took a "set" against the right bank at a point between 3 and 4 miles above the town of Kotree, threatening to carry away a valuable Mango tope, and a piece of forest land, covered with fine Babool trees.

24. When the attention of the local authorities was called to this encroachment of the river, the then Government Executive Engineer proceeded to construct a groyne, with a view to divert the set of the current.

25. The following seasons flood carried away the groyne, and the encroachments of the river continued to such an extent as to cause some apprehension that a channel for a portion of the flood waters would be cut along the low lying land immediately at the rear of the town of Kotree. As such an event would have involved damage to the Railway works, I at once proceeded to investigate the matter.

26. I recommended the re-construction of a groyne and the pitching of the river bank, the execution of which was entrusted to me, the cost being laid upon the Railway Company, for the reason that should the river succeed in forming the channel, the Railway works would be the first to suffer.

27. I built the groyne of the simplest materials; *viz.*, alternate courses of rough rubble stone and faggots, which withstood, without damage, the full force of the next year's flood,—completely diverted the set of the current, and with the aid of the rough stone, pitching to protect the upper stratum of alluvial soil from the ripple of the surface water, has rendered this portion of the river bank perfectly safe from all encroachment.

28. I have gone thus fully into the circumstances of the case, as I know that hence arose the rumor as to the safety of Kotree.

29. The right bank of the river at this place, and for some miles above and below, consists of a very firm bed of clay, upon which lies a light surface soil of some 2 to 4 feet in thickness.

I forwarded a sample of this clay with my Report No. 312 of 1864.

30. After careful inspection and thought, I must give it as my opinion, that with ordinary precautions there is no danger whatever of the isolation of Kotree, or damage, either to the present railway works or to those which the crossing of the Indus below Kotree would involve.

31. The results of the borings across the Indus at Kotree, submitted in my Report, No. 312 of 1864, are, I think, conclusive as to the practicability of founding the piers of a bridge there without excessive cost, while there is nothing to compel any extraordinary span for each opening.

32. At the Sukkur crossing the foundations would undoubtedly be upon rock, but the inevitable magnitude of the span of the principal opening, *viz.*, 600 feet, renders it a formidable undertaking.

33. As very few boats now pass down below Kotree, the headway for the river craft in a bridge below that place, need not certainly be more than 15 feet above high flood level, with a swing span for the occasional passage of steamers coming up the river to take up their stations at Kotree.

34. At Sukkur no swing span is admissible, and the height above flood level must be 70 feet, to permit the passage of steamers and large river boats—this involves very heavy and costly approaches on the main line, and at least ten miles of branch sidings to keep up the communication between it and a river-side station there.

35. At Kotree the approaches would be of a very moderate character.

36. It would appear that on the relative value of the engineering points of the right and left-bank lines, much depends that would settle the ultimate course of the "Missing Link." These points are many and intricate—possibly I have not succeeded in my endeavor to make them clear to every reader of the Reports I submitted from time to time.

I therefore beg to state that it will give me much satisfaction and pleasure to furnish any explanation you may consider desirable in furtherance of that most important object, the completion of the grand trunk line up the Valley of the Indus.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) JOHN BRUNTON.

*Extract from a Letter from G. P. BIDDER, ESQ. Consulting Engineer,
Scinde Railway Company, to W. P. ANDREW, ESQ., Chairman, Scinde
Railway Company, dated March 20th, 1868.*

AFTER the official announcement that the Indus Valley Railway "may be regarded as" one of the works "which will ultimately be required to form a complete system of main lines" in India, and the recent able and exhaustive letter of Sir C. E. Trevelyan to the "Times," urging the vigorous prosecution of this completion of the partial and interrupted railway system in the North-West Provinces and Scinde on the grounds of political and military expediency, it is admitted that the construction of this line must be regarded as an imperial necessity, at present only in abeyance, and but awaiting a suitable time to arrive, and the proper mode to present itself for the carrying out this important matter.

In the following observations I purpose giving you the results of my consideration of this subject from a commercial and financial point of view, and I have no hesitation in saying, that so far from the Government incurring any additional pecuniary liability by the construction of this line, I shall be able clearly to show a gain of at least £50,000 on the most restricted assumption, and more probably nearly £300,000 a year; and, if this be so, it is evident that on grounds, not only of political and military, but also of commercial expediency, the completion of this system of railways should not be delayed.

The opening throughout of the Delhi Railway, in some two years from the present time, will enable a passenger to make a continuous railway journey from Calcutta to Mooltan of some 1,600 miles; and, after encountering the tedious and intermitting service of 570 miles of river navigation on the Indus, and completing his journey by means of 109 miles of the Scinde Railway, he will arrive at the harbor of Kurrachee on the west coast, after traversing nearly 2,300 miles.

And here it must be noticed that, looking to the vast extent of India, and of its population, the harbors on its coasts are of very inferior capacity, difficult of access, and in some cases liable to most disastrous storms, while the accommodation and facilities offered to commerce are utterly insignificant.

Thus Calcutta, situated on the River Hooghly, is not only approached by an intricate and changing navigation, but is periodically visited by cyclones of most destructive character.

The dangers and difficulties of the navigation have indeed pressed so heavily upon its commerce, that relief has been sought by establishing a port with railway

communication on the Mutlah; but whatever other advantages this new port may possess, it certainly cannot escape the scourge of the cyclones; and grave doubts are entertained by practical persons of the permanence of the navigable channels.

Madras is only an exposed anchorage; and though some of the disadvantages have been mitigated by the construction of an iron pier, the port is still subject to the inevitable delays, losses, and great cost, which accompany the transshipment of goods and materials in an open roadstead.

Bombay indeed possesses great natural advantages, capable by the judicious outlay of money upon docks, &c., of affording facilities and conveniences in some degree commensurate with the requirements of the commerce of a large territory; but at present, during the prevalence of the south-west monsoon, its convenience as a port is comparatively restricted, owing to the want of shelter.

Kurrachee in its present state, is totally inadequate to the existing demand. Here, also, it would appear from the Report of the late Mr. Walker, that a great extension of its resources might be obtained at an outlay which is moderate when compared with the development of commercial enterprise which better accommodation would excite: and it possesses the further advantage, that the influence of the south-west monsoon is not nearly so severely felt as at Bombay, and the protection afforded by the harbor to vessels is much more certain and complete.

A few other ports, such as Tellichery, Mangalore, Calicut, Beypore, Cochin, Negapatam, &c., may be mentioned; but from their exposed position, undeveloped resources, or want of railway communication, they are of comparatively minor importance.

It thus appears that with a coast line of nearly 4,000 miles, India does not at present possess more than half a dozen harbors of importance; and the inevitable conclusion is, that until adequate harbor accommodation is provided by extended access and improvement, the industry of the country seeking an outlet by shipment must be to a great extent stifled, and the traffic upon the railways limited and confined.

The railway systems alluded to above, existing and projected, extend from Calcutta on the east to Mooltan, communicating at Allahabad, through Jubbulpore and Bhosawull, with Bombay, and by proposed but problematical extensions of lines at Delhi *via* Kotah and Baroda with Bombay, which will eventually be in railway communication with Madras, and Madras with Beypore, Cochin, and Negapatam.

Confining our attention to the North-west Provinces, the produce of the Punjaub and of the districts around Delhi and the intervening country will seek an outlet, either at Calcutta or Bombay by railway, or by means of the Indus River and the Scinde Railway at Kurrachee; and what the restrictions to commerce imposed by such a water

communication are, and its effect in limiting and neutralizing the advantages of a great railway system, a few facts drawn from official sources will exhibit in a striking light.

Indeed, the Indus offers so many difficulties, that it may be said to approach that point at which river traffic for the purposes of modern commerce becomes impracticable; for, influenced at certain periods of the year by floods causing a rise of 20 feet and a current of 7 or 8 miles per hour, and at others being so shallow, and encumbered with shifting shoals and blind channels, as to require the utmost care in navigation, which can only be attempted by day, and is impossible by night; more than a week is occupied at times in the passing of the first 50 miles below Mooltan; and on an average 20 days and 91 days are required for the trip up and down respectively between Kotree and Mooltan.

And this is the average; the irregularity to which commerce is further subject extending the up trip in some cases to a period of 35 days.

These delays entail so much expense and inconvenience, that the postal service is still carried at great cost by *dawk*; and the passenger traffic is quite insignificant: indeed (with the exception of officers in command of troops) official persons possessed of facilities for travelling along this route appear to shun it, and prefer to go to England *via* Calcutta.

Hence it is certain that, so long as no better communication with Kotree is provided, the receipts of the 109 miles of the Scinde Railway from Kotree to Kurrachee, instead of approaching £60 or £70 per mile per week, which ought to be the result upon a railway at the terminus of some 1,200 miles of line, will not exceed a small increase upon the £20 per week, which is the largest result yet attained.

So long also as the obstruction of the Indus is allowed to continue, the traffic from Mooltan, and Delhi, and the adjacent country, which ought to flow towards Kurrachee, will to a great extent be drawn away towards Calcutta, and perhaps Bombay; thus, not only imposing unnecessary extra charges upon produce from increased mileage and consequent changes, but also swelling the receipts of those lines already dividing a surplus, and diverting from the receipts of lines at present showing a deficiency, the whole of which has to be borne by the Government, while in the surplus they only participate to the extent of one-half.

Thus for every £1 of net receipts for traffic naturally seeking an outlet at Kurrachee, but artificially thrown on lines earning more than their guarantee, Government only takes 10s., and the remaining 10s., instead of being applied to recoup advances made by the State in the district from which the traffic is derived, is abstracted from it, and benefits capital raised for other purposes and expended in a foreign locality.

The importance of the proposed Indus Valley Railway to the State in its military and political aspects, and for postal service being admitted on all hands, the foregoing remarks naturally suggest the impulse its construction would give to commerce, by supplying a certain and unbroken communication between important producing districts and a port which is capable of great development.

Great, however, as these advantages are, it may be contended that they can only be acquired at a price which will outweigh them—it becomes therefore desirable to estimate the extent of the additional liability, if any, which would attach to the State from the construction of the railway.

That a communication of some sort between Kotree and Mooltan must be maintained is obvious, and this must be effected, either by the river or by a railway. The question is therefore narrowed into a comparison of the cost of the two systems, and of the results flowing from them.

Until lately, the river service by The Indus Steam Flotilla and The Oriental Inland Steam Companies, both supported by the State, admitted of about eighty voyages each way per annum, restricting the accommodation to intervals of about 4½ days in each direction—and involving an annual current expenditure of £120,000 (sinking fractions) or of £1,500 per voyage, as shown by the accounts of the respective undertakings, but exclusive of interest upon the capitals embarked.

Excluding all extra expenditure, arising from inexperience and ignorance of the peculiar requirements of the river, the capital cannot be taken at less than £700,000.

It is to be observed that, from the nature of the navigation, the vessels employed are necessarily of light construction, and are exposed to much more early and rapid deterioration than would be incident to rivers of more permanent character and depth, and situate in a temperate climate; so much so, that in the contract with the Government an annual reserve of 17 percent upon the estimated cost of the working fleet is required to be made, to form a fund to cover insurance, depreciation and contingencies.

In allowing therefore ten years as the life of a steamboat on the Indus, it is obvious that an extreme limit has been assigned, and the annual amount which must be set aside to reproduce the capital during this term, will be £55,000.

Adding to this the current cost of £120,000, the total expense therefore for maintaining the present irregular and uncertain communication, and at intervals of 44 days, would amount to £175,000 a year.

