Colonization, Defence, and Railways

IN OUR

INDIAN EMPIRE.

BY HYDE CLARKE.

LONDON: JOHN WEALE, 59, HIGH HOLBORN. W.C.
1857.


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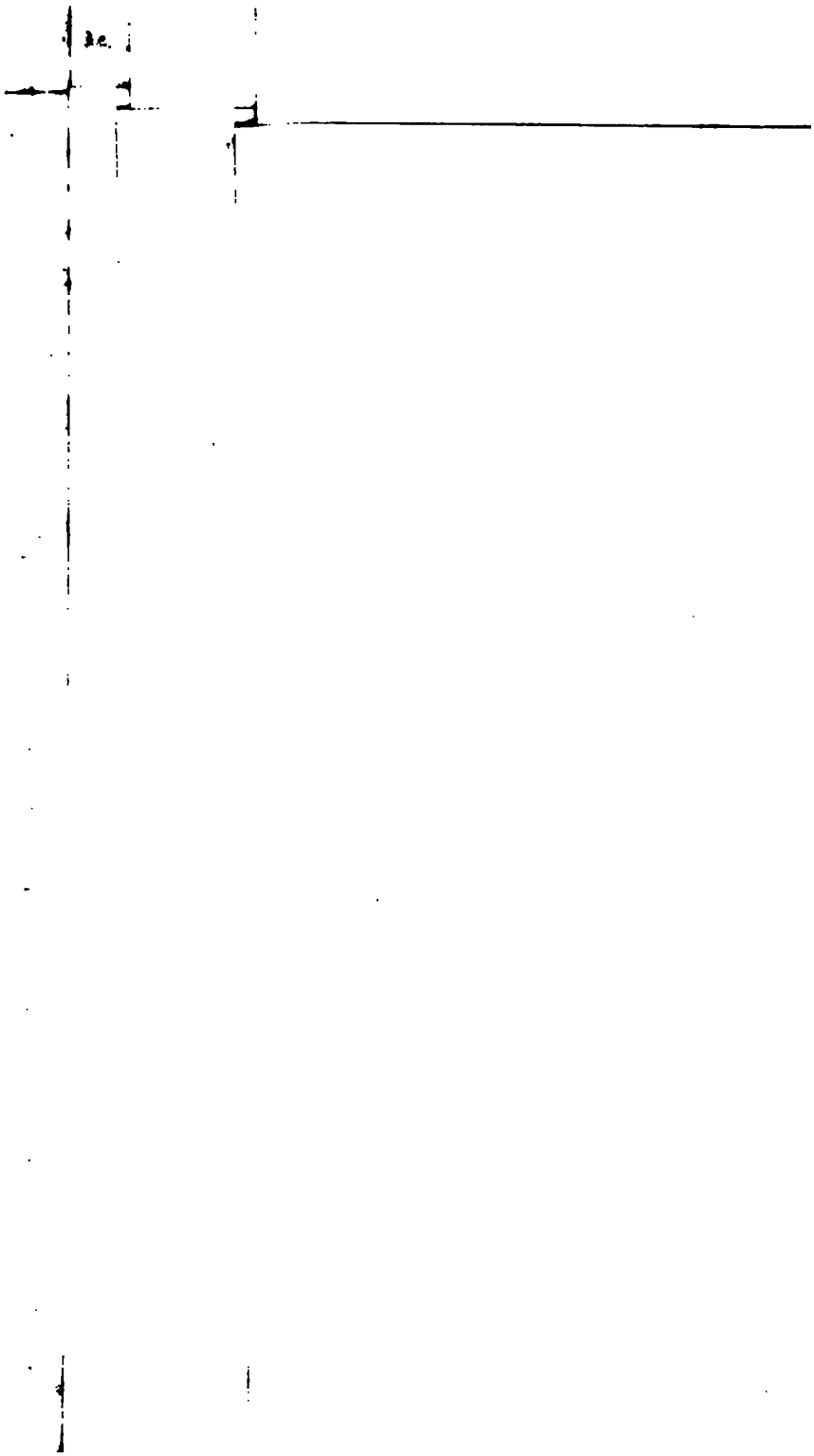

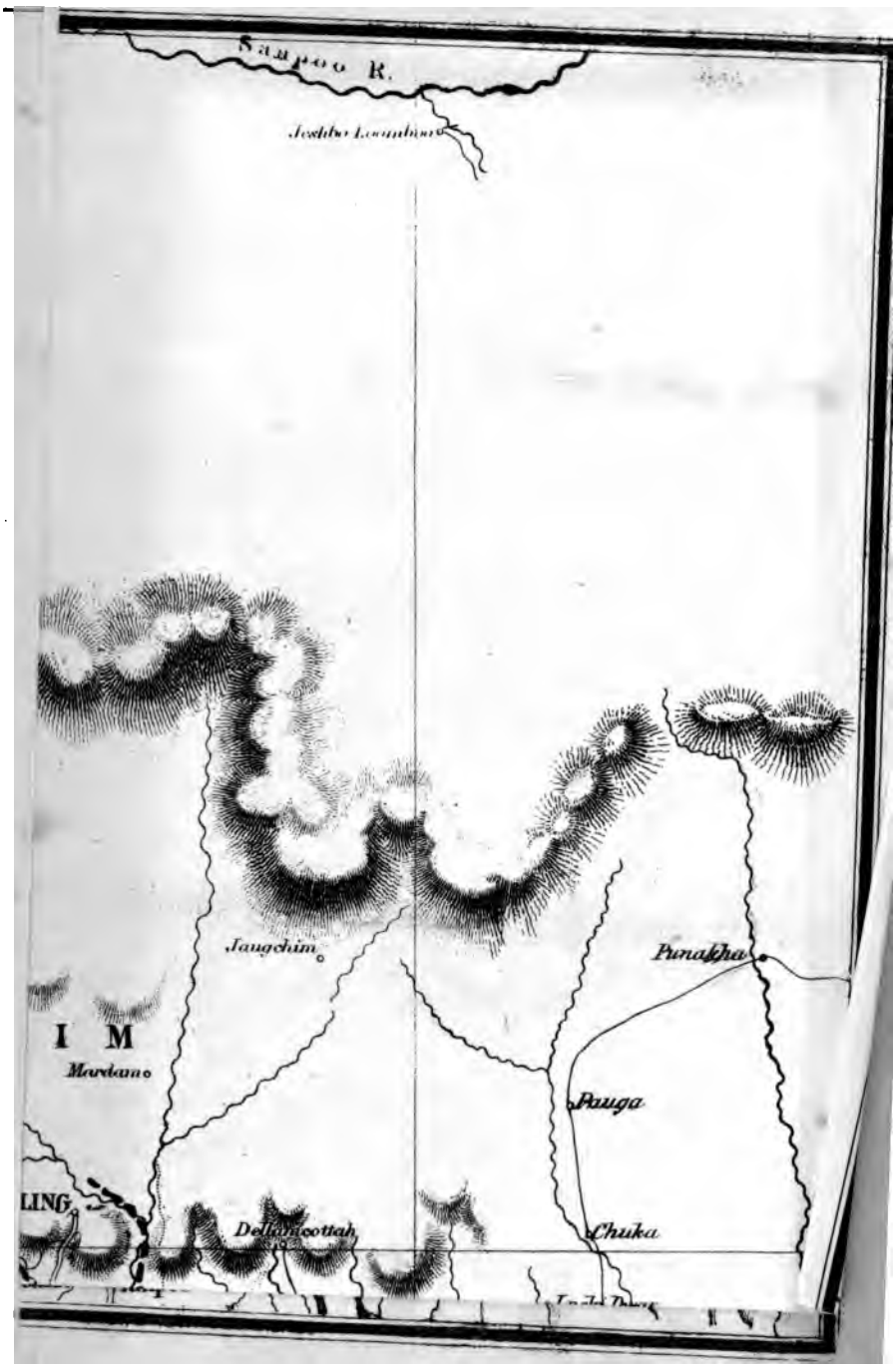
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TO THE HONORABLE

THE CHAIRMAN, THE DEPUTY CHAIRMAN,

AND THE COURT OF DIRECTORS OF

The East India Company,

THIS WORK

ON THE PROGRESS OF ENGLISH COLONIZATION

IN INDIA UNDER THEIR AUSPICES,

AND THE MEANS OF EXTENDING IT,

IS RESPECTFULLY DEDICATED,

BY THEIR OBEDIENT SERVANT,

HYDE CLARKE.

2, KING'S ARMS YARD, E.C.,
August, 1857.

PREFACE.

THE following pages are written in the hope of calling public attention, during the present crisis, to the English colonization of India, by showing what has been already done, and what remains to be done. The account here given of the hill stations is the first comprehensive statement of the progress and present condition of English colonization. The question of competition between railway and water carriage is discussed, as likewise the means of providing capital for public works from the resources of India, and the measures to be taken for making the public lands of India available as a national resource.

I have to express my thanks to Dr. Archibald Campbell, Sir Macdonald Stephenson, and Mr. Archibald Boyd, for assistance I have received from them in the progress of this work.

HYDE CLARKE.

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INDIAN COLONIZATION, DEFENCE, AND RAILWAYS.

CHAPTER I.

THE APPLICATION OF THE HILL RAILWAY SYSTEM TO THE COLONIZATION AND DEFENCE OF INDIA.

One hundred years after Clive's victory at Plassy we pause to consider its results. We find a vast empire built up under English rule, the peninsula of India, from the Himalayas to the sea, brought under our influence, and one hundred and fifty millions, of various races, directly or indirectly owing allegiance to us. Nor has our power been restricted by the old limits of India; for, on the east, Assam, Pegu, and the Malayan shores extend our frontier, and Singapore and Labuan are watch-towers on the road to our incipient empire in China; on the south, Ceylon is under our sway; on the west, Aden, and the isles in its neighbouring seas.

So far as to extent we may look back on the deeds of our governors and captains with satisfaction; nor has progress in peaceful arts been altogether wanting: the culture of sugar, cotton, indigo, opium, tea, rice, and jute have been greatly promoted; the production of coal and iron developed; the forests of the seaboard made available for shipbuilding; steam navigation has been opened on the coasts and rivers; the telegraph system

brought into operation; large roads constructed; the canalization of the Ganges and the Jumna effected; and railway communication provided for. The civil and financial administration have been improved, legislation has been humanized, and educational institutions on an improved basis have been founded. It is true that very much remains to be accomplished; it may be true that much more might have been done; but a fair and candid consideration of the facts must lead to the conclusion that the elements of progress have been provided for India by its governors.

In all this which has been done for India in a century, it will strike the dispassionate observer to see how little has been done for England, beyond endowing her with the political possession of the country. That possession brings no virtual accession to the imperial revenue: it affords to a few individual citizens some noble prizes of ambition; it affords employment to a limited number of civilians and officers; but it feeds our wealth only through its commercial development, as the United States and South America do. For the bulk of the population, for the extension of the English name and race, the empire of India has done nothing; while the wastes of Canada, Australia, and South Africa have been filled with our people, a few hundreds of our citizens alone represent us in the rich up-country of the presidencies. In the presidential cities alone have we any considerable English population, and even there we have not taken permanent root, for the Eurasian population is inconsiderable.

Many causes may be imagined and alleged for this state of affairs, beyond the actual facts; but such a controversy may be abandoned, and we may

proceed to the proved and notorious fact, that there do exist in India countries and climates suitable for the English race, and that the seeds of such colonization have been sown. The liberality and foresight of the Indian Government in some cases, the wants of invalid officials in other cases, have provided among the Himalayas and the Neilgherries English towns, wherein small populations enjoy a healthful climate and a pleasurable existence. The towns of Simla, Darjeeling, Ootacamund, Soobathoo, Dalhousie, Dapoolie, Almorah, and other infant settlements, have sprung up within the last thirty years, as the frontiers of English territory have been extended and access has been gained to these healthful regions. Among the mountain ranges a knot of invalids rear a village of cottages; the church, the library, and the school for the children follow; and a small town is kept up by the exertions of a succession of residents—most commonly without special encouragement, and often amid considerable difficulties.

Of late years these towns have become important as the permanent or season residences of the governors-general, governors, commanders-in-chief, bishops, and superior functionaries, whose duties of superintendence can be carried on as efficiently in the hill towns as in the presidential cities, and much more satisfactorily. Thus, Simla has for several years competed with Calcutta as the virtual metropolis of India, and with Agra as the capital of the north-west; Darjeeling is becoming a capital of Bengal alternately with Calcutta; and Ootacamund receives the governors, generals, and officials of Madras, as Dapoorie does of Bombay. On the hills in the neighbourhood of these greater towns are scattered the villages and villas occupied by the military and civil invalids under leave of

absence; for it is found that, in most cases, there are climates in India which will arrest the ravages of disease; and the Indian Governments at once retain the presence of their officers in India, and foster the hill-towns, by limiting sick-leave as far as possible to the Indian settlements.

It needs very little foresight to tell, from the steady growth of these towns, that they must, before many years, be recognised as the official capitals of India. Already the respective claims of Simla, Soobathoo, and Dalhousie to be the metropolis of India are canvassed, and more than one director and member of council has declared that Darjeeling will become the capital of Bengal. Their growth cannot be checked; so far as the state of events enables us to judge, it must, by the development of India, be materially promoted.

Looked at as a whole, the number of these towns and villages and their population are insignificant, though in proportion to the English inhabitants of India they are considerable, for they have grown up under most unfavorable circumstances. Hitherto many days' journey, and an enormous expense, to be undertaken by invalids, have precluded any but the wealthy from availing themselves freely of the hill towns; but the improvement of communication in India by steam navigation and by railways tends to afford better means of access, though the main lines are still far from the hill towns, except in Bombay.

The electric telegraph affords, as pointed out by me some years since, the means of directing the government of India from the hill towns, instead of from the pernicious cities of the coast. It was with this view that I laid down, in 1849, a

system of telegraph lines for India, which made Simla, Darjeeling, and the hill stations as effectually the centres of communication as Calcutta, Bombay, and Madras.

After having been engaged for some time on this subject I became, in 1849, the colleague of the late Francis Whishaw, one of the pioneers of the telegraphic system, who had likewise been long occupied with this subject, and with him I labored for some time. After various interviews with Mr. Shepherd, the then chairman of the Company, we were encouraged to submit our views in writing to the Court, which was done under date the 5th July, 1849, in a letter to Mr. Melvill, now Sir James C. Melvill. In these documents I entered in detail upon the various reasons for establishing a telegraphic system, and I proposed distinctly that connections should be formed with Simla and Darjeeling. I urged in particular that one great result would be "a better sanitary administration," that "troops may be concentrated in healthier cantonments; leave of absence may be more safely given; officers can be summoned from Darjeeling to the Presidency within four or five days."

By diminishing sickness I pointed out that there would be an increase of efficiency in the army, and a saving in the army and materiel. As a means of extending the sanitaria, by giving greater facilities in taking journeys for health, the electric telegraph was named as an agent. Two hundred miles added to the trunk would, it was shown, bring Simla into connection, and a distinct line was advocated from Calcutta, through Kishnagar, Moorshedabad, Rajmahal, Monghyr, Mauldah, and Darjeeling, of 450 miles, as being desirable to give a communication

from Calcutta to the sanitary station at Darjeeling. This was laid down on the telegraph map, and described as line D, being a secondary line.

With the propositions for the telegraph system, a distinct offer was made to undertake the construction. These propositions received the approval of the Honorable Chairman, and, with the sanction of the Honorable Court, were transmitted to India, with instructions to carry out the necessary experiments. These were placed under the direction of Dr. O'Shaughnessy, now Sir W. O'Shaughnessy, who has had the distinction of carrying out the telegraph system in India; for having proved the case, and a change having taken place in the administration at the India House, Mr. Whishaw and myself were no further called upon, and received no remuneration; but in the last year, a short time before his death, a small sum was allowed by the Honorable Court to Mr. Whishaw for expenses out of pocket.

Now, however, the telegraph is in action to Simla, and has been ordered for Darjeeling; and thus the officials can with more satisfaction remain in their country residences, while the duties of their governments are performed with increased vigor, because under freedom from disease, and the influence of a congenial climate; while the orders of government are by the telegraph more rapidly conveyed now, when the lieutenant-governor of the North-west provinces periodically resides at Simla, and the deputy governor of Bengal, at Darjeeling, than they were ten years ago. The telegraph has thus, among other benefits, become the means, as I pointed out, of saving many valuable lives, and of promoting the health of the European community.

As the telegraph extends, so will the relations of Simla, Darjeeling, Ootacamund, and Dapoorie be more widely distributed, and the residents be put in better correspondence with their stations in their lower districts, and thus be enabled to prolong their stay in their mountain residences, as they can transact a large portion of their business with rapidity. The improved postal arrangements, assisted as they will be by the railway, promise the same result. With the telegraph for all matters of emergency, the Governor-General, at Simla, is earlier in possession of instructions from Europe, and later in his home correspondence, than when formerly stationed at Calcutta, for he receives and sends despatches by Bombay. He communicates, likewise, with the Governor of Bengal, at Darjeeling, by the same means, and with those of Madras and Bombay at their hill residences.

The railway connexion of the Indian cities is of great importance to the hill towns, though, as yet, the Government of India has not provided for direct railway transit to the hills. The East Indian Railway will, however, on its completion, materially reduce the time and expense in getting to the hill capitals. The Rajmahal station will be within 200 miles of Darjeeling, so that half of the distance from Calcutta to Darjeeling will be performed by railway, and all the stations between Rajmahal and Delhi will have the greater part of the route performed with greater speed by means of that line. From Calcutta to Rajmahal the distance can be performed in five hours; from Delhi to Rajmahal in fifteen hours. The Delhi station of the East Indian Railway being within 200 miles of Simla, Soobathoo, Landour, Mussorie and Dehra, will shorten the time from those and the neighbouring towns to all the stations between Calcutta and Delhi, and

twenty hours will carry a traveller from one of these latter cities to the other. The Oude, Rohilkund, Tirhoot, Punjab and Scinde Railways, and the other connecting lines, all improve the facilities of access.

Not exceeding two hundred miles of railway or tramway are required at any one point to connect the hill capitals of the presidencies with the railway chain, and two millions of capital will give Darjeeling, Simla, and Soobathoo complete branch lines, with all the benefits of railway organization. A guarantee of five per cent., or £100,000 a year, will place these undertakings in activity, and effect some of the greatest measures which can be proposed for the benefit of India, more particularly since the experience of late events. These measures include—

The government of India by thorough European administration;

The control of India by English troops;

The colonization of India with an English population;

The establishment of a large land revenue, available for internal improvements, for promoting immigration, and for redeeming the national debt.

CHAPTER II.

THE HILL RAILWAY COMPANIES.—THE NORTHERN BENGAL RAILWAY COMPANY.—THE SIMLA RAILWAY COMPANY.

To establish the connexion of the hill towns with the railway system, two companies are now before the Indian Government and the public. The Northern Bengal Railway Company proposes to connect Calcutta and Bengal generally with Darjeeling, by carrying a branch from the main line of the East Indian Railway Company at Rajmahal, or some neighbouring station, to Darjeeling, providing at the same time for Malda, Dinajpore and Rungpore. The other company, the Simla Company, proposes to the East India Company a general plan for connecting Simla and all the hill towns in India, except Darjeeling, with the main railways of Bengal, Madras, and Bombay.

The Northern Bengal Railway was proposed by Sir Macdonald Stephenson as one of four great branch lines for developing the East Indian Railway, of which he has been the successful promoter. It forms the first natural branch or extension of the East Indian Railway Company, because for the section of that great trunk line from Calcutta to Rajmahal it forms the northern extension, making a direct route to Darjeeling, and it forms an extension of the other section between Rajmahal and Delhi. Thus at Rajmahal, or the point of junction, the Northern Bengal Railway forms a fork with the Southern and Western sections of

the East Indian Railway, and works in to both arms of the fork. Darjeeling will consequently be in a direct communication with Patna, Agra, Delhi, and the far western provinces of the Indus, as it is with Calcutta. In this way it will ultimately receive a large traffic, while it will pour on to the sections of the main line the rich produce of Dinajpore and the neighbouring collectorates, that of Rungpore, Assam, and the Burrampooter, and the increasing productions of Darjeeling and the adjoining districts.

The Simla and Hill Junction Railway Company will, in the cheapest form of railway construction, open out the hill regions to European traffic, colonization, and enterprise, and provide for the military organization. It will lay down branch roads, provide town sites, build barracks, hotels, schools, churches, and public edifices, and assist in the development of the countries of European climate.

Thus, each of these companies will effect important objects, and will constitute reproductive enterprises; though during the period of the development of the hill traffic, a portion of the guaranteed interest will become payable. This, and indeed the whole capital, may, however, be made repayable out of the Land Sales Fund, or Emigrant Tax, and be wholly redeemed, besides affording in the subsequent operations enormous funds for public purposes.

The present position of these important undertakings is shortly told, for no guarantee has yet been granted to either, nor a yard of work begun. The late and present Chairman, the Court, and the officials, have very favourably received the Northern Bengal Railway; have placed the road surveys at

the disposal of the committee, and all the information in their power, and have transmitted the plans to India for report. The Honorable Court have, however, thrown a damp on the undertaking, which has been very seriously felt; for although no guarantee was asked in the present stage, and only proposed to be demanded when the surveys and the reports of the East Indian authorities should have stamped the undertaking as worthy of such a condition, the Honorable Court, in a communication to the Company, not only asserted once, but reiterated it in the same letter, that at present they will grant no guarantee. The directors were, by this communication, placed in a position of difficulty, for it threw a doubt on all the encouragement which was afforded, and exposed them to invidious comments at an after period, in case any delay should occur, or any temporary check be experienced. They therefore determined to throw the responsibility of delaying this important measure on the Honorable Court, and postponed the survey, for which all measures were prepared; at the same time they restored to the shareholders the amount which had been paid in, without any deduction for the expenses, which are borne by the members of the board and promoters of the undertaking.

A proceeding so unexpected as that of the Honorable Court was not without serious influence, and the promoters of the Simla Railway followed the example of the Northern Bengal Railway, and delayed their enterprise, which was, as to principle, under the same conditions as the Northern Bengal Railway, and dependent therefore on the same policy.

Although the money of the shareholders in the Northern Bengal Railway has been returned, with

few exceptions, and the surveys have been suspended, the company remains an organized body under the Limited Liability Act, and the directors have determined to prosecute the undertaking, having every confidence of success. The documents which have been forwarded to the Government of India by the Honorable Court include a most valuable report on the undertaking by Dr. Archibald Campbell, whose presence in England on leave of absence at that period of the preliminary proceedings was a circumstance most fortunate for the undertaking. From the period of the formation of the settlement of Darjeeling by the Bengal Government, Mr. Campbell has held the important office of Superintendent of that station, and of the ceded districts of Sikkim and the Morung, and he is among those distinguished servants of the Government to whom India has been so much indebted for its progress. Possessing great intellectual powers, extensive acquirements, untiring energy, and high moral capacity, Mr. Campbell has been, under the direction of the Indian Government, the means of raising Darjeeling to its present importance.

When the proposition for the railway was brought before him, he considered it his especial duty, as a servant of the Government, and one to whom the interests of an important station were confided, to devote himself to its examination. Having an intimate knowledge of all the local details, Mr. Campbell was soon in a position to give not his opinion merely, but his attestation of the practicability and importance of the undertaking; and though then near the expiration of his leave, he considered it his duty to devote his remaining time to the promotion of the undertaking. At the request of Sir S. G. Bonham, the

chairman of the Northern Bengal Railway Company, Mr. Campbell drew up a report on the engineering and commercial capabilities of the undertaking, which was transmitted through the Honorable Court to India, and afterwards published in a separate form. What is Mr. Campbell's deliberate opinion can be seen in this document.

This report, emanating from such a high local authority, is a step in the progress of the undertaking, and cannot be without its influence. The undertaking will, in India, have this great advantage, that it will be referred to men intimately conversant with the subject. Mr. Halliday, the Deputy-Governor of Bengal, being a resident in Darjeeling, and having promoted the road, the telegraph, and every measure for its advancement, is locally acquainted with every detail bearing upon the undertaking; and the directors, therefore, confidently trust its merits to the judgment of that eminent person. There is not, however, a superior member of the Bengal administration who does not know Darjeeling, while the engineering features of the country have passed under the direct examination of the Public Works Department.

With regard to the practicability of the Northern Bengal Railway, that admits of no doubt, for the competent authorities of the Bengal engineers have provided routes for carriage transit, and the locomotive can follow the like routes. There may be some discussion as to the particular route to be adopted, but there can be none as to the engineering practicability of the enterprise. The terminus of the line at Darjeeling may likewise be matter of consideration, but that is all.

As to the amount of traffic in the districts of

Dinajpore and Rungpore, in the lower portion of the line, one of the highest personages connected with the Government of India in this country said, unhesitatingly, on a public occasion, that if any part of India could support a railway by its traffic, it was those collectorates.

The question which will remain for the determination of the authorities at the India House and the Board of Control, is that of guarantee. Without a guarantee, in the present state of the feeling of capitalists towards Indian railways, these lines will not be constructed; and such is the condition which some of the largest holders of the stock of the East Indian Railway Company impose as the requisite for supporting the Northern Bengal extension of their undertaking.

In order to secure the early progress of these undertakings, the authorities here must, therefore, concede the guarantee; and whereas before the Directors of the Northern Bengal Railway Company were quite willing to wait for a guarantee until a future period, it is, under the present condition of India, urgent that the guarantee shall at once be granted.

If these undertakings be sound, and if from motives of policy their construction be imperative, then adequate guarantees must be conceded. True it is that these guarantees are only transitory and temporary, for the traffic on a considerable portion of the lines is adequate to pay, and on the remainder there can be no doubt the ultimate traffic will be highly remunerative. The railways proposed are, it may be repeated, railways to the capitals of India, and will afford the best and most remunerative classes of traffic.

CHAPTER III.

DESCRIPTION OF DARJEELING.

THE foundation and progress of Darjeeling form an interesting feature in the history of India, for to that station we must look as the future metropolis of the lower provinces.

Its origin is thus detailed in a local work, the "Darjeeling Guide," published at Calcutta, in 1848:—

"The establishment of a sanitarium, within a short distance of Calcutta, and accessible to all the districts of the lower provinces, has long been regarded as an object of peculiar interest. It has been deemed of such general importance and utility that it has received the ready attention of the local authorities, and also the favorable notice of the Court of Directors, whenever the subject has been prominently brought under discussion.

"Darjeeling, which is situated at the distance of 371 miles from Calcutta, on a ridge of the Sikhim range of the Himalayas, the snowy heights of which seem to overhang the station, was first brought to the notice of the then Governor-General, Lord William Bentinck, in 1829, by Mr. J. W. Grant and Colonel Lloyd, as combining all the requisites for a convalescent depot.

"About the month of February, in the year 1828, Mr. J. W. Grant, at that time resident at Malda,

and Captain (now Colonel) G. W. A. Lloyd, then employed in the political department in settling the boundary between the Nipal and Sikhim frontier, made an excursion from Titalya into the Sikhim mountains, and explored as far as Rinchinpoon. When at Chongtong their attention was attracted to the position of Darjeeling, appearing at a distance of a few miles to the eastward of the spot on which they stood, and it struck them as one admirably calculated for a sanitarium. It was this occurrence that led to Mr. Grant's communication to Lord W. Bentinck. Colonel Lloyd, in a letter addressed by him to his Lordship's military secretary, Captain (now Colonel) Benson, dated the 18th day of June, 1829, states, that he visited Darjeeling in February in that year, and adds that he was the only European who had ever visited it. The extreme earnestness of these gentlemen in recommending it as a fit station for a sanitarium, attracted his Lordship's attention, who was induced, by the representations thus made to him, to direct Major Herbert, Deputy-Surveyor General, to explore the Sikhim Hills, and that officer carried his orders into execution in company with Mr. Grant: their reports were submitted to Government in the year 1830.

"His Lordship never lost sight of the expediency of establishing, on this tract of the Sikhim Hills, a station for the resort of those whose health demanded relief from the heat of the Bengal plains; looking upon it as admitted on all hands that a sanitarium was much wanted on our north-eastern frontier, he considered that Darjeeling, with reference to facilities of approach, position, climate, and resources, held out a better prospect of supplying this desideratum than any other spot on the highlands above Silhet.

" The reports of Major Herbert and Mr. Grant were perused by the Court of Directors with much interest, and they expressed their sense of Mr. Grant's zeal and intelligence in bringing to the notice of Government a position apparently so well adapted as Darjeeling for the site of a convalescent depot, and also highly approved of Major Herbert's having undertaken a journey to it with a view further to develop its capabilities. The Court also expressed a hope that Government would find it practicable and advisable to establish a sanitarium at that station, which they conceived might also prove valuable as a depot for the temporary reception of European recruits, and even as a permanent cantonment for a European regiment.

" The value of a sanitarium so near to the metropolis of India did not fail to present itself to Lord Auckland, very shortly after his arrival in India; and from the year 1836 to the termination of his government his Lordship continued to take the liveliest interest in the establishment of this station, until at length, under his fostering care, it has assumed a character of such importance as a place of general resort, that it has become the rival sanitarium of Simla and Mussoorie, especially from its being of much easier access than either of those places from all parts of the lower provinces.

" Its perfect success has been looked upon as likely to carry with it far greater consequences than might generally be ascribed to a facility of refuge from the oppressive heats of the climate of the plains. The precariousness of health in India would make this an object of no light importance; but in looking onward to ultimate results it has been considered that such a settlement in these hills will tend more than any other circumstance to attach English

families and English capital to the soil of India, and to give a more general character than has yet existed of permanence and consistency to undertakings and establishments resting on the wealth and enterprise of Europe. The advantages to Government of this position in the mountains are also considerable; situated as it is in the centre of Sikhim, and within thirty miles of the Nipaul frontier on the west, and little more from that of Bootan on the east, it gives the power of effectually checking any union of these two states on the south of the snows; while the example of a just and tolerant government in the territory adjoining them cannot fail to have the most beneficial influence on the condition of the population of the neighbouring states, at the same time that it affords to the unsettled tribes of mountaineers the opportunity hitherto wanting of judging of the power, resources, and moderation of the rulers of India.

"The establishment of such a sanitarium might, throughout Bengal, and more particularly amongst the residents in the capital of India, frequently prevent the long and distant separation of husband and wife, and of parent and child, and will have a much wider influence than may at first be imagined upon the public service, and yet more upon the mercantile and general European community.

"The healthiness to Europeans of the climate of Darjeeling may be taken to be fully established. It has now been put to the test for more than six years, under the disadvantages of difficult supplies, scanty population, uncleared jungle, and imperfect habitations, and all who have tried it speak most favorably of its influence.

"All the difficulties which at first presented them-

selves have been overcome; roads have been made; hotels and houses have been built; bazaars are in activity, and many speculations have been projected.

"It is well known with what deep interest this new settlement has been regarded at Calcutta, and that an association was formed, which proved to Government that the public fully responded to their views. When the Darjeeling Committee applied for an improvement of the communications leading to the station, and showed that the association which they represented had spent nearly 50,000 rupees upon the place,* and upon the roads leading to it, it was admitted that their wishes were fair and moderate, and a readiness was expressed to give effect to them at once, as far as could reasonably be done. It was considered that by compliance little more would in fact be granted than that a main line of communication would be made practicable, at a small expense, in a country where roads are greatly wanted, and that the works proposed, on the footing on which they would be placed in the first instance, were little more than ought, at all events, to be undertaken in a well-regulated district.

"Orders were accordingly issued for the repair of the district roads on the route to Darjeeling, the erection of bungalows at stated intervals, and the construction of more substantial boats than those in general use at the various ferries that intersect the roads."

On the situation and topography of Darjeeling, the "Darjeeling Guide" affords copious information.

* The estimated amount of capital laid out by European settlers, up to the 31st December, 1844, is six lacs of rupees—Company's Rupees, 6,00,000.

"Near the southern extreme of one of the mountain ranges, or ramifications, descending from the lofty Himalaya, rises the Sinchal mountain. Attaining an elevation of nearly 9,000 feet, and throwing out numerous ridges and buttresses, this mountain forms a remarkable feature in every view of the Sikim Hills from the plains.

"On one of these ridges, running first in a north, and then in a north-west direction, and jutting out, as it were, into a vast basin, in the very heart of the Sub-Himalaya,* stands Darjeeling.

"The ridge itself is for the most part narrow or hog-backed, with a steep descent on its eastern side down to the torrent of Rugno, our eastern boundary; while on the western and south-western sides it declines in more gentle declivities, broken into knolls and intersected by numerous streamlets, forming a fine amphitheatre, extending from two to three miles; on this the military lines, the bazaar, and some of the station-houses are built. The greater part of the residences, however, together with the church, the cutcherry, and the hotels, are constructed along or near the summit of the ridge. On the most commanding spot, where the ridge deflects to the north-west, are situated the ruins of the old Buddhist monastery, and immediately below is the neat little Christian church.

"From the north and north-west are thrown out several spurs extending down to the Little and Great Rungeet rivers. On one of these spurs, called Tugvor, is the German missionary station of Gnadenburg, under the superintendence of the

* By "Sub-Himalaya," we mean all the great Himalaya chain not included in the Snowy Range.

Rev. W. Start; and on another, Leebong, have been assigned some locations, and an excellent pucka house has been constructed.

"The latitude of Darjeeling is about 27° north, and its longitude nearly the same as that of Calcutta, or 84° 22′ east. Its position relative to the neighbouring country is somewhat peculiar, rising as it does almost isolated in the midst of an extensive hollow or basin, enclosed on every side by mountains generally higher than itself, except to the north and north-east, where the view is open and exhibits range upon range, until the prospect of the Sub-Himalaya, the magnificence of which is indescribable, terminates in the distant Snowy Range.*

"To the northward of east may be discerned the romantic valleys of the Teesta winding far away amongst the mountains of Bootan, and on the west and north-west the lofty range which forms, in part, the boundary between Nipal and Sikim.†

"Darjeeling is 371 miles, or about five days' dâk travelling, from Calcutta. Water carriage from June to September, to Dinajepore, or to Titalyah on the Mahanunda, a distance of only 28 miles from the foot of the hills; and during the remainder of the year, Dulolgunge, also on the Mahanunda, about 50 miles from Titalyah, or 80 miles from the foot of the hills, is the place where boats are obliged to stop.

"For all stations below Allahabad, Darjeeling will be preferred to the sanitaria in the north-western

* Himalaya proper.
† "Darjeeling Guide," pp. 14, 15.

mountains, the distance of Allahabad being, in a direct line from Darjeeling and Dehra, as nearly as possible equal. Even from Allahabad, the invalid's preferable course will be to Darjeeling; for this simple reason, that he will have the advantage of water carriage as far as Malda, with the stream; and for this same reason, even to stations above Allahabad, it might admit of question whether the western or eastern station of health be preferable. It is true, that as the invalid has also to return, it may be said he will in either case have the stream in his favor once, and only once; but to the invalid it is often, perhaps always, of more consequence to reach his destination quickly, than to return, he having it always in his power to choose his time for the latter.

"The following list of stations, with their dâk-route distances from Darjeeling, will give a better idea of the advantages which the establishment of a sanitarium at that place is attended with in this respect:—

	Miles.
Backergunge	340
Bancoorah	364
Barrackpore	356
Beauleah	264
Beerbhoom	465
Benares	468
Berhampore	274
Bhaugulpore	206
Bogra	223
Burdwan	329
Calcutta	371
Comercolly	304
Dacca	349
Dinajepore	133
Dinapore and Patna	301

	Miles.
Ghazeepore	420
Goruckpore	445
Gya	432
Hooghly	374
Hazeereebaugh . . .	502
Jelasore	360
Kishnagur	315
Malda	205
Midnapore	520
Monghyr	230
Mymunsing	302
Pubna	330
Purneah	137
Rungpore	141
Tirhoot	267*

"The officers, with their families, and several individual residents, with the numerous casual visitors occupying the two hotels and the various buildings erected at the station, now form a considerable society, who are enjoying throughout the year an invigorating climate, within a short distance of Calcutta, and where the average range of the thermometer is about that of England and the north of France, or a mean temperature of about 55 degrees, with occasional falls of snow in the months of January, February, and March.

"The station commands the most magnificent prospect of the Snowy Range visible from any place in India, and in which appears eminently conspicuous the lofty peak of Kinchin Junga, said to be 27,000 feet above the level of the sea, the elevation of Darjeeling itself being 7,218 feet.

"The surrounding country, in respect to natural scenery, is superior to Landour and Mussoorie, and

* "Darjeeling Guide," pp. 17, 18.

its productions, such as oaks, birches, and chestnuts, are of greater variety and larger size. It has a northern aspect, which is wanting at Landour and Mussoorie, and which counterbalances any supposed advantages possessed by either of those places.

"The general opinion of persons who have visited Simla and Darjeeling is in favor of the latter, as regards the natural advantages of scenery and magnificence of the forest. As to the prospect of the Snowy Range, there is no variation of opinion: Darjeeling is unrivalled in this particular; the clearances and small settlements of the mountaineers are much more numerous around Simla, and this gives greater variety to the scene; but the more bare and precipitous character of the Simla mountains is surpassed in grandeur and beauty by those of Darjeeling. The atmosphere of Darjeeling is drier than that of Landour and Mussoorie; this it owes to its greater distance from the plains, and the position of the loftier Sinchal, which obstructs the passage of the ascending vapours of the serai; while at Mussoorie, which overhangs the Deyra Dhoon, the atmosphere, during the warm season, is charged with the damp of the lowlands.