Let us now contrast this with the liability involved in the construction of a railway between Mooltan and Kotree, and in providing the rolling stock required to make one

trip per day throughout the year, or for accomplishing the journey with certainty and punctuality in 24 hours, instead of 20 days in one direction, and $9\frac{3}{4}$ days in the other.

To do this, the whole capital in rolling stock need not exceed £150,000; so that the outlay upon this railway (say at £11,000 per mile) need not exceed £5,300,000. I am aware that an outlay of £12,000 per mile has been estimated; but this has been arrived at without taking into account and allowing for the very small requirements of the proposed line for rolling stock and station appliances; there being no necessity for any extensive outlay for workshops, (those on the Scinde Railway being especially designed for its ultimate extension), and terminal stations, which have been already provided on the Scinde and Punjaub Railways, limiting the expense of stations therefore to providing the very moderate appliances required for the supply of fuel and water to engines, the refreshment of passengers, and the accommodation of local traffic.

On this basis, and taking the very high rate for working the trains which prevails on the Scinde Railway, *viz.*, 7s. 6d. per train mile (this appears to have increased from 5s. in 1866 to 7s. 7d. in the half-year ending June, 1867, and greatly exceeds that prevailing on the Punjaub Railway) the cost of a train conveying the same amount of goods which the boats average, namely, 240 tons from Kotree to Mooltan, a distance of 480 miles and back, would be £360, as compared with £1,500 already stated as the cost of the river trip, making the annual cost by railway £131,400.

Hence the total annual liability would be represented by the interest at 5 percent on £5,300,000, *viz.*, £265,000 plus the working expenses, *viz.*, £131,400, making together £395,400; or £221,400 in excess of the present annual outlay of £175,000 for working and renewal charges alone upon the river, which does not take into account either interest or profit upon the £700,000 capital embarked.

The next question is to estimate, from a commercial point of view, the reasonable addition to traffic which may be expected to result from increasing the facilities nearly fivefold, and substituting a punctual communication every 24 hours, for the irregular one at intervals of 15 days (taking the average of both ways) extended at times to 35 days.

In the first place, there are 285 additional trips each way, and as some guide, it is to be observed, that the earnings on the river during the half year ending June, 1867, and subject to the effects of rivalry and competing rates, amounted to £1,500 per trip, derived mainly from goods; for the passenger traffic, owing to the uncertain and protracted service was quite nominal.

Under these circumstances, it is not unreasonable to infer that the earnings per trip on the railway would be at least equal to that of the steamers, as the same quantity of goods, namely 240 tons, could be readily carried along such a level line by one engine,

and would earn at rates now prevailing on the Scinde lines the amount stated; moreover, such an increase is in accordance with the experience of railways in every part of the world.

On this basis, the increase of receipts would be represented by £427,500 per annum, as contrasted with the excess of charges as before stated of £221,400, leaving a surplus of receipts of £206,100.

But, in addition to this, there would be an increase of traffic upon the Scinde Railway amounting to £124,000 per annum in the gross, and allowing 50 percent for working expenses, as the fixed and permanent way charges would not be increased in the same ratio as the traffic; the result would be a net increase of receipt of £62,000 per annum, or a total of £268,100 per annum.

No doubt considerable additions would accrue to the traffic of the Punjaub and Delhi Railways which, until the imperfections of the Indus Navigation are obviated or superseded, must suffer from diversions by other lines; but what these additions may be, I have no adequate means of , estimating.

The foregoing calculation of working expense upon the railway is founded, as before stated, upon the existing rate of, say, 7s. 6d. per train mile for working the Scinde Railway, an isolated line of 109 miles in length; while on the Punjaub Railway for the half year ending June last, the rate was 3s. 10½d.—now, as in this country, the prevailing rate is from 2s. 8d. to 2s. 10d., and, after making ample allowance for the increased cost of fuel and European labor, the effect of climate, the maintenance of English and Indian establishments, &c., it is evident that the rate of 7s. 6d. per train mile is very high, and probably capable of material reduction.

Upon the completion of the Indus Valley Railway, it is manifest that great advantages would arise from the consolidation under one management of the four undertakings, *viz.*: Scinde, Indus Valley, Punjaub, and Delhi Railways; thus enabling considerable retrenchment of fixed charges to be made, and in the amount of capital required for rolling stock, and in the current charges for its maintenance.

* * * * *

Before concluding, a few incidental advantages of the Railway may be noticed, to which no exact money value can be assigned,—such as the saving of salaries and pay of Civilians, Military Officers and Men for the time occupied in transit and in various casual expenses, which a protracted journey of necessity inflicts.

Then, as regards facilities offered to Commerce, not only would a Railway secure the transport of goods which would never present themselves for carriage by a river

service, such as that now described, but a positive inducement would be held out to Ship-owners to seek cargoes in Kurrachee, which they now have to incur a considerable expense in obtaining in Bombay and elsewhere, the cost of which, in some shape or other, attaches itself to the imports of Kurrachee, — this, if reduced to figures, cannot be taken at less than 5s. per ton.

The producer would also materially benefit by having opened to him a choice of routes, and by using the Railway he would save the present necessary expenses of transshipment and shunting at Mooltan and Kotree, (at the latter place there are about 20 miles of sidings) with the loss and damage to goods inseparable from such operations, besides which, he would then be able to obtain insurances on fair and equitable terms; an ordinary business transaction, which, in the existing state of things, is almost impracticable, or only to be effected at onerous and prohibitory rates.

If, therefore, a communication is to be maintained with Kurrachee, the harbor rendered available as an outlet for the commerce of the Punjaub and of the North-Western Provinces, and the trade of the adjacent territory supplied with adequate facilities and inducements for its proper development, it has been shewn that a certain daily and convenient interchange of traffic may be obtained between Mooltan and the Coast, occupying, say, from 24 to 30 hours, instead of the present uncertain dilatory and vexatious service at intervals of only once in 4 days, (the journey occupying on an average 15 days on the river, and in the case of goods, certainly two days more on the Railway to Kurrachee) and that so far from this undertaking involving the State in any additional pecuniary liability, it will effect an annual saving, as stated in the opening paragraphs of this letter, upon calculations based upon actual official returns, and very high rates of working cost, of £50,000 upon a most restricted basis, and of £300,000 upon assumptions which are more conformable to experience.

Letter from JOHN FLEMING, Esq., C.S.I., (Messrs. Smith, Fleming & Co.,) to W. P. ANDREW, Esq.

*18, LEADENHALL STREET,
London, E.C., 31st March, 1863:*

My dear Sir,

In reply to yours of the 26th inst., I regret to state that my firm at Kurrachee complain much of the inadequacy of the means of transport on the Indus, and from the facts they have placed before me from time to time, it is evident that, unless immediate steps be taken to remedy this want, the growing trade of the Punjaub will be effectually stifled.

In a recent letter, my partner at Kurrachee states, "the produce we are now shipping has been bought nearly six months. Three months it lay at Ferozepore, and three months were occupied in its transit thence to our premises here."

No doubt this was an extreme case, but my friends complain that goods are never less than six weeks, and generally more than two months, in transit from Ferozepore to Kurrachee, and they always experience great difficulty in getting a sufficient number of boats for their wants at Ferozepore.

But even were native craft available in sufficient numbers, matters would not be mended much—as already stated, they make most tedious passages down the river—they are by no means safe,—their cargoes are generally landed more or less damaged, and on several occasions we have lost a whole cargo from the swamping or upsetting of the boat conveying it,—the cargo is often seriously injured by exposure, and, I may say, is invariably deteriorated by the addition of dirt or water, or both, as make weights, to conceal loss by pilfering.

We might, for a time at least, until better means could be supplied, bear with all this, could we only depend with certainty on getting our goods down to the coast within a definite period, but when we buy in the Punjaub we cannot tell whether our purchases may reach Kurrachee in two or six months, and it is this uncertainty which, more than anything else, paralyses our operations.

I do not look for much relief from your Flotilla. From what I have myself seen of the Indus, I am convinced that its navigation by steam will always be attended with enormous expense.

Your present rates of freight by steamers are equal to $2\frac{1}{4}$ d. per ton per mile on goods which you carry by rail at $\frac{3}{4}$ d. per ton per mile.

As you increase the number of steamers on the river the cost of fuel will increase, and beyond a certain point the forests from which you may draw your supplies will fail you altogether.

I cannot hope that you will be able to reduce your rates of freight by steamers, and I venture to state my conviction that if you depend on steamers as the connecting link between the Scinde and Punjaub Railways the greatest disappointment will result, both to your Shareholders and the public interested in those countries.

The trade of the Punjaub requires *through railway* communication, and can afford to pay for it.

I am glad to learn you take this view, and I trust you may succeed in inducing the Government of India to concur in it.

I may state that, in my own experience, comparing the present means of transport by native boats with railway carriage, on valuable produce, such as cotton, the saving of interest and insurance alone would nearly pay the full amount of railway carriage. In the case of less valuable produce, such as seeds, the great gain would be in the condition in which the seed would reach the port of shipment; and the perfect certainty which railway communication would ensure, would give an immense stimulus to the now struggling trade.

The country on the left bank of the Indus, through which I fancy the connecting line would pass, needs only irrigation to render it very productive I would only further express my belief that the banks of the Indus will yield a constantly increasing traffic, and when the Indus ceases to be used for the conveyance of the through traffic with the Punjaub, your Flotilla will find ample employment in conveying the produce grown on the river banks.

Believe me,
Yours very truly,
(Signed) JOHN FLEMING.
W. P. ANDREW, Esq.

INDIA AND RUSSIA.

THE
SCINDE RAILWAY COMPANY:
ITS ORIGIN AND POLICY.

BY
HARDY WELLS, C.E.,
ORIGINATOR OF RAILWAYS IN SCINDE.
VINCIT VERITAS.
LONDON: 1869.

A LETTER TO
HIS GRACE THE DUKE OF ARGYLL, KT,
(SECRETARY OF STATE FOR INDIA IN
COUNCIL,)
&C., &C., &C.

BY HARDY WELLS, C.E.,
ORIGINATOR OF RAILWAYS IN SINDE.

**THE SCINDE RAILWAY COMPANY.
TO HIS GRACE THE DUKE OF ARGYLL, K.T.,
SECRETARY OF STATE FOR INDIA.**

MY LORD DUKE,

It is a duty I owe to your Grace, as Secretary of State for India, and to the Government of India; it is a duty I owe to a province of India in which I labored hard for the Government for several years with acknowledged benefit to the State; and it is a duty I owe to myself and those dependent upon me, that I should do myself the honor of addressing the following remarks to your Grace in reference to a letter of Mr. W. P. Andrew, Chairman of the Scinde Railway Company, which has appended to it a letter from the Chief Engineer who superintended the surveys to determine upon an Indus Valley Railway, which letters are dated, respectively, the 5th day of June, 1869, and the 1st day of February, 1869.

In 1853, being in the employ of the Indian Government as an Engineer, I first commenced an agitation for the introduction of Railways in Scinde. I had well observed the unsafe navigation of the Indus; I was all for Railways, and nothing but Railways. My proposals got into the hands of the present Chairman of the Scinde Railway Company, without my consent being asked, and at the first annual meeting in 1856, to my utmost astonishment and surprise, that Gentleman thus laid down his policy:—

"I desire, in short, to bring practically into operation the system of Railway communication in India, which I advocated in 1846, in reference to the construction of Railways in another part of the Indian Empire—the Bengal Presidency —namely, to make use of the navigation of rivers when practicable, and as it were to supplement, where water transit becomes defective, the grand natural highways which Providence has made for the use of man by the assistance of the Railway (hear)."

In a book, published the same year by Mr. W. P. Andrew, entitled '*Euphrates Route to India*,' p. 15, the policy is again described in the following words:—

"*Same kind of improved transit alike applicable to the Valley of the Indus and to that of the Ganges.* Turning from the Valley of the Ganges to that of the Indus and its tributaries, I would recommend precisely the same mode of introducing improved transit, substituting Hyderabad for Rajmahal, and Mooltan for Allahabad. The Railway from Kurachee to Hyderabad will, as formerly explained, avoid the dangers and delays of the Delta, and debouche on a point of the river, above which there is permanently open navigation for 570 miles to Mooltan."

Being the Advocate and Originator of *Railways* in Scinde, I objected to the policy of the Chairman in every way in my power, because I knew such a policy could only end in ruin to everybody concerned. At the second meeting of the Scinde Railway Company, Mr. W. P. Andrew had grown in confidence; he gave a short definition of his "*system*," and proclaimed it was to be known as "Steam by Land and Steam by Water." Mr. W. P. Andrew was not without supporters—his success naturally commanded them—but to him is mainly due, in opposition to my opinions, the introduction of the system that I maintain, and will show, has crippled Scinde and all the countries supplying trade thereto.

While this policy was being pursued in England, it was necessary that an Agent should be sent out by the Company, who would support it in India, and in due course one arrived. He was not long in showing what his policy was to be towards the Projector of Railways in Scinde, and he soon publicly stated he was there as the Advocate of "Steam by Land and Steam by Water"; so on May 7, 1857, he stated: —

"I am well content on the part of the Railway Company with the river trade. It must be remembered that an essential part of the Scinde Railway Company is the establishment of efficient steamers between Kotree and Mooltan. The distance by rail and river from Lahore to Kurachee will be 870 miles, the first-class fares probably Rs. 150, and the time consumed, seven days. The distance from Lahore by Mirzapore to Bombay, if there were a continuous line, would be 1600 miles—first-class fares Rs. 150, and the time for a person sufficiently strong to bear the fatigues of continuous travelling, three days. The line to Agra from Bombay is not sanctioned. The line from Delhi by Irmballah to Lahore is not under construction, the Company having totally failed to comply with the conditions laid down by the East India Company. Before either of these works is completed, a line of steamers from Kurachee to Suez will decide the preference of easy cabins on board a steamer."

It will be observed the Agent argued upon the *down* trip of the Indus as *five* days. The Consulting Engineer, after all the money spent and improvements made, now gives 20 days *up* and $9\frac{3}{4}$ days *down* as the required time, but with the reserve that it is the "*average*," and in that average is included a *down* trip I made in 1862, which took 26 days, with troops on board.

I am bound to do the distinguished Gentleman, who now occupies the position of Consulting Engineer, the justice to say, if he had been in that responsible position in 1857, the policy pursued at that time would never have been carried out, or, if it had, he would not have held that position now. The Engineer and the Flotilla Agent say, they have got all the river traffic—"very few boats now pass down below Kotree." Is the Company "content"?

All "means" have been given to "command the end"; they have done all that the most lavish expenditure of money could do; steamers, tried in England and approved, have been sent out and condemned; others have been sent out, but never floated on the Indus, but cast away on the Keamaree beach; and yet the Consulting Engineer says the earnings of the Railway are only 20£ per mile per week. Your Grace may ask, Why should it be so? My answer is, what it was to the Company in 1856, — *"The river is not the route of the traffic of the country!"*

I based my advice upon personal knowledge and a study of Captain Wood's I. N. reports to Government, in which I found: — "The river Indus, after it passes the latitude of Hyderabad, undergoes an annual elevation in the level of its waters; but the swell does not reach such a height as to produce the effect of inundation in any degree. In this particular the Indus differs from the Ganges and from the Nile, and resembles the Euphrates, or perhaps more closely the Tigris. *Such difficulties have caused the merchants of the country to abandon the line of the Indus, and to transport their goods by the land routes.*"

Before I left Scinde, I begged the Agent, publicly and officially, to condemn the policy of "Steam by Land and Steam by Water," for if he did not, he would give Mr. W. P. Andrew bitter cause to regret its future failure. I warned him the Indian Government would someday say: — "We wanted you to attract the traffic of the Punjab, the North-West Provinces, and Central Asia; you refused; you cannot blame us for not rectifying your error: you have even made your line so as to exclude the trade of Central Asia from it; it keeps its old route, and finds its slow way along the common road. Look at your Mooltan and Lahore Line; it is now an excellent feeder for our Bombay (and Calcutta) Line; it should have been so to your own. You do not suppose passengers will come across from Aden to Kurachee and be thirteen days ascending the Indus, when they can come to Bombay and proceed in three days to their destination at less cost; the times have gone by when the public will pay Rs. 4 per diem for lodging in a boat at the top of a fiat on the Indus."

Was I right? What is the result? Mr. W. P. Andrew for six years has been begging in vain for permission to extend Railway communication up the Valley of the Indus. He sees the system almost drifting from his grasp. He has listened to the advice of those who have assisted in the policy that has not paid. The Projector of the policy that will pay should have been "sent for"; in him the Company would have had a true adviser. The Consulting Engineer now states, to confirm my views of 1856:—

"Indeed (with the exception of officers in command of troops), official persons possessed of facilities for travelling along this route appear to shun it, and prefer to go to England *via* Calcutta" (or Bombay).

What more bitter reflection can be cast upon the policy of "Steam by Land and Steam by Water"?

There was still another reason Mr. W. P. Andrew gave in support of his policy of "Steam by Land and Steam by Water." He said it was to be such a great financial success; declaring that though he wished a guarantee upon the capital to procure steamers for the Indus, yet such a matter was a mere nominal thing, for the "shareholders might depend the least interest they would receive upon their venture would be 25 percent;" and now the very parent of that system, over which Government have spent nearly ten millions sterling, has the boldness to tell your Grace, "it is feared it will remain a burthen to the revenues of India."

The result to me for opposing the policy of the Chairman may be easily imagined. My Lord Duke, my professional prospects were ruined for life: but though poor, while he and his coadjutors are rich and prosperous, it is my duty again to advocate my views, and proclaim, their policy has wasted millions to the State; and now Mr. W. P. Andrew, and those in his employ, wish to avoid the appearance and acknowledgment of failure in the "Steam by Land and Steam by Water" principle, by making out to your Grace that the line laid down from Kurachee to Kotree is a necessary part of an Imperial Line of Railway up the Valley of the Indus.

My Lord Duke, I assure your Grace it is no such thing.

In 1856 the Government of India required me to lay plans before them of such line of Railway as they should consent to. I did so. I stated in my reports:—"If you only wish a *Local Line* to be made connecting the Indus with the Port of Kurachee, then go to *Chilkya*, the shortest connecting line that could be made with a good river bank. If, on the other hand," I stated, "you want to make part of an *Imperial Line*, which is hereafter to be extended towards the Punjab, and carry the trade of Central Asia, the proper line to make is one from Kurachee to *Sehwan*." I was opposed, as will be understood, to any main line making Kotree one of its termini. The contract of the Government with the Scinde Railway Company was submitted to the law officers of the Indian Government, and upon the clause which stated the "Line was to go from Kurachee to a place on the Indus to be hereafter determined," gave the opinion the line could be taken to Sehwan or any other place.

The Company was powerless and the Agent was powerless to give orders in India contrary to the wishes of the Government. The Government said:—"Only show us by comparison you propose to go to the best place, and one we can therefore approve, and all will be right." I did so; but when I entered upon the inquiry, I never dreamt or heard of the Chairman having a "*system of his own*."

My position was one of great and unenviable delicacy. When sending my schemes home, upon which the Scinde Railway Company was formed, I most especially begged that a reserve should be made as to the place on the Indus to which the line should go;

because I was certain the Government would require a full inquiry into the matter. My Railway propositions were at the time under comparison with a canal scheme being worked up by the late lamented Lieutenant Chapman, R.E., whose very death, poor fellow, should have been a warning, for he was drowned by a native boat he was travelling in down the Indus striking a *sunken snag*. If I had *fixed* upon Kotree, Jerruck, or Chilkya, there was the canal scheme *against me*. If I had *fixed* upon Sehwan, the advocates of the canal would have said:—"Oh, this is a greater inquiry than contemplated; let us carry on the canal while it is being carried out." I went upon the great general principle that "*Scinde wants a Railway right through it, to open up the country.*"

In due course my reports came to be reviewed. The late lamented *General John Jacob* was Acting Commissioner in Scinde; he declared I was right, stating, in reference to the *Sehwan line*:—

"I have been along it at all times of the year, and there is nothing to prevent its being made."

General H. B. Turner, R.E., the Chief Engineer and Acting Consulting Engineer, stated:—

"If it is ever intended to extend the Scinde Railway, the line should be taken to *Sehwan*, and no other line should be thought of."

General C. W. Tremenhaere, R.E., Acting Consulting Engineer, not taking so enlarged a view of the matter as Generals John Jacob and H. B. Turner, with great caution, said the line should go to *Chilkya*.

The Government of Bombay and the Government of India both approved my recommendations, but it was opposed to carrying out a "Steam by Land and Steam by Water" policy; and my honest convictions and opposition to such a policy have been an irreparable loss to me. Now, the utter break down of the "Steam by Land and Steam by Water" system has been made so apparent even by its Author, it is to be hoped my day of something besides rejoicing has come. The Railway Company will surely *recompense* me for the injustice done me, and Government will generously consider the sacrifice I made in endeavoring to save the waste of public money which has taken place in Scinde.

Mr. W. P. Andrew states, with bewailing blame, in the 13th page of his letter:-

"The greatest disappointment has been felt both at home and abroad at the silence which Government has hitherto observed on this vast and most important subject; and the more so, that the fact of Government having authorized the surveys in 1863, had raised the hopes of all interested in the projected undertaking.

"It is to be deeply regretted that the statesman-like policy which was the motive power of the important steps then taken should not have been adhered to, and that a work which had already been too long delayed should have been thus further deferred."

There is a strong tincture of injustice in these remarks. Permission was given for the surveys in 1857, as is shown in General John Jacob's letter, at the end of this communication. I might *then* have surveyed the country from Kurachee to Cashmere, or Herat, if I had thought it necessary to determine the best route for an Imperial Line of Railway up the Valley of the Indus. The Persian war *was* on, and there was talk in high army circles of a force going by the Bolan Pass. Who stopped the work being done? Who "*delayed*" the work? Who stopped the "*statesman-like policy*" I wished to pursue, and the Government of India sanctioned? These are serious questions your Grace must ask, and the answer will quickly occur, It was the policy of "Steam by Land and Steam by Water."

I fear very much Mr. W. P. Andrew, while he deeply regrets, as I am sure he sincerely does, not now being empowered to carry out my Railway system up the Indus Valley, does not reflect whether the public and the Government think he has been sufficiently in earnest in wishing for a new policy. If, even in 1863, he had boldly acknowledged the faults of his former policy, stopped expenditure on the Kotree Line and the Indus Flotilla, things would have looked differently. There has always seemed to have been a sweet attraction to the Company in the old course, which did not mature in the new one.