"The comparative elevations of the Bengal sanitaria are as follows:—

	Feet.
Simla.	7,486
Darjeeling	7,218
Landour	7,200
Mussoorie	6,800
Almorah	5,520
Cheera Poonjee . . .	4,200

"In conclusion, all, without exception, who have visited Darjeeling, concur in describing it as pos-

sessing a climate superior to that of Landour or Mussoorie; and thus, at length, is supplied the desideratum, the want of which has hitherto been so seriously felt by the inhabitants of the metropolis of India and of the Lower Provinces, and a sanitarium is secured to them equal to any in India, and within the reach of all at a moderate expense."*

Dr. Hooker, the eminent naturalist, made Darjeeling his chief station during his important explorations in the Himalayas, and was the fellow prisoner of Dr. Campbell, when seized by the Rajah of Sikkim—an outrage which led to the surrender of a large portion of the Rajah's territory and a great accession to the jurisdiction of Darjeeling. To Dr. Hooker, who takes a deep interest in that country, the Company were indebted for the introduction to Mr. Campbell. In Dr Hooker's work called "Himalayan Journals" will be found much relating to Darjeeling, or, as he calls it, Dorjiling, and from which the following extracts have been made. Dr. Hooker says:†—

"The hill-station, or sanitarium of Darjeeling, owes its origin (like Simla, Mussooree, &c.) to the necessity that exists in India of providing places where the health of Europeans may be recruited by a temperate climate. Sikkim proved an eligible position for such an establishment, owing to its proximity to Calcutta, which lies but 370 miles to the southward; whereas the north-west stations mentioned above are upwards of a thousand miles from that city. Darjeeling ridge varies in height from 6,500 to 7,500 feet above the level of the sea; 8,000 feet being the elevation at which the mean temperature most nearly coincides with that of London, viz., 50°.

* "Darjeeling Guide," pp. 10, 11. † Vol. i., p. 105.

"Sikkim was, further, the only available spot for a sanitarium throughout the whole range of the Himalaya, east of the extreme western frontier of Nepal; being a protected state, and owing no allegiance, except to the British Government; which, after the Rajah had been driven from the country by the Ghorkas, in 1817, replaced him on his throne and guaranteed him the sovereignty. Our main object in doing this was to retain Sikkim, as a fender between Nepal and Bhotan, and but for this policy the aggressive Nepalese would, long ere now, have possessed themselves of Sikkim, Bhotan, and the whole Himalaya eastwards to the borders of Burmah.*

"From 1817 to 1828 no notice was taken of Sikkim, till a frontier dispute occurred between the Lepchas and Nepalese, which was referred (according to the terms of the treaty) to the British Government. During the arrangement of this, Darjeeling was visited by a gentleman of high scientific attainments, Mr. J. W. Grant, who pointed out its eligibility as a site for a sanitarium to Lord William Bentinck, then Governor-General, dwelling especially on its climate, proximity to Calcutta, and accessibility; on its central position between Tibet, Bhotan, Nepal, and British India; and on the good example a peaceably conducted and well-governed station would be to our turbulent neighbours in that quarter. The suggestion was cordially received, and Major Herbert (the late eminent Surveyor-General of India) and Mr.

"* Of this being their wish the Nepalese have never made any secret, and they are said to have asked permission from the British to march an army across Sikkim, for the purpose of conquering Bhotan, promising to become more peaceable neighbours to us than the Bhotanese are. Such they would, doubtless, have proved; but the Nepal frontier is considered broad enough already.

Grant were employed to report further on the subject.

"The next step taken was that of requesting the Rajah to cede a tract of country which should include Darjeeling, for an equivalent in money or land. His first demand was unreasonable; but on further consideration he surrendered Darjeeling unconditionally, and a sum of £300 per annum was granted to him, as an equivalent for what was to him a worthless uninhabited mountain. In 1840 Dr. Campbell was removed from Nepal, to be superintendent of the new station, and was entrusted with the charge of the political relations between the British and Sikkim governments.

"Once established, Darjeeling made rapid progress. Allotments of land were purchased by Europeans for building dwelling-houses; barracks and a bazaar were formed, with accommodation for invalid European soldiers; a few official residents, civil and military, formed the nucleus of a community, which was increased by retired officers and their families, and by temporary visitors in search of health, or the luxury of a cool climate and active exercise.

"For the first few years matters went on smoothly with the Rajah, whose minister (or Dewan) was upright and intelligent; but the latter, on his death, was succeeded by the present Dewan, a Tibetan and a relative of the Ranee (or Rajah's wife), a man unsurpassed for insolence and avarice, whose aim was to monopolize the trade of the country, and to enrich himself at its expense. Every obstacle was thrown by him in the way of a good understanding between Sikkim and the British Government. British subjects were rigo-

rously excluded from Sikkim; every liberal offer for free trade and intercourse was rejected, generally with insolence, merchandize was taxed, and notorious offenders, refugees from the British territories, were harboured, despatches were detained, and the vakeels, or Rajah's representatives, were chosen for their overbearing manners and incapacity. The conduct of the Dewan throughout was Indo-Chinese—assuming, arrogant, aggressive, never perpetrating open violence, but by petty insults effectually preventing all good understanding. He was met by neglect or forbearance on the part of the Calcutta Government, and by patience and passive resistance at Darjeeling. Such has been our policy in China, Siam, and Burmah, and in each instance the result has been the same: our inaction and long-suffering have been taken for weakness, and our concessions for timidity. Had it been insisted that the terms of the treaty should be strictly kept, and had the first act of insolence been noticed, we should have maintained the best relations with Sikkim, whose people and rulers (with the exception of the Dewan and his faction) have proved themselves friendly throughout, and most anxious for unrestricted communication.

"These political difficulties have not, however, prevented the rapid increase of Darjeeling; the progress of which, during the two years I spent in Sikkim, resembled that of an Australian colony, not only in amount of building, but in the accession of native families from the surrounding countries. There were not a hundred inhabitants under British protection when the ground was transferred; there are now four thousand. At the former period there was no trade whatever; there is now a very considerable one, in musk, salt, gold-dust, borax, soda,

woollen cloths, and especially in ponies, of which the Dewan in one year brought on his own account upwards of fifty into Darjeeling.* The trade has been greatly increased by the annual fair which Dr. Campbell has established at the foot of the hills, to which many thousands of natives flock from all quarters, and which exercises a most beneficial influence throughout the neighbouring territories. At this prizes (in medals, money, and kind) are given for agricultural implements and produce, stock, &c., by the originator and a few friends—a measure attended with eminent success.

"When estimating, in a sanitary point of view, the value of any health station, little reliance can be placed on the general impressions of invalids, or even of residents,—the opinion of each varies with the nature and state of his complaint if ill, or with his idiosyncracy and disposition if well. I have seen prejudiced individuals rapidly recovering in spite of themselves, and all the while complaining in unmeasured terms of the climate of Darjeeling, and abusing it as killing them. There are others who languish under the heat of the plains at one season, and the damp at another; and who, though sickening and dying under its influence, yet consistently praise a tropical climate to the last. The opinions of those who resort to Darjeeling in health differ equally; those of active minds invariably thoroughly enjoy it, while the mere lounger or sportsman mopes. The statistical tables afford conclusive proofs of the value of the climate to Europeans suffering from acute diseases, and they are corroborated by the returns of

"* The Tibetan pony, though born and bred 10,000 to 14,000 feet above the sea, is one of the most active and useful animals in the plains of Bengal, powerful and hardy, and, when well trained early, docile, although by nature vicious and obstinate.

the medical officer in charge of the station. With respect to its suitability to the European constitution I feel satisfied, and that much saving of life, health, and money would be effected were European troops drafted thither on their arrival in Bengal, instead of being stationed in Calcutta, exposed to disease and temptation to those vices which prove fatal to so many hundreds. This, I have been given to understand, was the view originally taken by the Court of Directors; but it has never been carried out.

"I believe that children's faces afford as good an index as any to the healthfulness of a climate, and in no part of the world is there a more active, rosy, and bright young community than at Darjeeling. It is incredible what a few weeks of that mountain air will do for the India-born children of European parents; they are taken there sickly, pallid, or yellow, soft and flabby, to become transformed into models of rude health and activity.

"There are, however, disorders to which the climate (in common with all damp ones) is not at all suited; such are especially dysentery, bowel and liver complaints of long standing, which are not benefited by a residence on these hills, though how much worse they might have become in the plains is not shown. I cannot hear that the climate aggravates, but it certainly does not remove them. Whoever, on the contrary, is suffering from the debilitating effects of any of the multifarious acute maladies of the plains, finds immediate relief, and acquires a stock of health that enables him to resist fresh attacks under circumstances similar to those which before engendered them.

"Natives of the low countries, and especially

Bengalees, are far from enjoying the climate as Europeans do, being liable to sharp attacks of fever and ague, from which the poorly clad natives are not exempt. It is, however, difficult to estimate the effects of exposure upon the Bengalees, who sleep on the bare and often damp ground, and adhere with characteristic prejudice to the attire of a torrid clime and to a vegetable diet under skies to which these are least of all adapted.

"It must not be supposed that Europeans who have resided in the plains can on their first arrival expose themselves with impunity to the cold of these elevations; and this was shown in the winter of 1848-9, when troops brought up to Darjeeling were cantonned in newly-built dwellings on a high exposed ridge, 8,000 feet above the sea, and lay insufficiently protected on a floor of loosely-laid planks exposed to the cold wind, when the ground without was covered with snow; rheumatisms, sharp febrile attacks and dysenteries ensued, which were attributed in the public papers to the unhealthy nature of the climate of Darjeeling.

"The summer or rainy season of 1848 was passed at or near Darjeeling, during which period I chiefly occupied myself in forming collections and in taking meteorological observations. I resided at Mr. Hodgson's for the greater part of the time, in consequence of his having given me a hospitable invitation to consider his house my home. The view from his windows is quite unparalleled for the scenery it embraces, commanding confessedly the grandest known landscape of snowy mountains in the Himalaya, and hence in the world. Kinchin Junga (forty-five miles distant) is the prominent object, rising 21,000 feet above the level of the observer out of a sea of intervening wooded hills;

whilst on a line with its snows the eye descends below the horizon to a narrow gulf 7,000 feet deep in the mountains, where the great Rungeet, white with foam, threads a tropical forest with a silver line.

"To the north-west, towards Nepal, the snowy peaks of Kubra and Junnoo (respectively 24,005 feet and 25,312 feet) rise over the shoulder of Singalelah; whilst eastward the Snowy Mountains appear to form an unbroken range trending north-east to the great mass of Donkia (23,176 feet), and thence south-east by the fingered peaks of Tunkola and the silver cone of Chola (17,320 feet) gradually sinking into the Bhotan mountains at Gipmoochi (14,509 feet).

"The most eloquent descriptions I have read fail to convey to my mind's eye the forms and colours of snowy mountains, or to my imagination the sensations and impressions that rivet my attention to these sublime phenomena when they are present in reality; and I shall not therefore obtrude any attempt of the kind upon my reader. The latter has probably seen the Swiss Alps, which, though barely possessing half the sublimity, extent, or height of the Himalaya, are yet far more beautiful. In either case the observer is struck with the precision and sharpness of their outlines, and still more with the wonderful play of colours on their snowy flanks, from the glowing hues reflected in orange, gold, and ruby, from clouds illumined by the sinking or rising sun, to the ghastly pallor that succeeds with twilight, when the red seems to give place to its complementary colour, green. Such dissolving views elude all attempts at description; they are far too aerial to be chained to the memory, and fade from it so fast as to be gazed upon day after day with undiminished admiration

and pleasure, long after the mountains themselves have lost their sublimity and apparent height.

" The actual extent of the Snowy Range seen from Mr. Hodgson's windows is comprised within an arc of 80° (from north 30° west to north 50° east), or nearly a quarter of the horizon, along which the perpetual snow forms an unbroken girdle or crest of frosted silver; and in winter, when the mountains are covered down to 8,000 feet, this white ridge stretches uninterruptedly for more than 160°. No known view is comparable with this in extent, when the proximity and height of the mountains are considered; for within the 80° above mentioned more than twelve peaks rise above 20,000 feet, and there are none below 15,000 feet, while Kinchin is 28,178, and seven others above 22,000. The nearest perpetual snow is on Nursing, a beautiful, sharp, conical peak, 19,139 feet high, and thirty-two miles distant. The most remote mountain seen is Donkia, 23,176 feet high, and seventy-three miles distant; whilst Kinchin, which forms the principal mass, both for height and bulk, is forty-five miles distant.

" On first viewing this glorious panorama, the impression produced on the imagination by their prodigious elevation is, that the peaks tower in the air and pierce the clouds, and such are the terms generally used in descriptions of similar Alpine scenery; but the observer, if he look again, will find that even the most stupendous occupy a very low position on the horizon, the top of Kinchin itself measuring only 4° 31′ above his own level. Donkia, again, which is about 15,700 feet above Mr. Hodgson's, rises only 1° 55′ above the horizon, an angle which is quite inappreciable to the eye when unaided by instruments.

"This view may be extended a little by ascending Sinchul, which rises 1,000 feet above the elevation of Mr. Hodgson's house, and lies a few miles to the south-east of Darjeeling; from its summit, Chumulari (23,929 feet) is seen to the north-east, at eighty-four miles distance, rearing its head as a great rounded mass over the snowy Chola range, out of which it appears to rise, although in reality lying forty miles beyond, so deceptive is the perspective of snowy mountains. To the north-west, again, at upwards of 100 miles distance, a beautiful group of snowy mountains rises above the black Singalelah range, the chief being, perhaps, as high as Kinchinjunga, from which it is fully eighty miles distant to the westward, and between them no mountain of considerable altitude intervenes; the Nepalese Himalaya in that direction sinking remarkably towards the Arun river, which there enters Nepal from Tibet."

In 1854, in consequence of the progress of Darjeeling, Mr. Welby Jackson, of the Civil Service, was sent specially by the Bengal Government to report upon it, and in addition to technical details, his report contains much interesting matter.

With reference to the progress of the settlement, he says:—

"System of Management.

"The entire management of this district has, from the first session, in 1838, been in the hands of the present superintendent, Dr. A. Campbell. When he took charge of it there were not twenty families in the whole tract of hills; there is now a population of 10,000 persons in this portion, exclusive of Morung, and the patches of cultivation may be distinguished all over the less steep portions of the mountains."

The military convalescent depot is thus described by Mr. Jackson:—

"A convalescent depot has been established at Darjeeling for European troops; it is situated on the Jullah Puhar, to the south of the station, at an elevation of 800 feet above it; total elevation above the sea, 7,800; and will accommodate 150 men.

"There is a commandant, a surgeon, and station staff officer, with non-commissioned staff attached; and three or four officers are annually appointed to do duty. The men are sent up in June, and return to the plains in December. The effect of the climate on them has been very beneficial.

"SAPPER CORPS.

"A party of 108 Sappers and Miners are also quartered at the Sudder station and perform the military duty of the station, besides being employed on the roads and public works. This is a local corps, formed chiefly from the people of the district, and is most valuable in constructing and preserving the communications. When employed on roadwork the men receive an extra allowance of 1½ annas a day; they are under the command of the Executive officer."*

Of the administration of Dr. Campbell, Mr. Welby Jackson speaks highly, and does it no more than justice. He says:—

"In speaking of the administration of this district generally, before going into the detail of the various departments, it is neces-

* "Report on Darjeeling," p. 2.

sary to observe that whatever has been done here has been done by Dr. Campbell alone. He found Darjeeling an inaccessible tract of forest, with a very scanty population. By his exertions an excellent sanitarium has been established for troops and others; a hill corps has been established, for the maintenance of order and improvement of communication; no less than seventy European houses have been built, with a bazaar, jail, and buildings for the accommodation of the sick in the depot; a revenue of Rs.50,000 has been raised, and is collected punctually, and without balance; a simple system of administration of justice has been introduced, well adapted to the character of the tribes with whom he had to deal; the system of forced labor has been abolished, and labor, with all other valuables, has been left to find its own price in an open market; roads have been made; experimental cultivation of tea and coffee has been introduced, and various European fruits and grapes; and this has been effected at the same time that the various tribes of inhabitants have been conciliated, and their habits and prejudices treated with a caution and forbearance which will render further progress in the same direction an easy task. The way has been shown; and those who succeed Dr. Campbell have only to follow it, as far as they are capable of doing so.

"It is not only to the simple matters of administration, the results and objects of which are immediate and palpable, that Dr. Campbell has applied himself; he has exerted his abilities in the pursuit of science, and in exploring the routes, the ultimate object of which is less apparent to those who act under more limited views of direct and tangible utility. His journey to the confines of Tartary, at much personal risk, has extended our knowledge of the geography of the great Himalayah range—of its position and produce—and of the means of communication with the countries to the north of it. I may, in short, say of him, that to him is the Government indebted for the formation of the district of Darjeeling—for the revenue which is now derived from that district—and for the organization of the whole system of management. The people, on the other hand, are indebted to him for the blessings of a just and paternal government, under which they, at this moment, enjoy a degree of liberty, as well as a protection of property and person, unknown to them under their former masters: and they are fully sensible of this advantage.

"It is to the personal character of the Superintendent that his success is due, and to the admirable temper, deliberation, and forethought, with which he has acted throughout; and this success would have been greater had he received more support and more ample means of carrying out the sound views which he entertains of improvement of the district intrusted to his charge." *

With regard to the climate of Darjeeling, there is copious information. The Darjeeling Guide

* "Report on Darjeeling." By W. B. Jackson, Esq., C. S., Judge of the Sudder Court.

has several articles on this subject, and expressly states :—

"A place like Darjeeling, at an elevation which secures it the temperature of a high latitude, yet within the full influence of the tropical rains, may well be supposed to possess a peculiar character of climate. Such is the case: for although at the great height of 7,218 feet above the sea, yet, owing to its nearness to the tropics, the winter is not to be compared to that of England for cold; while, from the fall of rain at that season, the summer is much colder; its mean temperature is thus produced, which is about, or but little exceeds, that of England, or the north of France.

"It has been ascertained, in India at least, that as we ascend in elevation, the temperature falls at the rate of about 1° for every 300 feet. Major Herbert therefore argued that the mean temperature of Darjeeling below that of Calcutta might be confidently reckoned at 24°, or lower, on account of its having a northern aspect, and having a higher latitude, by 5°.

"Meteorological observations, since Herbert's time, show that the general depression of the thermometer is about 30° below that of Calcutta. At the rate of 1° for every 300 feet, Calcutta being on the level of the sea, and Darjeeling having an elevation of 7,200 feet, we should have a depression of 24° only; but with 5° of higher latitude, and a country clothed in evergreen, 6° of temperature are added to the number we looked for as the probable fall below the mean heat of the metropolis.

"The beneficial effects of its climate on European children is most striking and remarkable. During five years that it has been the resort of children from Bengal, in all stages of weakness from fever, teething, &c., there has not been a single instance in which recovery did not follow residence of one hot season. We are, perhaps, liable to be considered as over estimating the value of this climate to Europeans in Bengal, when we give it as our firm and deliberate opinion, that it is quite equal to that of Europe in general healthiness for children, and superior to it in many respects—viz., that when it is coldest it is most dry, whereas in England the coldest weather is generally the wettest and dampest.*

"With this tropical situation the seasons follow the course of those of the plains; about the vernal equinox copious showers of rain fall, with sometimes hail. They are often repeated during the months of April and May, gradually becoming heavier and more frequent, until the setting in of the rains at the beginning of June. But these 'spring showers' are not followed by the immediate effects of those of a higher latitude. There, herbs and flowers come forth at the first call of spring, and a few months (in some latitudes a few weeks) see the plains of ripening corn in the place of the plains of snow; while here, though vegetation takes a start, its progress is at first but slow, the brown left by the recent frosts hardly disappears until the rains have fairly begun. The signs of summer are but

* "Darjeeling Guide," p. 28.

little, if any, more marked than those of spring. The rains cease about the end of September and beginning of October, and about the middle of November the frosts begin.*

"RAINS.

"The rains set in fairly about the beginning of June. The weather becomes cloudy, and the rain falls steadily, not very heavy, and, unless in much exposed situations, straight down and even, there being little wind. It has been known to rain in this manner for two days without intermission, to the extent, in one instance, of 7·80 inches in 24 hours, and in another 5·85 inches in one day, and 4·87 inches on the next. Two inches in the 24 hours often fall: sometimes three; and, though more rarely, sometimes four. Notwithstanding this, the weather during the rains is not unpleasant to those who have, or make for themselves, occupations within doors. The rains continue unabated during the months of June, July and August, about 30 inches, on an average, falling in each of those months: with September a decided change takes place, the continued fall changes into showers, which become less and less frequent, while the sun shows himself oftener, and his gleams are of longer duration, until towards the latter end of the month, or the beginning of October, when the rains cease altogether. After the first of August the air is sensibly cooler in the shade."†

Dr. Hooker says:—

"At about 4,000 feet a great change took place in the vegetation,—marked first by the appearance of a very English-looking bramble, which, however, by way of proving its foreign origin, bore a very good yellow fruit, called here the "yellow raspberry." Scattered oaks of a noble species, with large lamellated cups and magnificent foliage, succeeded; and along the ridge of the mountain to Kursiong (a dawk bungalow at about 4,800 feet) the change in the flora was complete.

"The spring of this region and elevation most vividly recalled that of England—the oak flowering, the birch bursting into leaf, the violet, *Stellaria*, and *Arum vaccinium*, wild strawberry, maple, geranium, bramble. A colder wind blew here. Mosses and lichens carpeted the banks and roadsides, the birds and insects were very different from those below, and everything proclaimed the marked change in elevation; and not only in this, but also in the season, for I had left the winter of the tropics, and here encountered the spring of the temperate zone.

"These flowers are so notoriously the harbinger of a European spring that their presence carries one home at once; but as species, they differ from their European prototypes, and are accompanied at this elevation, and for 2,000 feet higher up, with tree ferns, pothos, bananas, palms, figs, peppers, numbers of epiphytal orchids, and similar genuine tropical genera. The uniform temperature and humidity of

* "Darjeeling Guide," p. 28.
† "Darjeeling Guide," p. 28, 29.

the climate here favor the extension of tropical plants into a temperate region, exactly as the same conditions cause similar forms to attain higher latitudes in the southern hemisphere (as in New Zealand, Tasmania, South Chili, &c.) than they do in the northern."*

Upon the cold season—an important one to the invalid Anglo-Indians—the "Darjeeling Guide" says:—

"THE COLD WEATHER.

"The cold weather is divided into three portions. The first, at the conclusion of the rains, is mild and pleasant, the atmosphere clear, the ground covered with flowers and sweet-scented herbs, and the prospect, for the most part, clear and open; this is the autumn, if autumn there be, at Darjeeling. In November the hoar frosts begin, and the cold weather comes on at the latter part of the month. The ground is frozen in December and January, sometimes almost all day; the weather feels very cold; the atmosphere is cloudless, dry, and sparkling, giving a sensation like that felt on a frosty morning at home. All vegetation has now ceased; the little grass there is, the herbs and flowers, are frostbitten and dried up; ice stands in the little pools of water in the morning, and in shady places it lasts all day. At early morning it is very cold, but as the sun rises it becomes agreeable, and at midday warm, with bright sunshine; as the evening comes on it is cold and chilly, and the night is clear and starlight.

"About Christmas the weather is cloudy, as in the plains at that time, and rain sometimes falls."

To what has been said by the authorities already quoted about the beauty of the neighbourhood for excursions, the following may be added:—

"A pleasant excursion may be made in cold weather to 'Poorh Sáchoo,' a hot medicinal spring on the left bank of the Great Rungeel river in Sikim. The sanitary effects of this spring are described as considerable, especially in rheumatic and cutaneous affections. The Lepchas, Bhokahs, and Limboos, during the dry season, visit it in crowds for the purpose of bathing in its waters; for this purpose there are baths of various sizes hollowed out of blocks of wood. These are placed at a little distance from the flow of water, and are filled through a split bamboo from the main spring. The patient generally remains for five or six hours daily in the bath, the water constantly flowing over him. The temperature of the water is said to be high enough to boil eggs when it issues from the rock. A similar spring, but of less notorious virtue, is to be found on the banks of the Mechi, the river which divides Nipaul from Sikim."†

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* Hooker's "Himalayan Journals," vol. i. p. 99.
† "Darjeeling Guide," p. 16.

The following list of locations at Darjeeling, in 1848, will show how the town and villa lots were taken up by the Indian community, and what was then the popular estimate of it as a settlement.

LIST OF LOCATIONS AND PROPRIETORS.

THE DARJEELING HILL.

The Superintendent's Cutcherry .. Opened in 1840.
The Established Church..... Opened in October, 1844.
The Public Library..... ..... Cleared for building.
Mr. Start's Chapel ..... Opened August, 1844.

Map No.	Location.	Proprietor.	Grantee.	Reg. No.
1	....	Dr. Pearson.....	Dr. Pearson.....	1
	BIRCH HILL.			
2	The Hermitage.....	Sir T. E. M. Turton.	Dr. Pearson.....	2
3	Holiday Hall.....	Sir T. E. M. Turton	— Watson	..
4			John Storm	39
5			William Martin.....	38
6			Dwarkanauth Tagore..	11
7			Theodore Dickens.....	37
8			Edward Hepper.....	9
9			Colonel Cobbe.....	36
10	Lochnivar.....:....	Samuel Smith	Francis Warman.....	26
11	The Hotel.....	Samuel Smith	Darjeeling Association.	23
12	Primrose Hill.....	David Wilson	Hepper and Co.	..
13	Prospect Hill.....	Samuel Smith	T. W. Smyth.....	17
14	Sunny Hill.....	Samuel Smith	W. Martin	47
15	The Mount.....	Samuel Smith	G. W. Yule.....	40
16	Birch Hill	Samuel Smith	C. D. Russell.....	8
17	The Knoll.....	Samuel Smith	Samuel Smith	42
18	West Point.....	Samuel Smith	Samuel Smith	41
	BIRCH HILL ROAD.			
19	North Point.....	Samuel Smith	J. S. Stopford.....	43
20	South Point.....	W. Agnew	W. Agnew	..
21	Sunny Slope.....	Samuel Smith	Edward Hepper	48
22	....	Samuel Smith	F. W. Harman	59
23	....	Samuel Smith	William Johnstone....	58
	THE STATION ROAD.			
24	The Lounge.....	David Wilson.....	David Wilson	18
25	Woodbine Cottage ..	David Wilson	Hepper & Co.....	..
26	Lowland Place	Sir T. E. M. Turton.	Edward Hepper	45
27	The Sand Pit.....	Sir T. E. M. Turton.	T. Sandes.....	12
28	Caroline Villa	Colonel Lloyd	W. Bruce.....	5
29	Mount Pleasant	Colonel Lloyd	Colonel Lloyd	6
30	Dell Cottage	Henry Clarke.....	Henry Clarke	3

THE AUCKLAND ROAD (ABOVE).

Map No.	Location.	Proprietor.	Grantee.	Reg. No.
31	One Tree	Samuel Smith	H. V. Bayley.....	30
32		Samuel Smith	A. Campbell, M.D.....	7
33	Rockville	Samuel Smith	C. H. Cameron.....	31
34		Samuel Smith	Samuel Smith	14
35	Oak Lodge	Samuel Smith	Lieut. Montgomery ...	10
36	Vernon Cottage	Samuel Smith	Capt. George Ellis	33
37	Cecil Lodge	Samuel Smith	G. W. Cragg.....	20
38	Salt Hill	Samuel Smith	C. H. Salter.....	..
39	Elysee.....	Sir T. H. Maddock..	Capt. George Bishop ..	..
40	....	Captain Bishop	Dr. Griffith	..
41	....	Samuel Smith	W. H. Smoult.....	..
42		Samuel Smith	W. H. Smoult.....	..
43		Samuel Smith	W. H. Smoult.....	..
44		Samuel Smith	W. H. Smoult.....	..
45	Colinton	C. Huffnagle	Original Grantee	..

THE AUCKLAND ROAD (BELOW).

46	Beechwood	A. Campbell, M.D..	W. Martin.....	4
47	Victoria Place.....	A. Campbell, M.D..	Colonel Garstin	24
48	Grove Hill.....	A. Campbell, M.D..	E. Hepper	..
49	....	Major Crommelin...	Dr. Pearson.....	22
50	....	Major Crommelin...	Captain Taylor	24
51	Woodlands.....	Captain Bishop	Original Grantee.....	35
52	....	Miss Lloyd	— De Chal	62

LEE BONG.

53	....	H. M. Low	Original Grantee	..
54	....	C. K. Robison.....	Original Grantee	..
55	....	J. Jenkins	Original Grantee	..
56	....	R. Davidson	Original Grantee	51
57	....	A. Dick	J. F. Cathcart	..
58	....	A. Dick	Original Grantee	..
59	....	A. Dick	Original Grantee	..
60	Bannockburn	James Grant	Original Grantee	..
61	....	J. S. Stopford	Original Grantee	..
62	....	....	....	..
63	....	....	....	..
64	....	Mackillop and Co..	Original Grantee	..
65	....	....	....	..
66	....	....	....	..
67	....	....	....	..
68	....	....	....	..
69	....	C. Huffnagle.....	Original Grantee	..
70	....	James Hume.....	Original Grantee	..
71	....	....	....	..
72	....	....	....	..
73	....	....	....	..
74	....	....	....	..
75	....	....	....	..
76	....	....	....	..
77	....	....	....	..

THE JILLAPAHAR.

78	Chevremont.....	Samuel Smith	Captain Napier	13
79	The Glen	Samuel Smith	Captain Napier	..
80	....	Rev. W. Start.....	H. V. Bayley	..
81	....	Colonel Garstin	Original Grantee	60
82	....	Colonel Garstin	Original Grantee	61

Map No.	Location.	Proprietor.	Grantee.	Reg. No.
83	Sans Souci.....	Sir T. H. Maddock..	C. Huffnagle	28
84	Herbert Hill	Sir T. H. Maddock..	Original Grantee	32
85	Place Madoc.....	Sir T. H. Maddock..	Colonel Stewart	..
86	....	Sir T. H. Maddock..	Original Grantee	..
87	....	Sir T. H. Maddock..	Original Grantee	..
88	....	D. Wilson.....	Dr. Griffith	..
89	....	H. S. Lane	Original Grantee	..
90	....	H. S. Lane	G. W. Bacon	..
91	....	H. S. Lane	G. F. Cathcart.....	..
92	....	E. Hepper.....	Original Grantee	..
93	Richmond Hill.....	Sir T. E. M. Turton.	Original Grantee	54
94				55
95				56
96				57

KURSION (East of the Road).

1	The Hotel.....	Samuel Smith	H. M. Low	1
2	Bon Hill	Samuel Smith.....	E. Hepper	2
3	The Retreat.....	Samuel Smith	H. M. Low	3
4	Eagle Hill	Samuel Smith	G. C. Tulloch	4
5	....	Colonel Lloyd	Original Grantee	..

KURSION (West of the Road).

6	....	Sir T. E. M. Turton.	G. Bone	..
7	....	Samuel Smith	Original Grantee	..
8	The Park	Samuel Smith	A. Campbell.....	5

CHAPTER IV.

THE NORTHERN BENGAL RAILWAY.—REPORT OF DR. ARCHIBALD CAMPBELL.

THE Northern Bengal Railway was, as already stated, projected some years ago by the pioneer of the Indian railway system, Sir Macdonald Stephenson; and, in the end of last year, on account of my having long devoted myself to Indian enterprise, he associated me with him in this undertaking. Already in 1849, when called upon to report on the telegraphic system for India, I had recommended lines of telegraph from Calcutta to Kishnagur, Moorshedabad, Rajmahal, Monghyr, Mauldah, and Darjeeling, a route of 450 miles, because I considered it desirable to give a communication from Calcutta to the sanitary station at Darjeeling. The completion of this line has lately been ordered. With the assistance of Dr. Archibald Campbell, the railway plan was brought into its present shape; and a Company having been formed under the Limited Liability Act, the following prospectus has been issued:—

"NORTHERN BENGAL RAILWAY COMPANY (LIMITED).

"*Office*, 2, *King's Arms-yard*, *E.C.*

"Capital, £2,000,000, in 100,000 shares of £20, or 200 rupees each, with power to increase the capital. Deposit, three shillings per share. All issues of new stock will be offered rateably among the existing Shareholders. Registered under the Joint Stock Companies' Act with limited liability. *Directors.*—Sir S. GEORGE BONHAM, Bart., K.C.B. (late H.M. Plenipotentiary in China, and Governor of Hong Kong), chairman; Sir MACDONALD STEPHENSON (Director of the East Indian and Oude Railway Companies), deputy-chairman; WILLIAM BORRADAILE, Esq., of 20, King's Arms-yard; ARCHIBALD BOYD, Esq., of 115, Westbourne-terrace, Hyde-park; ARCHIBALD CAMPBELL, Esq., of Darjeeling; SAMUEL RAWSON, Esq. (Messrs. Rawson, Sons, and Co., London; and Leach, Rawson, and Co., of Calcutta); Major-General G. B. TREMENHEERE,

late Bengal Engineers (with power to add to their number). *Official Auditor.* — J. A. FRANKLIN, Esq., 9, Warnford-court. *Secretary.*—HYDE CLARKE, Esq. *Solicitors.*—Messrs. J. C. and H. FRESHFIELD. *Engineer.*—T. R. CRAMPTON, Esq., C.E., K.L.H. *Bankers.*—Messrs. GLYN, MILLS, and Co.

"The East Indian Railway is open to Ranegunge, on the route to Delhi, and will be soon completed to Rajmahal. The object of the present undertaking is to construct a northerly extension to Dinajpore and Darjeeling, accommodating the districts of Rungpore, Malda, and Purneah. The connexion may be made by one of several routes, as shown on the accompanying map, the comparative advantages of which can only be determined by actual survey. The total length of railway to be constructed will be between 200 and 300 miles, to be undertaken in sections, as the Court of Directors of the East India Company may direct.

"The proposed lines will accommodate a country of great traffic and vast resources as shown in the accompanying report of Dr. Campbell, who has occupied an official position for above twenty years in these districts. The lower country sends largely to Calcutta, for consumption and shipment, sugar, tobacco, cotton, hemp, jute, rice, oil, seeds, &c., and in the upper country the production of copper and tea are being extended, for all which these lines will be the chief route. The hill regions also produce coal, and other mineral productions, and the railways proposed command the traffic to Assam and Central Asia. Besides this, Darjeeling, which enjoys a climate equal to that of England, is a sanitarium of great importance to the community of Calcutta, and will command a first-class traffic, which will be greatly increased when the distance is reduced from a week of laborious travelling to a single day of convenient transit. The East India Company have felt it to be so great an object to increase the means of communication between these places, that they have it in contemplation to expend £150,000 on an improved high road to Darjeeling.

"It is estimated that the cost of the railway will not exceed £9,000 per mile.

"The grounds on which the Northern Bengal Railway rests its claims to the support of the East India Company and the public are :—

"That it is a natural and necessary extension, in a northerly direction, of the East Indian Railway, near Rajmahal, where it diverges to the north-west, and will open up the communications to the north-east.

"That it is required for developing the advantages of the sanitarium at Darjeeling and the neighbouring districts.

"That it would be admirably adapted for the purposes of a European military depot of the frontier of Nepaul.

"The Directors are in communication with the Hon. East India Company, with a view to place this Company upon the same basis as the other Indian Railway Companies, under a guarantee of a minimum rate of interest. Should this arrangement, which is regarded by the Directors as an essential and indispensable condition, not be effected, the deposit of three shillings per share will be returned, less the expenses which shall have been incurred. The Allottees will not be required to execute any deed, but will receive Scrip Certificates in exchange for the Bankers' receipts, without incurring liability.

"APPLICATIONS FOR SHARES may be sent to the Company's Offices, No. 2, King's Arms-yard, E.C., in the annexed form; but no application will be considered unless a deposit of three shillings on each share applied for is previously made to Messrs. Glyn, Mills, and Co., Bankers of the Company. The deposit will be returned if the application is not acceded to.

"FORM OF APPLICATION FOR SHARES.

"N.B.—This must be presented to the Bankers entire. The applicant will retain the receipt at foot, and forward the letter to the Company's Offices. The Bankers' receipt will be exchanged hereafter for the scrip certificate, and due notice will be given when such certificates are ready.

"To the Directors of the Northern Bengal Railway Company. —Gentlemen,—Having paid to Messrs. Glyn, Mills, and Co. to your credit £ , being three shillings per share on shares in the above Company, I request you to allot me that number of shares, and I agree to accept the same, or any less number, when called upon to do so, by public advertisement, or in default, that the deposit paid shall be forfeited. (Name) (Profession or Business) (Address) (Date)

"BANKERS' RECEIPT.

" , 1857. Received from on account of The Northern Bengal Railway Company, the sum of pounds. For Messrs. Glyn, Mills, and Co. £ .
This receipt will be exchanged for scrip certificates when ready."

It is upon this basis the Company is proposed to be conducted, and whenever in the state of the arrangements with the Indian Government the proper opportunity comes, the remaining portion of the capital will be filled up.

Annexed to this prospectus a report of Dr. Archibald Campbell has been extensively circulated, and this very fully explains the practical bearings of the undertaking. This report is as follows:—

"NORTHERN BENGAL RAILWAY.

"*Report addressed to the Board by A. Campbell, Esq., M.D., of Darjeeling.*

"From A. Campbell, Esq., M.D., of Darjeeling, to Sir S. George Bonham, Bart., K.C.B., late H.M. Plenipotentiary in China, and Governor of Hong Kong; Sir Macdonald Stephenson, Major-

General G. B. Tremenheere, and the Directors of the Northern Bengal Railway Company.

"GENTLEMEN,—I have great pleasure in complying with your request to furnish the Board with some information, in a condensed form, on the advantages to be derived from a railway communication with Darjeeling.

"As I am a stranger here, it will be satisfactory to the Shareholders to be informed how I came to know something on the subject of your inquiries. I have therefore to state that, after serving eight years in Nipal, I have resided sixteen years at Darjeeling; that I have during every cold season of that period visited the neighbouring plains on duty, where I mixed freely with the natives of all ranks, and took some pains to acquire a knowledge of the principal features of the country, its wants, and its productions.

"The great distinguishing feature of the country lying between the Ganges and the base of the mountains is the existence of two distinct levels, both, however, affording very easy gradients.

"The higher levels, which may be called spurs, or plateaux, run north and south; it is, therefore, of great moment, in fixing on railway lines, to secure as much of the higher levels as possible for the passage northwards, rather than to run slantingly on the lower level, or across the great drainage of the mountains. Thus a spur or plateau extends from Dinajpore to Burgatchi; another from Purneah to Caragola; and from Titalya to Dinajpore a great deal of the higher level will be available; but from Purneah to Dinajpore, or to Kishengunj, the direction being east, there is much of the lower flooded level to traverse. Notwithstanding, I believe I may say, now that the East Indian Railway has been so successfully carried up the southern bank of the Ganges, that the country on the northern bank may be traversed with equal success. I can certainly say that the want of the means of communication is a crying grievance; and with equal confidence I can state that the productions of the country are very valuable, of vast amount, and easily increased under an increasing demand.

"RISE AND PROGRESS OF DARJEELING.

"Darjeeling was ceded to the British Government by the Sikim Raja in 1838, and was taken charge of by Colonel (now Major-General) G. W. A. Lloyd, C.B., of the Bengal Army. In 1840 I succeeded him, since which time, as Superintendent, I have held civil charge of the station, and of its annexed territory. From an uninhabited forest it has risen to be a populous and a first-rate sanitarium. I also had charge for eight years of the Bootan frontier of Rungpore and Coochbehar. The road from Darjeeling, *via* Dinajpore and Burgatchi, has always been under my supervision, and recently I had to report to the Bengal Government on the best road line communicating with the East Indian Railway from the Ganges to Darjeeling.

"It is thus I have acquired an acquaintance with all the districts of Darjeeling, Rungpore, Dinajpore, Purneah, and Malda, which our railway is to pass through, and for the improvement of which it is so well calculated. It will also, I firmly believe, be as profitable an investment of capital as any Indian railroad can offer.

"Without access to authentic records—as I now am—the Board will keep in mind that I do not make statements claiming to be quite accurate: they are all, however, to be relied on, and will, in extent and importance, I am sure, be rather under than over the actual state of things to be hereafter procured on the spot, for the information of the Shareholders and the guidance of the Board.

"POPULATION AND REVENUE OF THE RAILWAY DISTRICTS.

"Darjeeling has a population of 50,000, and yields an annual revenue of 50,000 rupees. Purneah yields a revenue of 1,400,000 rupees; Dinajpore, 1,300,000 rupees; Malda, I believe, 300,000 rupees; Rungpore, 1,200,000 rupees; and Cooch Behar, a small principality north of Rungpore, and under British guidance, yields, I believe, 300,000 or 400,000 rupees per annum. Thus, we have, as the circle of our rail, a home territory yielding 4,600,000 rupees per annum, and having a population, very probably, of more than 1,000,000. The outsiders who will benefit by our enterprise are, on one hand, the people of Assam, Bootan, Sikim, Eastern Thibet, and Nipal, east of the Koosi.

"On the other hand, we have the Europeans of Calcutta, and all Bengal, and the merchants of England, to whom it will open out new and greatly extended means of commercial enterprise in the export of manufactures, and in the increased import of very valuable products. Surely we have here a scheme which cannot fail to secure the sympathy of Indian philanthropists, and the assistance and guarantee of the Indian Government.

"PROPOSED LINES.

"It is proposed to carry our lines northernly to Darjeeling, and north-east through Rungpore to the Burrampooter, with a separate line of about 30 miles from Caragola Ghat to Purneah. This will secure all possible political advantages to the Government of India in connection with Nipal, Sikim, and Bootan, and for the European troops of Bengal and Burmah, whether they shall be cantoned in regiments in the Darjeeling hills, or use the climate only for sanitarial purposes. It will also secure all sanitarial advantages to the European community and officers of Government in Bengal, Burmah and Behar, as well as the interests of commerce to the native states and British districts already named, except to the portion of Purneah lying to the north and east of that station. It will therefore, I conceive, be advisable not to regard the terminus at Purneah as a settled thing, but to consider the extension of the line to Kishengunj and Titalya as still within the scope of our operations. It will also, I consider, be advisable, in ordering the preparatory surveys, to secure one of a line running from Purneah east to Dinajpore, crossing the Mahanuddi at or near Nuwabgunje, with a view of comparing its merits with the proposed line to Dinajpore from the Ganges opposite Rajmahal *via* Malda. There can, I think, be no doubt at all that our line must pass through Dinajpore to secure to it the extensive traffic of Rungpore, Assam, and Dinajpore itself; but it is a question worthy of consideration whether Dinajpore shall

be reached from Purneah or *via* Malda. This question would not require to be entertained were it more easy to effect a junction with the East Indian Railway opposite Burgatchi; but as the East Indian Railway does not touch the Ganges below Rajmahal, the question, I think, is important. Of all lines from the Ganges to Dinajpore, the one from Burgatchi *via* Parbuttypore is the most desirable; it is direct; the levels are easy; it is not flooded to any extent; and throughout the whole distance there is not a river to cross, nor are the streams of any magnitude.

"As I advocated the road which has been recently decided on,—viz., through Purneah, and which will cost 12 or 14 lacs,—it may be asked how it is that I now advocate a railway through Dinajpore as indispensable. I have to state that the road was mainly intended for Darjeeling; while the railway is a much more extended and important project. It is to be the feeder of the East Indian Railway for all the countries lying between the Burrampooter and the Koosi, of which Darjeeling is but one, although, no doubt, the most important.

"General and Commercial Advantages.

"The climate of Darjeeling is as healthy as any in the world, and very agreeable. It is more favorable to the health of children than that of England, as all the diseases of infancy are in a milder form, and there is not the same proneness to bronchitis and affections of the lungs; there is an excellent field for European settlers and Colonists, and the hills are well suited for the growth of tea and coffee. I have just learned that three tea companies have been recently formed there, and that all the available land near the station has been taken up for tea cultivation. A native has just received 3,500 rupees for a parcel of land at Kursiong, for which he did not pay 10 rupees per annum. The leases of the Hill territory away from the station, lapse on the 30th April, 1858, so that in the course of this year it will be easy for intending speculators to arrange for leases of tea lands. They can obtain perfectly valid titles, which is not the case anywhere else in Bengal. They can also purchase building estates with titles in perpetuity, and others with leases for ninety-nine years, under safe title deeds. There are excellent building timbers all over the hills—oak, chestnut, magnolia, walnut, birch, and many others; copper has been found, and has been worked near Kursiong; and coal is also found, but not yet worked, in the same neighbourhood, and on the Teesta.

"In the districts of Purneah and Rungpore, labor is abundant and cheap; the ordinary cost for coolies to be employed in earthwork is 2-8 or 3 rupees per mensem. Wood for sleepers — Sâl and sissoo—is procurable in the Nipal and Darjeeling territories. Lime is easily procurable by water from Cheerapoonje, and may, I believe, be laid along the whole of the course of the railway at the same rate as in Calcutta. As elsewhere in India, iron for the rails is not obtainable; but for other purposes, a good deal of very superior iron is exported from Nipal, and is procurable at Purneah and other places. I am not able just now to give figured statements in detail of the amount of carrying traffic to be calculated on for the rail; but it may be safely reckoned on as of very great extent. Dr. Buchanan Hamilton estimated the exports and imports of three of

our districts, as follows:—Purneah, exports, Rs.5,543,000; imports, Rs.2,038,566—Rungpore, exports, Rs.3,648,596; imports, Rs.1,450,125—Dinajepore, exports, Rs.4,819,360; imports, Rs.1,285,900.

"The exports of Nipal into Purneah for the Calcutta market are gunny, hemp, ginger, ghee, wax, hides, horns, iron, copper, rice, catechu, cardamums, blankets, cassia, &c., &c. From Purneah the products are the same, with the addition of indigo, oil seeds, &c. From Thibet, Sikim, Darjeeling, and Bootan, we shall have chowries, woollen cloths, gold dust, blankets, oranges, beeswax, musk, skins, wool, excellent potatoes, cotton, tea, coffee, woods, hides, and horns. From Assam we shall have the tea, and probably all its other exports, to avoid the navigation of the Burrampooter. Rungpore and Dinajpore will, however, contribute the most.

"The tobacco of the former district is cultivated with great skill and care; it is very superior, and grows in great quantity. With facilities for reaching the English market, it will be a very important article of commerce. The sugar cane is also of a superior kind, and largely cultivated; gunny, hemp, and jute are exported in immense quantities; and the exports of indigo and oil seeds are considerable.

"The great outlet for the produce of these districts is the road from Dinajpore to Burgatchi, on the Ganges, the goods being shipped at Godagharry, on the Muhamuddi. During the dry season the road is literally crowded with hackeries laden with country produce for the southward, and with salt, copper and brass vessels, and manufactured piece goods for the north. I have counted as many as 300 hackeries in the course of one march of 16 miles. As the greater part of this traffic now comes into the Burgatchi Road above Dinajepore, it will be secured to our rail as soon as it reaches Dinajepore. From Malda the principal exports are silk and indigo, with hemp and gunny, and the amount is considerable. Of the extent of the upward trade from Calcutta I cannot speak with equal confidence; but it is very important. It is almost entirely in the hands of natives. The principal marts are Darjeeling, Purneah, Dinajepore, Malda, and Rungpore. It is carried on by river and land carriage: by river to Dulalgunge, on the Mahanuddi, which, consequently, is an important place; to Dinajepore by the Purnabhuba; and to Rungpore by the Burrampooter and Teesta. The principal land routes are from Malda and Burgatchi to Dinajepore, and from Caragola to Purneah. The carriage of salt alone from Calcutta, to supply all the districts and territories to be connected with our Railway, will be a very important item of our receipts; and as it can be delivered at the stations in one day instead of in six weeks, the necessary diminution of price on this essential article of existence will be of great moment to the mass of the people, and will, I believe, tend very much to make the Railway popular with them.

"To conclude, I have to inform you, that a good deal of the information we require may be obtained in the reports of Buchanan Hamilton, and in the records of the India House; but the most recent information on the proposed lines must be sought in Bengal, from the surveys and reports of Captain Impey, Executive Engineer, Darjeeling; on the new road from the Ganges, in the report of Mr. G. U. Yule, now Commissioner of Bhagulpoor; and in that of Mr. E. C. Craster, Joint Magistrate and Deputy-Collector

of Malda; and there are many other gentlemen in different stations to whom we can apply with certainty of assistance, as soon as it is expedient to do so.

"I have the honour to be, Gentlemen,

"Your obedient servant,

(Signed) "A. CAMPBELL, M.D.

"London, 19th January, 1857."

In order to enable the reader to form some notion of the present expense of reaching Darjeeling with any degree of expedition, the evidence of the "Darjeeling Guide" on the cost of dawk travelling may be of some use.

"The expense of travelling by dawk from Calcutta to Darjeeling, with eight bearers, two mussalchees, and two banghy-burdars—say 372 miles, for 12 men, at an average of 15 annas and 2 pie per mile—is 259 rupees 9 annas. Or as follows:—

372 miles, at 8 ans. per mile for 12 men, being	Rs.	186	0 0
Additional charges, as below detailed . . .		72	5 0
Deposit, 50 per cent.		93	0 0
Postage		1	4 0
		352	9 0
Deduction:—			
Deposit returnable if no demurrage . . .		93	0 0
Actual expense to Darjeeling . .	Rs.	259	9 0

Additional Charges (included in the above).

Posting bearers from Burgatchee to Poorsahaut		21	14 0
" Poorsahaut to Dinajepore		12	0 0
" Dinajepore to Titalya .		6	15 0
" Titalya to Darjeeling .		31	8 0
		72	5 0*

The total cost of a first-class traveller by express from Calcutta to Darjeeling is therefore £25, and the time employed about seven days. By the East Indian Railway, and Northern Bengal Railway, the cost of a first-class express passenger will not exceed £5, nor the time ten hours. By

* Extract from the "Darjeeling Guide," p. 186.

ordinary train, the first-class fare will be about £3; a second-class return ticket would be about £2. The cost of an emigrant passenger would be about sixteen or seventeen shillings.

Writing upon the prospects of Darjeeling, Dr. Hooker says, in 1850, on taking farewell of Darjeeling: "The prospects of Darjeeling itself are neither doubtful nor insignificant. Whether or not Sikkim will fall again under the protection of England, the station must prosper, and that very speedily. I saw both its native and its European population doubled in two years; and its salubrious climate, its scenery, and accessibility, insure it so rapid a further increase that it will become the most populous hill station in India."*

* "Himalayan Journals," vol. ii. p. 256.

CHAPTER V.

COMMUNICATION WITH DARJEELING.—THE OFFICIAL REPORTS ON THE ROAD.— THE TELEGRAPH.

THE importance of communication to Darjeeling has been already sensibly felt, and the governments of Bengal and India have caused the roads to be improved and various surveys to be made with the view of improving the access to Darjeeling. These reports are of the more interest because they emanate from experienced and competent engineers, and by showing the practicability of road communications, afford conclusive data of the facility there is for laying down a railway. By the communication of these official documents, which the liberality of the Honourable Court of the East India Company has placed at the service of the Northern Bengal Railway, the preliminary inquiry as to the practicability of laying down a railway line to Darjeeling is rendered unnecessary, and on the grant of the required guarantee all that remains to be done is in correspondence with the local authorities to determine the precise route to be adopted with reference to commercial and political considerations.

The memorial to the Lieut.-Governor of Bengal, which was signed by Sir Lawrence Peel, the Chief Justice of the Supreme Court, by one hundred and nineteen of the chief residents in Bengal, and by Dr. Campbell, the Superintendent of Darjeeling, Mr. C. W. Swinton, B.C.S., Mr. B. H. Hodgson, B.C.S., and thirty-seven other residents at Darjeeling, speaks powerfully as to the value of Darjeeling, and of the feeling of the Bengal community with

regard to it. It is evidence, too, on which the promoters of the Northern Bengal Railway rely as to the support which they will receive in India in behalf of their undertaking.

The memorialists say:—

"Calcutta, June 26th, 1855.

"*To the Honble. F. J. Halliday, Lieutenant-Governor of Bengal.*

"HONBLE. SIR,—We, the undersigned, residents of Calcutta and its vicinity, most respectfully solicit from you an attentive perusal of this memorial, with such a favorable consideration for its object as, after such perusal, it may be deemed by you to merit and invite.

"Your memorialists, Honble. Sir, have been induced to submit it under the impulse of a desire to suggest a means of mitigating the many and great discomforts and distresses incident to themselves and fellow-citizens, especially to those of limited incomes, the effects of an uncongenial and debilitating climate, which they seek to obtain through the instrumentality of your powerful influence, as leading to benefits and blessings which such influence only can command.

"In the climate of Darjeeling, distant from Calcutta only 371 miles, nature has provided a refuge from the evils your memorialists contemplate, as suitable, perhaps, as England; but the difficulty of access is so great as always to present serious, often insuperable, obstacles to those—the sick and the suffering—who most require it, and desire, but vainly desire, to fly to it for relief.

"Your memorialists are impressed with a belief, Honble. Sir, that you entertain a sympathizing interest in this, the object of their present address, and that you acknowledge an equal sense of public benefit to be derived from its success. They have learned with equal satisfaction that, under your instructions, a survey has already been held on the most eligible line of communication between the Ganges and Darjeeling; and that the report of his proceedings has been laid before you by the officer to whom the business was entrusted.

"Under such assurances, your memorialists might have remained satisfied and silent; but surveys and reports do not necessarily lead to the practical adoption of the plans they elucidate, and your memorialists are aware of the many claims and calls, not upon your time and attention only, but upon the funds at your disposal, on which, after all, must depend the work which you, in common with them, consider so essential: they would most respectfully, but earnestly, suggest, that nothing of less immediate importance to the public welfare be allowed to interfere with an early communication and uninterrupted execution of it.

"A road—a road open and passable at all seasons—is undeniably required, and to that only your memorialists allude in this appeal as the one thing wanting. It should commence at Caragola, opposite the Pier Pointee; and they would urge the expediency of its completion simultaneously with that of the railway to the latter station.

"In proof of the benefits believed by competent judges to attach to such a work (independently of its value to invalids), the railway company are, we understand, willing to provide an adequate steam ferry to cross the wide passage of the Ganges between the places above mentioned, the certain consequence of a good road being the exportation through its course of the entire produce of Purneah; and their remuneration, the transport of that produce to Calcutta, and other marts on the line of their operations. It seems scarcely necessary to observe that such remuneration will not be confined to the railway, and that commerce and the revenue will be at least equal participators in the profits and advantages which are anticipated.

"Bridges over the intersecting rivers and nullahs are, it is almost superfluous to add, indispensable; and a commodious bungalow convertible into an hotel (which speculation and enterprise will speedily establish), should be erected at Caragola, Purneah, Kissengunge, and Titalyah; but such adjuncts will attend, of course, and details may be dispensed with.

"It will be a gratifying reflection to you hereafter, Honorable Sir, to have placed such a sanitarium within the reach and means of the poorest servant, not of your own Government only, but of all the lower portion of the north-western provinces, and, not less freely, of the many unconnected with our public offices and establishments. With this additional and not unworthy incentive to a compliance with the universal desire of the community, your memorialists respectfully conclude."

The following portions of the official correspondence will place the reader in possession of much evidence bearing on the railway question. The reports of Lieutenant Impey, the engineer charged with the survey, and of Mr. G. W. Yule, collector of Dinajepore, contain most valuable information on all the details of the undertaking, but are too long for insertion here.

"PUBLIC WORKS DEPARTMENT.

"PUBLIC.—No. 24, of 1855.

"*To the Honorable the Court of Directors of the East India Company.*

"HONORABLE SIRS,—A proposal based on a recent survey by Lieut. A. Impey, of the Engineers, has been laid before us by the Honorable the Lieutenant-Governor of Bengal, for constructing a metalled road from the Ganges to Darjeeling, in order, by means of the line of railway now in progress, to complete the communication between Darjeeling and Calcutta.

"2. Several projects have been discussed; two petitions have been addressed to the Lieutenant-Governor of Bengal; and much corres-

pondence has passed on the subject. The following are the principal lines of road which have been proposed for consideration :—

"I. The present Darjeeling road, *viâ* Burgatchi and Dinajepore, with the addition of 20 miles on the west side of the Ganges, to complete the communication with the rail near Jungypoor.

"There is a good deal of traffic on the existing portion of this road, and the line is well chosen, crossing little drainage; but it involves an additional road journey of 20 miles to the rail, and joins it nearer to Calcutta, so losing much of its advantages, and it does not include a connection with Purneah and Eastern Tirhoot.

"II. A road from Rajmahal, *viâ* Malda and Dinajepore, joining the present road.

"This line seems to have been taken up mainly as part of a project for a grand road from Rajmahal to Assam, but subsequent inquiry has shown that such a road is not required.

"III. From Rajmahal to Nawabgunge, Kissengunge, and Titalyah.

"Proposed by Mr. Yule, collector of Dinajepore. It has the advantage of a good crossing of the Ganges to connect the road with the railway; but it has not been fully examined, and it appears probable that the country between the Ganges and Mahanuddee will be found unfavorable.

"IV. From Sikrigullee to Nawabgunge, Kissengunge, and Titalyah.

"This line is condemned by the examination just made by Lieut. Impey, who reports the Sikrigullee ferry dangerous and inconvenient, and the country between the Ganges and Nawabgunge low and liable to inundation.

"V. From Caragola to Purneah, Kissengunge, and Titalyah.

"This is the line recommended by Lieut. Impey, and approved by Colonel Goodwyn, chief engineer, and by the Honorable the Lieut.-Governor of Bengal. There is no difficulty between the Ganges and Purneah, but about a mile of water way must be crossed beyond Purneah. The principal objection to this line is the distance of the ferry on the Ganges from the railway (about three miles), and the broken nature of the ferry itself, there being a large low island (Chur) between the main stream and Caragola Ghat. This crossing is yet to be surveyed, and a detailed explanation given how the communication between the road and railway can be conveniently worked.

"3. We are of opinion that a good metalled road from Darjeeling to a point opposite the railroad is an absolute necessity, and ought to be completed by the time the rail is open to Rajmahal, and we would therefore strongly solicit your Honorable Court's general sanction to the measure.

"4. After careful consideration of the several lines that have been proposed, we incline to the Caragola and Purneah line (No. V.); but the line (No. III) from Rajmahal due north should also be surveyed; although it is only in case the Caragola Ghat should turn out very badly indeed, that we would select a line which omits Purneah and includes no station or great mart whatever.

"5. This opinion has been communicated to the government of Bengal, with instructions for the careful determination of the best line, and an intimation that we would await the general sanction of

your Honorable Court as here applied for before the commencement of operations.

"6. The line of road we contemplate is roughly estimated by his Honor the Lieut.-Governor of Bengal to cost about 21 lacs of rupees.

"We have the honour to be, Honorable Sirs,

"Your most faithful humble Servants,

(Signed) "J. DORIN,
"J. LOW,
"J. P. GRANT,
"B. PEACOCK.

"Fort William, 10 August, 1855."

"No. 1505.

"*From W. Grey, Esq., Secretary to the Government of Bengal, to Lieutenant-Colonel W. E. Baker, Secretary to the Government of India.*

"Public Works Department,
"Dated Fort William, 12th July, 1855.

"PUBLIC WORKS.

"SIR,—With reference to the correspondence noted in the margin, I am directed by the Lieutenant-Governor of Bengal to submit in original, for the consideration and orders of the Supreme Government, a letter and enclosures from the Chief Engineer, Lower Provinces, and a copy of a minute recorded by the Lieutenant-Governor, regarding the proposed construction of a metalled road from the Ganges to Darjeeling.

"2. A good deal of correspondence, I am desired to say, has passed upon the subject of this road with the local civil officers, which it will be seen is referred to by Lieutenant Impey and Col. Goodwyn.

"3. This correspondence will be submitted if desired.

"4. The memorial and a copy of the reply to it, referred to in the concluding paragraph of the Lieutenant-Governor's minute, are forwarded herewith.

"I have the honor to be, &c.,

(Signed) "W. GREY.

"Secretary to the Government of Bengal.

"Council Chamber, 12th July, 1855."

"No. 1505. "No. 2.

"(First Copy.)

"PUBLIC WORKS DEPARTMENT.

PUBLIC.

"*From the Secretary to the Government of Bengal to the Secretary to the Government of India.*

"Dated July, 1855.

"MINUTE.

"DARJEELING ROAD.

"A very good summary of Captain Impey's report is given by the

Chief Engineer, rendering it unnecessary to do more than refer to the summary for a general view of the results of the present preliminary survey.

"2. Two routes were suggested to Captain Impey. (1) From Rajmahal to Malda, Dinajepore, and Titalyah. (2) From some point higher up than Rajmahal, either Sikree or Caragola, through Purneah to Kissengunge and Titalyah.

"3. Sikree having been rejected as a dangerous point for crossing the Ganges, the choice seemed to Captain Impey to lie between Rajmahal and Caragola as the place for crossing the Ganges, and though Caragola is open to the objection that the rail will not come nearer than three miles to the point on the right bank from which travellers must cross the river, Captain Impey has, nevertheless, given it the preference, partly because of its taking passengers to Darjeeling by a route which, though longer by rail, is shorter by land,—an important advantage; partly because of the high ground between Caragola and Purneah, and a road already to a certain degree existing there; but chiefly on account of the great commercial advantage of opening up Purneah and Eastern Tirhoot, while the road by Malda and Dinajepore is shown to offer no such corresponding benefits, besides traversing, between Rajmahal and Malda, a very swampy and difficult, not to say impracticable country.

"4. On the whole, I am disposed to agree with Captain Impey, so far as my present information extends, that the road, if made, should be *via* Caragola and Purneah,—a road which, besides other advantages, is also most convenient for Dinajepore and the districts of Behar generally.

"5. It has been suggested that, as the rail will approach very near to Bhageeruttee, at a point about opposite to Jungeepore, which, again, is only twenty miles from Bhogwangola on the Ganges, where the present Dinajepore and Darjeeling road crosses the Ganges, it might be a better plan to complete that road with metal, and join it to the rail opposite Jungeepore. This is not without advantage, especially in the existence of fair weather, the road from Burgatchi upwards only requiring to be metalled, and already furnished with bungalows for travellers. I am assured also that the present commercial traffic on that road is great, showing that it is already a great outlet of traffic from Northern Bengal, and will therefore have to be kept up at any rate, and probably improved.

"6. But the distance by land from the rail to Darjeeling would be by this route 270 miles, while the distance by land *via* Caragola would be only 180 miles. This seems to me to be sufficient to decide the question as between the two routes. It is to be remarked that to *metal* the 270 miles of the former route (*via* Jungeepore and Burgatchi) would cost, at the rates now estimated, 2,160,000 rupees, while the Caragola-road, though probably under-estimated by Captain Impey, may probably be safely estimated at something less than twenty-one lacs.

"7. Colonel Goodwyn recommends that, in order finally to settle the place of crossing the Ganges, the railway engineer nearest the spot should meet Major Ommanney and Captain Impey. This seems unobjectionable.

"8. The Chief Engineer has directed the attention of Colonel Impey to the old Mogul road from Purneah to Nawabgunge, on the Ma-

hanuddee, with a view to a better line between Purneah and Kissengunge. Captain Impey should examine this, and should, I think, have an opportunity of observing the course of road proposed during the present floods, as far as that may be possible.

"9. Captain Impey himself alludes to the necessity of an examination of flood-levels and drainage during the rains in the thirty-fifth paragraph of his report.

"10. In the twelfth paragraph of his letter Colonel Goodwyn recommends that the road should be commenced from Titalyah and Purneah immediately—*i. e.*, I suppose, next season—working south. If Caragola be chosen as the point of crossing, this might be done, and it would accelerate the completion of the work if it should be determined that the work shall be undertaken.

"11. This, however, is matter for the decision of superior authority. It will certainly be a pity to lose a whole season if the loss can in any proper manner be avoided.

"12. I have received a numerously and very respectably signed memorial from the residents of Calcutta and its vicinity, praying for an early commencement and construction of the road now under consideration, so that it may be open to the public as soon as the rail shall be open to Pointy. This memorial, together with a copy of my answer, may be submitted to the Government of India, together with the papers transmitted by Colonel Goodwyn.

"13. The latter papers should be sent up in original.

"(Signed) FRED. JAS. HALLIDAY.

"11th July, 1855."

"(True copy, signed G. G. Morris, Under-Secretary to the Government of Bengal.)

"*From the Honorable F. J. Halliday, Lieutenant-Governor of Bengal, to the Honorable Sir Lawrence Peel, Knight, and other Gentlemen.*

"Dated 12th July, 1855.

"HONORABLE SIRS AND GENTLEMEN,—The memorial presented to me in your behalf regarding the early completion of a road to Darjeeling, to communicate with the railway at a convenient spot on the left bank of the Ganges, has received from me very earnest attention.

"2. You may be assured of my deep interest in the subject of your memorial, and of my anxious desire that the important benefits which the climate of Darjeeling is able to afford may, by means of rail and road, be placed as soon as possible within the reach of the many who, in this trying climate, are too sure to require them.

"3. I am satisfied that you have rightly estimated the great social and commercial advantages which must arise out of such a line of communication, independently of its immense value to invalids.

"4. The report of the engineer officer who was deputed to examine the country with a view to determining upon the line, is entirely favorable to the undertaking.

"5. It will now be my duty, which I shall perform without any delay, to recommend this report to the consideration of the Honorable

the President in Council, with whom it will rest to determine the course proper to be taken.

"6. Whatever may hereafter fall to me to do in the prosecution of this undertaking will be done, you may be quite certain, with a zeal fully equal to your own.

" I have the honor to be, &c.,

" (Signed) F. J. HALLIDAY.

" Fort William, 12th July, 1855."

" True copy.

" (Signed) G. G. MORRIS,

" Under-Secretary to the Government of Bengal."

" No. 1318.

" *From Lieutenant-Colonel H. Goodwyn, Chief Engineer of the Lower Provinces, to W. Grey, Esq., Secretary to the Government of Bengal.*

" Public Works Department, Fort William, 27th June, 1855.

" SIR,—I have the honor to submit the accompanying report from Lieut. Impey, on the proposed line of road from the Ganges to Darjeeling, with sketch maps, sections, and estimate, prepared in reference to the instructions contained in your No. 534 of 3rd July last annexures.

"2. One of the annexures alluded to is a memo. by Lieut.-Colonel Baker, giving a sketch of the probable routes taken from observation of the Revenue map. This memo. suggests three lines :—

"1. From Rajmahal direct north, joining the road from Purneah to Titalyah, a little way south of the latter town.

"2. From Sikreegullee, *via* Purneah and Kissengunge, to Titalyah.

"3. From Caragola to Purneah and Titalyah.

"The ultimate choice of the line certainly must be judged by the following considerations :—

" PROFESSIONALLY.—1. The fittest ghat to cross at, with reference to the state of the river and the advantages of rail.

"2. The level of the country through which the line is traced, having reference to drainage, bridges, and embankments.

" COMMERCIALLY.—The requirements of the districts through which the road is carried, having reference to other means which it may possess in the shape of water communication.

" SANATARIALLY.—The greatest amount of benefit to be derived by those who would frequent Darjeeling, and the readiest means of getting there.

"The most proper line, therefore, will be that which in the greatest degree shall combine the greater number of the above conditions.

"3. I will mention three communications that have been received on the subject, noting at first their tendency, and afterwards referring to them as being in favor of or adverse to any of the considerations in paragraph 2.

"Mr. Craster's letter, No. 262, of 31st August, 1854, suggests a line from the Burrampooter, *via* Rungpore, Dinajepore, and Malda, to the Ganges.

"Mr. Yule (letter dated November, 1854) states that a line from Rajmahal, *via* Dinajepore and Rungpore, to the Burhampooter, is not desirable commercially; is in favor of a trace from Rajmahal, *via* Nawabgunge, to Titalyah, as the probable best line for Darjeeling. Dr. Campbell, Superintendent of Darjeeling, similarly to Mr. Yule, opposes Mr. Craster's views, advocates the keeping in good repair the line from Dinajepore to Burgatchi, on the Ganges, so strongly in favor of a line to Darjeeling from Caragola or Sikreegullee, *via* Purneah and Titalyah.

"The above letters are with you, and accessible, and I need not enter into their details, but confine myself to a distinct proposal drawn from their results.

"4. Mr. Craster's views may, I think, be set aside in the consideration of this road, for he is opposed by both Mr. Yule and Dr. Campbell, and also by Lieut.-Colonel Vetch, as regards any advantages to be derived by the Assam Provinces from Mr. Craster's proposed line. See Lieut. Impey's report, paragraphs 6 to 10. My own opinion, too, as regards the Rungpore and Assam districts, is, that they will derive all their advantages for trade by means of the projected line (whether road, canal, or rail), from Dacca to Calcutta.

"5. Leaving out the question of any line from Rajmahal *via* Malda, for reasons given in the report as above noted, the disadvantages of a line from Rajmahal northward appear to be, that there is no mart until it arrives either at Nawabgunge, Kissengunge, or Titalyah, according to the route it might take; at any rate, for one-half the distance between Rajmahal and Titalyah, no particular commercial advantages could be gained. The country is described as very low (par. 23), and the district of Purneah, which seems to be, from the report, that which requires prominent attention to its means of traffic (see pars. 15 to 20), is left quite unprovided for. Lastly, Rajmahal is not so advantageous for the railway company or the travellers as either Sikreegullee or Caragola, for it is a shorter distance from Calcutta than either.

"Its advantages are, I think, that the railway station on the right bank of the Ganges is more conveniently situated with reference to the ferry; and, according to Mr. Yule, it might be cheaper. Thus, whilst we have no decided data as to the professional merits of this line, it is deficient in commercial and sanitary conditions.

"6. That the line from the Ganges to Darjeeling shall be traced *via* Purneah, Kissengunge, and Titalyah, seems to be the most desirable from the documents before me; it will develop the resources of the Purneah and Eastern Tirhoot districts, which have now no roads, and scarcely means of conveying produce to the Ganges from the north and north-west of Nawabgunge, whence the Mahanuddee is navigable all the year round, so Lieut. Impey says. It presents the better prospect of advantages to the railway and to the traveller, for it will (particularly if Caragola Ghat be chosen) bring him so much nearer to Darjeeling by rail.

"7. Whether the road shall start on the Ganges from Sikreegullee to Caragola, is entirely dependent on which of those places presents the most favorable ghat for crossing. Lieut. Impey says (par. 21), that in the cold weather a sand exists four miles width at the Sikreegullee Ghat, caused by the river having considerably widened

its channel by encroachments on the left bank; and that in the rains the crossing is always dangerous from the violence of the stream and existence of a whirlpool, and during that season scarcely used, travellers passing up to Caragola in preference; and in par. 22, he says, that the mails are frequently delayed, owing to the dangerous crossing at Sikree. To this may be added that from Sikree to Darjeeling is twenty miles longer than from Caragola, and a line from Sikree would not benefit the Purneah district nearly so much as one from Caragola (par. 23.)

"8. Of Caragola Ghat he says (par. 24), that it has the disadvantages of not being very accessible from the railway, being distant, I believe, three miles, which Lieut. Impey states can be overcome in an hour, whilst it gives the advantages to a safe crossing more convenient for travellers from the south and west (See Revenue Map), and the intervening island presents the means of a road being made across it for cold weather traffic. It is the only spot where steamers anchor between Rajmahal and Calgong (par. 24). On these grounds he has advocated the Caragola Ghat as the spot for crossing.

"9. There do seem to be preponderating advantages at Caragola; but I do not wish to give a decided opinion till more facts are brought to bear on it; and I would advise, therefore, that the Railway resident engineer nearest to the spot should meet Major Ommanney and Lieut. Impey, and set the question of the most favorable ghat at rest.

"10. Lieut. Impey, from par. 26, describes the trace of the road from Caragola Ghat *viâ* Purneah, and from that town, crossing both the Konkai and Mahanuddee rivers about 4½ miles above their junction, proceeds *viâ* Kissengunge, and neglecting the old road along the left bank of Mahanuddee for reasons given, follows a higher level to Titalyah.

"11. There is one part of this trace which, I think, requires to be examined prior to confirming the whole of the above line, and that is between Purneah and the Mahanuddee, marked in pencil on Lieut. Impey's sketch map. From Purneah to Nawabgunge on the Mahanuddee existed part of the old Mogul road through Bengal; and as some parts of it may exist now, much expense having been originally laid out on its construction, it appears to me worthy of consideration whether the new road cannot follow a portion of that line east of Purneah, and bending gradually to the north from about midway, cross the Mahanuddee below the junction with the Konkai. Lieut. Impey will be instructed to examine this part.

"12. Neither the choice of ghat, nor the examination of this piece of country, need interfere with the early commencement of the work, if Government see fit to sanction its being made; for Lieut. Impey can at once commence both from Titalyah and Purneah, working southwards: for even if Caragola be not chosen as the ghat, it would appear from the report that Sikree certainly will not, and it will most probably be so much in the neighbourhood of Pointy as not to interfere with the commencement of the road Purneah in that direction.

"13. As regards the estimate, Lieut. Impey has, I think, underrated the work: he states the earthwork to have been assumed at a lower rate than he was informed it could be done

for, and gives his experience as the reason; but his experience has been in a more favorable spot, where food was cheaper and laborers more abundant. His rate for bridges, too, is far too low, and I am averse to recommend timber bridges for the large steamers, though, with great care, seasoning of timber, and European superintendence, they might be constructed for smaller ones. There is no mention, either, made in his estimate for the improvement of the road from Titalyah to Darjeeling, 62 miles, of which the first 30 miles from Titalyah are 24 feet wide, unmetalled, and the remainder a narrow road not more than 10 feet wide; and if the whole road from the Ganges to Titalyah is to be metalled and bridged, the portion north of that town should hardly be left as it now is, and as stone metal must be close in the vicinity. I have added to the estimate a supplement of the probable expense of completing permanently the line from Titalyah to Darjeeling, though, of course, not of such a width as the lower portion, which will have the produce traffic.

"14. Early orders of Government are solicited with reference to par. 12, that arrangements for establishment and material may be made to enable the work proposed to be begun directly the season will admit.

"15. Major Ommanney, Superintending Engineer, Second Circle, being absent from Calcutta, a report from him on this road cannot at present be obtained.

"16. The return of the original enclosure is solicited.

"I have the honor to be, &c.,

"(Signed) H. Goodwyn,

"Lieutenant-Colonel, Chief Engineer, Lower Provinces."

"No. 397 of 1855.

"*From A. Campbell, Esq., Superintendent, Darjeeling, to W. Grey, Esq., Secretary to the Government of Bengal, Fort William.*

"Dated Darjeeling, July 6, 1855.

"Sir,—On behalf of the residents and visitors at Darjeeling, I have the honor to request that you will submit the enclosed copy of the Calcutta memorial for a road from Caragola to Titalya, in which they have earnestly joined to his honor the Lieutenant-Governor, in the hope that the crying want of the sanatarium and of the neighbouring districts may meet with the Lieutenant-Governor's early consideration and sanction.

"2. It has so frequently been my duty to press this subject on the attention of Government, that I shall not now trespass much on your time in once more urging the petition of the people here for the removal of the obstructions to easy transit which weigh down their energies and impede their progress and welfare, and through which there is an immense deal of sickness left unrelieved in the different stations of Bengal, and through which the greatest inconvenience is experienced by those who leave all the difficulties of the present route in search of health for themselves or other families.

"3. So bad is the access through Purneah now, that officers

obliged to leave Dinajepoor for change of climate prefer undergoing the expense and annoyance of a land journey to Nynce Tal or Mussooree, 700 miles, to encounter the difficulties of a dâk journey of 120 miles through Purneah. With a road, the invalid leaving Calcutta by steam would reach Caragola in comfort in two days, and be at Darjeeling in two days more, instead of going through the jostling of a rough carriage for eight or nine days to reach the western sanatarium.

"4. I have the pleasure to state that Lieutenant Impey is just now starting to make an examination of the country between Titalyah and Purneah, to mark off the utmost spread and rise of the waters on the proposed road line. This will insure the most important and trustworthy record of facts of Government.