Again referring to Mr. W. P. Andrew's advocacy of the "Steam by Land and Steam by Water" system, allow me to draw attention to the following passage of his letter at page 3:—

"I have said that from Kotree to Mooltan the communication is maintained by means of the Indus Steam Flotilla, but in spite of all the efforts which have been made to render this mode of communication with the Upper Provinces as perfect as possible, the shallow, shifting, treacherous nature of the river Indus makes it inefficient, uncertain, unsafe, costly, and—even under the most favorable circumstances— quite inadequate to accommodate with punctuality and dispatch the requirements of Government, the necessities of commerce, and the demands of an important Railway system."

Your Grace will hardly conceive it possible that the foregoing remarks were written by one and the same person who forced from the Government a guarantee of five percent upon capital for navigating the Indus, but who now states in his letter to your Grace, that for "fourteen years" he has advocated an Indus Valley Railway. In 1856, directly I heard of the policy then being advocated by Mr. W. P. Andrew, I wrote to him nearly similar words to those I have quoted. My opinions and my warnings went unheeded by

that gentleman in his temporary success. "I have a system," said the Chairman; "it must produce a wonderful success." I had previously, at a public meeting at Kurachee, presided over by Mr. (now Sir Bartle) Frere, stated that everybody would be ruined who attempted to navigate the Indus at a profit.

The Indus Flotilla Company enjoys a five per cent guarantee; but let the poor ruined shareholders of the Oriental Inland Ream Navigation Company say, if my warning was not based on truthful observation.

If the Indus Flotilla Company is a success, why is it not continued to perpetuate the system of "Steam by Land and Steam by Water"? If, on the other hand, it has proved a failure, as I know it has, let it be honestly acknowledged, and some justice done me.

Assertion is not proof; let me therefore deal with facts, and look into the result of this "system" of "Steam by Land and Steam by Water,"—responsibility resting where it is due for the following sad results.

The Scinde Railway stands thus:—A lawsuit with their contractors, fully foretold by me, which has lasted ten years, the expense of which a capable authority has stated must fall upon the Company, with any damages given. A debt of 833,000£ for guaranteed interest, with a credit of 190,000£. Net annual receipts 23,398£, to pay an annual charge of 101,533£.

The Punjab Railway.—A debt of 717,000£ for guaranteed interest, with a debit account or loan from Government of 828,000£, making together 1,045,000£. Net annual receipts 24,645£ to pay an annual charge of 99,676£, or, with 5 percent interest on loan, 116,076£.

The Indus Flotilla.—A debt of 151,000£ for guaranteed interest, with a debit account or loan from Government of 236,000£, making together 387,000£. Annual interest payable 29,038£. There is no return of any "net annual receipts" for this Company by the Government Director for - Indian Railways; it may be assumed, therefore, the Company does not, as I said it never would, pay as expenses. If the Government were to offer all the property of the Indus Flotilla Company for sale tomorrow, that which has cost 593,683£ would not, I believe on good authority, fetch enough to pay the Government five shillings in the pound upon their debt! This is the Company that was to pay 25 percent profit. The foregoing is the results which cannot be disputed, to the Government, in reference to the Companies representing the system of "Steam by Land and Steam by Water"; but it is not all; it has added upon the Consulting-Engineer's calculation at least 25 percent to the cost of the construction of the Punjab and Delhi Railways above what they would have cost as portions of a through Indus Valley Railway—and they would have been made in one-half the time. In this opinion I was supported by the late Mr. Stevens, Agent of the Punjab Railway. Who is to wonder,

with these results, the Government contemplate taking the Railway out of the hands of the present Company, and constructing it under a different system?

But just look at what a crippling effect this "Steam by Land and Steam by Water" system has had upon the trade of Scinde. Between 1846-47 and 1856-57, the sea-borne trade of Scinde rose from 342,700£ to 1,419,187£—in ten years it quadrupled itself. If we refer to the returns of shipping from 1857-58 to 1861-62, the time during which the Scinde Line was under construction, the average yearly tonnage of sea-going trade was, import and export, 110,000 tons; and between 1861-62 and 1866-67, during which the Scinde Line was open, it had only risen to 128,000 tons, and this includes the tonnage of considerable quantities of material for the Punjab and Delhi Railways. But the earnings of the Scinde Line clearly show that the shipping tonnage is not supplied by that line. It is made up of the trade struggling from the right bank and Central Asia down the common roads.

I consider these results make it clear that the failure of the policy pursued has done more to destroy the future prospects of private Railway enterprise in India than anything in connection with them. In 1856-57 the wishes of the authorities were opposed, with the assistance of the Company's Agent, in the province in which he was going to carry on great works, which, as General John Jacob said, was "poisoning the very sources of success." The Agent opposed the Government of India—look at the result. Mr. W. P. Andrew opposes the authorities in Scinde again in 1869: under advice from his Engineer, he applies for a concession to carry on work which he knows is opposed to the opinions of the most able men now in the country. How stands this matter of the Indus Valley Railway?

The failure of Mr. W. P. Andrew's policy made the Government anxious to know how it could be rectified. In Scinde a commission was appointed, at the head of which was Sir William Merrewether, who has spent nearly the whole of his official life on the frontier, and is now Commissioner of Scinde; he recommends a line of Railway on the right bank of the Indus to Sukkur, and that it should be extended along the Derajat district to Dhera Ghazee Khan and to Mooltan. Here is the head of a province, politically and strategically the most important in India at this moment, one of the ablest military men in India, reporting to the Government upon the most serious question connected with the communications of the country; and Mr. W. P. Andrew, under the advice of the same Engineer, wipes out such an opinion by saying, it is a "*gigantic blunder*"; give me a concession for something else.

Then a Commission was appointed in the Punjab. No opinion whatever is expressed in their report to bear out Mr. W. P. Andrew's policy of the left-bank line; it only entered generally into the necessity of a Railway, which everybody must acknowledge. The Punjab Government never said the line was to go by Bhawalpoor. The dispatches of the Government of India leave it quite an open question—"They desire at once to cause all

necessary surveys to be completed for obtaining a definite and final project" When "negotiations" are commenced with the Scinde authorities in reference to a line through Bhawalpoor, it is not unlikely, but rather probable, that the carrying a line throughout our own territory, and at a saving of Ply miles of distance, may appear preferable to going through a foreign territory, and may show that Sir William Merrewether and the Scinde Commission did not commit themselves to a "gigantic blunder."

Having then reached Sukkur or Shikarpoor, on the right bank, the line would be extended down to Sehwan, and then —what next? The authorities would choose a line to Kurachee by a route which for many years has been a wheel-road,—save another fifty miles of distance rather than face the construction of a tunnel 6 miles long through the Luckee Hills and other formidable difficulties.

The Government Director has indicated this advisability in his report, when he says, in reference to the East Indian Railway, paragraph 58, " The completion of the Chord Line, which will be opened next year, will shorten the distance between Calcutta and all places above Luckeserai by 70 miles."

I said, and told the Company in 1857, that the system being pursued "would never add to our greatness, our comfort, our welfare, or our political safety in India."

Indeed, almost in Mr. W. P. Andrew's own words, I said, "We should seek to pursue a policy which will at once maintain our prestige, inspire confidence in those we have undertaken to govern, and at the same time forward their social, commercial, and political interests."

It is because Mr. W. P. Andrew did not pursue such a policy, that he has now to come to your Grace as a suppliant, and say, "Nearly every authority of eminence in India has borne official testimony to the importance of this line, on political, strategic, and commercial grounds."

They did so "fourteen years ago," and it was opposed by Mr. W. P. Andrew, or would now have been completed; and instead of writing comparative envious remarks respecting the East Indian Railway, profiting, as it largely does, by the Delhi and Umballah Line, he must know, had my advice been taken, the traffic of that line would now have been streaming down the Valley of the Indus.

The East Indian Railway Company said to Government in 1856, "Let us push on our National Railway."

The Scinde Railway Company said to Government in, 1856, "Let us awry out a policy of Steam by Land and Steam by Water."

The two systems stand out, proclaiming the truth of success and failure. What would now have been the state of the North-West Provinces, if the system Mr. W. P. Andrew has carried out on the Indus, had been carried out between Rajmahal and Allahabad?

Mr. W. P. Andrew and the Consulting Engineer take a most restricted view of this matter. They must prepare themselves, and the Government must prepare, for a much more serious feature of the case; that is, when the Oude and Rohilcund Line is opened on to the East Indian Line, the East Indian Line will refuse to take the traffic off the Delhi and Lahore Line. The trade of the Ganges Valley is in its minutest infancy. 6,000,000£ more money had be spent upon the main line. In a very few years four lines of rails, in perfect working, will not be competent to transport the produce of the country. It is going, with the aid of the Oude Line, to open up a country, where I know, have seen, and told the Government, thousands upon thousands of quarters of wheat and other produce rot on the ground after a run of full harvests—when wheat is selling in Mark Lane at 70s. a quarter. This is from want of the means of carriage. Sugar goes unproduced; cotton, growing like a weed, goes unpicked. Some people think it is the want of irrigation; it is not: when this means of getting produce away is perfect, and good common roads made, the Government difficulty will be to stop the construction of irrigating works, for then will come agrarian quarrels for the land. The study of Indian Railways by the light of the East Indian Line is a most intricate and tentative one, and requires the closest mental study, from the multiplicity of its bearings. They are burthened with an inexhaustible blessing to the country, but they may also be laden with injustice. The East Indian Line will soon pay 10 percent interest; so would my Direct Indus Valley Line, had it been commenced in 1856, as wished by the Government of India, instead of being agitated for in 1869. As the interest increases, the Government will lower the tariff for traffic; indeed, the Company, without compulsion, will do so. Then we shall find, as now, in a different degree, one part of India favored with cheap carriage for their produce, and another part with a maximum of charge upon their trade.

The Chairman of the East Indian Line stated in the House of Commons, they refused to construct the Delhi and Lahore Line; he said, "We did not want it; we have quite enough of our own business." In the light of self-interest they were justified in doing so, but certainly not in the light of Imperial policy. If the East Indian Line pays, say 10 percent, and the Delhi Line pays 4 percent, but the latter assists to make the East Indian Line pay the Government 2½ percent profit above guarantee; how far will the Government be entitled to withhold a proportion of that 2½ percent, which might make the Delhi Line pay 5 percent, and how far is it just that the carriage of the Lahore Line traffic should be only valued at a minimum tariff rate, because by other traffic combined the East Indian Line can pay 10 percent? I argue upon the Lahore Line, because I am quite certain the Rohilcund Line will, very soon after being completed, pay a surplus over the 5 per cent guarantee.

Then, again, if it is going to be tried whether the Lahore, Punjab, Indus Flotilla, and Scinde can be combined as one capital, the East Indian Line will naturally say, We do not mind being liberal to your Delhi shareholders, and assist the Government to divide with them some of our large surplus earnings; but surely you are not going to ask us to assist in raising your sunken steamers from the Indus.

If my Direct Indus Valley Railway had been commenced in 1856, the Chairman and the Consulting Engineer of the Scinde Railway must know that the two Railways between Calcutta and Kurachee would now have "ceased to be on a different footing"; and though I do not think the Direct Indus Valley Line would ever have proved as profitable, as a speculation, as the East Indian Line, yet I am satisfied it would have caused no pecuniary anxiety to the Government, as the present system is doing; and I firmly believe the two lines would have worked so harmoniously together, at any time one or the other found it necessary, from any executive cause or otherwise, that shippers would have sent 1000 tons or more to Kurachee or Calcutta, as they might have been asked. What a different picture is the reality; but I fear it will continue, unless Mr. W. P. Andrew and the Consulting Engineer will deal with the subject more in a manner which appears to me a "statesman-like policy."