"5. With reference to the experience I have had of the difficulties of road-making in this part of the country, and to the short time now available before the rail reaches Peer Pointy—two working seasons only—I beg leave to suggest that strenuous efforts should be made during the present rains to *prepare* for commencing the work as soon as the rains are over."

"No. 1,150.

"PUBLIC WORKS DEPARTMENT—PUBLIC.

"*From Lieutenant-Colonel W. E. Baker, Secretary to the Government of India, to W. Grey, Esq., Secretary to the Government of Bengal.*

"Dated August 10, 1855.

"SIR,—I am directed to acknowledge the receipt of your letter, No. 1,505, of the 12th July last, with enclosures, on the subject of the proposed road from the Ganges to Darjeeling, and to state that the Government of India, in conformity with the views expressed by the Honorable the Lieutenant-Governor of Bengal, fully recognises the necessity of a good metalled road from Darjeeling to a point opposite the railway, and considers it highly desirable that such a road should be ready by the time the rail is open to Rajmahal.

"2. The Honorable the Court of Directors have been strongly recommended to accord a general sanction to the commencement of the work as soon as the best line of road shall have been determined.

"3. The Honorable the President in Council concurs with the Lieutenant-Governor in preferring the Caragola and Purneah line of road; but yet it remains that the crossing of the Ganges should be surveyed, and detailed explanations given how the ferry communication with the railway can be conveniently worked. This point I am desired to request may be reported on, as proposed by the Lieutenant-Governor.

"4. The President in Council is of opinion that the line from Rajmahal due north (No. 1 of the second paragraph of the Chief Engineer's letter) should also be surveyed; although it is only in case the Caragola Ghat crossing should turn out very badly indeed that his Honor in Council would select a line which omits Purneah, and includes no station or great mart whatever.

"5. The President in Council sees no need to consider any other of the lines of communication referred to in connexion with this

subject than those which would start respectively from Caragola, if the crossing is at all practicable, and Rajmahal.

"6. The services of Captain Impey should continue to be employed on this project in making the surveys above indicated, in observing the effect of the floods of the present season on the country through which the road must pass, and in preparing detailed drawings and estimates, which should be before Government in time to admit of the work being sanctioned immediately upon receipt of the order of the Honorable Court.

"I have the honor to be, &c.,

"(Signed) W. E. BAKER, Lieutenant-Colonel,

"Secretary to Government of India.

"Council Chamber, August 10, 1855."

With regard to the geological character of the district, the "Darjeeling Guide" states:—

"The rock at Darjeeling is gneiss, and at the northern end of the ridge lower down, near the banks of the Runjeet river, slate is said to be found; whether it might be made available for building purposes is doubtful. Iron ore, very rich and pure, is found at the foot of the hills in the Morung; copper is also said to exist; but there seems to be some religious prejudice against working any mines in Sikim, otherwise there is no doubt valuable minerals might be found, as it is well known the same range of mountains produce them in Nipaul."

The discovery of lime in the Darjeeling district is likewise a matter of interest, in reference to railway operations.

"Our readers will probably remember that, some months ago, it was reported in the proceedings of the Asiatic Society, that Captain Napier of the Engineers had discovered a lime deposit in Sikim, which would be available for the station of Darjeeling, and that Mr. Piddington had analysed a specimen from it, and found it to contain 98 parts in 100 of pure lime. At the time this analysis was made, the quantity of available lime was not known, nor had the locality been visited by any European, or other person, able to observe and report upon it.

"We have now the pleasure to state, that there is a large available supply of the mineral; that it is coming into use at Darjeeling, and that it will make a saving of 50 per cent. on this article in all building works. The Superintendent of Darjeeling has lately made an excursion into Sikim, and we have been favored with the perusal of a note of his on the lime deposits, which is annexed. The trip will, we hope, become a popular one from Darjeeling, when we may expect

some light to be thrown on the geology of that country, as yet unknown to us."*

Upon the question of the supply of labor and rates of labor, the following information affords a few details.

"The settled population in the immediate neighborhood of Darjeeling being confined to a few Lepcha families, the demand for all kinds of labor being very great, and the price of food being enhanced by importation from the plains, the rates are much higher than in the proximate plains and neighbouring countries of Sikim and Eastern Nipaul. Sikim contains a few craftsmen, and their services have been made available at Darjeeling. Calcutta, Rungpore, Patna, Torbool, and Monghyr, supply us with artizans at the following rates:—Calcutta sawyers, using English saws, three men to a set, 30 rupees per mensem; Rungpore and Patna sawyers, using country saws, two men to a set, 16 to 20 rupees; head carpenters, 20 rupees; working carpenters, 8, 10, 12, and 16 rupees; blacksmiths, 8, 10 to 16 rupees; masons, 8 and 10 rupees. Lepchas, for wood cutting, &c., 8 rupees. Coolies, 5 rupees. Domestic servants are all men of the plains, the Lepchas, except in two or three instances, having hitherto declined this species of service. Khidmutgars get 10, 8 and 7 rupees; bearers, 8 to 6; chaprassies, 5 and 6; syces, 4 and 4½ in the rains, and 5 in the cold season; grass cutters, 5; sheep and cowherds, 5; female servants are difficult to get, and more difficult to keep, the oldest and ugliest, having early opportunities of settling in married life, generally prefer the bonds of Hymen to those of domestic servitude; wages, 10, 8 and 7 rupees."†

The supply of timber is said to be abundant. A local authority, already frequently quoted, states:—

"On whichever side we turn, the whole road, from Punkabaree to Darjeeling, upwards of 30 miles, runs through a forest of the noblest trees, with an almost impenetrable underground for the entire way; and the same extends over the whole of Sikim to the Snowy Mountains."‡

As already stated, in 1848 I proposed that a telegraph should be laid down from Calcutta to Darjeeling. This has now been authorized by the

* From the "Bengal Hurkaru," 14th January, 1843.
† "Darjeeling Guide," p. 21.
‡ "Darjeeling Guide," p. 23.

Government of India, and will be speedily in operation.

The result of this measure is to make Darjeeling more effectually the capital of Bengal, by enabling the Deputy-Governor of Bengal, and the superior officials, to continue their residence there without detriment to the public service, and by affording facilities to public servants and private residents, who may visit Darjeeling for the purposes of health. Thus, the measures already recorded tend greatly to the development of Darjeeling in anticipation of the opening of the railway, and its resources at that period will be more considerable than they can now be represented to be.

CHAPTER VI.

COMMUNICATION WITH ASSAM.—MR. CRASTER'S REPORT.

It will have been seen, from the prospectus already quoted, and the report of Dr. Campbell, that by means of a secondary lateral branch, the Northern Bengal Railway proposes to effect a communication with the Upper Burrampooter and Assam. On this subject, the official documents at the India House contain a valuable report by Mr. E. C. Craster, joint magistrate at Malda.

"Enclosure No. 55.

"(No. 262.)

"*From E. C. Craster, Esq., Officiating Joint Magistrate of Maldah, to the Commissioner of Circuit, Rajshahye Division, Bauleah.*

"Dated Maldah, 31st August, 1855.

"Sir,—The desire of the Government that one of the chief wants of this country—facility of internal communication—should be supplied with all practicable speed, has of late been made so manifest in various ways, that I am induced to think the present a fit opportunity for bringing forward a project which has occupied my thoughts for some time past, and for which I beg to solicit your support, in submitting it to the consideration and orders of the Hon. the Lieutenant-Governor.

"2. My proposition is one of the construction of a road upon the same scale as the Grand Trunk from Rajmahal Ghat, on the Ganges, to Bughwa Ghat, on the Burhampooter.

"The object to be gained by the carrying out of this scheme is threefold:—First. The connection of the Assam Provinces and the districts of the Burhampooter with the point nearest to them upon the Ganges, which is touched by the railway now in course of construction.

"Secondly. The opening of the communications with the Gangetie valley of the large and populous districts of Bengal, lying between the Ganges and the Burhampooter, through which the proposed line of road would necessarily run, and the admitting of them to a share of the benefits which it is presumed the opening of the railway will confer upon all within reach of it, much larger than with the present imperfect means of communication they can possibly enjoy.

"Thirdly. The connecting with the railway, and otherwise increasing the accessibility of the Hill station of Darjeeling, the sanitarium for all the northern districts of Bengal.

"4. With regard to the first of these objects, the advantages which would be conferred upon the Assam provinces by the construction of a line of road upon the scale proposed, which should connect the entrance into those districts at Bhugwa Ghat with the railway at Rajmahal, can hardly, I think, be over-estimated. At present communications between Calcutta and Assam, other than through the Post Office, are at certain times of the year maintained solely, at other times almost wholly, by the monthly Government steamers to Gowhatty; they are thus constantly liable to interruption, as in the year 1852, when so many of the Government river steamers were required for service on the Irrawaddy, and to bring down troops from the upper provinces to Calcutta, that the Assam line was for a considerable time deserted, and communication by steamer was not for several months regularly maintained.

"5. But even if the steamers always ran with the utmost regularity, and the line were not liable to interruption from external causes, it is, I think, time that there were some additional facilities of communication between the seat of Government and the important province of Assam, and that the circuitous route through the Sunderbunds and by Dacca, Sirajgunge, &c., up the Jenai and Burhampooter, over which a steamer toils slowly once a month, should cease to be the only one by which at least a great part, if not the whole of the year, the Assam districts are accessible, while passengers and goods are starting from and arriving at the Hourah terminus half-a-dozen times a day, for and from the various places along the Ganges within reach of the railway. It is not, I think, right that the passenger for Gowhatty should have to wait, it may be a fortnight or three weeks, for an opportunity of prosecuting his journey, while goods, if not valuable enough to be able to pay steam freight, must be sent at a risk so great that no Insurance Company would accept it, and eventually reach their destination, if they are fortunate enough to do so at all, after a lapse of time almost as great as would be required for their conveyance round the Cape.

"6. The additional facilities of communication with Assam which are so much required would, I think, be in a great measure supplied by the construction of the line of road which I have proposed. To answer the required purpose, it should of course be out of the reach of all inundation, metalled throughout, and bridged at all points where bridges are practicable; where they might not be found so, proper ferry boats should be maintained; and where necessary dowk bungalows should be erected for the accommodation of travellers. Thus at all seasons of the year, the rainy season as well as the dry, hot weather or cold, both passengers and goods, whether from Calcutta or the upper provinces, could leave the railway train or river steamer at Rajmahal, and pass without the smallest interruption along a good dry high road, *via* Maldah, Dinajepore and Rungpore, to Bhagwa Ghat, on the Burhampooter. How they would fare beyond that point I cannot undertake to say, but I presume not worse than they now do; and certainly their onward progress thence would be in no way retarded by their having been enabled to reach a point so near the end of their journey in about the same number

of days that is now necessary to take them clear of the Sunderbunds. It might be found eventually practicable and advisable to continue onwards from Bhugwa Ghat; but on that point I cannot now undertake to write.

"7. There is another point worthy of attention in considering the effect which the construction of the proposed line of road would have upon the communications with Assam and the intermediate districts, as soon as the railway is opened as far as Rajmahal. The mails for all parts of the country lying to the north-east of that place will, I presume, be forwarded thither by railway train for transmission to their several destinations, to reach which they must all pass through this station. The existing road hence to Rajmahal is in such a state that, during the height of the inundation, the mails are brought for half the distance in a boat. Were the road constructed as I propose, the mails for Assam and all intermediate places might be—and, I presume, would be—conveyed by horse or ekka dawk along the whole line from Rajmahal Ghat. At Maldah we might, I believe, expect to get our letters about noon of the day after they were posted in Calcutta, instead of, as now, the morning of the third day afterwards; and the deliveries at the more distant stations along the line would be accelerated in a similar degree. Gawhatty would then receive its mails in about four days, instead of, as now, some indefinite period of time—frequently, I believe, upwards of a week; and the dispatches thence and from intermediate places for Calcutta would be transmitted at a similarly increased rate of travelling. Now that efforts are being made with a view to the amelioration of the postal communications throughout the country, I think that this is a consideration worthy of attention, and that it would not be one of the least merits of the scheme I bring forward that, by its execution, so considerable an increase in the rate of travelling of the mail on the northern road as, I believe, might thereby be effected, would be obtained.

"8. Referring to the second object, it will hardly require much argument to prove of what great importance it must be to the inhabitants of any district in Bengal that their communication with the Ganges should be as easy as possible; that the natural obstacles which present themselves in the way of rapid intercourse with the towns and marts upon the banks of that river should be, as far as practicable, removed, and the difficulties of the road neutralized to the utmost extent that circumstances will admit of. As far as the great staples of the commerce of the country are concerned, the Ganges must, I believe, always continue to be what it has been for many ages past—the channel of communication between the two grand divisions of Northern India, Hindoostan and Bengal, as well of one with the other as of both with their common part of Calcutta. By far the largest portion in bulk, and not the least in value, of the articles both of the internal and external commerce of these provinces must, I believe, always continue to be transported from the one to the other, and from both to the port at which they are shipped for foreign consumption, by water carriage along the stream of the Ganges. It is, therefore, surely a matter of no small importance to the inhabitants of the fertile grain-bearing districts of the Upper Ganges, or the great rice-producing tracts of Bengal, to be able to

secure an uninterrupted and easy communication with that grand artery and natural high road of the country.

"9. And if this be true of other districts, it is at least equally so of those which lie between the Ganges and the Burhampooter, in the line of the proposed new road. Let us see, then, how they stand in this respect, and how far the means of communication with other parts of the country which they possess are susceptible of improvement. During the rains, so long as the inundation keeps up to or above a certain height, there is certainly every facility for communication by water between the marts upon the Mahanunda river, in this district, and the Ganges; but as soon as the inundation has fallen between that point, that state of things ceases, and cargoes intended for the upper provinces—as a very large proportion of the shipments at those places are—must be conveyed, at certainly a great waste of time, down the Mahanunda to its confluence with the Ganges, nearly opposite Bhogmangola, and again up the latter river to Rajmahal, where they find themselves, after some ten days or a fortnight's labor, not further than twenty miles from the point at which they started. If such a road as that of which I now propose the construction were in existence, it is most probable that, at those times of the year during which the direct communication by water between the Mahanunda at this station and the Ganges at Rajmahal remained closed, the whole of this traffic would pass along it, and Rajmahal Ghat would become the emporium for the trade of this part of the country with the upper provinces—always very considerable.

"10. At present this is impossible; the road from Maldah to Rajmahal is in such a state that for a very considerable portion of the year it is impassable even to foot passengers. The mails at this season (the rains) are brought for half the distance in a dinghy, and land traffic is simply impossible. It is true there is water carriage just now for goods, heavy and light; but in a short time the passage which is now open will be again closed, as it is every year, and then the want of a road will be felt. The subsidence of the inundations will not have rendered the communication by land much more easy than it was before, when the whole country was under water; and the road will still be difficult for any but foot passengers. It is only towards the end of the dry weather, when the whole country is a road, that traffic by wheeled carriages can be regularly maintained; and even then there would be many difficulties in the shape of unbridged nullahs, a road cut up as with a plough, &c., to be overcome before a train of carts could deposit its burden safely at the Ghat at Rajmahal.

"11. An attempt was made a few years ago, on the part of the Ferry Fund Committee of this district, to amend this state of things, and a very considerable amount of funds at their disposal were expended in repairs to the road from Maldah to Rajmahal; but it is, I think, doubtful whether any proportionate result was obtained. The works necessary to put the road in a serviceable condition are far greater than the Ferry Fund Committee can undertake to execute, and, as far as the main object was concerned, the attempt was a failure, just as another would be, were it to be made again by the Committee, and for the same reason, that with the small means at their disposal they can do little more than make a beginning; can but indicate, as it were, what is required.

"12. Thus far as regards this district. The case of Dinajepore is different. The Tangan river, which joins the Mahanunda a few miles below this station, forms almost the sole means of communication by water with the Ganges which it possesses; and the stream is most uncertain, even during the inundation. There is, I believe, but little certainty that it will not be to a great extent closed in a few days, to remain so until a fresh flood comes down from the hills in which it rises. At other seasons of the year the external communications of this district are maintained wholly by land, along the existing lines of road. After the rice crops have been harvested, immense quantities of rice are brought down from Dinajepore for shipment at various places on the Mahanunda for the markets of Mirzapore, Patna, &c. Were there a good land communication with the Ganges itself, such as I propose, it is not improbable that much of the time and trouble expended, and cost incurred, in transporting these carriages into the Ganges, and getting them on their way to their ultimate destination as far as Rajmahal, would be saved, by the consigners sending them on advance by land for shipment in the first instance at that place. At present they have no choice. The expense of a land journey, if it cannot be performed rapidly, becomes more than they ordinarily care to encounter. The only method of reducing the expenses is to increase the rate of travelling; and for rapid travelling it is necessary to have a good road. This it is the object of my proposition to provide in the place of the very inferior one which now exists.

"13. But, however that might be, allowing that once on the banks of the Mahanunda, goods intended for the up-country marts would always continue to be shipped in boats on that river, instead of being carried direct on to the Ganges and put on board there, roads are still necessary to get them down to the place of shipment. Of the lines of roads connecting the Dinajepore district with the Mahanunda river, that along which the amount of traffic already existing and likely to arise is the greatest, is that from Dinajepore to Malda; and it is this which I propose should be re-constructed upon a proper scale. That the whole district of Dinajepore would be most generally benefited by its restoration does not admit of a doubt.

"14. As regards the district of Rungpore, I am little able to estimate the exact extent to which it would profit by the opening of an outlet of its commerce in the direction of the Ganges. It cannot, however, be supposed that the advantages it would derive therefrom would be other than great. It would be contrary to all known experience that a district should not be very largely benefited by the construction through the heart of it of a great line of road, connecting it with a river like the Ganges, and with a railway such as that which is intended eventually to extend from Calcutta to Delhi. I may assume that Rungpore would profit by the execution of this proposed work at least in an equal degree with any other district under similar circumstances; and if so, the day upon which the order sanctioning the undertaking should issue would be an auspicious one for Rungpore and its inhabitants.

"15. In treating of this portion of the subject, I have made but few allusions to the fact that Rajmahal, the proposed terminus of the new line of road, is the nearest of all the stations on the railway in course of construction to these north-eastern districts of Bengal. I think it

hardly necessary that I should enlarge much upon the advisability of extending as far as possible the influence of the railway, and admitting the greatest possible number to a share of the benefits it must certainly confer. In England the attainment of these objects would be sought by the construction of branch lines of railway, to serve as feeders to the main trunk. In this country lines of road must be made to serve the same purpose; and of the many lines which might be, and doubtless will be constructed, with the object of connecting distant parts of the country with the railway, I doubt whether any is more required than this, or whether any can be proposed by which so many and such important districts are likely to be effected for good.

"16. I now proceed to the third object of the proposed undertaking. One cause which has hitherto operated to the prejudice of the hill station of Darjeeling, and which has, I believe, deterred many from seeking in its bracing climate that benefit to their health which they have failed to obtain elsewhere, is its comparative inaccessibility. Those who wish to avoid a long land journey go now by water to Kissengunge, and thence on by land; but this route can only be taken at certain seasons of the year; and when there is not enough water in the Mahanunda to carry boats up to Kissengunge, travellers from the southern and eastern districts usually go by land from Burgatchi on the Ganges above Rungpore Bauleah, up what is called the new road to Dinajepore, and thence onward, *via* Titalyah.

"17. In the course of one or two years more, however, the railway will, it is believed, be open as far as Rajmahal, and travellers proceeding to Darjeeling will then naturally wish to avail themselves of it as far as practicable; the old rules will consequently, in all probability, be to a great extent abandoned, and unless some direct line of road were to be constructed from Rajmahal or some other place touched by the railway to Titalyah, specially for the use of travellers to Darjeeling, which would, perhaps, hardly be deemed necessary, there is, I think, no other route which could be substituted for them better than *via* Maldah and Dinajepore. If the road I propose were constructed, the journey from Rajmahal to Titalyah could be accomplished with the greatest ease: a dawk bungalow should be erected at Deotollah (half way between this place and Dinajepore), for the use of those who might wish, as I believe most would, to divide the dawk from Maldah to Dinajepore. Along the road from the latter place northwards, dawk bungalows already exist at convenient distances. By this route a traveller leaving Calcutta in the morning of any given day, at any season of the year, would be able to reach Punkabarry in the hills, elevation 1,500 feet, on the morning of the fifth day afterwards, and this, too, while shortening the stages to the utmost extent desirable. He might, on the other hand, if necessary, reach that place on the third day afterwards, without extraordinary exertion. Either would, it must be allowed, be a great improvement upon the present rate of travelling, but a good road, passable at all seasons of the year, from Rajmahal to Dinajepore, connecting the Darjeeling road with the railway, is absolutely necessary, before the time now required for a journey to the hills from Calcutta can be much alleviated.

"18. Having thus endeavoured to point out some of the advantages which it is believed would be attained by the carrying out of the

undertaking I have proposed, I will proceed to notice, as far as I can, the nature of the works required for its accomplishment, and the difficulties which stand in the way of the execution of the project.

"19. During the past cold season I employed a person to measure and report upon the present state of the road along the proposed new line within the limits of this district, funds having been placed at my disposal by the Ferry Fund Committee for the purpose.

"20. The entire length of the line from the eastern bank of the Ganges at the Rajmahal Ghat to Deotallah, on the borders of the Dinajepore district, was found to be forty-eight miles.

"21. Throughout this length of road it is believed that bridges would be required at about seventeen places, though, in the absence of a professional survey, it is, of course, impossible definitely to fix the total number which would be necessary. The road hence to Rajmahal runs for a considerable distance through plains which are flooded during the rains. It would, therefore, be necessary to provide a sufficient number of bridges to prevent the road, which would of course be raised above the inundation, from interfering with the drainage of the country through which it ran. Bridges of this kind, however, would not be expensive works, and a considerable number might be put up without adding much to the cost of the undertaking.

"22. Those streams and nullahs over which large bridges would be required are the following:—

"*On the Dinajepore Road.*—The Rumgamutty Dharak, the breadth of which is reported as 1½ rufees (say sixty yards). The ground here is very preferable for the construction of a bridge; the stream is confined between higher kunkur banks, and the appearance of the place is such as to lead me to suppose that at some former time or other a bridge really did exist at that spot. Schemes for bridging this nullah have often been before the Ferry Fund Committee, but the expense of carrying them out has always been considered too great for the means at their disposal. The remaining bridges said to be required upon this road are all of moderate dimensions; none upwards of twenty-five feet in length.

"23. *On the Rajmahal Road.*—The following watercourses would require bridging:—The *Amerty Dhara*, measuring one rufee, or forty yards in breadth; the *Parkhan Kadhara*—breadth, one rufee, or forty yards; the *Sutkia Dhara*—breadth, one rupy, or forty yards. The other bridges required on this portion of the line are believed to be merely small drain bridges.

"24. In many places upon the line from Rajmahal to Maldah the road would have to be considerably raised, in order to prevent its becoming impassable in the rain. Along the rest of the line through this district the road would run, in most parts, over ground which is itself high and clear of inundation; but in other spots it would be necessary to raise it to some small extent.

"25. For metalling the Rajmahal road it would be necessary to use burnt clay. On the Dinajepore road there would, I believe, be no difficulty in procuring kunker at almost any spot sufficiently near to the line to be available if required.

"26. As to the facilities for or obstacles to the construction of the road through the districts of Dinajepore and Rungpore, I cannot offer

an opinion beyond this, that I believe the latter would be found much fewer than in this district. The country through which the line will run being there comparatively free from large watercourses, and, on the whole, considerably more elevated than it is here, the actual metalling of the roadway would in most places be almost all that would be found necessary to make the road passable at all seasons of the year.

"27. To render the work as complete as possible a dawk bungalow ought to be erected at Diotollah, halfway between this place and Dinajepore, and one would also, I presume, be necessary at each end of the line.

"28. I beg, in conclusion, earnestly to solicit your support for my proposition in submitting it for the consideration of the Government. I do not doubt that much more might be said in its favor than I have been able to urge, and I hope that you may be induced to lend your aid in the furtherance of the project, fraught, as I believe it is, with the greatest advantages to this and the adjoining districts of your division. I will also venture to express a hope that, when the project is laid before the Honorable the Lieutenant-Governor, he will be pleased to call for a professional opinion as to its feasibility, probable cost of execution, &c., and, if necessary, for reports upon the advantages likely to result from its being carried out, from those officers whose official position, long residence, or other circumstances have necessarily made acquainted with the wants of these districts, and are likely to have rendered competent judges of the extent to which such an undertaking as that which I have proposed will benefit their inhabitants.

"I have, &c.,

"(Signed) E. C. CRASTER,

"Officiating Joint Magistrate."

"P.S. Since the above was written, I have read a letter from the officiating Under-Secretary to the Government, to the address of the Superintendent of Marine dated 22nd June last, published in the Calcutta newspapers, from which I learn that it is in the contemplation of the Government to establish a regular communication between Dacca and Debrooghur, in Upper Assam, by steamers built and appropriated for the purpose. When this line is once established, passengers for Assam leaving the railway at Rajmahal, and travelling along the proposed line of road to Bhugwa Ghat, would of course find no difficulty in prosecuting their journey onwards from that place, and thus the only existing objection to the adoption of this route to Assam would be at once removed.

"(Signed) E. C. CRASTER,

"Officiating Joint Magistrate."

The Commissioner of Assam, and other authorities of that district, have reported on the practicability of uniting the Assam roads at Bugwah,

and of its value for passenger traffic; but they were of opinion that the goods traffic would be small, because by road from Bugwah to Rajmahal transhipment would be required, which they considered would be objectionable to freighters. This objection does not, however, apply to a railway, which would afford continuous communication from Bugwah to Calcutta, and bring down the teas and sugar of Assam without the delays, dangers, and expense of water communication, a subject which is discussed at some length in a later chapter. It is sufficient here to say, that notwithstanding the opinions of Colonel Cotton and the followers of his school, railway communication can successfully compete with water carriage for goods traffic in Europe, America, and Asia; and that while it is desirable to encourage the improvement of water communication and common roads in India, it would be suicidal to stay the progress of the railway system under the mistaken notion that railways cannot economically carry goods, or that the capital supposed to be absorbed by them might be more advantageously applied in other undertakings.

Such propositions arise from false and loose notions of that branch of political economy which applies to the investment of capital in such undertakings, and from belief in the nonsensical doctrine, taught by leading authorities, that an enormous capital has been sunk or absorbed in railways in this country. A confusion prevails between circulating and fixed capital, between surplus labor and surplus income, and the most beneficial operations are discountenanced as disastrous; whereas a rightful consideration of the subject would teach us that capital is not absorbed in the way supposed, and that there is ample capital—that is ample surplus labor—available in India for all the roads, canals,

works of irrigation, and railways that the country requires, without restricting any one of these branches of enterprise.

This is a subject so important in reference to India in particular, that it is hereafter discussed at some length.

CHAPTER VII.

PRODUCTS OF DARJEELING AND THE TERAI.—THE COTTON CULTIVATION.—TEA CULTIVATION.

BETWEEN the lower hills of the Himalaya or Sub-Himalaya and the plain of Bengal lies an intermediate tract or strip called the Terai or Tarai, extending along the whole foot of the range from the banks of the Burhampooter to the Ganges at Hurdwar. In some parts it is very narrow, particularly on the north-west; but in Bengal it is from twenty to twenty-five miles wide. It is a swampy country, like some of those in the south-eastern states of America, with a very rich soil covered with jungle and forest trees, and having a peculiar climate, as the rains fall here more frequently than in the plains. The district itself is unhealthy, both for Europeans and Hindoos; but there is a population of local tribes.

It is one peculiarity of the Terai or Morung of Darjeeling, noticed by Dr. Campbell as indicative of the climate, that the cocoanut here fruits, which occurs only on the seashores of Bengal; and its suitability for the growth of Sea Island cotton is an important fact ascertained by him.

"The present staple produce of Morung is rice in the lower and cotton in the upper portion," says Mr. Welby Jackson. "The quantity of cotton produced is stated at 3,000 maunds,* and the American cotton, which was introduced and cultivated, has turned out well, being of a peculiarly fine fibre, but rather short in the staple. At present there would seem to be some defect in the system of cultivation, the land

* "Report on Darjeeling," pp. 4 and 5. By W. B. Jackson, Esq., C. S., Judge of the Sudder Court.

being left fallow for some years after yielding a cotton crop. In fact, the cotton is grown on fresh lands just recovered from the jungle by burning the trees and underwood. On this a good crop is obtained, but rice is sown the next year, and afterwards the land is left till it again is covered with jungle; after which the same rotation takes place. Why such a course should be necessary here, when it is not found so in the similar tracts of Zillah Beerbhoom, on the skirts of the hills, which are being gradually brought under cultivation through the labour of the Santhals, it is not easy to understand."

Dr. Campbell, however, has since paid special attention to the cotton cultivation; and the result of his experiments he thus describes in a letter to the "Times:"—

"COTTON CULTIVATION IN INDIA.*

"*To the Editor of the Times.*

"SIR,—In an article of 'The Times,' of the 11th inst., on the important subject of growing foreign cottons in British possessions, there is an allusion to the fact of Sea Island cotton having been grown near Darjeeling, in the Eastern Himalaya, and this, along with the result of other experiments, is justly regarded as a good prospect for the increased supply of cotton for the English market.

"The subject is so very important that I do not hesitate to intrude on your valuable space with a few particulars of that experiment. It was instituted by me in 1852, with the assistance of the Government of India; and if you desire a detailed record of it, I have no doubt that I can procure the report for you.

"You are aware that the Court of Directors and the Government of India, in their anxiety to introduce foreign cottons into India, went to the expense of having American cotton planters to try different kinds of foreign cotton in Bundelcund, to the westward, and in Rungpore and Dacca, rich and very productive districts of Northern Bengal. In reading the result of these trials, I was much struck with the stress laid by the planters on the want of rain at and soon after the sowing season, as being adverse to the full success of their experiments. This was particularly the case in Bundelcund; and also, but to a smaller extent, in Bengal. It was, therefore, a great object to find a climate with a wetter spring than the plains of Bengal; and this we have in the terai or lowlands at the base of the Eastern Himalaya, and in the outer valleys of the Darjeeling hills, where indigenous cotton is regularly cultivated. The cotton sowing season is in February and March; and it is remarkable that about the middle of March frequent showers begin to fall, and continue to do so till about April and May. This secures sufficient moisture to the young plant, and the scorching of it is obviated. It was with a view of turning this favorable feature of the Darjeeling climate to good account, that 12 cwt. of acclimatized Sea Island cotton seed was pro-

* "The Times," February 16, 1857.

cured by me from Coimbatoor, in the Madras territory, and tried in the Darjeeling terai. It grew excellently, just as well as the indigenous cotton, and the pods were well formed and abundant. The seeds were smaller than in the local plant, and the cotton was beautifully fine, but I was informed by the Agricultural Society of Calcutta, that the staple was shorter than that of the indigenous Sea Island cotton. Whether this was attributable to the specimens being the produce of seed grown in India I do not know, but it would be very important to make a trial with seed direct from the Sea Island district, as the Darjeeling district offers great inducements for the cultivation of foreign cotton on account of its soil, climate, and vicinity to Calcutta, as well as on account of the facilities which are now coming into play for rapid transit by means of the East India Railway, the proposed Northern Bengal Railway, and the other feeders to the East India Railway, which must soon develop themselves as necessary and profitable accompaniments of this great and successful undertaking.

"I am, Sir, your obedient servant, &c.

"February 16, 1857."

The cotton cultivation of the Terai of Darjeeling and of the Sub-Himalaya, is likely to be of the greatest importance to these regions, because from the possession of the climate peculiarly suited to the growth of the Sea Island cotton, and which facility is wanting in the plains, the cotton cultivation and export of India will be greatly stimulated. On this subject some communications will be found in the "Economist," "Society of Arts Journal," and other publications.

With regard to the tea cultivation, this has also been lately introduced in the Darjeeling district. Mr. Welby Jackson, in his report on Darjeeling, says:—

"The tea plant thrives readily and with little care in Darjeeling. I have seen several plantations in various stages of advancement, both of the Assam and China plant, and I have found the plants healthy and vigorous, showing that the soil is well adapted for the cultivation. In the garden of the Superintendent, Dr. Campbell, in Darjeeling; in the more extensive plantations of Dr. Withecombe, the civil surgeon, and Major Crommelin, of the Engineers, in a lower valley called Lebong, the same satisfactory result has been obtained: the leaves, the blossoms, and the seeds are full and healthy. The reddish clay of the sides of the hill at Leebong seems to suit the plant better than the black loam of Darjeeling.

"This has been the result at and about Darjeeling itself, at a height of 7,000 feet; but the opinion of Dr. Hooker, and of others competent to judge, seems to be that there is too much moisture and too little sun at Darjeeling to admit of the cultivation on a large scale becoming remunerative. This objection, however, does not apply to the lower sites of Punkhabaree and Kurseong, where a plantation of both tea and coffee has been established by Mr. Martin, and the plants are now in a highly thriving condition. In this tract of country, between the Morung and Darjeeling, every variety of elevation and aspect is to be found, and there seems to be little or no doubt that tea cultivation in that tract would answer. The elevation of Mr. Martin's plantation is about 4,000 feet at Pankhabaree, and fresh land is obtainable to any extent in that neighbourhood, equally well adapted for the purpose. It would be worth while to send some person thoroughly conversant with the tea cultivation to report on the capability of these lands for extensive and remunerative culture of the plant. The communication with Calcutta, either by the river Mohanuddee and the Ganges, or by the rail, when constructed, from Rajmahal, is ready and easy; there would be a short land carriage to the banks of the Mohanuddee. When the new road from Darjeeling to the Ganges is constructed, the export would be still more facilitated."*

The railway would, of course, afford still greater facilities both to Darjeeling and Assam, for a good and safe conveyance of the produce is of great importance to the tea grower. The success of Mr. Martin has had such an effect that this year several new tea companies have been formed in the Darjeeling district, and it is expected much land will be taken up for that culture. It is one particularly suitable for European enterprise.

Of the trade with Thibet, Mr. Welby Jackson says:—

"The people of Thibet are known to be well affected towards our government, and willing to enter into amicable relations and engage in traffic with our people. Hitherto they have been deterred by the power of the Chinese Government, which has the nomination of the chief authorities at Lassa, or, at least, a veto on their election; but this authority must now be much weakened, and the opportunity might be taken to form an opening for extending our communications with Thibet. Free access into Thibet, through the Sikim territories, would seem to be the best mode of effecting this. The road

* "Report on Darjeeling," p. 5. By W. B. Jackson, Esq., C.S., Judge of the Sudder Court.

is well known from Darjeeling to Lassa, and I have spoken here with several who have travelled it: the distance is estimated at a month's journey, and the two large towns—Phari, with a population of 4,000 inhabitants, and Geanchee Shubur, with a population of 20,000—lie on the road."*

He further says:—

"The present imports from Thibet I have stated at Rs.50,000: of this a portion is salt, which is preferred by the inhabitants to the salt of the plains; the low price of the latter is, however, driving the rock-salt out of the market; some gold and silver, coarse woollen manufactures, and some China woven goods, as well as some precious stones; but the most important article is the wool of the Thibet sheep. The flocks of Thibet are immensely numerous, and the wool of the finest quality; it is as fine as the merino, with a much longer staple, and has attracted the notice of the Jubbulpore School of Industry, which has expressed a wish to obtain a consignment to the extent of a lakh of rupees of the article. The fineness of this wool is attributed to the same cause as that of the merino—the fine and succulent short pasture of the Thibet hills; while the cold climate has the usual effect on the fleece of supplying that peculiar quality which is found in the shawl wool of the Thibet goats."†

Upon the tea cultivation of Darjeeling and Assam, some further particulars will be found in the Appendix, in an interesting paper from the "Illustrated News" of August 15th of this year.

* "Report on Darjeeling," p. 4.
† Ibid. p. 6.

CHAPTER VIII.

SIMLA AND THE SIMLA RAILWAY.

SIMLA is a name now well-enough known as the frequent residence of the Governor General of India, of the Commander-in-Chief of India, of the Lieutenant-Governor of the North-West provinces, and of the superior officials. It is one of the virtual metropolises of India, and there are few officers or residents in the Bengal provinces who do not pay it a visit.

In Thornton's "Gazeteer of India" Simla is thus described:—

"SIMLA.—An English station in the lower or more southern part of the Himalayas, between the rivers Sutlej and Giree, celebrated as a retreat for those seeking renovation of health, or relief from the oppressive heat of the plains of Hindoostan. It is situate on the route from Soobathoo to Rotgurh, 22 miles north-east of the former post. The houses built for the accommodation of residents or visitors at this place are irregularly scattered over a narrow ridge of mountain, advantage being taken of every level spot or moderate slope for building. A few dwellings are erected on a spur of hills running north at right angles to the Simla range. The eastern extremity of what may be properly called the Simla range, is abruptly terminated by the Peak of Jako, rising about 400 feet above it. At the western base of this eminence is the bazaar of the settlement. The sides of the Jako Peak were originally thickly clothed with wood, and the quantity is still considerable; but the demands for the purposes of building may be expected to cause a rapid diminution. At the western extremity of the ridge of Simla is another eminence, inferior in height to Jako, and devoid of timber, the summit crowned by a mouldering ruin. The scenery within view from the town is very noble. Immediately south is a dark, deep, precipitous valley, which, as well as the neighbouring mountains, is thickly covered with fine forests; beyond to the south-west are seen the mountains about Soobathoo, and still further the vast plain of Hindoostan, traversed by the meandering Sutlej. To the north successive mountain ranges rise in proportion as the distance increases, and are terminated with surpassing grandeur by the snowy crescent of the Himalaya, the peaks of which in fine weather have so distinct an outline against the dark blue sky, that their real

distance of 60 or 70 miles seems not more than 9 or 10. The following description of this scene, and of its impressions on the observers, occurs in a modern work :—

" 'The general appearance of this mass of snow is that of a wide undulating plain, from which peaks arise in every imaginable shape. Upon reaching the crest of the ridge at Simla, the vastness of the scene became oppressive. The lofty snowy range shone from the dense azure of the heavens; its giant flanks were broken with black mural precipices and profound ravines, which were purple from their depth; below was heaped a shattered mass of mountains, peaks and glens, ridges and valleys, some aridly bare, others luxuriantly rich.' The trees in the neighbourhood are the deodar or Himalaya cedar, pine, oak, and rhododendron; the last-named glowing with rich scarlet blossoms. Of four-footed animals the most commonly occurring are the kacker or barking deer (*Cervus Muntjuc*), so called from its cry resembling a short bark; the antelope, the wild goat, and the marmot; there are also the wild hog, the flying squirrel, musk, and other kinds of deer, and monkey, both hanuman or langoor (*Semnopithecus entellus*), and the bundur (*Sumarhesus*). The carnivorous quadrupeds are leopards and leopard cats, bears, jackals, hyenas, and foxes; sometimes, though rarely, a tiger makes its way to these elevated regions. There is no great variety or abundance of game; the principal of the feathered kind are pheasants, chukars, and black partridges, quails and woodcocks. Eagles, vultures, and crows are very numerous The fruits and esculent vegetables of Europe in general thrive well here; potatoes especially are grown in great abundance and excellence, and are sent in large quantities to the plains. The climate is considered highly salubrious, and in consequence of its lower temperature, appears in favorable contrast with that of the plains. The winter is sometimes very severe. In 1836, snow lay in the month of February to the depth of six or eight feet, and did not melt away in shady places until the end of May.