In page 5 Mr. W. P. Andrew states, "A branch line will be required from Sukkur, *via* Shikarpoor and Jacobabad, to Dadur."

In page 7, in reference to the main line, he states the routes which present themselves for choice are three in number:—

"1st. Entirely on the left bank of the Indus.

"2nd. Entirely on the right bank.

"3rd. On the right bank from Kotree to Sukkur (about half the whole distance), and crossing the river at Sukkur, thence to Mooltan by the left bank."

I submit to your Grace that this statement deceives you; there is another route quite independent of all three, and it is the one which should and must be taken if justice is done to the poor tax-payers of India and the traders of Scinde and the Punjab. It is the line I recommended to the Government and Railway Company more than "fourteen years" ago, and which line was approved by the Government of India. It stands well the rub of time. "The line must start from Kurachee (Manora), proceed in the most direct way practicable to Sehwan, thence to Larkhana, where the trade of Central Asia coming through the Bolan Pass will be intercepted, then proceed to Shikarpoor, throwing out branches to Jacobabad and Sukkur, and eventually be carried on to Dhera Ghazee Khan, with a branch to Mittun-Kote to take in the trade coming down the Sutlej River."

Route No. 3, sketched by Mr. W. P. Andrew, takes the line to Sehwan *via* Kotree, making the distance 197 miles, when by my line it can be reached in 147 miles. But it will be said the line to Kotree is made. Yes, that "gigantic blunder" has been committed, and the parents of it wish, therefore, to tax the trade of Scinde and the Imperial trade of Central Asia with 50 miles of unnecessary carriage, and make a tunnel perhaps 6 miles long on the route. Or if No. 1 route is to be taken, the whole trade of Central Asia is proposed to be passed over the Indus above the Sukkur Rapids by means of a steam ferry. I should have thought the author of such a scheme had had enough of steam ferries over the Indus in the abortive endeavor to establish one at Kotree. Then the traffic, after being transported once across the Indus, is to undergo a repetition of the process at Kotree, by a gigantic bridge at that place, or, perforce, by another attempted steam ferry.

Then an objection is taken to my line between Shikarpoor and Dhera Ghazee Khan, because the line would "traverse a country annually flooded to a very great extent."

If your Grace will refer to page 70 of Mr. W. P. Andrew's book, before quoted, there will be found Mr. (Sir Bartle) Frere's opinion "that not a single engineering obstacle to such extension exists until you reach the hills of Kalabagh."

This was also the expressed opinion of General John Jacob, and it can only have been in utter forgetfulness of the existence and increasing success of the Bombay, Baroda, and Central India Railway, now spoken of by Mr. W. P. Andrew as a competing line, that any mention could be made of the "watershed of the mountain ranges."

As to any interruption to this line from the "lawless and unsettled character of the frontier tribes," that is a mere pleasantry. Government know full well they can trust that matter of police to the Scinde Horse and Lahore Light Cavalry to answer for Mr. W. P. Andrew and his Engineer's imaginary marauders. I am much afraid Mr. W. P. Andrew's mind must have been acutely sensitive to the fear of the "wild tribes" engendered in the mind of the Engineer in charge of the surveys, for the "wild tribes" appear to have frightened him from surveying the line the authorities consider the best to be taken. In reference to one part where these "wild tribes" are supposed to exist, that is, nearly as far as Mittun-Kote, Colonel Sir Henry Green, in charge of that frontier, states:—"As an example of this (safety) I can state, that during the past year upwards of 20,000 camels, laden with valuable merchandize, passed through this country to and from British India with the loss of only two camels by theft, and these were recovered and the delinquents punished."

But the fear of the "wild tribes," according to the Engineer, has prevented all trade between Shikarpoor and Dhera Ghazee Khan; for he states there "is the certainty of no local traffic of any importance between Sukkur and Dhera Ghazee Khan."

There appears here to have been great, I should be sorry to say intentional, forgetfulness of a place called "Mittun-Kote," the exit port for the trade of the five Punjab rivers. It might be thought Dhera Ghazee Khan was a mere name to an isolated spot on the bank of the Indus, perhaps requiring, in the Engineer's mind, something more than "bush-faggots and rubble-stone" to keep it as secure as Kotree.

Let me, however, explain in the words of Lieutenant (now Captain) Wood, and Agent of the Scinde Railway Company, and judge whether the Railway is only proposed to be taken into a country of Bozdar robbers: —

"Dhera Ghazee Khan is situated about 4 miles from the river Indus, but in the swell, like most of the other towns upon that river, it has a large navigable canal, by which it may be approached by boats for some months. Dhera Ghazee Khan has, however, advantages that it will be difficult to set aside: the town lies at the foot of a pass in the Sooliman Mountains, that leads both to Cabool and Kandahar, while it is equally central with respect to the Indian routes. It is the largest town on the Indus, and even under the Seikh rule it wears an appearance of increasing prosperity. Its merchants, though they do not speculate largely, have an extensive agency, and a considerable command of money. The country around yields heavy crops of grain and the staples of cotton and indigo; while its home manufacture of silken stuffs, such as Gool-buddens, Timorus, &c., is only equaled by the manufacturing marts of Bhawulpoor and Mooltan. When to the above recommendations are added the fairs at Peer-Abdul and Sekh-i-Surwar, I believe that, everything considered, Dhera Ghazee Khan, or rather some spot in the vicinity, will alone be considered as the most eligible place to lay the foundation-stone of an Indian St. Meccreare. By a reference to the map it will be seen that Sekh-i-Surwar and Peer-Abdul are towns in the district of Dhera Ghazee Khan. At each of these places a large mill or fair is annually kept. That of Sekh-i-Surwar occurs in the Indian month of Wysakh, answering to our March. It is held in honor of the peer after whom the place is named. The fair lasts five days, and pilgrims from India's farthest shores come to prostrate themselves at the tomb of Sekh-i-Surwar; few come from the countries west of the Sooliman Range, and the followers of Brahma outnumber those of Mahomed; the aggregate of both cannot be much under 100,000 souls. Though commerce is not neglected, there is little business done: a Khorassan, or Affghan horse-dealer, may now and then exchange an animal of his stud for the productions of India or the manufactures of Europe; but this *mala* is essentially an assemblage of devotional and pleasurable purposes. But with such a material, and the example of the holy Mecca, it is easy to foretell that, when the fair is established, many individuals in this annual concourse of devotees will become as enterprising merchants as they are now zealous and bigoted Fakeers."

There is another place higher up on the Indus which would contribute greatly to the traffic—it is Dhera Ismel Khan. The loyalty and enterprise of its inhabitants during the Crimean war is thus described in the '*Lahore Chronicle*': —

"Dhera Ismael Khan (on the Upper Indus) has not been far behind Lahore in celebrating the fall of Sebastopol. The official news was received with the greatest enthusiasm by all classes, and the inhabitants resolved to have illuminations, fireworks, &c. The bazaars of the city were brilliantly illuminated; every shroff and wealthy merchant displaying from 1000 to 1200 lamps before his house, and other shopkeepers from 200 to 300 lamps."

As I have quoted Sir Bartle Frere to support the practicability of the northern portion of my line, I may, I think, with advantage quote that distinguished public man in support of the great importance of the cities on the Indus and their trade. He says, in reference to the Lohanee merchants, who I hope the Engineer will not confound with the fearful "wild Tribes":—

"These men are the great carriers of the Affghan trade. They have their homes about Guzni, where they spend the summer. Since the trade *via* Tatta and the Indus was extinguished in the latter end of the last century, these people have supplied themselves with sea-borne goods *via* Calcutta. They descend the passes before they are blocked up with snow, between Guzni and the Indus, in vast caravans of eight or ten thousand souls—the whole tribe moving bodily —men, women, children, and cattle—their goods being on camels and ponies. Arrived in the *Derajat*, they leave the aged men, women, and children in black felt tents, with their flocks and herds in the rich pastures bordering on the Indus, while the able-bodied men push across the Punjab, with their goods for sale, either in that province or on the banks of the Ganges.

"Last year (1855) the first of this tribe came down to Kurachee, and told me they would soon all come that way; that they had no idea of its comparative shortness and other facilities. When I met them, they had shipped the wool they had brought down from Guzni on board river boats at Dhera Ismael Khan and Dhera Ghazee Shan, and were taking their unladen camels down to Kurachee, expecting there to find return loads, with which they could go back to Affghanistan. A string of camels, numbering 5000, occasionally comes from Bokhara to Dhera Ismael Khan on the Indus."

These are the cities, the peoples, and the trade, that Mr. W. P. Andrew, directed by his Engineer, tells your Grace and the public it would be a "gigantic blunder" to go and attract to an Indus Valley Railway. But grant that this is Imperial traffic, and so in their minds beneath consideration, let us look more closely to Government documents to satisfy us there is no local traffic to make Mr. W. P. Andrew and the Government pause before deserting it for 120 miles of Railway through the wretched Bhawalpoor territory. I have not very recent Punjab Government reports, but by one in 1863 I find that in the Derajat "the area irrigated in 1859-60 was 68,148 acres; in 1860-61 it was 95,089 acres; and in 1860-61 there were 30,400 acres under cotton cultivation, and that 2,936,000 lbs. of cotton were exported of the quantity grown in the district"—double the quantity

exported from Mooltan. "The cultivation of indigo in the Dhera Ghazee Khan district has increased so much, that the manufacturing apparatus has been found insufficient for the quantity;" and lastly, there was then a population of 910,696 souls, producing a land revenue of 113,000£ annually.

Here was a population one-half the whole of Scinde, through which the Engineer goes to get to Bhawalpoor, a country the Government have no reason to assist, quite the contrary; and he turns from this garden of the Punjab with an exclamation which he could not have used decently if he had ever been to the neighborhood of the city of the district, which is "*one of the most lovely spots in all India.*"

But just now your Grace hears a great outcry from Manchester; in that city the manufacturers and operatives call "Cotton, cotton!" "India, India!"

Your Grace might think, a gentleman who had been "fourteen years" learning India would be very cautious how he offended Cottonopolis; but let me see whether Mr. W. P. Andrew, under advice of his Engineer, does not run a great risk of doing so. The Derajat district, through which the Scinde authorities recommend the Railway to go, in 1860-61 exported 2,936,000 lbs. of cotton, which would have paid on my Railway 7300£ for carriage to Kurachee. If I take the average increase of irrigated land from 1859-60 and 1860-61 and apply it to the amount of cotton exported, the Derajat district would in 1866-67 export 8,000,000 lbs., which would have paid more than 20,000£ for carriage to Kurachee. The 2,936,000 lbs., exported in 1861 is an official fact! The Governor of the Punjab, in reference to the trade, stating, "he is himself disposed to think that, if a local demand were to arise, the production of cotton might be indefinitely increased;" and, again, so enterprising in 1861 were the natives of our own territory, that "the Commissioner of Peshawur reports that there is a disposition amongst the people beyond the border to obtain land for cultivation within our territory. This is a satisfactory indication of the gradual change of habits which contact with our more civilized subjects is beginning to effect. Even more encouraging is the project of a frontier Zemindar, in the Dhera Ghazee Khan district—Mussoo Khan by name—to make a small canal from the Indus at his private expense."