"In 1841 there were at Simla upwards of one hundred houses built in the English style, and varying in rent from £40 to £100 a-year. The position and habits of those resorting to the place cause it to be abundantly supplied with the luxuries as well as the necessaries of life, though most sorts of provisions have to be borne three or four days' journey over mountain roads. The population is very fluctuating. In a recent publication it is thus prospectively estimated: 'Should the Governor-General and Commander-in-Chief come up next season, it will consist of English, 200; natives, 8,000! and when the tributary chieftains and followers come in, it will be nearly 20,000. Again, in winter, when but a few remain, it will probably not exceed—British subjects, 20; natives, 2,000.' Measures have been taken for providing funds for the purpose of carrying out public improvements. The first English dwelling erected in this place was that of Lieut. Ross, in 1819. It was thatched over, and its walls were composed of spars, grass and mud. In 1822 the first permanent cottage of the usual materials, stone and timber, roofed with pine-wood shingles, was erected by Captain Kennedy. Simla is the seat of an observatory, at which a series of magnetical and meteorological observations were commenced on the 19th January, 1841. A church has been provided at an expense of 15,000 rupees; of which amount the Government contri-

buted 5,000 rupees, the remainder being raised by private subscription.

"The district known as Simla is composed of territory acquired partly from the Rajah of Putteeala, and partly from the Rajah of Keonthul; in both cases by exchange. It is under the civil jurisdiction of the Board of Administration in the Punjaub. Elevation of encampment above the sea, 7,866 feet. Distance N.W. from Calcutta, *via* Kurnal and Soobathoo, 1,097 miles. Lat. 31° 6′, long. 77° 14′."

Christchurch cost £2,050. There are a Baptist chapel, five public schools for boys and girls, boarding school for boys and girls, boarding school for girls, dispensary, bank, library, hotels, &c.

There is a municipality for Simla.

In the report on the telegraph system for India, under date 5th July, 1849, I urged that Simla should be provided with telegraph communication, considering it at that period as virtually a metropolis for India. I stated to the Honorable the Chairman in laying down the main trunk line,—"It appears most desirable to put Simla in communication with Calcutta; an extension of 200 miles will do this. The Governor-General and Commander-in-Chief will thus have the whole valley of the Ganges. The length of the range of the Calcutta and Simla line is 1,100 miles. The mail from Calcutta to Simla takes ten days, which, with the return, makes twenty days. The telegraph will allow of several communications in one day." All these advantages have now been realized, and were sensibly felt during the late insurrectionary proceedings.

With regard to the effect of railway communications in developing the resources of this station, they are thus described in the prospectus of the Simla Railway Company:—

"The railway system established in India under the auspices of the Government of that country has two chief objects—the moral

advancement of the population, and the development of the commercial resources; and the Government, in return for its guarantee, obtains improved means of wielding its military and civil power. In the north of India the railways authorized form two great systems: those of Bengal in the east, of which the East Indian Railway extends as the grand trunk from Calcutta to Delhi, and those in Scinde, which follow the main river artery of that district.

"Bengal is the great seat of population, commerce, and revenue. Scinde and the Punjaub lie on the most exposed frontiers, the scene of military operations, and whence the movements of the hill tribes, and the gradual advances of Russia toward our Indian empire have to be watched. Between these hot and sickly districts, amid the hills, near the upper valleys of the Jumna and the Sutlej, lie the healthy regions of the Himalayas; within which are the stations of Simla, Soobathoo, and Almorah, chosen as the sanitaria of the north-west, and the first of which is the frequent residence of the Governor-General, and of the Commander-in-Chief of India, chosen as nearer the scene of events than Calcutta, and from temperature and climate natural to European constitutions.

"On bringing the hill stations, by electric telegraph and railway, in communication with Calcutta on the east, and Hyderabad on the west, the advantages now enjoyed by the heads of the Government could be possessed by the European troops, and by a large English community. The large army of Europeans now assembled on the north-west frontier, were this communication effected, could be chiefly stationed in the hill country. There twenty thousand men could be more cheaply maintained than ten thousand in the plains; but what is of more importance, their effective strength would be threefold from the diminished sickness and greater temperance of the men, to say nothing of the better facilities for the exercise and discipline of a European force in a European climate, as it may be called, instead of an Indian one. This force would dominate all the provinces to the east, and afford corps for embarkation on expeditions from Calcutta, but to the west by facilities of railway communication, it would be at once available on the military frontier, along which the Simla, Punjaub, and Scinde railway lines would form a military *cordon*, or line of communication and reserve. Upon this line a healthy and effective army of twenty thousand men, in the best condition, would be placed, with all its equipments, within a week, ready to act with the native troops, and giving them a greater moral confidence than is now afforded by the sickly regiments drawn slowly from their cantonments. It is by such a measure that our empire in India must be reinforced, and an effective barrier created against the encroachments of Russia.

"To make it financially possible to maintain in India a European army of nearly twice the effective strength of that now employed there, is only the beginning from which further resources would be derived. Placed in healthy regions abounding with natural products, the English soldiery would prefer to remain after their time of service, and many would enlist for limited terms, for the bounty of free transmission to such a country. Thus a military reserve of veterans and volunteers would be created, available, should occasion require, for the reinforcement of our military strength. With such establishments formed, free settlers would be induced to occupy these

regions, and permanent European communities would be formed, diffusing the influences of civilization in India, and securing to us its empire.

"It is in these cities of the upper districts that the governors, civil servants, officers, and merchants of the plains, would maintain their families in health within a few hours' railway journey of the localities of their avocations.

"To effect these objects, two lines of railway are proposed, following such distinct courses as the surveys to be made shall determine.

"One Eastern line, starting from Delhi, the terminus of the East Indian Railway now in progress, would communicate with Soobathoo, or other point in the hill districts.

"One Western line connecting with the railways in progress in Scinde and the Punjaub, would proceed up the course of the Sutlej to join the Eastern line.

"The lines would join at an elevation above the lower level of about 2,000 feet, affording very moderate gradients.

"The Eastern line would be about 200 miles in length, and cost about £2,000,000; but the length of the Western line would depend on the length of the extension to join the Scinde Railway, or its feeders.

"To introduce railways for such great purposes into India, is a work as much of an imperial character, as an investment for capitalists; but it can only prudently be made a suitable investment for capitalists by the contribution of such a guarantee from the Government as will justify the application of money at such a distance from England, and for objects which, although ultimately reproductive and profitable, must for their immediate and early realization depend upon the vigor and energy of the Government in carrying out the corresponding political measures. This is the fair apportionment of the contribution of each towards the realization of objects of such importance, and it is proposed for the present simply to raise such small funds as may be requisite for the preparations of the plans and surveys and establishment of the undertaking, engaging no further until the requisite guarantee is obtained. It is on these conditions and basis that the undertaking depends."

The following letter to the Secretary of the Honorable East India Company states more fully the views of the promoters, and the bearings of the undertaking:—

"Simla Railway Office, 42, Basinghall-street, E.C.,
29th June, 1857.

"Sir James C. Melvill, K.C.B., Secretary of the Honorable East India Company.

"Sir,—I am desired to lay before you for your information the accompanying document, which expresses the grounds on which it is considered provision should be made for railway access to the sanitary stations of the North West at Simla and elsewhere.

"This is a subject which has long occupied the attention of the gentlemen engaged in this undertaking; but on the one hand they have desired not to press unduly on the attention of the Court, occupied as it has been with numerous projects, and in the next place they have not felt, in the course adopted by the Honorable Court towards like undertakings, encouragement to push forward such an enterprise.

"Late events, however, prove to the minds of the promoters the correctness of the principles on which this undertaking is based, and they hope that the Honorable Court may have become more completely convinced of the necessity of increasing English influence in India. In the late unhappy proceedings, nothing but the exertion of English civilians and soldiers has saved India from revolution and anarchy; and it is to the strengthening of this moral and physical force that we must look for the safeguard of our empire. Such have been the views at all times entertained by the Honorable Court. With a benevolent regard for their own servants, and with an enlightened and far-seeing policy, the Government of India established many years since the sanitaria and hill stations. The experience of a quarter of a century has proved that these stations have a climate congenial to Englishmen, and that not solely for the recovery of health, but as permanent residences they are suitable for our population.

"The extension of these towns of Simla, Darjeeling, Ootacamund, Dalhousie, Mussoorie, Almorah, Soobathoo, &c., with their churches, schools, orphan asylums, hospitals, &c., is one of the most important facts in the history of Indian progress; and this has been accomplished, although access to many of these towns can only be attained by seven days' dawk, and an expenditure of twenty or thirty pounds. Thus, the less wealthy classes of Englishmen are deprived of the advantages which the liberality of the Indian Government has created, and English immigration on a considerable scale is impossible.

"The progress of trunk railways under the auspices of the Honorable Court has, however, been attended with circumstances most auspicious for the extension of the sanitaria and hill colonization. At Rajmahal the East Indian Railway main line comes within 200 miles of Darjeeling, the sanitarium for Bengal, and at Delhi this main line is within a like distance of Simla and its adjoining settlements. From other points of the trunks short tramways of 100 or 200 miles in length will connect with the grand railway system established by the Honorable Court all the hill countries of the Sub-Himalayas and the Neilgherries.

"To affect this is an important political and commercial object; and the promoters of this undertaking consider that so far from being restricted to a communication with Simla, it is desirable it should be so constituted as to afford the means for establishing English colonization, not only at Simla or Soobathoo, but generally in the Sub-Himalayas and Neilgherries, by the promotion of railways, the erection of the necessary buildings and works, and the introduction of emigrants. A limited amount of assistance from the Government would enable this to be accomplished, as the undertaking is reproductive, and the capital could be so applied as to be virtually a floating capital.

"The great results of such operations would be—

"1st. The English colonization of the hill regions, now comparatively unproductive of revenue.

"2nd. The cantonment of a large European force in a European climate on European pay.

"3rd. The constitution of a reserve of invalids, pensioners, recruits, and militia, available for any great crisis, beyond the regular army.

"This enormous force would pour down on any part of India or any threatened frontier in fewer hours than it now takes days to concentrate the requisite army, while the regular action of the Government of India would be materially assisted.

"These considerations I beg to lay before you, in the hope that they are such as under present circumstances the Honorable Court will favorably entertain and be willing to give such encouragement as to enable the promoters to carry the undertaking into effect.

"I have the honor to be, Sir,

"Your most obedient servant,

"HYDE CLARKE."

It may be mentioned that the tea cultivation has been introduced into the Simla district, that it has fully succeeded, and that it is being extended as a branch of English enterprise.

CHAPTER IX.

PROGRESS AND PRESENT STATE OF ENGLISH COLONIZATION IN INDIA.—THE HILL STATIONS.

SOME notion will have been already formed of the progress of English colonization in India under the auspices of the Indian Government, and from the spread of English enterprise. Beginning with two or three sanitary stations thirty years ago, the gradual advance of our frontiers into the hill regions has caused the foundation of several residentiary stations, and, within the last few years, of the rapid formation of several stations for tea cultivation. Singularly enough the introduction of tea culture into India has become an instrument of English colonization.

The following is a list of the chief hill stations, exclusive of Assam, over which several small settlements connected with the tea plantations are scattered:—

DARJEELING:

Jelapahar	Kursion
Gnadenburg	Leebong
Hope Town	

CHIRRA POONJEE:

SIMLA:

Boileaugunj	Sanawur
Koteghur	Dugshaie
Juttogh	Soobathoo
Kussowlee	

DEHRAH DHOON:

Landour	Mussoorie
Woodstock	

	ALMORAH:	
Hawulbagh		Bheen Tal
Nynee Tal		
	MURREE:	
Dalhousie		Dhurrumsala
Budorodeen		Abbotabad
	ABOO:—Erinpoora.	
	OOTAKAMUND:	
Coonoor		Kotageri
	DAPOORIE:	
Byculla		Malcolmpeth
Mahabuleshwar		

Of these the following are residentiary towns, either permanently or during part of the year:

Darjeeling for the Deputy-Governor of Bengal;
Simla for the Commander-in-Chief of Government of India;
Nynee Tal for the Lieutenant-Governor of the North-West Provinces;
Murree for the Chief Commissioner of the Punjab;
Landour and Mussoorie for invalids throughout the North-West Provinces and Bengal;
Mount Aboo for the political agent of Rajpootana;
Ootakamund and other stations on the Neilgherries for the Madras Government;
Mahabuleshwar and Dapoorie for the Bombay Government.

As military stations in Bengal, several of these are already occupied. Thus, in 1857, there were at Darjeeling a European depot and a local sapper corps; there were at Kussowlee, Her Majesty's 75th Regiment; at Almorah were a company of artillery, the Sirmoor battalion, and 66th Goorkhas; at Dugshaie, the 1st Bengal Europeans;

at Soobathoo, the 2nd Bengal Europeans; at Dehra, the 20th Native Infantry, and the Kemaoon battalion; at Landour, a European depot; at Murree, a European depot; at Simla, the Nusseree battalion; at Cheera Poonjee, the Sylhet Light Infantry; at Abbotabad, a military station.

The experiment has been tried for a sufficient length of time, and with abundant success, and all that is now required to promote a complete European colonization of the hill regions is, as herein pointed out, to encourage and construct branch railways and tramways, and to organize an Emigration and Land Sales Department under a Commissioner or Commissioners.

Darjeeling and Simla have been already described.

JELAPAHAR is the seat of the military depot at Darjeeling. (See p. 41.)

GNADENBURG is the seat of the German Missionary Establishment there. (See p. 20.)

HOPE TOWN is ten miles from Darjeeling, and has a large bazaar, a tea garden, and several English residents.*

KURSION is twenty-four miles from Darjeeling, and is 4,500 feet above the level of the sea. Here are a tea garden, some English residents, and two farms.† (See p. 42.)

LEEBONG, a village on a hill near Darjeeling. (See pp. 21, 41, 79.)

* New Calcutta Directory, 1857. † Idem.

The tea stations or gardens in Assam, mostly belonging to the Assam Company, at each of which are English residents, include Chubwa, Dikkun, Myjaun, Duralee, Cautchnie, Gowhatty, Kaliabor, Duboka, Nazeerah, Hathee Pokree, Mazengah, Cherido, Cinnamara, Nigree Ting, Noa Cacharee, and Ninealighur. (See Appendix.)

Gowhatty, Luckimpore, Nowgong, Seebsaugur, Silchar, Tezpore, Gowalparah, Saikwah, Jorehaut, and Golaghaut, are towns in Assam, with a more considerable English population.

BOILEAUGUNJ is a village near Simla.

KOTEGHUR is a town 50 miles north of Simla. Here is a church, mission, and boys' and girls' school of the Church Missionary Society, and mission of the Moravian Missionary Society. The place, which is 8,000 feet above the sea, has a tea plantation.

JUTTOGH is the military station near Simla.

"KUSSOWLEE," says the "Gazetteer of India" (Thornton's), "is an English sanitary station in Baghat, is situate on the route from Pinjor to Simla, nearly due north of the former place, and distant from it about 14 miles by a circuitous route, and thus described by the 'Delhi Gazette:'—

"'Kussowlee itself is a hill of about 5 miles in circuit, considerably detached from the chain of which it forms a part. Its height is about 7,000 feet. The upper part is an undulating table-land, and the whole hill does not show any abrupt peak. From the plains the ascent is very sudden, that face of the hill presenting a forbidding aspect, intersected by perpendicular ravines, and showing

the strata of clay slate at an angle of 30 or 40°. The road from Pinjor is chiefly cut along this steep hill side. The northern face of the hill is much less abruptly defined, and runs into the ranges that slope to the river Gumber.' In a direct line, it is about 20 miles south-west of Simla, and nearly on a level with it. The soil overlying the rock is light and porous, except in places where decaying vegetation has accumulated a black mould. The timber consists principally of firs, mixed with which are a few oaks and rhododendrons. The absence of underwood, and the porosity of the soil, quickly absorbing rain, render the air dry and healthful. The principal disadvantage is the want of water. The natural springs are at a distance below the station, and the non-retentive nature of the surface precludes the construction of tanks, while, from the rocky character of the substratum, it is impracticable to obtain a supply by sinking wells. Hence, during the spring and the early part of the summer, water must be brought on mules and bullocks from springs a mile and a quarter distant, and 848 feet below the level of the parade ground. There is no cultivation except in the valleys, where irrigation is practicable; and in such localities the slopes are formed into terraces, supporting successive slips of soil, bearing very fine crops of rice and other grain, ginger, turmeric, potatoes, onions, and other vegetables. The writer already quoted describes the scenery as fine:—'West and south the view of the plain is boundless, and, after the rains, the Sutlej winds along in great majesty, its course being clearly traceable from Roopur to Loodianah; while on the other side the Jumna can be seen. Standing on the summit of a hill, looking down the steep declivity of nearly 6,000 feet, there is one vast map spread before you, which, in the different lights of morning and evening,

shows a magic variety of tints and shades. The sun is just now dipping into the Sutlej where it runs due west; turn gradually to the right, and you will have a view of the plains of the Punjab, until you reach the lowest spurs of the mountain range, just where the river issues from the hills. Then comes a group of beautiful varied hills, the highest of which is Soorujghur, above Belaspoor. Behind these the white peaks begin to appear, and, looking north, you have the whole snowy rampart rising in uninterrupted majesty; for the hills on a level with Simla, or even Whartoo, form but undulations in the foreground of this magnificent panorama. Turn further round, and to the north-east you have another group of nearer hills, the most conspicuous of which is Baghat; and behind them the snow appearing at intervals till you reach the east. In that quarter you have lost the snow; but there is a beautiful sea of undulating hills, with here and there glimpses of the plains, until, looking south, you come again to an unlimited horizon. In all this landscape there is but one thing wanting—the one deficiency which prevents our hills from being absolutely lovely—and that is, the absence of water. No lake, no stream enlivens the view; and this makes all the rest like a beautiful face with the eyes shut.' A church has been erected here for the Christian community. In 1855 Kussowlee was visited by cholera, which greatly increased the ordinary rate of mortality; but its general salubrity appears well established. Kussowlee is distant north-west from Calcutta 895 miles, lat. 30° 54′, long. 77° 3′."

During the late revolt it has been used as a place of retreat for English ladies and children, and was the cantonment of a large force. The church above referred to cost £1,400. There is a

Roman Catholic church; also a brewery. Kussowlee is the residence of the Commissioner and Superintendent of the Cis-Sutlej states.

SANAWUR is on a spur of the Lower Himalayas, midway between Kussowlie and Dugshaie ; it was founded in 1847 by that eminent administrator Sir Henry Lawrence, who placed here the Lawrence Military Asylum for the orphan and other children of European soldiers. The number of children boarded here is 200 boys and 200 girls. Printing, bookbinding and telegraphy are taught here. The income is £8,000 a year. The Bengal Military Normal School was founded in 1856 for training soldiers as schoolmasters for regiments. The asylum is also used as the church.

DUGSHAIE is a station in Sirmoor, in the North Western provinces. Here are an Established Church, and a Roman Catholic one. A company of artillery is stationed here. It is 8 miles south-east from Soobathoo, and 16 miles south from Simla, between the rivers Sutlej and Jumna. Lat. 30° 53′ N., long. 77° 1′ E.

SOOBATHOO is one of the places to which communication is proposed to be provided by the Simla Railway Company. It is a favorite station, and has been proposed by some as the metropolis of India instead of Simla. It is thus described by Thornton in the " Gazetteer of India."

" Soobathoo, a fort and cantonment, the principal place of a small pergunnah of the same name, reserved by the East India Company, on the settlement of the hill states, at the conclusion of the Ghoorka war, in 1815; previously it was

within the thakoorai or lordship of Keunthal. The district is bounded on the west by Kothar, and surrounded on all other sides by Burroulee. It is a sort of table-land, having in its vicinity mountains varying in height from 4,600 to 8,000 feet above the sea, but southwards, or towards the plains, it is rather open, and exposed to the winds blowing from them, though overtopped by some highlands in that direction. The fort is situate on an eminence rising about 1,100 feet from the right bank of the river Gumbur. The surrounding country is populous, being studded with many villages, the number of which has continually been on the increase since the establishment of English supremacy, in consequence of the refuge afforded to persons oppressed in the neighboring hill states, and the extended demand for labor and produce to supply the consumption of the English troops stationed there. Agriculture is carried on with great industry and skill, the sides of the mountains being formed into successive terraces like huge steps. The level spots on the banks of the streams are irrigated and cultivated for rice, which is produced in great abundance, and of a quality superior to that of the adjacent plains. The other crops are wheat, barley, maize, millet of various kinds, ginger, cotton, opium, tobacco, oilseeds, red pepper, hemp, and a variety of esculent vegetables. The fruits are generally excellent, and among them are apricots, peaches, walnuts, a few apples, wild pears, raspberries, and melons; the strawberries are small and without flavor. The high grounds in the immediate vicinity of the station are almost destitute of wood, except on their northern declivities, which are covered with pines. The climate is altogether agreeable and very healthy, the mean temperature of the whole year being from 65½ to 66°; the heat

in May and June is considerable, but not oppressive. The periodical rains are heavy, commencing about the 20th of June and continuing to the close of September; hoar frosts commence in November and cease about the beginning of March. During December and January, in severe seasons, ice of considerable thickness is produced on standing water. Snow sometimes falls to the depth of four or five inches, but seldom lies above three or four days, as the direct rays of the sun are powerful. The supply of water for the cantonment appears to be sufficient only in ordinary seasons. During periods of drought recourse must be had to springs three-quarters of a mile distant, and 400 feet below the level of the barracks. The old fort has been converted into a jail for delinquents convicted at the cantonment and at Simla. Soobathoo is in the Cis-Sutlej division of the territories subject to the jurisdiction of the Commissioner of the Punjab. The fort is distant north-west from Calcutta 1,075 (1,038) miles; elevation above the sea 4,500 feet. Soobathoo was some time since selected as the site for a sanitarium for troops; its salubrity has been satisfactorily tested, the special committee appointed to inquire into the relative healthiness of different stations having arrived at the conclusion that at least two soldiers die at stations on the plains for one on the hills. Lat. 30° 58′, long. 77° 3′."

The "New Calcutta Directory for 1857" states, that there are a church, which cost £1,150; an American Presbyterian church, Roman Catholic church, and masonic lodge. It is 8 miles north-west from Dugshaie, and 10 miles south-west from Simla.

"DEHRAH," says Thornton,* "the principal place of the Dehrah Doon, is situate on the crest of a

* "Gazetteer of India."

ridge of moderate height, extending from the Sewalik range to that bounding the valley on the north-east. It is situate amidst an extensive and dense grove of very luxuriant orange-trees, and surrounded by verdure, the vicinity being watered by a torrent descending from the mountains. As the intermitting nature of the stream renders the supply of water from it precarious, the town is in dry weather supplied from several wells, nearly 200 feet deep. Jacquemont, in his "Indian Travels," describes the place as avery large village; and in a letter bearing date May, 1842, it is mentioned as 'a large town, in the neighbourhood of which are many houses, the property of Europeans.' It has a situation favorable for traffic, being at the intersection of the route from Hurdwar to Sirmoor with that from Saharunpore and the plains to the English sanitary stations of Mussooree and Landour, and to Western Gurhwal. Whatever may be the present prosperity of Dehrah, it must have resulted from English rule; for in the account of the trigonometrical survey of the Himalaya, drawn up about 1820, where it is noticed as one of the stations of small triangles, the town is said to be 'small and poor.' Mundy, writing eight years later, describes it as inconsiderable, but with good cantonments, and a handsome temple, built of stone, and embellished externally with designs in stucco. The elevation of this place above the sea is 2,369 feet. Distance north-west from Calcutta, 974 miles. Lat. 30° 19″; long. 78° 5′."

"LANDOUR," says Thornton,* "in the English district of Dehrah Doon, is a sanitary station on the ridge bounding that valley on the north; was founded for the reception of invalids from Meerut

* "Gazetteer of India."

and other cantonments in the plains of the North-Western provinces. It is situate on a ridge running nearly east and west, and is three miles east of the sanitary station of Mussooree, but connected with it by an intermediate straggling series of buildings. Barracks and other public buildings and private residences are scattered over the rugged ridges and slopes, which form a wild and varied scene, rendered more striking by magnificent views of the distant Himalayas, covered with perennial snow. According to the notice in the 'Bengal and Agra Guide' of 1842, the station contained, about that time, a church, post-office, forty-two private dwellings, large hotel, library, temperance room, hospital, five barracks for invalid European soldiers, seven officers' quarters, mess-room, guard-room, storehouse and magazine, quarter for steward, quarter for hospital-sergeant, godown (storehouse) for commissary stores, godown for barrack department, bakehouse, mule-shed. At the same time, the average number of officers doing duty at the depot was eight; of Europeans annually sent up the average number was 110; of those who returned cured, 100. In consequence of the rapid increase of elevation, the diminution of temperature is very striking to a visitor from the plains, as the thermometer has been found to fall from 90° to 52° in a journey of two or three hours. The maxima and minima of degrees of temperature during the successive months—the variations being taken between six A.M. and six P.M. —were:—January, 53°, 31°; February, 60°, 32°; March, 67°, 44°; April, 76°, 55°; May, 78°, 58°; June, 79°, 54°; July, 75°, 61°; August, 72°, 60°; September, 70°, 58°; October, 69°, 45°; November, 58°, 34°; December, 56°, 39°. The burial-ground of the united stations is situate on the northern face of the extremity of Landour. The highest point of the station is 7,579 feet above the

sea. Distant north-west from Calcutta, 980 miles. Lat. 30° 27′; long. 78° 10′." The church here cost £900; and here is a Catholic church.

Woodstock is a village near Landour, with a Protestant girls' school.

"Mussooree," says the same authority,* "is on the northern frontier of the Dehra Doon, towards Gurhwal; is a sanitary station, established by the English to suspend, relieve, or remove the consequences prejudicial to health from the sultry climate of Hindoostan. It is approached from the south, and consequently from the Dehra Doon, by a road which, at Rajpur, situate at the base of a mountain, becomes very steep for three miles; thence for two and a half miles the ascent is more gradual, and for the remaining mile nearly level. The road is described by Mundy, in 1828, as difficult and perilous in the extreme; it 'sometimes winds down the edge of the rocks, sometimes zigzags up the face of the hill; plunges into the dark depths of a ravine, or creeps over the summit of a naked crag; but as no mention is made of these terrors by Garden, they have no doubt in a great measure disappeared before the labors of the engineer. Jacquemont, indeed, describes the road as excellent. The rugged ridge on which the station is situate, consists of beds of compact limestone alternating with others of soft slate, and is analogous to that called the transition limestone of the north of Europe, the mountain limestone of England; it is black, gray, or grayish white, cavernous or carboniferous, emitting a fetid smell, and appears to have suffered from the action of heat, inasmuch that its vesicular structure resembles

* "Thornton's Gazetteer of India."

that of grey lava. The slate, which alternates with the limestone, is wonderfully varied in its colours, black, gray, green, brown, red, purple, yellow. A few veins are so hard and fissile as to serve for roofing slate. In some places trap-rock makes its appearance, composed in some parts principally of compact white felspar and green diallage, in others of hornblende. The slopes are steep, and, as is usual with such formations, covered with vegetation; in some places there are veins of quartzy sandstone. On the adjacent height of Landour, the prevailing formation is quartz. This rugged tract was formerly thickly covered with forests of large timber trees; but these have nearly all been felled for building purposes, or for burning lime and bricks. It is thought, however, that the injurious effect to the scenery has been more than compensated by increased salubrity, as the dense and luxuriant forests of Simla are considered at certain seasons to be productive of gloom and sickness. There is no level area of any extent at Mussooree, so that the houses are built at considerable distances from each other, on sites which it has been necessary to level, on a ridge, a crag, or on the southern slope of the mountain. The eastern part has been longer settled, and there the houses are disposed more closely together than westward, in which direction the town is at present extending. In 1841 the number of private houses was about 100. The views are very beautiful, comprising on the north the Himalayas, clad in perennial snow, on the south the rich and varied expanse of the Dehra Doon, bounded by the Sewalik Hills; beyond which the prospect extends over the vast plain of Hindoostan, without any other limit than that of the powers of vision, or that caused by the imperfect transparency of the atmosphere. In the later part

of midwinter there are smart frosts, with occasional falls of snow; neither, however, occurring after March, when spring sets in. There are in that season showers of hail and rain and thunder storms occurring at intervals even as late as April. Then succeeds delightful weather until the middle of June, which ushers in the periodical rains. These, which are much heavier than in the neighbouring parts of the plains, cease about the middle of September; from which time to the middle of December the weather is equable, becoming, however, cooler as the season advances, and terminating in sharp frosts. In 1834, from the latter half of May, the mean temperature at 10 A.M. was found to be 76°, the highest temperature at any part of the day being 79°. At the same hour during June the mean temperature was 69°, the highest temperature at any time being 71°. July, same time. mean 67°; highest 69°. August, at same hour, mean temperature 67°; highest at any hour 69°. September, at same hour, mean 66°; highest at any hour 68°. October, at same hour, mean 60°; highest at any hour, 62°. November, at same hour, mean 55°; highest at any hour 57°. The mean of the mean temperatures from the 15th of May to the 21st of November, 66°. A breeze from the south, called on that account 'the Doon breeze,' sets in before 10 o'clock A.M., and blows until late in the evening; at night there are generally light airs from the north. Mussooree is abundantly supplied from the bazaar of the adjoining sanitary station of Landour with wheat, barley, and other grain from the plains; the finest rice from the hill states; which last also furnish honey, turmeric, ginger, potatoes, onions, and other esculent vegetables. Butcher's meat is abundant and good, as are milk and butter, the hill pastures imparting

great excellence to the produce of flocks and herds. The wines, liquors, and wares of Europe and Hindostan are abundant and of superior description, and in consequence of the great competition between the native dealers, cheaper than in the plains. Christchurch, built by subscription, and finished in 1837, is a neat slated structure with a turret. The Himalaya club had, in 1842, 155 members. The clubhouse contains accommodation for sixteen resident members, who have each a sitting-room, bed-room, and bath. There are besides a handsome ball-room, two billiard-rooms, a dining-room, and coffee-room, with all accommodation suitable for such an establishment. To these it was intended to add a reading-room, supplied with the best periodicals. In this flourishing little settlement there are two well-managed and successful schools for young ladies, and one for boys. Beer is brewed from native barley and English hops, and the result has been so encouraging that a large brewery has been set up. A bank was established in 1841, and has been very successful. A humble botanic garden, subsidiary to that of Saharunpoor, is managed here by natives, at the expense of 66 rupees (£6 12s.) per month. Of the diseases contracted in the plains, the effects of a residence here are found favorable to fevers of intermittent and remittent type, dyspepsia, dysentery, liver complaint, pulmonary consumption, rheumatism, general debility, or exhaustion of the constitution. Affections of the heart have had invariably a fatal result. Children thrive remarkably here, though there have been some instances of their being affected with bronchocele or goitre, which has, however, been cured by administering iodine. Mussooree is distant north-west from Calcutta, by Lucknow, Bareilly, Hurdwar, and Dehra,

983 miles. Elevation above the sea, 6,282 feet. Lat. 30° 27′; long. 78° 5′."

There are a Roman Catholic church, St. George's Roman Catholic school for boys, established in 1853, and two branch convents for the education of Roman Catholic young ladies; a Protestant grammar school, a Protestant girls' school, and two girls' boarding schools.

"ALMORAH* is the principal town of the English district of Kumaon, within the territories subject to the lieutenant-governorship of the North-West Provinces, is situate on the crest of a ridge which runs from east to west, and consists principally of one street, three-quarters of a mile long, forming two bazaars, divided from each other by Fort Almorah, and by the site of the ancient palace of the Rajahs of Kumaon, now occupied by a jail. Detached houses, chiefly occupied by Europeans and Brahmins, are scattered along each face of the mountain below the town. The houses have each a ground story of stone, and that part in the trading quarter of the town is occupied by a shop. The upper stories, of which there are sometimes two, are constructed of timber, and are covered with a sloping roof of heavy grey slate, on which small stacks of hay are sometimes piled for winter consumption. The stone-built story is generally white-washed, and tricked out with grotesque paintings. The main street, secured by a gate at each end, has a natural pavement of slate rock, and is kept in very neat order. At the western extremity, and immediately adjoining the town, are the lines of the regular troops, and in the rear

* Thornton, "Gazetteer of India."

of them the fortification called Fort Moira. The defence on the north-eastern side is a small martello tower, called St. Mark's. There are several Hindoo temples, but none meriting particular notice.* The Cutcherry, or public office of the district, is at Almorah, but the houses of the civil officers are at Hawulbagh, five miles north of it and there the provincial battalion is stationed. This town, which had been fast decaying under the Goorka sway, has much improved since it has become an English station.

"At Sittolee, close to Almorah, was fought the battle which decided the fate of the war between the English and the Goorkas. In advancing to the attack, the English had to cross, by ford, the river Rosilla, flowing at the bottom of a deep ravine. Having accomplished the passage, the heights and town of Almorah were successively carried in the most rapid and brilliant manner, and the result was the conclusion of a convention, by which the whole district of Kumaon was ceded to the English. Elevation above the sea of Fort Moira, 5,520 feet; of the town, 5,387. Distance N.W. from Calcutta, by Lucknow and Bareilly, 890 miles. Lat. 29° 35″; long. 79° 42″."

"HAWULBAGH," says the "Gazetteer of India," "in the English district of Kumaon, lieutenant-governorship of the North-West Provinces. It is situate five miles north of Almorah, and on the left bank of the Rosilla, running at a considerable depth below, with a deep, black, and violent current. The site is picturesque and fine, and as the climate is warmer than that of Almorah, in consequence of an elevation less

* According to Traile, Almorah is said to have been so named from the abundance of wild sorrel (*Almori*) which grows in its vicinity.

by 1,900 feet, it is generally the residence of the civil officers in charge of that town, and of the district of Kumaon. There is also here a cantonment for the provincial battalion. Elevation above the sea, 3,889 feet. Distance N.W. from Calcutta, 902 miles. Lat. 20°. 38′.; long. 79°. 40′." Here are tea plantations. KUTYOOR is a village with a tea plantation, in Kumaon, near Almorah. RAMGURH is a village with a tea plantation, near Almorah.

"NYNEE TAL," says the "Gazetteer of India," "in the English district of Kumaon, lieutenant-governorship of the North-West Provinces, is a town on the route from Rampoor to Almorah, 30 miles S.W. by S. of the latter. This new settlement is extensively resorted to as a sanitarium, and a market has thus been opened for the productions of the neighbouring country. Nynee Tal contains a church, erected by public subscription in 1847. Here many English took refuge in 1857. There is a view of this town in the "Illustrated News" for August 15. Lat. 20° 20,′ long. 79° 30′."

At BHEEN TAL, near Nynee Tal, are the Government tea plantations.

"CHIRRA POONJEE, Cherra or Churra," says the "Gazetteer of India," "in Eastern India, in Sylhet, a town situate on the Cossiya Hills, in lat. 25° 14′, long. 90°. 45′. The station has an elevation of 4,200 feet above the level of the sea. Its average temperature throughout the year is stated to be twelve degrees of Fahrenheit below that of the plains of Bengal, while during the hot months the difference increases to twenty degrees.

"Beef and pork are produced on the hills, but grain of all kinds must be conveyed thither from

the plains. The native fruits, including the orange and the pine-apple, are excellent and abundant. Coal exists in all parts of the hills, of superior quality and in profuse abundance. The mines have been transferred by the Government to lessees, who, however, would appear to have exhibited no great amount of enterprise in the speculation. Iron ore is equally abundant, and it is believed that works might be established in those hills for the manufacture of iron and steel on a very extensive scale, and under a favourable combination of circumstances."

Here is a church; and in the neighbourhood are the collieries of the Sylhet Coal Company, and tea plantations.

Dr. Hooker, in the "Himalayan Journals," vol. 2, page 273-4, says:—

"Churra Poonji is said to be so called from the number of streams in the neighbourhood, and poonji 'a village,' (Khas); it was selected for a European station partly from the elevation and consequent healthiness of the spot, and partly from its being on the high road from Sylhet to Gowahatty, on the Burrampooter, the capital of Assam, which is otherwise only accessible by ascending that river against both its current and the perennial east wind. A rapid postal communication is hereby secured, but the extreme unhealthiness of the northern foot of the mountains effectually precludes all other intercourse for nine months in the year.