Then we turn to Mr. W. P. Andrew's favored district, Bhawalpoor, and from his own letter I learn that in 1866-67, after the influence of the American War, there was produced "from 2219 acres 960,000 lbs., of cotton"; and among the articles imported into the district I find "cotton"!

Here is, then, the Derajat district in 1860-61 exporting 2,936,000 lbs., and in 1866-67- by a generous calculation exporting 8,000,000 lbs., of cotton, and Bhawalpoor is importing cotton; the former district having in 1860-61, 39,400 acres under cotton cultivation, against 2219 acres in 1866-67 in Bhawalpoor.

It does appear to me most incredible that any gentleman sent out to inquire into the direction of an Indus Valley Railway, "in a spirit of perfect impartiality," and who states his opinions are founded upon "intimate personal inspection and study of every locality," should state the country in which this cotton is produced is a "desert."

"England is crying aloud for Cotton!"³⁵ Mr. W. P. Andrew, under advice from his Engineer, echoes back, "Gigantic blunder!"

But the Engineer may say, "Why do I not argue upon population, look at the population of the highly cultivated district of Bhawalpoor." So I turn to the report of Captain Minchin, Political Agent at Bhawalpoor, and I find the following facts:—Two-thirds of the district are cultivable; but as it is not very likely there is any population on the uncultivated parts, I find there are 1111 square miles under cultivation, and there is a population of 147 per square mile—making 163,317 in the district! And if we rob our own territory for the purpose of populating a foreign one, it is only capable of containing 261,707 upon the entire cultivable portion, and a very considerable part of that land and population would be found away from the route of the line proposed to be taken by the Engineer.

I think the Engineer who went out to carry on the surveys, and make an inquiry "in a spirit of perfect impartiality," is more to be pitied than blamed. First of all, his appointment was not one that could command confidence in an altogether unprejudiced opinion from him, because, before he went out he had publicly recorded his idea that the line should go on the left bank. Then in paragraph 5 of his instructions he is told:—

"You will bear in mind that the primary object of the survey entrusted to you is to fix in as short a time as possible, upon the route best adapted for a Railway between &tree and Mooltan."

A new name had been found and given to this; it was no longer "Steam by Land and Steam by Water," it was now the "Missing Link," and well the catch-cry word has been taken to, even by members of the Government. I cannot doubt the Engineer's determination to forge this "miming link," with the aid of his fourteen European Engineers and "any native assistance which he may find necessary." No matter, it seemed, where the process was carried out,—on a steam ferry at Kotree, or on the "faggot and rubble-stone" protected abutments of a gigantic bridge at that place; on a steam ferry above the Sukkur Rapids, or in the middle of a 6-mile tunnel in the Luckee Hills,—so long as the "missing link" was but forged. If money could have found out where the smithy was to be erected, truly it was given out by Government without any stint.

³⁵ Minute by the Most Noble the Governor-General of India, 20th April, 1855.

My Lord Duke, it is not a "missing link" that is required, it is a "new chain" of sound metal, in the shape of a great national highway, that is required to be made by the Engineer, and that "early."

I recommend this new chain now as I did "fourteen years" ago, in these words, "to bring down the trade of Central Asia that at present struggles through the Bolan Pass, the pass through the Sooliman Mountains at Dhera Ghazeo Khan, and the Kyber Pass. It is also to answer the great national political use of quickly moving up troops from England to defend our Western Indian frontier from the future dangerous hostile encroachments of Russia."

This line is also strictly in obedience to the policy laid down in Lord Lawrence's dispatch, dated 9th January, 1889:—

The completion of the communication between Kurachee and Mooltan, with a line on the other side of the Indus to that occupied by the main line, form one system of lines that seems desirable."

Future inquiry may show the advisability of another line in combination with proposed irrigation works in the Hyderabad district.

I pray your Grace to take a kind of return ticket for Sehwan along this national highway. Sehwan is the most productive wheat district in Scinde. General H. B. Turner, RE., Chief Engineer in Scinde in 1851, stated:—

"I found at a place called 'Naree,' a few miles above Sehwan, stocks of Government grain of three successive years; it was utterly spoiled, fit only for manure."

How much of this rotting food of man has been carried by the "Steam by Land and Steam by Water" system, after spending nearly 3,000,000£ sterling? Let one of poor General John Jacob's favorite Lieutenants state. Colonel Sir Henry Green, in a letter dated 3rd of October, 1868, relates:—

"The valleys of Peshawur, Sarawak, and Mustang, situated at the head of the Bolan Pass, as well as those at Sallee and Cutch Gundava, situated at its foot—all of which the proposed Railway from Sukkur to Dadnr would tap—produce during favorable seasons enormous quantities of grain, which for want of transport is allowed to rot on the ground.

"In Cutch Gundava and in the countries about the Bolan Pass the same waste was occurring, while the State was paying high prices for grain to export to Abyssinia, and raising the price of food in the districts surrounding the seaports."

What General Turner saw in 1851, Sir Henry Green saw in 1868. Poor Scinde! Now, it is proposed, after taxing the Sehwan wheat with 50 miles of unnecessary carriage, to take this wheat 100 miles out of its natural route to the sea, and so tax the Imperial trade of the country. The length of line from Kurachee to the Bolan Pass, by the left bank of the Indus and Roree, is 470 miles, *with two Indus River crossings*. By my line from Kurachee *via* Sehwan the distance is 370 miles; by keeping on the western side of the Muncher Lake it can be made shorter. *It has no Indus River crossing!*

While Government hesitate to bridge the Hooghly and connect the supreme Government city with the great network of Imperial Railways, Mr. W. P. Andrew cannot expect Government to sanction a bridge over the Indus, which is quite unnecessary, the practicability of which appears to rest upon the Engineer staying the advancing waves of that most "treacherous" river, with sovereign contempt, by an erection of faggots and rubble-stones; or will, I think, Government hastily sanction the passing the national trade of the country over the Sukkur Rapids by a steam ferry, until the same gentleman has experimented upon the lower falls of Niagara.

But, on the other hand, when Dhera Ghazee Khan is reached, it may appear practicable to bridge the Indus; at that place, the river has not more geographical water supply than the Sutlej at Bhawulpoor; it is comparatively close to the hills from which the stone could be obtained, and there the thousands and the tens of thousands who are mentioned by Sir Bartle Frere and Captain Wood would work contentedly, while the Scinde Horse and Lahore Light Cavalry watched the Russian Cossacks in the hills. There is yet another point which seems to have quite escaped the notice of the Engineer carrying on the surveys for an Indus Railway, and that is the facility of getting coal from lialabagh, where it is known to exist, to Dhera Ghazee Khan by a downward water carriage.

Mr. W. P. Andrew, at page 8 of his letter, states:—

"I will only remark here, therefore, that the through traffic would be more effectually conducted by the route on the left bank, that route being shorter, as well as safer, than the route by the right bank."

What are the facts from official documents? The route from Kurachee, *via* Kotree and Bhawulpoor, to Mooltan, that is the left bank, is 622 miles; the distance from Kurachee, *via* Sehwan, Larkhana, Shikarpoor, Dhera Ghazee Khan, that is the right bank, is 493 miles. Without entering into any "problematical" calculation whether it is cheaper to cross the Indus 600 miles higher up than Kotree, or whether the river at Mooltan close to the workshops of the Company in the Punjab is easier than crossing the Sutlej in a foreign state, there is 129 miles of additional cost at 11,000£ per mile, equal to

1,419,000£, throwing a tax for ever upon the through Punjab traffic of 70,950£ per annum.

Lord Lawrence gives a very strong reason for taking the right bank, in reference to the expenditure during construction: —

"It will mainly run through British territory and benefit our subjects."

Take the official road-route distance from Kotree to Mooltan, by an apparent shorter route than the Railway is laid out, it is 510 miles, so that my "new chain" is shorter than the "missing link" on the left bank by 17 miles. Take, again, the two points of Roree and Mooltan; the left bank is 307 miles, while the right bank is only 250 miles. I believe it is only 242 miles as the line would go.

The following table will show correctly the relative distances: —

KURACHEE TO MOOLTAN.	
Via Sehwan direct — right bank	493 Miles.
Via Kotree, Sehwan, Shukarpoor, and Dhera Ghazee Khan right bank	544 Miles.
Via Kotree, Roree, Bhawalpoor — right and left bank	621 Miles.
Via Kotree, Roree, and Bhawalpoor — left bank	622 Miles. ³⁶

I have no hesitation in declaring, therefore, bearing in mind that the starting from Kurachee has been made and is common to all lines, the Great National Railway recommended by me, and approved by the Government of India, General John Jacob, General H. B. Turner, R.E., and other high officers in India, has greater political and strategic advantages, can be made cheaper, more expeditiously, and with less scientific difficulties than any so-called "missing link," and that the earnings of the line would be so excessive, that the increased interest upon the money expended, would amply suffice to repay the Government all loss accruing from the "gigantic blunder" of constructing the line to Kotree in the first instance; and the experience of the people employed on the Scinde Line shows, the population, through and near which the line would pass, are more ready to work, and better adapted to the labor required, than the effeminate inhabitants of the foreign states, Syrpoor and Bhawalpoor, over whom the Government have no control; and that for military purposes the 3 feet 6 inches gauge will be found best adapted for cheap and expeditious construction. Executive reasons, more important than any I can put forward, will I am sure be pointed out to your Grace and the Government of India, why this line should be commenced "early" at all "points."

The Government have also to hand, Mr. T. G. Newnham, Chief Engineer of the present Scinde Railway, who, from his great ability and acknowledged high and honorable

³⁶ I have given the official road-route distances; the post-office distance is 630 miles.

character, would attract many young military Engineers on to his staff, and ensure an energetic carrying on of the work.

But I am most sincere when I say, I hope Mr. W. P. Andrew will carry out my statesman-like policy; for however much his former policy condemns itself by the results, I am obliged to point to, and however hard I may have been dealt with, I do respect his great ability, and cannot help reflecting what future reward his country would have given him, had he pursued the policy in 1856 he is now advocating in 1869, instead of spending the best years of a useful public life upon an attempt to make a policy pay, which had in it, at starting, the very seeds of rottenness and decay.

There is another point which seems to have been lost sight of by the Engineer. The trade of the Kyber Pass, which comes to Attock, is shipped into boats for Mittun-Kote, and then transshipped into a different kind of boat to descend the river. Now that trade will join a line at Dhera Ghazee Khan, - whereas, if a left-bank line were taken, it could not possibly seek Railway carriage until it reached Roree. It is idle to think it could bear Railway carriage all round from Attock *via* Lahore to Mooltan.

The policy I recommended "fourteen years" ago I now press most urgently upon your Grace and the Government. I now insist upon it as a duty, and in the interests of the Indian Government, my former generous masters: it was sanctioned by the Governor-General, as may be learnt from a document appended to this letter. It was cast aside with its Author, by Mr. W. P. Andrew, in pursuance of the "Steam by Land and Steam by Water" policy, if such an abortion could be called a policy, which I maintain has enabled Russia to rattle at the gates of India.

When, in 1856-57, I begged the Railway Company not to be diverted from a national policy, I entered minutely into the trade as it would be affected by a line of Railway. I present some of those remarks; they, like the direction of the line, stand the crucial test of time: —

"In 1850-51 we had a trade valued at Rs. 62,22,934, while in 1851-52 we had a trade valued at Rs. 73,33,430, showing an increase of 18 percent Let us see how much the Indus contributed to this wealth. In 1850-51 the value of the trade of the Scinde ports on the Indus was Rs. 12,96,797, and in 1851-52 the value of the same trade was Rs. 15,67,384, not a sixth of the trade of the province! By Government documents it is shown that to carry that trade it required 30,496 tons. Well, now, if we turn to the land frontier trade of Scinde for the same year, we find on the right bank, that is, countries west of the Indus, the value of the trade was in imports and exports Rs. 31,60,420, which would give 60,000 tons of traffic for a through Railway, so that we should actually neglect a trade worth double in value to the Railway to that we go out of our way to carry (by Steam by Land and Steam by Water).

"While speaking of Sukkur, I may here mention the value of the trade of that place in 1851-52 was Rs. 9,48,139, and the whole trade of Scinde was Rs. 71,33,430; and so far from the "classic river" developing our trade, the value of the trade of Sukkur in 1855-56 was Rs. 15,00,000, and yet the trade of the province had risen to Rs. 123,42,537, showing that in 1851-52 the trade of the Indus was a sixth of the land frontier trade, while in 1855-56 the trade of the principal port of the river was only one-eighth of the entire trade of the province, showing clearly *the river is not the route of the traffic of these countries*, the trade of which is struggling to get to this port of Kurachee."

Mr. W. P. Andrew now states there are 198,000 tons of *Scinde-produced local traffic* on the right bank, which would go by the Sehwan and Kurachee direct line: production has not increased in Scinde to any great degree since I wrote, yet the Agent stated my study of the traffic was "*froth and sound*." When the Engineer reviews the northern portion of my line, he tells Mr. W. P. Andrew the country I go through is a "*desert*," and to go there is a "gigantic blunder." Americans would call this "*ladderly language*"; but I respectfully state it is not argument worthy an important subject, on a right study of which may depend the safety of an Empire.

If Mr. W. P. Andrew had published the report of the Bombay Government, and which in fairness he should have done, I would have verified all these statistics with the trade returns up to recent dates. The report, as well as many other documents from which that Gentleman quotes, are sealed against me. The truth of my calculations, however, is borne out by his own publication of Scinde trade returns, as appears on the opposite page.

I am well informed the results are more startling now, and that even if there is any export production in the 50 miles between Adam Wahan on the Sutlej and Mooltan, which it is hoped is secure against the Engineer's "wild tribes," that trade existed when Mr. W. P. Andrew published his book, and is made to swell the left-bank decreasing trade.

There is one party connected with this controversy about an Indus Valley Railway, whose interests I am most surprised has but very poor, if any, advocacy from Mr. W. P. Andrew in his letter to your Grace. The interests of the shareholders appear to me to be placed in a most critical position; they are told by the Chairman of the Company, who they have so complacently obeyed and supported, that their prospects are so poor that he even ventures to think and fear that the great public works he has so persistently advised them to carry out will remain a "*burthen to the revenue*." But he does not tell them, if the Government decide, as is contemplated, to make the Railway themselves, they will lose all the advantages which have been given to the Great Indian Peninsular, the East Indian, the Madras, and the Bombay, Baroda and Central Indian Railways, by the issue of extension capital. Further, experience shows that in India the first portions of Indian Lines are generally scant in earnings; but the traffic on the upper portions,

quite independent of the traffic brought down to the sea, swells the receipts to the advantage of the stock-holders. Moreover, the present prospect threatens them with further ruin, as acknowledged by Mr. W. P. Andrew and his coadjutors, in reference to the Delhi and Punjab Lines; the traffic of which lines is swelling the receipts of the East Indian Line. The Punjab and Delhi Lines, as regards the Scinde Line, is like a man with a fruit tree, laden with fruit, overhanging his neighbor's ground, having no ladder to gather it with, it falls into that neighbor's store. If the shareholders apply to Government to carry out a national policy, they must and will be respectfully listened to, and their interests considered; if, on the other hand, they are led away to support a patch-work policy, they must fail, as the former policy has failed.

GENERAL DIRECTION OF THE TRADE, AND ITS VALUE RELATIVE TO DIRECTION, &c.						
	Imports		Exports		Increase	Decrease
	1851-52	1852-53	1851-52	1852-53		
Affghanistan, Beloochistan, and countries West of the Indus (right bank)	11,88,211	17,64,575	8,80,912	11,08,887	8,04,289	..
Bhawulpoor, Jessulmeer, Marwar, and East of Indus (left bank)	6,51,372	4,36,639	6,81,964	6,22,656	..	2,73,041
Punjab, and adjacent British Possessions	5,42,263	11,58,674	2,22,542	2,79,551	6,71,551	
Total Rupees	22,82,446	33,59,888	17,85,418	20,10,775	14,75,840	2,73,041

In case this letter should be seen by any of the shareholders of the Scinde Railway, I will beg them not to delay waiting upon your Grace and memorializing the Government to let them make an Imperial Line of Railway up the Indus, and offer to deposit the capital in accordance with the policy pursued by other lines in India. I am well aware they have placed themselves in a position to have it said, "You cannot complain; the policy you have supported—that of 'Steam by Land and Steam by Water' — is the one you subscribed for." They must trust to the generosity of the Government, and, above all, the facts contained in this letter. They may rest assured, as I have before said, the receipts and earnings of the line from Kurachee to Dhera Ghazee Khan will compensate them for the loss they will sustain for a time by the Kurachee to Kotree Line and the Indus Flotilla.

I have made it clear in a former part of this letter, Mr. W. P. Andrew, while applying for concession for his Indus Valley Railway, which is recommended by his Engineer, may be applying to raise money which might be used to carry out a scheme which that Engineer pronounces to be a "gigantic blunder."

If I have not interlarded amateur Russophobia politics in this letter, with which to weary your Grace, it is not that I am ignorant of the geography of the Russian encroachments. When in 1856 I advocated this Imperial Railway, I begged the Government to have it made before the Russian army marched from Orenburg to Khiva and Bokhara. It has

not been made. I now beg the Government to have it made before the Russian army is encamped at Kandahar. If it is not made, history will tell whether, if my advice had been taken, it would have prevented streams of English blood from filtering through the sandy waters of the Indus.

The soldier who shows his army which way the enemy comes, deserves the thanks of his country; and, perchance, from the humblest ranks may come the man who foretells the way. I have, for nearly twenty years, deeply studied these matters, with the assistance of some of the ablest minds in India. Until these works are completed, the Punjab is not safe. Think you, my Lord Duke, the Poles want Poland; the Austrians want their recently conquered territory from Prussia; or that the Seikhs want the Punjab, and as much more as they can get? Would the Englishman want England if it were conquered by a foreign country, and had to see and bear what the bold, sensitive, and warlike Seikhs have to see and bear every day?

I have tried to study the marches of Alexander, Mahomed of Ghuzni, Timour, Baber, and Nadir Shah, who with more or less success invaded India by the way of our western frontier. There is now a modern Power marching stealthily along those routes; how that Power works is shown by the following manifesto: —

"Obliged to pursue the enemy through a country without roads, laid waste by the troops which were to have defended it; often opposed by nature itself; exposed to the burning sun of summer, and the rigor of winter,—our brave army, after unparalleled efforts, succeeded in conquering Erivan, which was reputed impregnable. It passed the Araxes; planted its standards on the top of Ararat, and penetrating farther and farther into the interior of Persia; it occupied Tabreez itself, with the country depending on it. The Khanate of Erivan, on both sides of the Armes, and the Khanate of Makhichwan, a part of the ancient Armenia, fell into the hands of the conqueror."

If the works I have feebly pointed to the great necessity of, are completed before Affghanistan becomes the tool and vassal of Russia, then the Punjab will be safe, and England will draw the red treaty line that will divide the Russian Bear from the British Lion; if they are not, then Russia will draw that line: be sure, in time, I pray your Grace, that line shall not be in the middle of the Indus, which position is invited by the advocates of a left bank Indus Railway.

I must not omit to mention the matter of the improvement of Kurachee Harbor, of the importance of which so much is written. I was the first person to bring to the notice of the Indian Government the fact, that by carrying out simple works, principally of excavation, the capacity of the harbor, both in reference to its anchorage and entrance over the bar, might be greatly improved. My opinions were submitted to the late Mr. Walker, who, without seeing the place, designed works of various kinds. His opinions

have been supported lately by the gentleman who originally supplied data for Mr. Walker's report.

I was strongly opposed to one piece of work, that is, the Keamara Groyne; and whatever remarks it may be thought becoming to address your Grace in reference to the Corps of Engineers in the Bombay Presidency, as to their being "Amateur Engineers," I am well informed the harbor is in a very critical state now; and before any more money is spent upon such speculative works as I hear proposed, I do most strongly advise your Grace to order a commission to thoroughly report upon the subject. There is not in India or out of India, a man more thoroughly competent to head that commission than Colonel Fyfe of the Bombay Corps of Royal Engineers.

My advice to the Government now is what it was "fourteen years" ago—excavate all the harbor channels, by man labor and dredging, to their utmost extent, but leave fantastic works alone, unless the Government can be assured, without doubt, that good effects have actually been produced by them in other places under similar circumstances.

To summarize this letter, I beg to state it appears to me evident, the route for the Indus Valley Railway must be determined by answers to the following questions:—

Is it cheapest to carry the *through traffic* from Noonan to Kurachee by a Railway 493 miles in length, or in Mr. W. P. Andrew's language, page 36, "should the produce of the country be burdened with unnecessary charges from the increased mileage" of a line 622 miles in length?

Is there most traffic on the right bank or the left bank to be intercepted, en route, by an Indus Valley Railway?

Is it cheapest to build a bridge over the Chenab at Mooltan, and one over the Indus at Dhera Ghazee Khan; or to build a bridge over the Sutlej at Bhawulpoor, and one over the Indus at Kotree, weighing, in the latter case, the having then to pass all the Central Asia trade over at Sukkur by a steam ferry or any other way?

Is it most advisable to construct a Railway 493 miles entirely in English territory, or a line 510 miles, 180 of which must be taken through foreign territory?

Or, if the upper portion is alone considered, is it best to construct a line 250 miles entirely in English territory, through a population of 910,696; or to make a line 307 miles, of which 120 miles is through foreign territory, with only about a moiety of a population of 163,317?

Will a right-bank or left-bank line give the best means of carrying out the political advice of Sir Charles Trevelyan and Mr. Grant Duff M.P.?—

"These lines ought to be vigorously prosecuted as Imperial Works, and branches should be made from them to the extreme limits of British territory at the mouths of the Bolan and Kyber Passes, and perhaps, to one or two other points on the FRONTIER.

"Above all, we should press forward our Railways towards the FRONTIER, make Kurachee a great port, and complete Railway communication through the whole of the Indus Valley."

Lastly,—Is a fortified bridge over the Indus at Dhera Ghazee Khan, made capable of passing the trains, a better connection for the Military Stations of the Punjab and North-West Provinces with the "points" of the frontier, than a bridge over the Indus at Sukkur, with a span of 600 feet and 70 feet above flood level?

Having placed these most serious questions before your Grace, I meet the Engineer upon his scheme and conduct, in superseding my propositions for the Indus Valley I say, then, at Kurachee he has assisted in, and supported, measures which contract the tidal inlet of the harbor, which must be destructive to its capacity, which he will find detailed at paragraph 137 of my Report No. 1, dated 1st July, 1856.