"On the first opening up of the country the Europeans were brought into sanguinary collision with the Khasias, who fought bravely with bows and arrows, displaying a most blood thirsty and cruel disposition. This is indeed natural to them,

and murders continued very frequent as preludes to the most trifling robberies until the extreme penalty of our law was put in force. Even now some of the tributary Rajahs are far from quiet under our rule, and various parts of the country are not safe to travel in. The Garrows, who occupy the western extremity of this range, at the bend of the Burrampooter, are still in a savage state. Human sacrifices and polyandry are said to be frequent amongst them, and their orgies are detestable. Happily we are hardly ever brought into collision with them, except by their occasional depredations on the Assam and Khasia frontier. Their country is very unhealthy, but is said to contain abundance of coal, iron, and lime."

"Education has been attempted by missionaries with partial success, and the natives are said to have shown themselves apt scholars."—Hooker, page 276.

"The flat table-land" (Hooker, page 278-9) "on which Churra Poonji is placed is three miles long and two broad, dipping abruptly in front and on both sides, and rising behind towards the main range of which it is a spur. The surface of this area is everywhere intersected by shallow rocky watercourses, which are the natural drains for the deluge that annually inundates it. The western part is undulated and hilly, the southern rises in rocky ridges of limestone and coal, and the eastern is very flat and stony, broken only by low isolated conical mounds.

"The scenery varies extremely at different parts of the surface. Towards the flat portion, where the English reside, the aspect is as bleak and inhospitable as can be imagined; and there is not a

tree and scarcely a shrub to be seen, except occasional clumps of screw pine. The low white bungalows are few in number and very scattered, some of them being a mile asunder, enclosed with stone walls and shrubs; and a small white church, disused on account of the damp, stands lonely in the centre of all.

"The views from the margins of this plateau are magnificent; 4,000 feet below are bay-like valleys, carpeted as with green velvet, from which rise tall palms, tree-ferns with spreading crowns, and rattans shooting their pointed heads, surrounded with feathery foliage, as with ostrich plumes, far above the great trees.

"To the south of Churra" (Hooker, page 280) "the lime and coal measures rise abruptly in flat-topped craggy hills covered with brushwood and small trees. Similar hills are seen far westward across the intervening valleys in the Garrow country, rising in a series of steep isolated ranges, 300 to 400 feet above the general level of the country, and always skirting the south face of the mountains. Considerable caverns penetrate the limestone, the broken surface of which presents many picturesque and beautiful spots, like the same rock in England.

"The climate of Khasia" (Hooker, page 283-4) "is remarkable for the excessive rain-fall. Attention was first drawn to this by Mr. Yule, who stated that in the month of August, 1841, 264 inches fell, or twenty-two feet, and that during five successive days thirty inches fell in every twenty-four hours. Dr. Thomson and I also recorded thirty inches in one day and night, and during the seven months of our stay upwards of 500 inches fell: so

that the total annual fall perhaps greatly exceeded 600 inches, or fifty feet, which has been registered in succeeding years. From April, 1849, to April, 1850, 502 inches (forty-two feet) fell. This unparalleled amount is attributable to the abruptness of the mountains which face the Bay of Bengal, from which they are separated by 200 miles of jheels and sunderbunds.

"The direct effect of this deluge is to raise the little streams about Churra fourteen feet in as many hours, and to inundate the whole flat; from which, however, the natural drainage is so complete as to render a tract which in such a climate and latitude should be clothed with exuberant forest so sterile that no tree finds support, and there is no soil for cultivation of any kind whatsoever, not even of rice. Owing, however, to the hardness of the sandstone the streams do not cut deep channels, nor have the cataracts worked far back into the cliffs. The limestone alone seems to suffer, and the turbid streams from it prove how rapidly it is becoming worn away.

"The mean temperature of Churra (alt. 4,000 feet) is about 66°, or 16° below that of Calcutta. In summer the thermometer often rises to 90°, and in the winter, owing to the intense radiation, hoar frost is frequent. Such a climate is no less inimical to the cultivation of plants than is the wretched soil; of this we saw marked instances in the gardens of two of the resident officers, Lieutenants Raban and Cave, to whom we were indebted for the greatest kindness and hospitality.

"We returned on the 7th August to Churra, where we employed ourselves during the rest of the month in collecting and studying the plants of

the neighbourhood. We hired a large and good bungalow, in which three immense coal fires were kept up for drying plants and papers, and fifteen men were always employed, some in changing, and some in collecting from morning till night. The coal was procured within a mile of our door, and cost about six shillings a month; it was of the finest quality, and gave great heat and few ashes. Torrents of rain descended almost daily, twelve inches in as many hours being frequently registered.

"Though the temperature in August rose to 75° we never felt a fire oppressive, owing to the constant damp and absence of sun. The latter when it broke through the clouds shone powerfully, raising the thermometer 30° in as many minutes. On such occasions hot blasts of damp wind ascend the valleys and impinge suddenly against different houses on the flat, giving rise to extraordinary differences between the mean daily temperatures of places not half a mile apart."

"MURREE" (says the "Gazetteer of India"), "in the Punjaub, a sanitarium for troops, situate on a hill between the rivers Indus and Jhelum, and established in the year 1851. The place is already attracting a considerable population; barracks are in course of construction, and houses are rising in every direction. Cherries, strawberries, raspberries, currants, apples, pears, and apricots are abundant; and every kind of European and tropical fruit, it is said, may be successfully cultivated here. Elevation of the station above the sea, 7,330 feet. Lat. 33° 54′; long. 73° 27′."

In 1857, according to the "New Calcutta Direc-

tory," this was the seat of the Chief Commissioner of the Punjaub, Sir James Lawrence, and of other officials. There was a church, a depot of military, and the revenue survey department of the Sind Sagur Doab.

DALHOUSIE is a sanitarium and hill station in the Punjaub, named in honor of the great Governor-General, who has done so much for the extension of English power in India. It was projected in 1853, and having received the sanction of the Marquis of Dalhousie, was appropriated as the sanitarium for the cantonments of Sealkote and Lahore. It is seated on the Chumba Hills, at the head of the Baree Dooab, 120 miles N.E. from Lahore in the Sub-Himalayas.* The object was to obviate the necessity of English soldiers being dragged to Landour, 320 miles off, and with three rivers intervening, while Dalhousie is accessible for them at all seasons. In 1856 a temporary road was opened to this sanitarium.† The situation of Dalhousie has been so well thought of that it has been by some proposed as the capital of India, instead of Simla. Dalhousie is about 1,180 miles from Calcutta, and 100 miles N.NE. of Umritsur.

DHURRUMSALA is a hill station and sanitarium in the Punjaub, in Kangra district, near Kangra, and Hosheyapore. Here are barracks for thirty invalids, a church, and the cantonment of a regiment of Seikh infantry. The tea cultivation has been introduced into this district and there is a Government establishment.‡ It is 1,273 miles from Calcutta.§

* General Report on the Punjab, 1849 to 1851, § 391; ditto, 1851 to 1853, No. II., 149; ditto, 1855-6, Part II., p. 34.
† General Report, 1855-6, Part II., p. 34.
‡ "New Calcutta Directory."
§ Punjab Reports, 1855-6, pp. 42, 56.

KYELANG is a Moravian missionary station in Lahoul division of Kangra district, Punjab government.*

BUDORODEEN MOUNT, near the Valley of the Bunnoo, is a small station founded in 1853, during the government of the Marquis of Dalhousie. It is in the Punjab, equidistant from Bunnoo and Dera Ismael Khan, on a hill cut off by the Pyzoo and Mulzye Passes from the Wuzeree and Buttunee mountains, and thereby safe from open attack. It is protected by a police post from thieves and marauders. It is the most western sanitarium in Bengal, and will, it is expected, save many an officer to the Punjab Irregular force.† It is about 1,600 miles from Calcutta.

ABBOTABAD is a town and military station in Hazara, in the Punjab, 22 miles north of Hurripore, 82 from Peshawur, and 1,580 from Calcutta, near the road to Cashmere. It is situated between two ranges of hills, and about 3,000 feet above the level of the sea. Its climate is mild, and well suited to the European constitution. It derived its name from Major James Abbott, formerly Deputy-Commissioner of Hazara, who was much beloved by the inhabitants of that district, amongst whom he remained during the rebellion of 1848, preserving the country under trying difficulties. Here is a detachment of infantry.‡

"ABOO," says the "Gazetteer of India," "is a mountain in the territory of Serohee, in Rajpootana, connected with the Aravulli range, but rising far

* "New Calcutta Directory."
† Punjab Reports, 1849 to 1851, § 391; ditto, 1851 to 1853, No. II., p. 149.
‡ "New Calcutta Directory, 1857."

above any other summit. The top of the mountain is extremely irregular, terminating in numerous peaks. The elevation above the sea assigned to it by Tod is 5,000 feet; Jacquemont states the elevation to be 4,500 feet. It is a celebrated place of pilgrimage, especially for the Jains, who have a very magnificent place of worship at Delivara, about the middle of the mountain: it is beyond controversy the most superb of all the temples of India. The summit of the mountain is situate 40 miles north-east of the English cantonment of Dessa, to which it was thought it might afford a useful and excellent sanitarium, from the moderate temperature resulting from its great elevation, the beauty of the scenery, the fertility of the valleys, and the fine sites for building. The suggestion was favorably entertained, and a commencement made for carrying it into effect. In 1847, about sixty ladies and gentlemen, with a number of children, were assembled here, and a hundred European invalids were also sent to partake of the presumed restorative powers of the climate. Lat. 24° 45′; long. 72° 49.′" "It is the head-quarters," says the "New Calcutta Directory," "during the hot season, of the Agent for the states of Rajpootana. Here are Trinity Church and the Aboo Lawrence School, founded by Sir Henry Lawrence for thirty boys and twenty girls of European soldiers." The climate in May and June is delightful; and English, suffering from the climate of Deesa and the plains, rapidly recover.

ERINPOORA is the military station. Here is stationed the Joudpore Legion.

OOTACAMUND, or OOTAKAMUND, is one of the chief stations in the Neilgherries, and is the frequent residence of the Governor of the Madras

Presidency. Thornton says (in the "Gazetteer of India"): "It is a town in the English district of Coimbatoor, Presidency of Madras, and the principal sanitary station on the Neilgherry hills, having an elevation of 7,300 feet above the level of the sea, and is 1,300 feet higher than the minor stations of Kotageri and Coonoor. It is situated in the open valley almost in the centre of the hills, protected by the Dodabetta range or the north-east and south, but open to the westward." According to the authority already quoted, "the only town on the hills properly so called is Ootacamund; and even this term can only be applied legitimately to the native portion of the settlement, since the residences of the Europeans are too widely dispersed along the slopes of the valley to admit at present of its further extension. So rapidly, however, is the number of houses increasing, that before long the term town will not be inappropriately applied to the whole settlement. The site of Ootacamund was first occupied in 1822. The mean annual temperature is 58°. The rain fall, on an average of four years, was found to amount to 44 inches. An elegant church, which has been recently enlarged, is one of the greatest ornaments of the settlement. There are also public gardens; and the site has been selected for one of the meteorological stations of the Madras Presidency. Ootacamund is 32 miles north-west-by-north of Coimbatoor. Lat. 11° 24′; long. 76° 47′."

"Coonoor," says the "Gazetteer of India," "one of the minor sanitary stations on the Neilgherry hills, is in the district of Malabar, Presidency of Madras, 6,000 feet above the level of the sea. It is situate on the crest of the hills in the south-east angle of their summit; the residences of the Europeans, including an hotel, being placed on the

rounded tops of a range of hills, which runs from a high mountain, called 'Coonoor Betta,' towards the top of the pass, while the bazaar and native residences are in the hollow below, and adjacent to a masonry bridge, which spans a wide stream flowing from the Jakatalla valley, and descending the hills at this point in a large volume of water. The south-west monsoon sets in at this station in the month of June, but with less rigour than at Ootacamund, owing to the clouds, which come charged with rain from the westward, meeting with opposition from the high spurs of the Dodabetta range which intervene. The annual fall of rain here averages 55 inches; that at Ootacamund 60 inches. Distant north from Coimbatoor 26 miles. Lat. 11° 21′; long. 76° 56′."

"KOTAGERI, or KOTERGHERRY," says the "Gazetteer of India," "is one of the minor sanitary stations on the Neilgherry hills, in the district of Malabar, Presidency of Madras, situate 6,000 feet above the level of the sea. This station is well protected from the violence of the south-west monsoon by the Dodabetta range, which stands out like a huge wall to screen it. The annual fall of rain averages 50 inches. Lat. 11° 27′; long. 77°."

As Simla, Darjeeling, and Ootacamund are for the other presidencies, so is Dapooree for Bombay; and now that it is to be provided with railway communication, it will rapidly advance to the dignity of a presidential capital.

"DAPOOREE," says Thornton ("Gazetteer of India"), "is a town situate on the left bank of the Moota river, a feeder of the Beema, in the English district of Poonah, Presidency of Bombay, four miles north of Poonah. The town contains a resi-

dence for the use of the Governor of Bombay; and in its vicinity are the botanical gardens maintained by the Government. Lat. 18° 32′; long, 73° 51″."

BYCULLA is one of the southern settlements occasionally resorted to by the governors of Bombay. Here is a school in which the orphan girls of halfcastes are brought up. Viscountess Falkland, in her "Chow-Chow," states that these girls become the wives of inferior English and of Eurasians; and that candidates in search of a wife visit Byculla, and at tea are introduced by the schoolmistress to such of the elder girls as are by her considered eligible.

"MAHABULESHWAR," says the "Gazetteer of India," "in the Presidency of Bombay, is a small town or village on the summit of the range of mountains bearing the same name. The range is part of the western ghauts, extending from south to north in a direction nearly parallel to the western shore of India, and at the distance of about forty miles from it. The soil of this range is fertile, and produces in abundance the esculent vegetables of Europe, especially potatoes, which are here finer than in any other part of India. The picturesque attractions of this table-land are very great, there being 'a varied succession of mountain scenery, which, for grandeur and beauty, is scarcely to be equalled in any part of the world.' There are excellent roads, and an abundant supply of water. The violence of the monsoon is extreme. During July and August fogs prevail, with unintermitting light and drizzlng rain, and occasional drenching showers. At other times of the year the humidity of the atmosphere is moderate. The cool season begins early in October, and is the pleasantest part of the year. Throughout November,

December, January, and February, the sky is almost uniformly clear, and the atmosphere bracing. This hill station is totally free from malaria. The place was abandoned as a sanitary station for troops owing to the climate being unsuited to the acute diseases which are most common among the troops; it is, however, much frequented by invalid officers, for whose accommodation there is a sanitarium containing eight sets of quarters and several detached bungalows. There are also about seventy private dwellings, upwards of fifty of which are of hewn stone. In cases where a visit to this place is not contra-indicated by acute inflammatory disease, restoration to health is almost certain. Its effects are highly beneficial in fevers, whether intermittent or otherwise, especially in the obstinate endemic fever of Guzerat. In disorders of the digestive and biliary organs, a residence at this station is decidedly beneficial, as also in certain forms of diarrhœa. In cachexia and general debility its restorative effects are strongly marked, as also in chronic disease of the liver and spleen. For the cure of headache, chronic rheumatism, ulcers, various scrofulous affections, diseases of females and children, a residence at this place is likewise recommended. The number of visitors appears to have been steadily increasing. The station is situate at the north-west corner of the table-land, and has a western aspect favorable for receiving the advantages of the salubrious sea breezes. It was established in 1828 by Sir John Malcolm, then Governor of Bombay, after whom the village of Malcolmpeth was named. The site was ceded by the Rajah of Sattara in exchange for another spot. The bazaar is a tolerably large one and is well supplied. There is a small church, a subscription library, and an hotel. A detachment of fifty native troops, under the command of a jemadar,

is stationed here to maintain the requisite guards; its European establishment consists of a chaplain and a medical officer, the latter being superintendent of the station. The general elevation of the station above the sea is 4,500 feet; that of the highest summit 4,700. Distance north-west from Sattara, by a good carriage road, 30 miles; south-west from Poonah, by a circuitous hilly route, 70; south-east from Bombay, crossing the haven, and subsequently proceeding by Nagotna, 114; and by another route, 127, viz., by sea down the coast to Bancote, 70; thence up the river Sawitri, 30; and subsequently by land 30 more. Lat. 17° 59′; long. 73° 41."

Viscountess Falkland, who resided at Mahableshwar with her husband, the Governor of Bombay, speaks in her "Chow-Chow" in the highest terms of the restorative effects of this climate.

MALCOLMPETH, a village near Mahableshwar, founded by Sir John Malcolm in 1828.

The approaching annexation of Cashmere will afford a good supply of fine land for English colonists.

CHAPTER X.

ENCOURAGEMENT OF RAILWAYS—APPLICATION OF LAND GRANTS AND OF THE LAND SALES' FUND — ESTABLISHMENT OF FREE EMIGRATION IN INDIA—LIQUIDATION OF THE NATIONAL DEBT.

Besides a guarantee of five per cent., it is in the power of the Indian Government to give very material encouragement by land grants and other privileges.

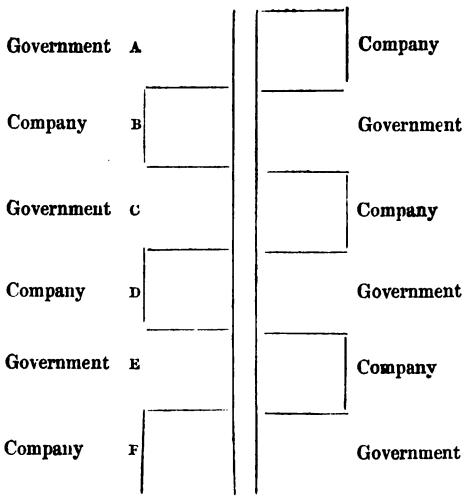
A free grant of the land required for the railway, on payment of compensation where there may be occupying tenants, which is only in the lower portions of the lines, is a reasonable demand. In the hill regions are abundant supplies of timber and materials for ballasting, in which the low countries are deficient.

Exemption from taxation, general and local, for an extended period, is another boon, which costs nothing to the granters, and is an encouragement to capitalists. This is a concession well understood by railway capitalists.

Another concession which might be made, is a preemption right to coals and quarries within a certain distance of the line. Coal has been already found in more than one of the districts referred to, and is on geological grounds likely to be more extensively discovered.

The most valuable bonus, however, to such under-

takings, would be a grant of land on the same basis as has been conceded to some colonial lines, and as is commonly granted in the United States. The grant would be the usual one of alternate mile sections, with a further grant at the terminus. The land would be thus apportioned:—



On the first mile of railway A, the land for one mile deep on one side would belong to the company, that is to say, one square mile or 640 acres. On the second mile B, the section on the other side would belong to the company, and so on for each mile C, D, E, F, &c. Thus the company would get for each mile of railway 640 acres of land, which would be of high value, because adjoining the railway. If the line were economically constructed, the land at its improved value would ultimately pay the whole cost of the railway.

Such a grant would be of the greatest advantage to the Government, in the first place, for the experience

of the Federal and State Governments of the United States teaches us that the remaining alternate mile sections, and all the adjoining lands, are so enhanced in value that they fetch more than the whole of the original wild land. Thus the part given away, instead of being a loss, brings to the Government a large gain. In the second place, such a grant would be the most effectual measure for replacing at an early period the system of guarantees, as the land bonus would become, as in the United States, a sufficient substitute for a guarantee, even in the most thinly peopled district. Land grants will be the only subsidy from the United States Government to the Great Direct Californian Railway, and land grants would, in a few years, supply every river valley in India with railways, tramways, and canals.

In the hill regions, most of the land is waste; the Government is proprietor, and the land tenure is uncomplicated. The questions attaching to land titles in the Bengal and other presidencies do not, therefore, apply to this part. Where, however, the land is under settlement, there is no reason why the Government right should not be conceded to the railway company, with the conditions of compensating the zemindary, ryotwary, and other inferior interests. Whether the land revenue in India is rent or tax does not affect this question, nor is there any difficulty in affording practical aid to the railway company in the manner suggested. It is, however, questionable how far a principle adopted in the laws of some of the American States should be applied to India; and an inquiry be made, after the railway has been constructed, which party has been benefited or injured, and whether the company should pay compensation to the Government, zemindar, or ryot, or whether the Government,

zemindar, or ryot should pay compensation to the railway company for the benefits received.

A land grant on the usual scale is the best measure that can be adopted by the Government of India for the ultimate promotion of railways and of works of canalization, irrigation, and drainage.

The best measure for the immediate promotion of the required railways is an immediate guarantee.

In order to effect the English colonization of India on a large scale, large funds must be provided, and those cannot be afforded out of the present revenues of India. Those revenues have to meet charges connected with the defence of India, the maintenance of a stable government, and the advancement of native interests and native progress; and they are, therefore, in no condition to afford the large contribution required for immigration.

A railway system, as here proposed, would induce a large voluntary immigration, though still insufficient for the political and military requirements of India. Those who know Simla and Darjeeling will invite relatives, friends, and dependents to come and settle in a region which offers better scope for capital and enterprise than even Canada, Australia, or New Zealand. In those lands the undeveloped riches of nature are to be sought; but in India, while there are virgin lands to be tilled, and mineral wealth in exhaustless abundance to reward the search, there are, in addition, all the resources of a vast population, and of enormous agricultural production available for the application of science, enterprise, and capital. Thus, India offers better scope to those who possess

the requisites than any of the new lands so eagerly sought by emigrants; and when India is once laid open, the immigration to Simla, Darjeeling, Assam, and the neighboring regions, will be great.

These immigrants will enrich India by bringing capital; but five or ten thousand immigrants a year will constitute no political power. To give India an effective English population, we must provide it with the same machinery as Australia and New Zealand for supplying a self-supporting immigration — namely, the application of the Wakefield system, by means of a land sales fund, devoted to immigration and local improvements. India possesses, in the hills alone, millions upon millions of acres of land, which, at an upset price of £1 per acre, would yield an enormous sum; but in the plains there are likewise millions of acres of untilled lands, which would realize an enormous revenue. The land sales fund would constitute the basis of the immigration; and when immigration was carried out on an adequate scale, an emigrant could be taken to Calcutta, Madras, or Bombay, as cheaply as to Sydney or Wellington, and could be carried up country by emigrant trains as cheaply as from New York or Montreal to Michigan or Lake Huron. From £14 to £20 per head would place an assisted immigrant in Darjeeling, Simla, or Assam.

The more immigrants the more land would be sold, and consequently the larger the amount of the land sales fund, while a proportional outlay, as in the colonies, on roads, bridges, and other necessary works, for making the public lands available for settlement and sale, would likewise enhance the proceeds of the fund. An immigration of 50,000

men, women, and children per year would be within the limits of the ultimate progress, and such numbers would constitute an effective and powerful colonization. A million a year, which is nothing for the resources of India, would place 50,000 immigrants in the hill regions; and to the ultimate immigration it is not easy to assign bounds. The population would likewise increase by births, so as to settle a new branch of the nation in the strong places of India, worthy to vie with those great tribes who now people North America, Australia, and South Africa.

The establishment of an immigration department for India would allow of the correction of a defect which has seriously restricted colonial immigration, and that is, the want of a provision for the repayment of the immigration bounty. The best means of affecting this would be by a small poll-tax—say £1 per head yearly—on all immigrants or Europeans in India, free or assisted. This system was proposed by the author for application to Australia some years ago, and other measures have been proposed by other parties; but the present course has prevailed so long in those colonies that it is difficult to innovate upon it; but in India there would be opportunity for taking advantage of all the improvements that experience elsewhere has suggested, and for conferring greater benefits on India and the empire at large.

The first step is the appointment, in London, of a Commissioner of Emigration for India, or a Board of Commissioners, with local agents in India, co-operating with the several Departments of Public Works.

By devoting half of the land sales fund to

immigration and half to local improvements, the poll-tax repayment fund, which would produce, on the average, nearly the whole amount of the land sales fund, would remain free for imperial purposes. By the application of this and the accruing funds as a sinking fund for redeeming the consolidated National Debt of England and India, that debt, enormous as it is, even if it should be hereafter raised to one thousand millions sterling, would hereafter be paid off as effectually as the successive federal debts of the United States have been extinguished by means of the sales of public lands in that continent.

In the development of the resources of India, the joint interests of England and India are bound up, and our success in this enterprise will abundantly reward our endeavours. Our first steps may be slow and feeble, but our ultimate progress will be rapid, as has been the growth of every enterprise in India.

The colonization of the hill regions of India with English will give us a hold which can never be shaken off. In those settlements will be maintained a larger European force than is now kept up, and it will be maintained at English pay in English health and efficiency. Residence in a healthy climate and a land bounty will never leave the Indian army without recruits or volunteers.

The recruits, invalids, pensioners, and veterans of this active force will be kept in the hills, affording a copious reserve; and the colonization will afford a numerous militia, which will keep India under ultimate control, and render its frontiers on the north and north-west unassailable. An English population of one million will render revolt or

revolution in India impossible, and secure its peaceable settlement and our perpetual domination; while all prospects of a Russian invasion will be at an end. Russia is to be foiled by no increase of Sepoy armies, by no alliances with frontier princes, by no augmentation of European regiments, such as will constitute a commensurate force; but by bringing the power of the English race to bear upon the frontiers menaced, so as to defend them with English arms, with English hearts, and with English enterprise. When we have done that, then, and then only, shall we have secured our Indian empire beyond the dangers of Meerut revolts, or Delhi emperors, or the ambitious advances of the Russian legions. How this is practically to be done is here shown.

Thornton, in the "Gazetteer of India,"* states that the Special Committee appointed to inquire into the relative healthiness of different sections, arrived at the conclusion that at least two soldiers die at the stations on the plains for one on the hills. This is a sufficient comment on the importance and practicability of making the hill countries the seat of our chief European military force.

* "Gazetteer of India"—Article, "Soobathoo."

CHAPTER XI.

ADVANTAGES OF ENGLISH COLONIZATION, AND OF THE HILL RAILWAYS.

AMONG the advantages which will accrue to India from the establishment of the Northern Bengal and Simla Railways, the following will be observed:—

I. The provision of healthful residences for the Governor-General, Governors, and Lieutenant-Governors of India must necessarily be followed by the removal of the Members of Council, Secretaries, and heads of departments, from their present dangerous residences, in which some of the noblest servants of the Indian Government and greatest benefactors of the country have lost their lives. The legislation of India can as well be carried on at Simla as at Calcutta; the Treasury of Bengal will be better looked after at Darjeeling than at Calcutta; and the political interests of the north-west more safely conducted at Simla than at Agra or Delhi. With the chief administrators placed under circumstances favorable to their health, their comfort, their peace of mind, and the exercise of their intellectual and physical powers, India will at length reap the full benefit of the services of those who have reckoned among them some of the greatest administrators of the empire. How much more would many of these friends of India have done under a climate more propitious than that to which they were doomed, and under social and domestic influences more congenial to noble minds.

II. It will occur to any one who looks at the working of the system, that the Supreme Courts must ultimately be established at Simla, Darjeeling, and other suitable hill towns, for the several presidencies and provinces. Thus a greater command will be obtained of legal talent for the bench and bar, and appeal cases and cases of the highest jurisdiction, instead of being carried on at the hazard of valuable lives in Calcutta, Madras, and Bombay, will be necessarily transferred to the healthy regions. This point gained, circuit courts, with a circuit bar, will become practicable, and the administration of justice in criminal cases, and secondary civil cases, be placed on a much better footing. This will be an enormous relief to the higher civil and judicial functionaries, removing them from seats of pestilence to cities, where they will have the companionship of their families and the association of friends. Thus only the local magistrates in the first instance need be resident in the lower stations, and, after a short residence in the plains, promotion will place them permanently in a healthy climate.

III. The mints, the chief post-offices, and most of the great public establishments will in time be removed to the hills, for the benefit of health to their superintendents, and to insure cheap and efficient skilled labor. Thus the sorting of the overland mail will be better performed at Dapoorie than at Bombay—at Simla than at Calcutta, and the duties of the post-office be more surely performed. The distinguished men who have conducted the mints of India will have successors who will earn the like distinction at less hazard to their lives, and less sacrifice of home comfort and intellectual enjoyment.

IV. One strong political argument in behalf of the hill cities and their hill railways is, that the system will secure the preponderance of European intelligence in India, and make native intelligence in India more available than in the present state of affairs can be the case. Now, the English in the presidential cities and great stations are made dependent on native assistance; but hereafter, placed in the hill cities, they will have to avail themselves of European assistance, as the climate of the hill cities will be found prejudicial to the natives of the plains. A more open career can safely be given to the natives of India, and at the same time a more vital and energetic administration be securely established on an unassailable basis.

V. The furlough to England will be as necessary as ever—it must not be assumed it can be superseded; but then it will be under different circumstances. It is essential that intercourse shall be maintained with the centre of modern progress—that the mind shall be renovated under the influence of a home visit; and no man will debar himself from association with aged parents, near kinsmen, or old friends. But he will no longer go home on sick leave—his enjoyment of home poisoned by disease, and his convalescence effected only to prepare him again to encounter the vicissitudes of an Indian life,—he will go home, like the Australian or Canadian settler, in the full vigour of health and spirits, to enjoy his short stay in the old country, and to take back a full mind and a contented heart to the country of his abode. The wearisome journey of the westward route may still have to be encountered, but not by the weakened frame of the invalid. A visit to India will likewise have less drawbacks for kindred or friends at home, because

it will not be a visit to scenes of pestilence, but to abodes of health, amid the grandest scenery in the world—the giant Himalayas towering behind Darjeeling.

VI. In Simla, Darjeeling, and the other hill cities, small military and civil hospitals are now seated; but with the introduction of the railway system they will become the residences of the superior medical functionaries of the several presidencies, and of the most eminent medical practitioners, and they will be endowed with large hospitals and medical institutions. Here both medicine and surgery can be better studied than in the hot cities; and anatomy will be learned by dissection, instead of by inspecting models and preparations. The hill cities will consequently not only provide medical schools for practitioners among the European hill population, but the native students of Calcutta, Madras, Bombay, and other medical colleges, will be able, without material expense or injury to health, to study for one year in the hill schools, to the great advancement of medical science; an object dear to philanthropists and the enlightened friends of India. In the thirst for superior knowledge the medical students of India have made the voyage to England, and in their zeal successfully competed for the honors of the University of London. This, however, is an advantage available to but few; but the medical schools of Simla and Darjeeling will be open to all.

VII. At Simla, Darjeeling, Ootacamund, Landour, Soobathoo, &c., are established churches and chapels, which are the real, vital, and stable seats of religion in India, and with the extension of colonization, it follows that a great supply of clergymen and churches will be attendant upon it. Instead of

small stations and missionary churches scattered over India, there will be concentrated Christian populations, admitting of effective organization and superintendence. Archdeaconries, cathedrals, and bishoprics will be necessary to carry out the complete system; and instead of a few bishops and a few chaplains perilling their lives in the cities of the plains, too many to die martyrs (like Heber), or, at the best, to come home invalids to stations of diminished usefulness, a vigorous and efficient clergy will be maintained, and the curates or missionaries in the plains will be gradually drafted off to the livings and dignities in the hill parishes. It is at Simla and Darjeeling, and not at Calcutta or Agra, that the primates and metropolitans of India must be stationed. Now they visit the sanitaria like other invalids, and minister to the small European congregations, abandoning with regret their vast dioceses in the plains, which hereafter railway transit will enable them regularly to visit and more advantageously to administer.

VIII. The merchant goes out to India in peril, and with the hope that his stay there will not be prolonged; hence few firms can offer suitable prospects to partners, and to few firms, relatively, is the mercantile community of India limited. The unmarried man must, perforce, content himself with his condition; the married man is exposed, like all residents in India, to dangerous sickness in his family, and to have wife and children, for safety's sake, banished from him to Europe. Thus the domestic circle is maintained against the onslaughts of disease, or broken up at one fell attack; and a residence in India, if attended with commercial success, is too often embittered by home sorrows.

To give the Calcutta merchant a homestead at

Darjeeling, within eight or ten hours' reach, wholly remedies these evils and removes these terrors. There he can provide for his family a happy and comfortable home, which may become a permanent abode on his retirement from business. At this home he will be every week, and there he will stay during the sickly seasons; and thus, with greater safety to his own health, he will conduct his business. At the more active periods he will leave for Darjeeling on the Saturday, and return on Monday; but on occasion he will make a longer stay: and whenever his health is affected by the climate of Calcutta, he has his home for a resort, the ministering aid of relatives, and fair weather for his restoration. This change of system will be attended by no diminution of assiduity; for the time now spent on the sick bed, nay, the time lost under the enervating influence of climate, is much more than what will be spent, not on lessening health and on shortening life, but on renovating the constitution and maintaining it in full activity. The man of business will do more in less time, because he will do it better. It will then be possible to carry out, by European hands, many departments of commerce not now pursued by them, and the result must consequently be a free extension of commerce and an augmentation of the European community of Calcutta.

IX. These several advantages will not be confined to Calcutta, but access to Darjeeling will be enjoyed by every station and town on or near the main line of the East Indian Railway, as far as Delhi, and some of these places will be brought within five hours of Darjeeling, so that almost daily transit will be practicable, if required. Thus the whole of a vast range of country will be opened to

European commercial operations, and the transactions of the Calcutta houses, or, possibly, of Darjeeling houses, will be extended to many cities of the plains by trustworthy partners or agents, under suitable contracts and on moderate remuneration.

The part that Simla, Darjeeling, and the hill cities will take in financial and commercial operations must ultimately be an important one. With great and enterprising communities resident in them, they will have banks and assurance companies on a large scale, and these will have branches elsewhere; so that the tendency will be to a concentration in the hills of business now of necessity carried on in the presidential capitals. It is in the up country a Bank of India must have its seat. It is there naturally that the administration of railway enterprise will be carried on; and, in fact, joint-stock enterprise will thence take its origin and its extension. The result must consequently be the creation of great financial resources.

The vast natural wealth of the uplands in fuel, minerals, timber, and cattle, cotton, tea, and other produce, and the artificial advantages to be given to it of cheap and skilled labor, will give it the basis of an immense commerce. There many manufactures will be exclusively conducted, and, in the nature of things, as the cultivation of those productions suitable to the alluvial plains of India will be stimulated, so more and more will its manufacturing industry be directed to the hills. The import and export trades are the appanage of the seaports; but it does not follow that, commercially, supremacy will remain with them. Birmingham is a greater commercial centre than Gloucester. Leeds and Sheffield have their merchants independent of Hull; and

Manchester divides the realm of commerce with Liverpool. So, too, on the continent, Havre is found as the outlet only of Paris and Rouen.

X. To the merchant's clerk and mechanic employed in Calcutta or any of the great stations, intercourse with the hill cities will be of the greatest value. What is sought for by Governors-General and Governors would be of avail to the humbler classes, did but their opportunities of time and means of expenditure permit; but what is easy for a high official with unlimited resources is not practicable for the humbler individual, who has not seven days for dawk to the hills, nor seven days to come back, nor the wherewithal to pay for it. With the railway, and a second or third class return ticket, matters would be altered, and from the westward a clerk could run up to Simla, or from Calcutta to Darjeeling. When unwell, two or three days' leave would readily be granted, and a clerk in Calcutta would get his two or three weeks' holiday as regularly as if in England. Mercantile life in the seaports would become more endurable, and a better command would be had of the labor market. A run to Darjeeling or Simla would be within the compass of all, and a stay in a climate like England would refresh both body and mind. Indeed it is difficult to overrate the value of such a resource to the resident in India of limited means, to say nothing of the opportunity which would be presented to those who had suffered by the climate of the plains and seaboard, of obtaining employment in the hills.

On the other hand, the hills would supply labor on any casual emergency, and, indeed, contribute a reserve of European and skilled labor whenever required—as, for instance, in the case of steam-boat

repairs, and in the supply of sufficient engineers, or, in getting up new machinery, in providing the requisite workmen. The workman would naturally prefer a congenial climate, where he had his family and his home, but whence he would be tempted by the high wages of the plains; and relays of workmen would thus be obtained without danger to life and without exorbitant expense. By creating a home for the working classes of England in the hills, India would readily obtain the needful assistance of skilled labor in every department of industry, nor would the workmen be so much exposed to habits of intemperance and irregularity. The manufacturer or contractor at home or in India could rely on the completion of his operations by competent assistance, without the necessity of sending out a trained workman, and without the hazard of his misconduct or his death. Lately the proceedings of the Calcutta gas works were delayed by the death of a skilled superintendent; and many an enterprise has been paralyzed for a season by a like casualty, until the required aid has been obtained from England. Moral resources would be more largely developed in India, and consequently the field for European labor extended.

XI. It is at Darjeeling and the hill towns that the great railway repairing establishments, on the scale of Wolverton, Swindon, and Crewe, will be ultimately placed, because there the raw materials, iron, copper, and coal, will be obtained, and English labor, a chief element of cost, can be most satisfactorily applied. There, too, the manufacture of agricultural implements and other machinery will be carried on, and a new element of industrial prosperity be created for India.

These establishments will powerfully aid European

colonization, and supply the railway with passenger traffic to and fro, and down goods traffic.

XII. At present the civil and mechanical engineers engaged in railways, canals, and other public works, are of necessity stationed in the plains; and it is notorious to all members of the profession how sad has been the sacrifice of life among those who have gone to India; indeed, few have become acclimated, and few have returned in health. With suitable access to the hill towns, engineers would have their establishments at Simla and Darjeeling as naturally as they now have in London. There they would prepare their plans and keep their drawing offices, and thence they and their staff would proceed at suitable seasons on surveys, while native clerks of the works could be the more extensively employed, as they would be under competent superintendence. To acquire a large body of men, whose business is the development of the machinery of civilization, would be a great boon conferred on India, and its realization is within the scope of the enterprises here described.

The remarks here made apply likewise to architects and other professional men, for whom healthful residence would be provided in the hill cities, with suitable access by railway to the scenes of their avocations.