I believe, upon the evidence of General John Jacob and General H. B. Turner, R.E., two most eminent scientific officers, if I could examine the Engineer's Reports and Plans of the Direct Sehwan Line, I should show he has exaggerated the difficulties of that line in comparison to its utility. I meet him at Kotree, and say, he has spent 2,250,000£., in constructing a line, without, during the five years he was so engaged, publicly stating how far he did not in accordance with the principle laid down in the 6th paragraph of his letter:—

"I would remark, that the construction of any portion of such a line of Railway, without reference to its best adaptation for the conveyance of the ultimate through traffic, is manifestly, in every point of view, unwise, to say the least of it."

Or, if he has done so, why did he spend money on the surveys from Kurachee to Sehwan, and Kotree to Sehwan? when, in October, 1863, I called his attention to the 130th paragraph of my Report, written in 1856, in which I had detailed the difficulties he brings forward in the 10th paragraph of his letter written in 1869:—

That his proposition to bridge the Indus at Kotree rests upon an insecure foundation, "commercially, strategically, and in an engineering point of view."

I meet him at Sehwan, where he should have gone to, and say, his proposals unnecessarily tax, and will almost destroy, the finest wheat-growing district in Scinde. I meet him on the 16th paragraph of his letter, where he proposes a preposterous

alternative for carrying the right-bank trade on the left-bank line, by placing stations on the canal banks, such canals not being navigable for more than six weeks in the year, and that not with certainty, and at a time of the year when the people of the country are fully occupied in irrigating their land, and producing the agricultural traffic which is marketable when the canals are dry.

I meet him on the 20th paragraph of his letter, and say, the bench marks are no indications of the general height of the country, for they often occur, from being fixed in the cold season, in places accidentally used, and not to show the height of the adjoining country. My view of the case is made out by the Engineer himself, for on the right bank he makes a rise of 5.81 in a distance of 25 miles, while on the next 23 miles he makes a rise of 25.55; on the immediately opposite bank he makes the rise in the first distance 17.41, and in the second 13.69. These borrowed figures, the Engineer states, are his "*unanswerable arguments*." What are they worth? What did they cost?

I meet him at Sukkur, and say, though the country, near the river, from that place to Kusmore may be flooded equally with the Roree side, yet the line from Shikarpoor to Dhera Ghazee Khan is not so flooded, but is perfectly secure.

I meet him on the matter of the floods, "between the watershed of the mountain ranges, and the river which receives the periodical torrents which flow from it," and say, while engineering science, under great difficulties, has grappled with the Nurbudda and Taptee Rivers on the Bombay and Baroda Railway, which rise 20 feet in as many hours, he has only to deal with a rainfall of 8½ inches per annum as a maximum.

I meet him at Dhera Ghazee Khan, and say, the river Indus at that place, being only one of five rivers, must present a more feasible crossing than 600 miles lower down, where the whole flood of the five rivers has to be dealt with.

I meet him at Roree, and say, any such scheme as the steam ferry is impracticable, or, if it be practicable, it is "a restrictive incapacity and delay in the means of conveyance," and therefore condemned by himself.

I meet him on the score of local traffic, and say, the members of the Scinde Commission were, collectively, better judges of the foal than he could possibly be. But I am bound to remark upon the singularly disingenuous "estimate" given Mr. W. P. Andrew for the 31st page of that gentleman's letter to your Grace:—First, If the left-bank trade of 270,000 tons produces 177,000 tons export trade, then the right-bank of 324,140 tons, in the same proportion, would give 212,000 tons, instead of 198,000 tons. Secondly, A considerable part of this left-bank trade is produced from the districts of Mahomed Khan Tanda, Meerpoor, and part of Jerruck, which being to the south of Kotree cannot possibly be brought into the calculation as local traffic for a through line.

I meet him on the score of the population, produce, and traffic of the "Desert" of Derajat, and the "highly cultivated districts" of Bhawalpoor, and say, it is self-evident he unjustly, if he did not ignorantly, advise Mr. W. P. Andrew upon the subject, although his special attention was called to it in the 7th paragraph of his instructions.

I meet him at Bhawalpoor, and say, that it is easier to cross the Chenab at Mooltan, than it is to cross the Sutlej, considering the difficulties which have exhibited themselves 300 miles higher up. This is so important a matter, that I feel it right to say, some correct idea can be obtained from the Report to Parliament by Mr. Juland Danvers, the Government Director 1868-69.

By a reference to paragraph 81, I find the most important bridges on the Delhi Line are over the Bess and the Sutlej, being two branches forming into one river lower down.

As regards the latter, Mr. Danvers states:—

"The river which runs through a valley five miles wide, and has for the last 70 or 80 years flowed along the northern side, seems now disposed to change its course to the southern side. It has already so far altered its position as to make it necessary to extend the bridge, which was originally designed for a crossing of 4000 feet, a further length of 2200 feet, involving a cost of upwards of 60,000£."

Taking one-third of the cost for the Seas, we have close upon 250,000£ to begin with, for an estimate; then there must be navigable headway of 15 feet, not required above; this is made clear at page 15 of a very instructive pamphlet by Mr. T. Login, C.E.³⁷

I, lastly, meet him at Mooltan, and ask, in "opening up Railway communication between the land-locked province of the Punjab and its natural port Kurachee," why he will transport that traffic 622 miles, when he can do it by a line of 493 miles in length?

In reference to this question I must point out the Engineer makes Mr. W. P. Andrew condemn his own policy, and with still stronger arguments condemn his own proposed Indus Valley Railway. In page 43, Mr. W. P. Andrew states:—"I believe it will always derive its chief support from a through traffic. It is only by thus regarding it that a really comprehensive and statesmanlike view of the whole question can be obtained." A line for the through traffic can be made 493 miles in length, why is a line 622 miles long to be taken and Mr. W. P. Andrew's arguments stultified? The trade of the country is not to be taxed forever, because a wrong policy was formerly pursued. The poor people of the country have done no wrong that they are to be permanently punished. The same may be said of the Central Asia traffic. Why are the traders, who have mainly raised

³⁷ 'Roads, Railroads, and Canals for India.' By I. Login, C.F. E. & F. N. Spoil, 1869.

Kurachee to its present commercial importance, to have a black mail tax laid upon their goods of 100 miles unnecessary carriage?

Is not it enough to know that they have for ten years continued to take an account to the inhabitants of Asiatic Russia that we have made a railway little or no use to them, or to ourselves for protecting or defending our Indian Frontier?

The position of the Engineer, who went out with preconceived ideas to investigate the matter of the Indus Valley Railway, is very critical, for, if my Direct Indus Valley Railway is proved to be the line that should, after all, be taken, Mr. W. P. Andrew will say:—"Why, you told me it was a gigantic blunder to apply for a concession for that line; what possible public reparation can we offer, after the injustice the Projector has received?"

If Mr. W. P. Andrew thinks his Engineer is infallible, and that the Scinde authorities and myself are wrong, of course he will persist in the policy advised; but I cannot help thinking very seriously the future dealings with the shareholders en masse, instead of in divisions, will give rise to difficulties at the present time, which will prove themselves almost insurmountable when Mr. W. P. Andrew has to plead the positions of the various disjointed portions of the present existing system of communications up the Indus.

That it may be all brought into uniformity, with adaptation to an Imperial policy, alike advantageous to Government and the Companies, I have no doubt; and upon that must depend the future satisfaction of all parties concerned, a result to bring about would be a worthy conclusion to the trouble and vexation the heretofore-pursued policy must have given to Mr. W. P. Andrew.

I cannot attempt to lift your Grace's mind above the practicability of statesmanship into the regions of Eastern imagination by such language as appears in the 61st page of Mr. W. P. Andrew's letter; I must ask to be only allowed, in reference to it, to submit a question that your Grace will doubtless seek a practical answer to:—

Why is your Grace asked in 1869 to consider "a more enlightened policy than we (?) have hitherto pursued," when that enlightened policy was pressed upon Mr. W. P. Andrew by me in 1856, and sanctioned by the Government of India in 1857?

The answer to that simple question will tell who has been forced to learn a lesson through the "sad and terrible experiences of the past."

I have written this letter under a strong sense of public duty; and I close it, feeling conscious of the disadvantages under which I address your Grace, as compared to a gentleman in the position of Mr. W. P. Andrew: "fourteen years" of lucrative employ

has enabled him to quote the writings of the many friends whose names so thickly pervade his letter; I have no such friends, and no such documents, to assist me in the position I wish to take up in advocating again my Direct Indus Valley Railway; but well known to many of them, there was a man, had he lived, would now be called to the Councils of the Nation, and whose opinions would have commanded attention at this critical juncture of affairs, who sleeps the sleep of death in his self-made home in the deserts of Scinde; HE would have felt and said I had again done my duty in drawing attention to this serious matter, even though it is done with feebleness of health, engendered by the wrong I have suffered for fourteen years."

I have the honor to be,
Your Grace's
Most obedient servant,
HARDY WELLS, C.E.,
Originator of Railways in Scinde.

CHAPPELL HOUSE, ODDIAM,
July 16, 1869.

(COPY)

Bushire, 30th May, 1857.

Sir,

I have the honor to acknowledge the receipt of your letter of the 13th May, 1857, to my address with accompaniments. With reference to their subject, I beg to assure you that I consider that you have throughout your connection with the Scinde Railway acted in the best possible manner for the interests of the Railway Company, of the Government, and of the public generally. The real interests of these three parties in this matter are inseparable. Having been from official position and personal knowledge well acquainted with your views, proposals, and proceedings, I am quite at a loss to conceive on what pretences the attempt can be made to fix on you a charge of having "obstructed" the work entrusted to you, or of having acted in a manner in any way injurious to the interests of the Railway Company. Such a charge is preposterous unless it be determined that the prospects of success and of advantage to all parties must be "INJURED" by careful and extensive observation, by skilful and unprejudiced examination, by clear and extended foresight, and by calm and wise discussion of the circumstances relating to and likely seriously to affect the work in hand.

I have publicly recorded my opinions regarding the line to be selected for the Scinde Railway to connect the river with the seaport, and I need not here repeat them; but I may remark that I am quite convinced *that TIME will show the soundness of your views on, the subject.* While even were it otherwise, and under any circumstances whatever, it appears to me to be certain and self-evident that the truth of the matter could only be ascertained satisfactorily by the inquiry examination and extended survey proposed by you, and this opinion was confirmed by the decision of the Government of India communicated to the local authorities when I was on the eve of departure from Scinde.

Had you acted otherwise than you have done in this matter, you might indeed have justly laid yourself open to the charge of having obstructed the interests of the Railway Company. But as the facts stand, it is my duty, as the head of the Province at the time, in justice to yourself; to state that I am decidedly of opinion that no man is more worthy of the trust and confidence of his employers than yourself; and it is with a feeling of something like indignation that I learn the unworthy requital which your services have met with from the Chairman of the Scinde Railway Company, and the unjust treatment which such an able, active, zealous, and trustworthy public servant as yourself has now received.

I am firmly convinced that the conduct adopted towards you by the Chairman of the Scinde Railway Company in this instance will prove to be as unwise as unjust, and that such proceedings towards their best servants must tend to act most injuriously on the real interests of the Company. Such conduct—as poisoning the very sources of success—must, in my opinion, prove of lasting and most serious disadvantage to the parties who may practice it.

I am, Sir,
Your most obedient servant,
JOHN JACOB,

General Commanding Forces at Bushire, late Acting Commissioner in Scinde.

To HARDY WELLS, Esq.,
&C., &C., &C.,
KURACHEE