XIII. With an English population seated in the hills, there would be a larger English population than there now is in Calcutta and the lower cities, because the unhealthy cities would be frequented for brief periods for purposes of commerce; as New Orleans, Savannah, Mobile, and the cities of the south are supplied with a population from the northern states.

CHAPTER XII.

RAILWAY TRAFFIC IN INDIA.—CAN RAILWAYS COMPETE WITH RIVERS AND ROADS?—OUGHT RAILWAYS TO BE MADE FOR GOODS TRAFFIC?

When railways for India were proposed by Sir Macdonald Stephenson, the founder of the Bengal system, by the late John Chapman, the founder of the Bombay system, and the late J. M. Heath, the founder of the Madras system, they were assailed on all hands with the assertion that railways would obtain no traffic, and that they could compete neither with roads nor rivers. At the request of several gentlemen connected with India, I entered on the investigation of the question in 1846, and from the documents furnished by them, obtained abundant evidence of the capacity of India for railway traffic, the results of which investigation were then published.

Since that time the opening of the East Indian Railway and of the Great Indian Peninsula Railway have furnished practical evidence in support of the views of the eminent men who founded the Indian railway system; but again the question has been raised by Colonel Cotton, and others, and railways are perseveringly assailed as unsuited to India, and as inferior to roads, rivers, and canals in the development of its traffic. It was in consequence of clamor of this kind that the Indian Government was prevailed upon to discontinue the direct line from Calcutta to Delhi; to stop it short at Ranegunj, and to proceed with the tortuous line

by Rajmahal along the river bank; the intention having been to prevail upon the Government, if possible, to stop at Rajmahal, and there receive the steamboat traffic, leaving the steamboats in possession of the Upper Ganges. It is, therefore, again necessary to consider the question of railway traffic, and to examine whether railways can compete in India, as they have done in Europe and America, with river and road carriage; and this is the more desirable, as the authorities in Assam have affirmed that the traffic of that country will proceed by the river route, and not by the road proposed through Bugwah, Dinajepore, and Rajmahal to Calcutta.

Lieut. Col. F. Jenkyns, the Commissioner of Assam, and Lieut. Col. Vetch, the Deputy Commissioner of Assam, have spoken strongly on this subject; but their arguments apply to the road between Bugwah, Dinajepore, and Rajmahal, and not to the railway route of the Northern Bengal Railway; but the evidence of those authorities will very likely be quoted against the railway, when it is proposed that the latter shall compete for goods with the Burrampooter.

Col. Jenkyns and Col. Vetch consider that the proposed road described in Chapter V. will be of great advantage for passenger traffic and for light goods traffic, and consider its construction desirable; but with a transhipment at Bugwah or Doobree to the road, and another from the road to the railway at Rajmahal, they consider that the heavy goods of Assam will continue to be carried by boat down the Burrampooter. This would be so by road; but inasmuch as the Northern Bengal Railway and the East Indian Railway will form one continuous route from Bugwah to Calcutta, the objection about tran-

shipment is at an end; but there remains the question, will these railways carry the tea, sugar, and cotton of Assam, or will they be conveyed from Bugwah to Calcutta by boat?

INFLUENCE OF TIME UPON RATES OF GOODS.

Time as an element of charge may perhaps be most appropriately considered first in its operation as an element of goods charge. A saving in time by railway conveyance is, of course, the effect of a higher rate of speed than by either land or water conveyance. This saving of time resolves itself into four heads:—

1. Saving of interest.
2. Saving of market.
3. Saving of quality.
4. Saving of stock.

The third, perhaps, partly or wholly belongs to saving under the head of safety.

Saving of interest is not merely concerned in the time of transit, but also in the time at which goods ought to be sent, but cannot be despatched for want of conveyances. Thus, although the saving of interest on the mere transit of a ton of goods by the quicker railway conveyance may be only on a fortnight, yet the saving of interest by the earlier despatch may be three months or more. With the river conveyance of India delays are felt from want of water at particular seasons (as on our canals), by the strength of the currents in the rains, and by the periodical monsoons.* In the case of the coal of Burdwan, the owners were unable to bring the coal down a direct distance of 75 miles in less

* Allen, Deffell, and Co., in Report of Macdonald Stephenson, Esq., p. 30.

than two seasons, by the circuitous route of the river Damooda;* the like happens with other goods in the Assam and Dinajepore districts. The boats could come from Ompta to the coal mines only in July, August, and September, and what has been dug during the whole year must remain at the ghat till those months.† In the case of coal, a loss of nine months' interest took place, which would be equivalent to 7½ per cent. per annum, because we must take a high rate in India. Since the opening of the East Indian Railway to Ranegunj, coals are brought down daily, and the traffic has enormously increased. In the case of the whole river traffic, from Calcutta to the up country, the only passable channel for boats drawing five feet water during nine months of the year, the smaller channels being closed, is by a circuitous route of 528 miles, instead of 200, through a perilous labyrinth of creeks and wood-encumbered straits, forming the wilderness called the Sunderbunds.‡ From this great delay necessarily arises. Thus thirty days are sometimes required for the passage from Calcutta to Rajmahal, where the junction of the Northern Bengal Railway takes place.§ Between Calcutta and Mirzapore the length of passage is six weeks by water and seven weeks by land.‖ The steamers sometimes occupy thirty-six days in going from Calcutta to Allahabad, although the voyage is occasionally eighteen days; twenty and a half days was the allotted time in 1857. From Calcutta to Mirzapore the water conveyance requires from six weeks to two months.¶ Some furniture

* W. Theobald, Esq., in Report of Macdonald Stephenson, p. 53.
† Report of Macdonald Stephenson, p. 59.
‡ Macdonald Stephenson, p. 16; and Report of General Macleod, p. 74.
§ "Calcutta Review."
‖ Report of Macdonald Stephenson, p. 17.
¶ M. Rustomjee, in Report of Macdonald Stephenson, p. 69.

sent from Calcutta to Benares occupied ten weeks in transit. Notwithstanding the advantages of steam freight on the Ganges, this means of transit is so restricted, that downward freight has sometimes been engaged in all the steamers for two months in advance. This must necessarily be added, to ascertain the loss of interest, to the time occupied in the transit. In the Bombay territories the evils are quite as great. Mr. Fenwick states,* that, from want of water and forage on the road, owing to the scanty preceding monsoon, a large quantity of the cotton from Berar could not be carried to Bombay, and was then lying on the road. This happens every year, more or less. In 1843, Messrs. Fenwick engaged with a house in Bombay to deliver 5,000 loads of cotton by the end of May, or before the setting in of the monsoon. That year the roads became impassable by rains for days together, and although carts were engaged at a high price, they could not perform their engagement. Out of the 5,000 loads 2,000 were dropped on the road: some they managed, by great exertion, to push on to Kushleebunder, but it arrived too late to be boated across the bay, and, being housed, it was, by accident, burned in October. In 1846, above 20,000 loads of cotton were left behind in that part of Berar.

The saving of interest will also accrue, partly under the fourth head, in consequence of a less quantity of goods being required to be kept in store. There is also a saving of interest on the time at which the freight is paid.

The saving of interest, under various heads, will frequently amount to $7\frac{1}{2}$ per cent., and will afford

* Report of Mr. Chapman, E., p. 29.

considerable compensation for an increased railway fare.

The following will show the amount of this saving per ton, at various rates, and the equivalent distance in miles, at one penny per mile, which might be traversed by railway:—

Interest taken at 7½ per cent., rate of saving on a ton of goods of various values, with the equivalent number of miles, at 1*d.*:—

£100	value	£7	10	0	saving	1,800	miles run.
50	„	3	15	0	„	900	„
20	„	1	10	0	„	360	„
10	„	0	15	0	„	180	„
5	„	0	7	6	„	90	„
1	„	0	1	6	„	18	„

Interest taken at 5 per cent:—

£100	value	£5	0	0	saving	1,200	miles run.
50	„	2	10	0	„	600	„
20	„	1	0	0	„	240	„
10	„	0	10	0	„	120	„
5	„	0	5	0	„	60	„
1	„	0	1	0	„	12	„

Interest taken at 2½ per cent:—

£100	value	£2	10	0	saving	600	miles run.
50	„	1	5	0	„	300	„
20	„	0	10	0	„	120	„
10	„	0	5	0	„	60	„
5	„	0	2	6	„	30	„
1	„	0	0	6	„	6	„

Upon coal, the saving of interest at 7½ per cent. would allow of its being conveyed 18 miles further,

at 1*d.* per mile per ton; at 5 per cent., of being conveyed 12 miles further; and at $2\frac{1}{2}$ per cent., of being conveyed 6 miles further. This operates so far as to extend the range of market and supply.

Upon such articles as sugar and cotton, the range of supply, at the rate of 2*d.* per mile for conveyance, would be occasionally extended 40 or 50 miles —a most important result.

The saving of market is, indeed, a very great advantage, which will give a large compensation for a difference of fare. This will at home cause a very large and sudden influx of traffic on railways in the shape of rice, cattle, and agricultural produce, a rise in a particular market being sufficient to draw a large amount of supplies. Upon indigo, which is largely raised in the Malda district, this will tell very powerfully; but it will extend to all classes of produce, whether cotton, sugar, rice, or jute.* Silks and cashmeres, exported to the extent of £1,500,000 a year from Calcutta, would on a market rise of 5 per cent. afford a large revenue to the railways. Of indigo, the value for export from Calcutta is £2,500,000 per annum; if a rise of only 1 per cent. took place, this might bring into the market half a million in value, which, dividing half the profit with the railways, would allow of an increased railway income of £2,500. Whenever the market price of any article rises above a certain point, it will be carried by railway, because railway conveyance is the only certain mode of conveying the produce. Indian cotton is chiefly shipped for the English market on a rise of price at Liverpool, and its speedy conveyance to the seaboard and shipment are imperative.

* Captain Goodwyn, in Report of Macdonald Stephenson, p. 38.

The saving of quality resulting from quicker conveyance is one which particularly affects many articles of production, as well in the northern Bengal districts as throughout India, and determines the question of their railway conveyance. In this country, fish, milk, butter, meat, fruit, and vegetables are carried by railway, because only in that way can they be brought to market in a saleable condition. In India this saving will affect many articles of consumption, because commodities which perish or become deteriorated in two or three days cannot even be carried by steam boats, which require two or three weeks or more for the transit.

Fruit and vegetables will be carried in India as here. Fresh oils, ghee, honey, molasses, will benefit by being brought into the market in a fresh state. Ice can be carried by railway best. This is an important article of consumption in India, and a necessary of life. Ice in Calcutta may be had abundantly at 1½d. per lb. At Barrackpore, sixteen miles from Calcutta, the yearly cost of conveyance alone for one family will not be less than £7 or £8: so that the price is much enhanced. At Madras large imports take place of articles in which freshness is of value, as ghee, to the extent of 993 tons; oil, 1,978 tons; tamarinds, 1,912 tons; jaghery, 677 tons. A large traffic in ice will take place from the hills.* To the hill railways the supply of fruits and vegetables from the plains, and fish from the seaboard, will be a source of traffic; while from the hills, fruits and vegetables of temperate climates, beef, mutton, poultry, milk, butter, hay, fodder, &c., will be conveyed to the plains. By proper arrangements the night trains would convey fish to Darjeeling and fresh meat to Calcutta.

* Papers relating to the Madras Railway Company, p. 84.

Many articles fetch a higher price when they can be brought to market earlier.

In everything which constitutes parcels traffic, expedition is a chief element. Even now the native merchants take advantage of the overland steam route for new goods.

A saving of stock is another effect of the less time required in railway transit. It will, with the advantage of railway accommodation, be less necessary for the merchant or the Government to keep up large stores to meet the present irregular and uncertain transit. At present the merchant feels the inconvenience of holding back produce, and of accumulating large stocks at particular seasons. To this an allusion has also been made under the head of interest.

All the influences of time, resulting from the higher speed of railways, whether of saving in interest on several heads, market price, quality and stock, may, in some cases, be combined, when, if the article to be carried is of large value, the railway will have very great facilities for charging a higher fare than by other modes of conveyance, if such higher fare be necessary for remuneration.

Perhaps, under this head should have been noticed the ill effects which are now felt from the uncertainty of the arrival of goods, when in transit, by the defective mode of conveyance by bullocks, carts, and native boats. This is the case in the northern Bengal and Simla districts as in other railway districts.

SAFETY OF CONVEYANCE AS AN ELEMENT OF RATES OF GOODS.

The effects of safety of conveyance as influencing railway traffic will, perhaps, be more sensibly felt in India than even in England. Upon this many of the local authorities place great dependence, as a certain cause of drawing traffic to the lines of railway; in whatever class of produce the merchant may be interested, whether cotton, sugar, indigo, or tea, the uncertainty of the present mode of conveyance is a circumstance which cannot fail to impress him with the necessity and value of some more efficient machinery of transit. Safety on railways may be conveniently considered under the following heads:—

1. Safety from wet and mud;
2. Safety from heat;
3. Safety from wreck;
4. Safety from robbery.

The evidence is strong that cotton, sugar, saltpetre, salt, grain, and pulse suffer at present from exposure to the wet in the native boats and carts. General Briggs states, that if a caravan of bullocks, carrying cotton, be overtaken with rain, the cotton becoming saturated with moisture is so heavy as to prevent its transport on the cattle, and the roads, if lying through the cotton ground, are so deep that men even sink above their ankles at every step, and cattle up to their knees, and wet frequently reduces the speed on the roads to a mile an hour, and thus the cotton is spoiled. Captain Waugh,* Surveyor-General of India, particularly alludes to the deterioration of cotton by exposure on the road. Mr. Fenwick† gives his testimony to

* Report of Macdonald Stephenson, p. 41.
† Report of Mr. Chapman, E., p. 41.

the way in which cotton is thus injured in the Bombay presidency.

"Sugar," says Mr. Kettlewell,* "is now sent on the Ganges in small boats, at a high cost, and generally arrives more or less damaged." This, in his opinion, would all go by railway. Timber is now floated down the rivers, as, for instance, in the Northern Bengal Railway district, and exposed to the injuries of wet and of destructive insects. All superior kinds of timber for durable or expensive purposes would, therefore, be carried by railway.

Metals also suffer by wet and rust during an exposure of two or three months on the river Ganges, in crazy and leaky native boats; and on all articles increased expense for packing accrues.

Military stores decay by exposure to the climate, and a considerable saving is expected from diminished exposure, and from less quantities being stored.†

Exposure to heat does not affect traffic so extensively as wet, but it is felt on particular articles. Fruits, vegetables, and vegetable juices will be carried more advantageously by railway, so will ice. This head has a near connection with that of the saving effected by superior speed and less time in the conveyance of produce to market.

Safety from wreck will be experienced in all traffic removed from the river navigation of India to the railway, and for which heavy insurance is now paid.

* Report of Macdonald Stephenson, p. 42.
† Colonel Warren, C.B., in Macdonald Stephenson's Report, p. 37.

Between Calcutta and Rajmahal, 200 miles, the insurance is as high as between Calcutta and England.* The desirability of saving insurance on the Ganges is felt by both English and natives.† On some furniture sent from Calcutta to Benares, valued at £100, the insurance paid was £3. Such articles as coals suffer from wreck. On the river Damooda one house lost three out of eleven lacs of maunds of Burdwan coals in one year from the boats having sunk, and the late Dwarkanauth Tagore calculated the average loss as large.‡

Safety from robbery is another local advantage. All articles of produce are plundered largely by river and land transit. On the large rivers, as the Ganges and Burrampooter, organized bands of pirates attack the native boats, and insurance does not protect against these losses, only against wreck. Speaking of the land route, Mr. Fenwick says, "It may be necessary to state that the most vexatious and forbidding circumstance attending the traffic between the interior and Bombay, is the loss sustained by the dealers during the transit of their goods. Cotton is eaten up by mouthfuls, by the bullocks, out of the bales. The Brinjarrahs (bullock drivers) and cartmen themselves steal largely, and the whole of the loss is never made up by them on arrival at the Bunder." Of the boatmen he says, "A good deal of cotton is stolen and made away with by the boatmen who man the purrows conveying it from the Bunder to Bombay. Canoes and small boats come alongside under one

* "Calcutta Review."

† W. W. Kettlewell, in Report of Macdonald Stephenson, p. 29; Allan, Deffell, and Co., in same, p. 30; Report, p. 63.

‡ Report of Macdonald Stephenson, p. 53; and Dwarkanauth Tagore, in the same, p. 53.

pretence or another and receive the bundles previously prepared and secreted. We have had our own peons guarding the bales in the boats, but still have discovered in the end that we have been robbed. On railway trains this would not happen."* Coal is also mentioned by Dwarkanauth Tagore as exposed to robbery.

The extent of loss by the present mode of conveyance is evidently very great; General Briggs, Mr. Fenwick, and Dwarkanauth Tagore made a large estimate of loss. The latter took the average loss on Burdwan coal at 20 per cent., and there can be no doubt that on many articles it reaches to that extent.†

On low-priced articles safety from loss will afford a considerable equivalent for fare. It will be observed that loss attaches not only to the original cost of the article, but also to a portion of the freight. The proportion of damage to a ton of goods of various value at 20, 10, and 5 per cent., is estimated below, with the equivalent mileage saved at one penny per mile.

DAMAGE TAKEN AT 20 PER CENT.

£20	value	£4	0	saving	960	miles run.
10	,,	2	0	,,	480	,,
5	,,	1	0	,,	240	,,
2	,,	0	8	,,	96	,,
1	,,	0	4	,,	48	,,

* This is confirmed by Captain Goodwyn, Report of Macdonald Stephenson, p. 38; and also as to indigo.

† Report of Macdonald Stephenson, p. 53.

DAMAGE TAKEN AT 10 PER CENT.

£20	value	£2	0	saving	480	miles run.
10	„	1	0	„	240	„
5	„	0	10	„	120	„
2	„	0	5	„	48	„
1	„	0	2	„	24	„

DAMAGE TAKEN AT 5 PER CENT.

£20	value	£1	0	saving	240	miles run.
10	„	0	10	„	120	„
5	„	0	5	„	60	„
2	„	0	2	„	24	„
1	„	0	1	„	12	„

On Burdwan coals the loss of interest and damage would be equivalent to 3*s.* 6*d.* per ton, or a total mileage of 66 miles, at one penny per ton per mile.

On sugar damage and interest may be taken as equivalent to the carriage of a ton ninety-six miles at threepence per mile; in fact sugar might be brought down from Rungpore or Dinajepore for the saving effected by conveyance on the Northern Bengal Railway.

On cotton damage and interest may be taken as equivalent to the carriage of a ton 200 miles at threepence per mile, but cotton could be carried from the Morung of Darjeeling for the value saved.

These calculations are irrespective of any advantage under the head of market price, and exclusive of the present native rates of conveyance. The figures only represent the bonus given by railway conveyance under the head of interest and safety.

It is to be noticed, as an important principle in the estimation of the superiority of railway traffic, that the influence of time and safety will be to a great extent proportional, and will be felt most on those objects carried the greatest distance, and that their action is favorable to through traffic.

MODES OF CONVEYANCE.

For the reasons given before, the present rates of charge of conveyance in India will be taken only as a single element, and will be considered nakedly, without reference to other influences. Thus, although we may in following out this inquiry find that in some cases the present rates are so low as to be unremunerative to a railway, we must not take that as a conclusive fact, because it may happen that such cases may be precisely those in which the highest rates of railway charge can be made. The result of this narrow inquiry will, therefore, be to show only a minimum rate of charge, and not the amount of railway charge.

Those articles which are the most carried may, from competition, be carried at the lowest rates, but they present no test of the efficiency of the modes of conveyance.

In India there are two chief modes of conveyance, by water and by land.

The railways in the Bengal provinces will have to come in competition with the rivers, but from their competition many of the lines in Madras and Bombay will be exempt. The East Indian Railway competes with the Ganges, the Northern Bengal Railway with the Burrampooter, Mahanudda, and other rivers. Where the river competition takes

place the railway rates will be rather lower than where land competition takes place; but then in the former case the extent of goods traffic is larger, because it is better developed; so that, though there is an apparent difference in the two cases, the real difference in the aggregate is not large.

The water conveyance divides itself into two chief classes:—

1. By steam boat.
2. By common boat, of various sizes.

The land conveyance is variously carried on by means of pack animals, and by carriages drawn by various beasts.

The pack animals include—

Men (coolies),
Ponies (tattoos),
Bullocks,
Horses,
Camels,
Elephants.

The carts (hackeries, &c.) are drawn by bullocks, horses, and ponies.

The loads of pack animals are reckoned as follows:—

	lbs.
Men	60
Ponies	125
Bullocks	210
Camels	500
Elephants	1,000

The loads of pack animals and of carriages vary greatly, according to the nature of the cargo, the road, or the season; indeed, the class of animal or conveyance used depends entirely on these circumstances.

In most cases, where there is both water and land conveyance, the water conveyance has the preference, on account of cheapness, and from the defective state of the roads and bridges, or absence of both. There are, however, cases where roads have superseded rivers.

In the Burdwan Collectorate, in Bengal, it is stated that the Burdwan Great Trunk road may be stated to be the only outlet for the produce of Baneorrah (West Burdwan), Burbhoom, and Burdwan Proper. The exports from Cutwa have fallen off amazingly since the closing up of the Bhageruty river at Gungeepoor. The navigation of that river is more difficult and dangerous every year, and from Burdwan to Muggro the road is so much better than the road to Cutwa; besides which, owners of carts are so much more certain by that route of a return load, that Calna for trade also fell off before the railway opening.

One circumstance which operates against river traffic is the shifting of the beds and courses of the rivers, which very much affects the formation of depot of goods. The "Calcutta Review" says, that the course of one of the channels in the Gangetic delta is so uncertain, that one year warehouses and goods might find themselves in the bed of the river, and another year some miles distant from the channel, where the craft would have to unship their cargoes. Indeed, the reviewer also applies this as an objection to a railway proposed on the course of the river.

Thus it appears the commercial facilities of river navigation are liable to very great drawbacks in the uncertainty of the mode of communication and place of arrival, in the risk of wreck and robbery, and in the certainty of damage by wet.

In considering the subject of Indian charges for conveyance, we must not lose sight of a circumstance mentioned above—the influence of a return freight. On the river the difference of freight is very great in the Indian General Company's and Ganges Company's steamers; whereas the freight upwards is one rupee four annas per foot; the freight downwards is only one-third of the freight upward.

STEAM-BOAT CHARGES.

The steam-boat traffic on the Ganges is that which, in the nature of its accommodation, comes nearest to railway traffic. The working of it is, therefore, particularly interesting.

In treating it, it will perhaps be useful to begin with some of the earlier records. In "Macdonald Stephenson's Report," p. 63, we have an account of the proceedings in the years 1840-1 of the iron steamers.

It was at that time ascertained that the native merchants, who were the principal shippers, sent valuable goods, and fully appreciated the saving of time and insurance. The time occupied in the voyages was, for the longest, thirty days, for the shortest, nineteen.

The accommodation was at that time very restricted, being chiefly required for Government service, and the freights charged for goods did not

remunerate nor meet the charges of the steamers, the compensation having been made up on carrying treasure. There were then only four boats on the river, shortly afterwards increased to eight.

At that period the obstacles in the way of steam navigation were found, as they now are, great in the heavy cost of coal and in the light draught of the boats, which do not exceed two feet six inches, or three feet at the utmost. This is independently of uncertainty of reaching the upper stations, or of the length of the voyage.

It has seemed useful to refer to these charges, as well in 1844 as in 1857, as they show what inconveniences are felt even under the improved accommodation of steam-vessels, and what charges goods will bear in India for the sake of greater safety and expedition, very much inferior as steam-boat accommodation is to railway accommodation.

It establishes beyond a question that rates of 3*d.* and 4*d.* per ton per mile can be charged in India, if it be necessary to impose such charges in the first instance, on the establishment of an efficient transit; and it is most advisable to begin as the steam-boats have done, with high rates in the first instance, and proceed to reduce them as the increase of traffic may justify.

In 1845, the down freight from Allahabad to Calcutta was reduced to ten annas per maund, or £1 13*s.* 9*d.* per ton, which brings the rate to rather more than four-fifths of a penny per ton per mile.

This, it must be remembered, is for the downward freight only, and is enabled to be so charged,

on account of the profit received from passengers and other sources, and from the upward freight, but the quantity of goods which can be so carried is limited.

The railway gradients on the Ganges, it is to be remembered, are all down hill for the downward freight, and can therefore be worked at very cheap rates, much below English prices, even allowing for a difference in the price of fuel, though when the Indian coal mines are opened up the difference will be considerably in favor of the Indian railway companies in the valley of the Ganges.

The steam-boat rates for downward freight afford no criterion for determining the minimum rates for downward freight by railway, because, as railways would carry the upward freight so very much cheaper than the steamers, the steamers would no longer be able to carry passengers or goods at low rates down the river; so far as the steam rates go, there is therefore no reason why the downward rates on Indian railways should be less than even 2*d.* per mile. We would observe, too, that even 1*d.* per mile on an Indian railway would give as good a return as a downward freight as $1\frac{1}{2}d.$ per mile on an English railway.

No arguments, consequently, can be founded on rates of 0·8*d.* or 1*d.* per ton per mile by steamers as to the minimum railway rate.

In summer the time of the river journey from Allahabad to Calcutta by steam is about a week, in winter about a fortnight. If goods were carried by rail at twelve miles an hour, which would be a good speed, and could be worked cheaply, they would be brought to Calcutta in forty hours, with a cer-

tainty of their delivery; and if it were worth while to insure the more rapid shipment of a cargo, they could be carried down within four-and-twenty hours.

If the steamers were working at 0·8*d.* per ton per mile, and the railway at 1·6*d.* per ton per mile, the railway would get the advantage whenever the market price of an article rose £1 13*s.* or £1 14*s.* per ton. The railway will also have the monopoly at those times when the approach of the monsoons, or the operation of other causes, compels shipping to leave Calcutta before a certain date. Under some circumstances the railway will carry down fourteen or fifteen cargoes against the time of departure before the steam-boat can bring down one cargo for shipment. Non-delivery of goods on some occasions may prevent their reaching the European markets for months.

The railway will also get goods at higher rates than the steam-boats whenever ship freights fall at Calcutta, so as to induce parties to get goods rapidly down, to avail themselves of a temporary reduction of ship freights. £1 will allow $\frac{1}{4}d.$ per ton on 960 miles of railway.

If an advance in prices and a reduction of ship freights occur together, though each singly might be inadequate, yet, if the two afford sufficient compensation, higher railway rates will be paid to bring goods down for shipment.

Goods may be accumulated at Allahabad and other points of the river, without a sufficient force of steam-boats to carry them down: and at particular periods in the season, although a steam-boat can get down in a week, it cannot return in less than a fortnight more; so that three weeks elapse before the same boat can again be brought to Alla-

habad. The locomotive which takes down a train with 100 tons of goods from Allahabad would be back in another day, so as on the third morning to be ready to start again from Allahabad with another train; and it would make ten trips backwards and forwards, while the steam-boat made one. The seasons have great influence in India, on shore and at sea, and it is most desirable to get the produce of the up country down to the coast in a mass, and to get it shipped at those periods which are favorable for the sailing of ships.

If it should be necessary, railway companies in the valley of the Ganges would have open to them the same resources as the steam-boat companies, in charging different rates for upward and downward freights. This is done to a considerable extent in this country, particularly on mineral lines, where the gradients all lie in one direction, and where there is a greater expense in working up than in working down. In the same way as the river current carries steamers down and opposes their return, so the gradients of a valley favor a train running down and oppose it running up. The difference against the railway is not so considerable, the inclinations being so very slight; still there is a difference in the expense of working which would justify different rates up and down.

The railway companies contending with river steam navigation have therefore two ways of meeting steam-boat competition: first, by charging uniform rates, which, being lower than the upward freight by steam-boat, would prevent them from carrying down freights on low terms; second, by charging lower rates for down than for up freight, or differential rates, which will beat the steam-boats quite as effectually.

The determination of the course to be adopted will require great consideration and experience, so as to make the rates safe to the company and suitable to the traffic. The only sure way to begin is to begin with higher rates, and gradually to accommodate them to the requisitions of the traffic. It might be found that some articles of produce would not bear even a remunerative rate, and it might be desirable to carry such produce at cost price, with the view of developing the resources of the country, and obtaining compensation on the passenger traffic and carriage of goods imported as a return for the produce.

Railway traffic in the East Indies will involve the application of considerable mercantile and financial knowledge; and it is particularly to be desired that the managers shall not, in the first instance, be fettered by any restrictions, but that they should be left to their own discretion. In the case of sugar, it might be necessary that the nominal money-price in the London market should be only a stipulated sum, allowing only cost price for railway traction. If the railway managers imposed a high rate on the conveyance of sugar, the result would be that none could be shipped, and, though the railway company would be no loser by that, it would lose by the destruction of the industrial resources of the district in the diminished passenger traffic, and by the people being unable to receive European goods, because they cannot pay for them. A case precisely like this does not happen in England, but we have some analogous experience, and we have an opportunity of applying the broad rules of common sense. What the railway managers would have to do, after experiencing the rapid falling off of all classes of traffic for two or three years, would be to lower the rates on sugar exported,

revive the trade, and so the general revenues would be restored. The working of the coal trade on the Great Northern affords some good hints for large traffic.

The difference between a week or a fortnight by steam-boat and one day by railway effectually prevents steam-boats from competing with railways in all classes of quick traffic, which become, as it were, *de jure* the monopoly of railways. The latter would also have the monopoly of the carriage of fish, fruit, vegetables, and all those articles which cannot now be carried by steam-boat.

A certain portion of the traffic which is most remunerative would belong to the railway as a matter of course; it will then be the endeavour of the managers to add to this, by abstracting traffic from the steam-boats carefully, and on remunerative terms, as has been done by the Paris and Rouen Railway, with the carriers on the river Seine. It may be safely taken that all the upward freight would go to the railways, as also the treasure, parcels, liquors, mails, and horses, and, of course, the passengers both ways, leaving to the steam-boats, in the first instance, only the downward freight and the intermediate traffic.

It must not, however, be thought the steam-boats will be driven off the river; it is only the nature of the traffic which will be entirely altered, while the steam-boat traffic will very probably increase largely, and thereby developing the resources of the country, increase the railway traffic, which will react to increase the steam-boat traffic. The steam-boat traffic, instead of being a through traffic, will become an intermediate and local traffic.

By increase of accommodation the whole nature of the traffic will be altered. In summer, a merchant from Calcutta cannot get to Allahabad without being three weeks from his business, and in winter five weeks; the consequence is, he cannot go; while the expense is so large that he cannot afford to pay agents or travellers. The effect of railway carriage will, however, be to bring European energy to bear on the upper country, to enable smaller European dealers to engage in business, and a larger number of travellers and agents to be employed at the present moment. If a traveller were at Allahabad, and wished either samples or goods from Calcutta, he must wait from three weeks to five weeks before he can obtain them. He is also backward in knowledge of the state of the markets at Calcutta, except by electric telegraph, so that he cannot sufficiently carry on operations for the purchase of produce.

The steam-boat freight from Calcutta to Allahabad is about two rupees per maund, but the distance from Allahabad to Delhi has to be charged. The down freight from Allahabad to Calcutta is twelve annas per maund. The up freight from Calcutta to Delhi may be taken at one penny per ton per mile, and the down freight at two pence farthing per ton per mile. The East Indian Railway Company is carrying the same classes of goods up or down, at one penny and three-sixteenths per ton per mile. There is therefore no question, so far as the matter has yet been tried, that the railway can compete with the river steam-boat.

On the Burrampooter,* the up freight, computed at 500 miles from Calcutta to Bugwah, is £1 16*s.* per ton, and the down freight is £1 1*s.* per ton.

* "Calcutta New Directory," 1857.

These rates are equivalent for the railway distance to one penny and one-eighth and two-thirds of a penny per ton per mile. For the bulk of the goods the Northern Bengal Railway can successfully compete with the Dacca and Assam boats from Bugwah to Calcutta; but instead of competition, the result will be to pour an enormous traffic on the steam-boats, which will then work between Bugwah and Suddya only, and to receive from them the increased traffic of the up districts.

RATES OF CHARGE BY BOAT.

In considering the rate of charge by boat on the rivers of India, we ought properly to include not merely the money charge for freight and insurance, but the no less serious charges for damage and robbery.

In several parts of India, railways will come into competition with boat traffic, but chiefly in the valley of the Ganges and its feeders.

Boat traffic in India is attended with the following incidents:—

Want of water;
Monsoons;
Strength of current;
Shifting of channels;
Risk;
Insurance;
Transhipment;
Damage;
Length of voyage;
Uncertainty;
Robbery;
Bad boats
Cost;
More expense in packing.

of 0·25*d.*, 0·37*d.*, 0·4*d.*, and 0·5*d.* per ton per mile, which will go some way towards railway rates. One of the Secretaries to the Government of India stated, in an official report, that the rate of insurance on the voyage from Calcutta to Allahabad was as high as the rate of insurance on the voyage from Calcutta to England.

If sugar and saltpetre as high-priced articles pay insurance, and rice, maize, and peas, and wheat pay no insurance, being low-priced articles, it does not therefore follow that the risk is the less. The extent of risk insured against is proved by the high rates of insurance on other articles, extending to a halfpenny per ton per mile, and a preference therefore naturally belongs to that mode of conveyance which requires no insurance.

DAMAGE.—Most witnesses concur in the very great damage attendant upon the conveyance of goods by boats on the Indian rivers.*

Damage to goods arises from most of the causes which have been mentioned under the head of risk; but it may be advisable to enumerate them, to show the ill result to goods carried by native boats:—

Leakage of boats,
Rain,
Fire,
Heat,
Breakage,
Carelessness.

Sugar is an article peculiarly liable to injury

* Messrs. Leach, Kettlewell, and Co., in Macdonald Stephenson's Report, p. 20; see also p. 53.

from wet, and for which no compensation is afforded by insurance. The water gets to it and dissolves it. Cotton soaks up water and then rots, and many other articles of produce are similarly affected. From these causes a greater expense is often incurred for packing than would be necessary with a safer conveyance.

LENGTH OF VOYAGE.—The length of voyage down the rivers and up the rivers is one of the greatest grievances of the merchants.*

The average time for the voyage between Calcutta and Mirzapore up the river is six weeks, which, by-the-by, is one week shorter than the land route.† This by railway, at twenty miles per hour, would be done within twenty-four hours, saving, as it may be said, six weeks.

From Calcutta to Benares, up the river Ganges, a cargo by native boat was ten weeks in transit. This would be done by railway in about one-and-twenty hours. Boats carrying passengers effect the same voyage in from thirty to forty-five days, or from four to seven weeks.

From Mirzapore to Calcutta cotton is carried down the Ganges in about three months. The railway time, as before said, would be within twenty-four hours.

From Ghazeepore to Calcutta sugar was carried down in fifteen days in the three months from July to September; in from thirty-five to forty days in the nine months from October to June.

* Macdonald Stephenson's Report, Allan, Deffell, and Co., p. 36.
† Macdonald Stephenson's Report, p. 17.

From Monghyr to Calcutta, about 300 miles, or fifteen hours by railway, the voyage with peas, wheat, and Indian corn was eight to twelve days in the three months from July to September, and from fifteen to twenty days in the nine months from October to June.

From Chuprah to Calcutta cargoes of saltpetre were carried down in from twelve to fifteen days in the three months from July to September, and from twenty to twenty-five days in the nine months from October to June.

During the greater part of the year the voyage from Ghazeepore to Calcutta takes up forty days, and from Mirzapore to Calcutta about three months; periods during which the markets may vary to the greatest extent to the serious injury of the grower.

The season for quick voyages for sending down produce from the interior is so short, that it materially abridges the power of the grower to avail himself of the most favorable season for shipment at Calcutta. He is also frequently forced to hurry down produce in a rough or uncleaned state, whereby he suffers in price and freight.

Uncertainty.—If the length of the voyage be an evil, it is a still greater evil that there is no certainty when a cargo will arrive, or whether it will arrive at all.

At the present time many merchants keep their own boats,* and are thus exposed to considerable

* Report of Macdonald Stephenson, p. 66.

outlay and risk, whereas the railway company would find trucks.

If the land route, as has been shown, be preferred even at a higher rate of charge to the boat route, it is but fair to assume that the railway route, which has much greater advantages, would be still more preferred even at an increase of charge.

With regard to the up traffic it is evident, from the instances already given, that the boats cannot compete with what would be heavy railway charges of 3*d.* per ton per mile, for some of the rates quoted are 9*d.* per ton per mile, exclusive of insurance, loss of interest, damage, &c.

On goods down the rates apparently are not so favorable; but they still show that the boats cannot carry on the competition except for very short traffic, and during the three months of the open season only. During nine months of the year the railway would have a decided superiority, when the following items are calculated as incident to boat conveyance:—

Freight;
Insurance;
Damage;
Loss of interest;

and to these must be added the railway advantage of gaining the market price.

The freight by boat in some cases is not more than a farthing per ton per mile, and the whole freight and insurance do not amount to a halfpenny per ton per mile. If that cargo be taken at the time of the year most unfavorable for the boats, the charges may fairly be taken as follows:—

	£	s.	d.	
Freight	1	3	2	per ton.
Insurance	0	13	7	
Damage 10 per cent.	2	14	0	
Loss of interest . .	0	10	0	
Total—say	£5	0	0	

This would allow a rate of 2*d.* per ton per mile to the railway, and give advantage to the customer, notwithstanding the fact that the boat freight is sometimes less than one farthing per ton per mile.

The following among other articles would leave the boats for the railway:—

Sugar . .	at 2*d.*	per ton	per mile.
Indigo . .	„ 3*d.*	„	„
Cotton . .	„ 2*d.*	„	„
Metals . .	„ 3*d.*	„	„
Coals . .	„ 1*d.*	„	„
Jute . .	„ 2*d.*	„	„
Shellac . .	„ 3*d.*	„	„
Opium . .	„ 3*d.*	„	„
Saffron . .	„ 3*d.*	„	„
Silk . . .	„ 3*d.*	„	„
Saltpetre .	„ 3*d.*	„	„

RATES OF CHARGE BY LAND.

Conveyance of goods by cart or pack beast involves—

1st. Cost.
2nd. Time.
3rd. Damage.
4th. Robbery.
5th. Uncertainty.

COST OF CONVEYANCE.—It must be remembered

that there are two great classes of goods, heavy goods and light goods, and that the latter will bear a much greater charge. Indeed, in some cases in Bengal, light goods are sent by dawk. Goods are thus sent from Mirzapore to Calcutta, a distance of 400 miles by dawk, in preference to being sent by water. One account* gives the cost at thirty-five to forty rupees per twelve maunds, besides eight rupees for a chuprassee. This is £10 8*s.* per ton, or upwards of 5*d.* per ton per mile.† This is about the rate, too, of the Government bullock train. Another statement is, by land for all descriptions of goods from Calcutta to Mirzapore, 5 rupees per maund.‡ This is about £3 10*s.* per ton, or 7*d.* per ton per mile.

The cost of conveyance of sugar and goods between Burdwan and Calcutta was estimated by Macdonald Stephenson § at 3*d.* per ton per mile. The quantity of sugar so carried is about 5,000 tons yearly, or yielding a railway income of £20,000 a year from a single district for one article. In Burdwan district,‖ in Bengal, goods are carried a distance of about 40 or 50 miles, sometimes in hackeries and sometimes on bullocks, by means of the great military road, at three or four rupees for twelve maunds of goods, which is a hackery load. At the lowest rate, this is 3¾*d.* per ton per mile, but rises to 4½*d.* per ton per mile, and nearly to 5*d.* per ton per mile.

In the conveyance of sugar in the same district, from Soonamookee to Hoogly, a distance of 90

* M. Rustomjee, in Report of Macdonald Stephenson, p. 69.

† See also Messrs. Gillanders, Arbuthnot, and Co., in Report of Macdonald Stephenson, p. 27.

‡ Ibid.

§ Report of Macdonald Stephenson, p. 17.

‖ Ibid. p. 76.

miles, for a hackery load of twelve maunds the contract price is four rupees twelve annas. This is very nearly 3*d.* per ton per mile.*

Salt is carried back at half-price, or very nearly $1\frac{1}{2}d.$ per ton per mile.

From Burdwan to Muggra the distance is 38 miles. A bag of sugar weighing two maunds costs four annas, or rather more than 2*d.* per ton per mile.† Other goods, however, pay nearly double—say $3\frac{1}{2}d.$ per ton per mile. In one year sugar paid the double charge.

Mr. Higginson, of Mirzapore, states that the cost of conveyance from Calcutta to Mirzapore is about 3*s.* per maund usually. This is about £4 per ton, or above 2*d.* per ton per mile. There are about 10,000 tons of goods carried at these rates. This gentleman's estimate of goods for export is—

Cotton	17,000 tons.
Sugar	2,000 „
Saltpetre	1,000 „
Lac dye and shellac .	1,300 „
Indigo seed	1,500 „

The Madras Railway Company, in their original report, stated that in their district‡ it has been clearly proved that the severest competition on the part of native carriers on the best roads in India cannot reduce the cost of transport below two annas, or 3*d.* per ton per mile; and it is considered that if the transport by railway were reduced to one and a half annas, or $2\frac{1}{4}d.$ per ton per mile, the superior advantages in other respects of the railway would

* Report of Macdonald Stephenson, p. 66.
† G. Erskine, Esq., in Report of Macdonald Stephenson, p. 60.
‡ Papers relating to the Madras Railway Company, p. 54.

secure to it the whole of the traffic passing between the termini. The committee estimated the traffic on the Madras and Arcot line at 43,681 tons a year, producing, at 2¼*d.* a ton per mile, £28,392.

Enough has been already shown to prove that railways charging as much as the native modes of conveyance have always a superiority of accommodation, and that railways may, in many cases, charge more with perfect safety to themselves and with very great benefit to the public. The first thing railways in India have to do after opening their lines, is to make good profits; for the first dividend-paying line in India—and the East Indian Railway promises this—will do more for the promotion of railways in India than any Government guarantee. Government guarantees must be limited in their operation, but good dividends will act as premiums to induce capitalists to undertake even the least promising enterprises.

The present lowest rate of cart-hire between Madras and Wallajahnuggur is four rupees for each loaded cart, or eight or ten rupees for each ton of goods, according to the nature of the load.* This allows half a ton for the load of each bandy, whereas the regulated load is 720lbs., or only about a third of a ton. Bulky goods may be reckoned at three bandies to the ton. The Committee expressed their confidence that eight rupees per ton, or two annas, or 3*d.* per ton per mile, is the lowest rate at which competition can be offered for the conveyance of road materials from the Red Hills. Paragraph 60. "But, perhaps, the greatest obstacle of all with which the railway has to contend is the high degree of economy prevailing in the supply of

* Papers relating to the Madras Railway.

road materials on the old plan, under which a heavy cart-load of material, weighing about 1,000lbs., is conveyed more than seven miles for seven annas, the regulated hire for a cart from Madras to the Red Hills being 1 rupee 2 annas 8 pice, to convey 720lbs. only; but this supposes a distance of ten miles, whereas the average distance of bringing the material but slightly exceeds seven miles. Still the discrepancy between seven and eighteen annas remains in force, owing to the relative weights carried." The Committee say that it will be seen from this, that although the greatest reduction had been effected for the purpose of competing with the tramway, the road materials could not be brought in carts for less than two annas per ton.

It must be observed that in the Madras district, although the minimum charge for the conveyance of goods is taken at 3*d.* per ton per mile, in many cases the charge runs much higher.

We now come to Bombay, and in reference to traffic in that presidency, the late John Chapman, the author of "The Cotton and Commerce of India," collected all the materials and made the calculations.

In investigating native charges, it is particularly desirable that they should be reduced to a uniform standard—that of pence per ton per mile; for, until this be done, it is impossible, as has been already shown, to arrive at any accurate conclusion. What appears a very low rate for a maund becomes a very high rate for a ton.

Mr. Chapman ascertained the rates by bullocks, by carts, and by men and women carrying loads:—

A. Bullocks.

	Miles.	Per ton per mile. s.	d.
Poonah to Panwell. . .	71 . .	4	4
Return	71 . .	6	5
Gooneer to Callian . . .	64½ . .	6	4
The Coast to Gooneer . .	66 . .	7	4
Ootoor to Callian . . .	63½ . .	7	9
Alleh to Callian	73½ . .	6	8
„ Bombay . . .	10 1/7 . .	4	7
„ „	10 1/7 . .	11	3*
„ Poonah	54 . .	9	11
„ „	54 . .	5	8
„ „	54 . .	4	5
Parneir to Callian . . .	107 . .	6	4
Wyrag to Oomrawuttee .	266 . .	5	8
„ „ . .	266 . .	3	3
„ Sheloo	266 . .	4	4
„ Hooblee . . .	229 . .	3	8
Shorapoor to Hyderabad .	140 . .	3	2
„ Sholapoor .	100 . .	7	1
Aurungabad to Nassuck .	104 . .	3	4
„ Hingoolee.	139 . .	2	5
„ Byzapoor .	41 . .	1	9
„ Unthoor .	40 . .	1	9
„ Poolmurry.	20½ . .	3	2
„ Bombay .	220 . .	4	0
Jaulnah from Panwell . .	253 . .	2	5
Return „ . .	253 . .	8	1
„ „ . .	253 . .	3	2
Ellichpoor to Panwell . .	175 . .	6	5
Secunderabad from Gunga Khair	160 . .	3	2
Secunderabad fromBezwada	120 . .	3	0
„ Themacanda	80 . .	2	8
„ Lutchapelt .	80 . .	2	8

* This seems to be an exceptional case.

	Miles.	Per ton per mile. s.	d.
Hingolee to Lutchapelt .	40 . .	5	6
„ „ .	40 . .	2	8
Khawngaum to Panwell .	288* . .	3	2
„ „ .	288 . .	2	9
„ „ .	288 . .	2	2
Oomrawuttee to Barsee .	266 . .	3	4

The difficulty in getting at these figures was very great, because it could not always be ascertained whether the charge was in the Company's rupees or Hyderabad rupees, while the distance travelled was not accurately known, the statements and maps varying.

Mr. Chapman therefore calculated the charges in various ways, so as to show the various results. Those selected here are generally the least favorable. Mr. Chapman's plan of calculating an average in some cases was not, however, free from objection, as the object ought to be to ascertain the maximum and minimum charges. The great thing, in the first instance, is to know how high the railway can charge, then gradually to accommodate the charges according to the nature of the traffic, so as to secure its expansion coincidently with a profitable return to the railway company. Good dividends tend to low fares, good working stock, good stations, high speed, and many branches; while bad dividends have a fatal tendency to generate bad management. Low fares, as a general maxim, tend to secure a large traffic; but, as time is an

* It is to be observed that in addition to the rates here given are to be added, in many cases, other charges of about one-fourth of the amount for charges at bunders, cost of attendance, &c., &c., which would not be incurred on goods sent by railway.

element in the development of traffic quite as much as cheapness, cheapness should not be allowed to get a-head too fast, as, if so, the companies are cramped, and the public do not derive the full advantage. In a practical point of view, average charges must be regarded as good for very little.

B. Carts.

Mr. Chapman observed that carts are only used for commercial purposes in India where made roads exist, and that they soon spring up in considerable numbers when roads suitable for them are made, even in districts where they have not previously existed. It may be added, that railways in India will have a direct tendency to promote the formation of roads in connection with the railway stations; and in many cases they will most efficiently assist them by bringing stone and other suitable materials at a cheap rate into districts where the construction of roads is now so expensive as to be economically impossible. Indeed, the indirect influence of railways in India must be as great as their direct influence, and furnishes one among the many strong reasons for their support by the Government of India.

Cart Charges.

	Miles.	Per ton per mile. s.	d.
Poonah to Panwell	71	3	1
„ „	„	2	7
Return	„	6	2
„	„	4	9
„	„	4	4
„	„	3	8
Panwell from Barsee	210	2	6
Howra to Poonah	48	10	2
„ „	„	5	1

	Miles.	Per ton per mile. s.	d.
Howra to Panwell	93¾ . .	7	9
„ „	„ . .	6	6
„ „	„ . .	3	7
„ „	„ . .	3	1
Wyrag to Hooblee	„ . .	4	6
„ „	„ . .	2	8
Bombay from Mahim . . .	6 . .	7	9
„ Sion	7 , .	8	1
„ Gaulnah . .	253 . .	4	0
Gaulnah from Panwell . .	„ . .	2	5
„ „	„ . .	1	8
„ to Ellichpoor . .	176 . .	3	1

Aurungabad, rates same as those for bullocks. *See* A.

Secunderbad, ditto, ditto.

Rates by Carts in Central India.

	Miles.	Per ton per mile. s.	d.
Nagpoor to Bombay . . .	538 . .	7	0
Saugur to Godhpoor . . .	400 . .	1	7
„ Sambhur . . .	350 . .	2	2
Oomrawuttee to Mirzapore .	450 . .	4	6
„ „ .	„ . .	3	9
Hoshungabad to Bombay .	518 . .	8	5

Men and Women.

Men and women are employed in the transport of burdens which require special care and softness of carriage, as the native hackeries have no springs.

The charge from Panwell to Poonah, 71 miles, comes out 3*s.* 7*d.* per ton per mile; and even for distances of 7 miles does not come under 1*s.* 8*d.* per ton per mile.

The native rates in the Bengal Presidency are, on the whole, as high as English rates.

SECOND: TIME IN CONVEYANCE.—It may readily be conceived that with the imperfect means of conveyance by bullocks and native carts much time must be lost, and the value of time in connection with loss of interest of money and market price forms a very considerable item.

Between Calcutta and Mirzapore, 460 miles, the time for the journey by dak is six and seven weeks, and sometimes two months.*

From inquiries of numerous parties of the native merchants in the Bengal provinces, travelling along the road with laden camels, bullocks, and hackeries, it appeared that their speed, never exceeding two and a half miles per hour, had sometimes been reduced to less than one mile per hour, from the state of the roads. They travel during about ten hours each day.

The time required for journeys in the Bombay Presidency, and in Central India, is shown in several cases by Mr. Chapman; but it is to be regretted that he did not make this element of accommodation a part of his system of investigation.

From Hoshungabad to Bombay, a distance of 518 miles, the time required for bullocks is from seventy-five to ninety days; for hackeries, on a good road, at eight miles per day, sixty-four days. On bad roads the load is diminished by a quarter.

Bullocks, in some cases, only make about six

* Report of Macdonald Stephenson, p. 117; and M. Rustomjee, in same, p. 69.

miles a day; carts sometimes make twenty-four miles a day.

At the rate of eight miles per day, we may calculate Mr. Chapman's bullock journey thus:—

Poonah to Panwell	9 days.
Parneir to Callian	13 „
Oomrawuttee to Wyrag . .	33 „
Saugur to Sambhur	44 „
Oomrawuttee to Mirzapore .	56 „
Nagpoor to Bombay	67 „

It is here assumed that the journey is prosecuted throughout; but as it will be hereafter considered, it is by no means certain in any long journey that the goods can be carried to their journey's end without casualty.

The following may be calculated as the loss of interest contingent on the state of land carriage:—

Oomrawuttee to Wyrag .	nearly	1·0 per cent.
Saugur to Sambhur . .	„	1·1 „
Oomrawuttee to Mirzapore	„	1·5 „
Calcutta to Mirzapore .	„	1·6 „
Nagpoor to Bombay . .	„	1·7 „
Hoshungabad to Bombay	„	3·0 „

This is exclusive of fluctuations in market price; but on European goods going up the country the loss of interest and trade profits must be reckoned at a retail rate of not less than 20 per cent. per annum, or double the above rates.

On the conveyance of goods of the value of £20 a ton, going to the coast for shipment, a difference of only 1 per cent. is 4*s*. addition to the cost of conveyance.

On valuable articles the loss of interest is so large that it greatly enhances the actual charge to the merchant for conveyance.

THIRD: DAMAGE.—This which is incident to most modes of native conveyance is particularly felt in conveyance by land. It includes

Damage in crossing rivers,
Damage by wet,
Damage by breakage,
Damage by transhipment.

In crossing rivers, it is by no means uncommon for cotton, for instance, to get wetted, when it rots and is rapidly deteriorated before it gets to the end of the journey. In many places the want of bridges is very severely felt, and on the Soane river, which the East Indian Railway Company propose to cross, the merchants would willingly pay 4*s.* per ton as a bridge toll, a sum which appears enormous.

If it be allowed that native charges for conveyance are low, which it will be seen they are not, of what avail is lowness of charge when the goods lose more than the whole saving by such conveyance in the damage entailed upon them?

If cotton or sugar lose £4 per ton on the way to market, it must be small consolation to the grower or merchant that his goods are carried at the rate of 1*d.* or 2*d.* per ton per mile. What India wants at the present moment is not so much cheap conveyance as efficient conveyance. Efficient conveyance will produce cheap conveyance by increasing the quantity of goods. As matters now stand, it is impossible to send cotton or sugar out of some

districts, for they are rendered worthless in crossing the unbridged streams.

FOURTH: ROBBERY.—This head has been sufficiently dwelt upon elsewhere to make it needless to repeat individual cases in proof of what will be recognized as a great source of evil in native conveyance.

FIFTH: UNCERTAINTY.—Here again we find the same incidents as in boat navigation. When goods are sent out on an expedition of two or three months, in the first place, the expedition can only be effected at particular seasons, and in the next place, if an unfavorable season comes on suddenly, the journey may be very much protracted.

Two very opposite causes act to impede long journeys in India.

1st. Rain.
2nd. Want of rain.

Rain and floods coming down suddenly prevent cattle and carts from crossing the fords or the rivers, and the journey is delayed until the waters subside. On the banks of the great rivers considerable tracts are flooded at the same time, and the carriers are sometimes caught in the inundations.

Drought or the want of water is quite as great an evil, as it is impossible in a hot climate like India for the cattle to obtain fodder or drink. Thus, in winter and in summer, causes of delay may always intervene to prevent a journey from being completed in the expected time.

As goods have frequently to be carried partly

by land and partly by river, a complicated system of delay is interposed; for the season which suits one mode of conveyance may be incompatible with the other, and the journey becomes seriously protracted. Thus, cotton has been sometimes eight months upon the road, and all cotton which is stopped by the seasons must be left on the road for a considerable time.

Goods are sometimes delayed when arriving by boat, for want of carts to carry them on.*

To sum up, if cotton can in any case be carried for 1*d.* per ton per mile by land, it can be carried for 3*d.* per ton per mile by railway; for the greater the distance to be travelled, the greater chances of injury.

* J. Erskine, Esq., in Report of Macdonald Stephenson, p. 60.

CHAPTER XIII.

OPERATIONS OF ENGLISH CAPITAL IN INDIA.

History has been said to be experience teaching by example, and the English are said by themselves to be that people in the world who most possess common sense; but whether that common sense induces them to profit by experience may well be doubted. In the United States, in a vast and thinly peopled country, there is an enormous network of railways constructed, which, without contradiction, has greatly developed the resources of the country. In India there is a vast and thickly peopled country with railways just begun; and Col. Cotton and many well-meaning friends of India propose to stop them as injurious to India; and many public authorities here wish to stop them as causing a drain on the resources of this country. Such is the contrast.

Looking to facts, however, one can hardly fail to believe not only that India ought to have a railway system as widely developed as that of the United States, but that, under a like system to that applied in the United States, she has within herself all the resources for their construction. At the present moment some disturbance of the operations of capital has been produced in this market; but if events be left to their own proper development, not only will the drain on this market cease, but a very large share of the profits of railways in India accrue to this country.

At present a system of guarantee by the Govern-

ment of India is in operation, which is indispensable, but the ultimate result will be the application of the capital of India to the construction of its own railways, by the primary aid of English capital, as has been the case in the United States and in France, each of which is now virtually independent of the English money market by the natural progress of its own resources. It is to this ultimate result I propose to look; and the mode of arriving at it I shall now consider, without embarrassing the question for the present with any reference to guaranteed or unguaranteed capital, or to the export of bullion.

As the most convenient mode of treating the subject, I shall consider the process of the investment of capital to railways in this country, because here the various facts can be better watched; and I shall then proceed to apply to India the principles so ascertained.

Considering the question after all, both in England and in India, to be one of labor as well as one of capital, I proceed at once to the point, Whence has labor for railways in England been obtained? and I affirm that the whole energy of the people of this country not being employed, it becomes a question of applying that energy more effectually. This will be found to be equally the case in India. No laborer need be imported there; no food, no clothing for the laborer need be imported; but what is required is to direct the labor of one hundred and fifty millions of people, whose time is now chiefly spent in inactivity, so as to construct the required railway, canal, irrigating and other public works; for though the subject is treated in direct reference to railways, it equally applies to all those public works advocated in

preference to railways by their opponents, and it shows whence the means are forthcoming for endowing India with every requisite means of advancement, namely, by the rightful application of her own energies and resources, without putting a veto on any branch of enterprise.

Without entering upon the question whether the whole population of England is at the present moment properly fed, we may safely lay down as a principle that the whole labor of railways might be done by the present means in addition to the usual labor of the country. The general truth of this any one's observation will teach him; and, with this possibility, why are we forced to assume on the other hand that the labor for railways must be taken from that applied to other pursuits?

Labor, it must be remembered, is the base; and whence this labor for railways has been obtained and is to be obtained is the true subject for investigation. It is not a matter of money, of pounds, shillings, and pence, and cannot be defined in that way. The subject of labor, productive and unproductive, has been well treated by Mr. John Stuart Mill in his first book, and likewise the different functions of circulating and fixed capital.

Adam Smith, too, in the second chapter of his second book of the "Wealth of Nations," gives us a text on which to work; and it is singular that in the present day, on a most important controversy, we should be invaded with the errors which three-quarters of a century ago he combated. He says:—

"When we compute the quantity of industry which the circulating capital of any society can employ, we must always have regard to those parts

of it only which consist in provisions, materials, and finished work; the other, which consists of money, and which serves only to circulate those three, must always be deducted.

"In order to put industry in motion three things are requisite, materials to work upon, tools to work with, and the wages or recompense, for the sake of which the work is done.

"Money is neither a material to work upon nor a tool to work with; and though the wages of the workman are commonly paid to him in money, his real revenue, like that of all other men, consists not in the money, but in the money's worth; not in the metal pieces, but in what can be got for them.

"The quantity of industry which any capital can employ must evidently be equal to the number of workmen whom it can supply with materials, tools, and a maintenance suitable to the nature of the work."

The proportion for materials and tools is not considerable enough in railway works to require special consideration; the grand question is, how workmen can be got and maintained, and we have said that it is a false assumption to assert that new workmen must be found because there is new work to be done.

Can the work be performed by greater energy on the part of the existing laborers, or does it absolutely require the employment of a totally new class with the disbursement of new wages? These are the two ways in which the supply of labor for railway purposes may be accounted for, but we are not bound to adopt either singly or exclusively.

In considering the subject more minutely, we shall first allude to some facts, which give reasons for believing that railway construction has not pressed upon the resources of the country; and, next, to those facts which enable us to judge whence the necessary labor may have been partially supplied.

That railway construction has not hitherto diverted capital from staple pursuits in England, or interfered with the distribution of *effective* labor to any great extent, we conclude from the following facts:—

1st. The wages of agricultural labor have not been abnormally affected.

2nd. The wages of manufacturing labor have not been abnormally affected.

3rd. The wages of the iron trades have been occasionally affected by the increased demand for rails.

4th. The wages of engineers have been occasionally affected by the increased demand for railway machinery.

5th. The wages of masons and bricklayers have been occasionally partially affected by the increased demands for railway purposes, though it is questionable whether they have been sensibly affected more than they would have been by the increased employment always consequent on a period of good harvests.

6th. The import of foreign corn has not been in any way affected by railways.

7th. The prices of provisions and manufacturing produce have not been influenced by the railways, but only by the ordinary causes of fluctuation.

8th. The price of iron and railway machinery has been occasionally raised by the influence of railways.

It results from these considerations that a diversion of capital or labor has only taken place occasionally, so far as concerns iron-men, masons, bricklayers, &c., and their produce; and it appears probable, therefore, that the means of executing the earthworks, and greater part of the works, have been afforded by the greater energy of labor already provided with the means of subsistence.

In every country, though the same instruments of labor exist, they are not all equally employed: some men are not employed at all, and of the others who are employed, the labor is of various intensity. Taking the classes devoted to labor in this country, and usually considered the available fund of labor, it must be admitted that their labor is exposed to very great fluctuations, and is in some years more effective than in others. This effective power bears only a small proportion to the means of subsistence. Adam Smith, indeed, supposes a regular scale and standard, whereby energy increases with the increase of wages; but this is, when applied extensively and practically in this country, an error. In consequence of the system of poor relief, the whole laboring population obtains a subsistence of some kind, work or play, and it is a small difference only which constitutes the alteration from idleness to productive labor. In Dorsetshire, for instance, 2*s*. or 3*s*. a week, sometimes less, decides the question between bone-grinding in the union work-

house and labor out of doors, with the indulgence of 7*s.* a week, a mud hovel, and a tail of grist. We may, therefore, have a laboring population, but *non constat* that we get any labor out of it, as the agricultural statistics of Ireland and France will illustrate. Agricultural labor, moreover, is so irregular in its demands, that for considerable periods there is no employment at all, though at harvest time, and on other occasions, a plethora of labor may be required. In India we see the same state of affairs: low wages, and a small amount of productive labor.

If there be poverty in this country there is also wealth; and there are other classes of the population who in ordinary times are idle, living on the resources of their kinsmen and friends, and whom a turn in the scale of wages will induce to apply to labor. In this case also a certain amount of subsistence is already provided, and what is wanted is only a small additional expenditure, by way of stimulus, to make the labor effective. The case frequently occurs of a small tradesman in a country town, with a son or two lounging about him, not fond enough of work to work for small wages, but whom a neighboring railway may tempt from his idle dependence. The contribution of the father in this case will require but a small addition from other resources, perhaps a coat from the woollen manufacturer, or a piece of stuff from the cotton spinner, to constitute a railway share, and make productive an expenditure of means which before was barren.

A grand source of labor for new pursuits is, however, to be found in the diminution of labor in old pursuits, consequent on the spirit of improvement, whereby labor is economised. This is

notably the case in agriculture, where the relative amount of labor employed has for some years experienced a large decrease. At the same time, as is equally well known, the productions of our soil have, by the same spirit of improvement, been very largely increased, and we have, therefore, yearly a large fund of food disposable for the subsistence of labor, and not taken into account by those who estimate the surplus earnings of the country. By bringing waste lands into cultivation, by embanking, draining, soiling, manuring—by access to greater supplies of sand, lime, &c., by railway—by the saving of weight of meat by railway carriage—by better tillage—by the greater health of cattle—the supply of food in this country increases, as it were, at compound interest on a limited scale, independently of any famine or abundance. This is a fund upon which the railways may fairly claim. An increase in the cotton manufacture should be met by an increased import of provisions from its foreign markets; in the woollen manufacture in the same way; but our home interests have naturally the fairest claim upon our home increase of food.

In England and Ireland there is always a large amount of agricultural and laboring population, and of paupers, who are receiving subsistence of some kind from the commonwealth, but who generally do not give their full extent of labor. To extract this *dormant* labor, a small additional stimulus only would be required, which is to be obtained from the increasing surplus of agricultural produce yearly provided. In times of depression, while some means of subsistence are provided, the energies of the laboring population are wasted, and nothing is better calculated to promote the national interests than the provision by railway

works for utilizing the population and keeping up the wealth and strength of the country.

To employ the inactive population in agriculture is out of the question, for the agricultural population is at all times redundant. To employ the inactive population in manufactures is dangerous, because it is only increasing production at a time when the foreign markets are overstocked, and a depreciation has taken place. Even mineral produce is subjected to the same influence, and a fall in prices consequent on a panic will already have thrown many miners out of employment.

Employment in public works does not interfere with the markets, while it increases the fixed capital or working plant of the community, and at the same time enlarges the permanent resources of subsistence; with harbors, breakwaters, roads, and canals, railways fulfil in the most eminent degree all the conditions required. The produce of the country is economised so far as regards the conveyance of cattle, fish, milk, salt, and many other articles; it is increased by the effective application of manures and soils; while by the facilities given for the conveyance of raw materials and manufactured goods, our artizans are enabled to withstand foreign rivalry, and to extend their markets. The grand question is involved whether in a year of famine and depression, the advancement of the country is to be promoted or neglected.

For the service of these public works, it may be considered that at least 200,000 agricultural laborers are available, and 30,000 miners; and this force can be still further increased in times of distress, which is one reason why railway works can then be carried on at a lower nominal price.

Except in the ancillary matters of masonry, brickwork, rails, and engines, the greater part of the labor on railways is rude labor, and a small number of skilled professional men is sufficient to supply the requisite technical help. Land is not a material of cost in railway construction, it involves only a transfer of capital. The earth for the embankments is a raw production of the soil; and in most cases stone, lime, and brick earth are excavated on the spot, and require only to be converted. Timber produced from our own forests requires very little labor to fit it for use; and even for the rails and other metal work the material is a raw produce of the soil. Thus, we have particular advantages for the construction of railways; we have not to exchange the produce of our soil for the materials; and, as we have shown, we have in the food bestowed on unproductive labor the greater part of the wages for the labor requisite to carry out the railway works.

In the case of railways in Ireland, much of this argument will apply; for if the Irish population is deficient in food, at any rate it is still more deficient in the application of labor; for with 1,500,000 of agricultural laborers and the work for 750,000 alone, a prodigious extent of working power is left unemployed. To carry out, therefore, an extensive railway system in Ireland, it was not requisite that we should export from this country the subsistence of all the laborers employed; but only such small portion as would be sufficient to give the requisite stimulus, and to turn the balance between idleness and starvation, and labor and competency. That a very little would do this might have been argued from the old rate of wages in that country, and has been proved by events.

Over and over again it has been said that the railway expenditure must absorb a large amount of capital, and divert the working capital and resources of the country from every branch of industry. On these assumptions the extension of the railway system was deprecated, and legislative restrictions were warmly advocated.

Meanwhile the expenditure for railways had gone on increasing from £1,000,000 a-year to £20,000,000 a-year, and yet no pressure had taken place on other branches of industry. Had there been the assumed pressure or diversion of capital, wages and prices in the cotton and woollen manufactures must have risen to an appreciable extent; whereas the changes of price that did take place were only those always consequent on the changes between famine and plenty. Besides this index that no disturbing influence has been exerted by railways, evidence was obtained that the great staples of manufacture, far from having suffered from a diminution in the number of laborers, had actually, during the period of greatest railway activity, increased the number of their laborers.

The careful observation of the whole of the facts enabled me long since to pronounce that the railway system did not press on the resources of the country, and did not cause a diversion of capital; but although I stated that the construction was carried on from the economy of previously existing means of subsistence, I did not attempt to define in what manner.

While I felt compelled to reject the doctrines of the panic party and their assumptions as to the surplus capital of the country, and its limit of

£30,000,000, I was not prepared on the other hand to admit the equally vague calculation of the resources of the country, founded on the statistics of the national debt, which were similarly based on what Adam Smith and Mill have denounced as a misstatement of the operations of money.

To account for the great railway operations by the change from famine to abundance, and the release of a number of laborers from the unions, was evidently incompatible with the statistics of the Poor Law Commissioners. Though the number of able-bodied paupers relieved had greatly diminished, still, to account for the construction of railways from economy on the poor rates, as asserted by some, appeared an impossible task, when the saving on the rates was restricted to millions, and the expenditure on railways extended to tens of millions. While admitting the concurrence of this cause, we may reject it as the *causa causans*, or grand cause. We should observe, by-the-by, that one feature in the Poor Law operation has been neglected, and that is, that at all times there is a considerable extent of able-bodied relief in the winter, and particularly to the very navigators working on railways whose improvident habits deprive them of all means in winter. As there is a large number of the population dependent on the unions in the winter, so the saving which is experienced in the diminution of the poor rates is limited to able-bodied laborers, who in times of severe distress obtain relief in the summer.

Having pointed out the yearly increase of the produce of the country, the diminution of the demand for labor in old pursuits, and the economy of produce effected by the railways, the foundation was laid for the farther investigation in which it

has been shown that the means for executing the railway system are derived from the more efficient exertion of the laboring classes employed in rude labor, and which takes place under the stimulus of increased wages obtained from the surplus production of the country.

The limit to this operation in England can only be when the full powers have been exerted of 1,150,000 agricultural laborers, 370,000 other laborers, and 200,000 miners, and when the surplus produce is no longer sufficient to produce a distinction between agrarian inanition, Poor Law inanition, and something a degree better. What the real demand for capital for railway purposes may be under these circumstances it is impossible to tell, and it is useless to calculate the amount or the proportion; but it must evidently enter only for a small proportion in the apparent expenditure for railways, and make the greater part of the apparent expenditure a mere transfer of capital. We may also say this, that the means of the country for railway construction will be equally efficient in famine as in abundance, as the stimulus to be given to utilize labor is still restricted to the amount necessary to turn the scale of the pauperism of the agricultural classes.

The mode in which capital is applied to the construction of railways is as little understood as the source whence derived. Bankers and stockbrokers rarely succeed in explaining it; and although this may at first sight seem anomalous, it can readily be explained. The practice of their respective employments gives them only a limited view of the operations concerned, and it would be extremely difficult for either party to acquire a theory which

must be worked out by extensive experience and by close application. There are no books which treat of the subject, and there are no masters to teach anything except error. To attempt to learn is to get confused with conflicting opinions and assertions; and a slight experience in the study of the operations of currency will be quite sufficient to deter most men from the pursuit of knowledge which is not indispensable for the conduct of this business. With regard to the operations of circulating or floating capital, and of fixed capital, Mr. John Stuart Mill has laid down the principles in his first book, and has partially considered their application to railways in his great work. Mr. Tooke and Mr. Newmarch have embraced railways in the continuation of the work on Prices; but share investment is, in its present extended form, a new feature in political economy, and there has not, therefore, been time for the adoption of settled doctrines, scarcely for accurate and extended observation of facts, which can be the only sound basis for a useful theory. The few parties who have engaged in the study have found themselves baffled and left behind in the gigantic march of events; the observations which in the infant were scarcely matured were of little assistance in the study of the more advanced organization. The railway system, from calls of £100,000 a year, advanced to £1,000,000; from £1,000,000 to £4,000,000, and then to £40,000,000; and from totals of a few millions to hundreds of millions. A higher organization has become more complicated in its members and its functions, and the study of these has been impeded by investigations into the present and future condition of the system, which have diverted attention from the careful consideration of the existing facts.

It must be borne in mind that whatever the theory as to the origin or source of the capital for railway purposes, the mode of application will be governed by the same laws; and therefore, whether railways be made by surplus capital or savings, by the greater energy of existing means, or, as here stated, partly from the increased resources of the country, and partly from the greater energy of existing means, the mode in which the landowner and contractor are compensated and the navigator fed will be identically the same.

The subject will resolve into two parts, first, the operation of the application of capital in this country, whether fixed or circulating, under the existing system, and next a consideration of the several systems of application. This, though not the philosophical course, is adopted, because it will be most readily apprehended by practical men, but it necessarily, in the first place, involves the unquestioned admission of the joint-stock system.

The investment of capital in railways, as it is commonly called, really involves two distinct operations, the investment of capital and the transfer of capital. The navigator, for instance, who constructs an embankment, and the landowner who sells land, will be remunerated in a very different manner. The navigator must be maintained with food, warmth, and clothing; the landowner, having received the price of his estate, must seek a new mode of investment which will give him a yearly income. The two operations are therefore completely distinct. The landowner might be satisfied, as he has been sometimes, with railway scrip, with the shares reserved for him, and there is an end of the transaction, without the general or market operations of capital being at all interfered with:

not so the laborer; he cannot eat railway scrip; and the end is that he must be supplied with solid bread and meat which must in some way be sought for him.

The capital nominally expended in railway construction is for estimating the real amount to be reduced by the whole amount of capital transferred, and this constitutes an important item in all investigations of the amount of capital really required from the country.

The proportion of capital merely transferred is so very large that it reduces to a very small relative extent the call upon the resources of the country, though it is never taken into account in the vulgar discussions on the subject. The result is some of those gross misapplications of figures and sums which tend to the delusion of the ignorant and the depreciation of the authority of statistical science. Unless we could muster by forced levies a body of laborers as Cheops did for his great pyramid, and as some Indian tyrants have done for works in India, and levy the food too, and form a numerical account of the pulse and onions consumed, we should never be able to learn the real drain on the resources of the country. The figures of £200,000,000, authorized to be expended in railways, are as delusive as the figures of the public revenue in any year of the last war, and require the same caution in making use of them. The £200,000,000 now spent do not, however, represent even the nominal amount expended, because there are charges paid by the investor as stamps and brokerage, and, in many cases, interest, which go to constitute, to an individual, the actual cost of investment, and which might be just and usefully reckoned for any practical purpose.

What is called the transfer of capital, requires a separate consideration; for it must not be confounded with a popular delusion of some of the railway advocates, that it matters not what amount we expend in railways, as it is a mere matter of transfer of capital among ourselves. The transfer of capital is, however, really a new allotment or distribution of the resources of the country, and not a simple transfer of capital. So much food-producing ground is taken out of the common stock, and a food and material-increasing machine is brought into its place; and a new total is formed, which has to be shared out afresh. We should, therefore, call it re-distribution of capital, if the term of transfer of capital, although ambiguous, were not better understood.

The transfer of capital in railway matters takes place, as has been already said, to a great extent. The outlay for land in England is twenty per cent.; in India, in many cases, nothing.

Transfer of capital takes place for the profits of contractors, ironmasters, engineers, lawyers, &c. It also takes place for the profits of the laborers, and the tradesmen with whom they deal; and it is this part of the operation which has deluded many people into the imagination that railway investment had no limit, and is conducted in this mode. The extent to which transfer of capital really does go is very great. In the article of bread, "transfer" is involved in the "profits," beyond subsistence of the baker, the meal man, the miller, the corn merchant, the carrier, the implement maker, and the farmer, perhaps of the agricultural laborer; it is also involved in all their purchases of other dealers, and in many cases it forms part of the rent of land. It is by no means improbable or impossible, that the produce cost of railways is a very small per centage

of the nominal amount, perhaps twenty per cent., perhaps ten per cent. At any rate, we are safe in taking off at least twenty per cent. for land, and on taking off at least twenty per cent. for appreciable profits. If contractors get ten per cent., as a minimum average, sub-contractors and gangers must have their profits; and on most earthworks this will come to 30 per cent. It is also a question, whether transfer of capital is not largely concerned in the royalties for brick earth, stone, lime, and iron ore. At any rate, these materials might be acquired by the transfer of capital. Timber will also come under the same category; for being a crop of long growth, it is also one of long consumption.

Transfer of capital is in many cases complicated, but an understanding of it in its simpler forms will be quite sufficient for all practical purposes. The simplest form is where the landowner at once exchanges his land for a nominal value in railway shares. It, however, takes place most frequently with parties immediately connected with the proposed railway. It is well known that the engineers and lawyers generally have some stake in the concern, and it is not uncommon for ironmasters and other contractors to hold largely in it. Contracts are not unfrequently let on the express stipulation that the contractor should take a certain proportion of the price in shares, and he again has made similar terms with his sub-contractors.

Here the operation can be well understood; and it will be seen that if a whole railway could be constructed in this way, that the money market would have no concern in the transaction. If a landowner could be persuaded to take railway scrip, or South Sea or Mississippi scrip, and keep it instead of his land, it is clear that, whatever nomi-

nal amount may be involved, no disturbance of the circulating capital of the country takes place. These simple operations are, however, few, and where a transfer of capital does take place, it is not direct, and is consequently not rapid; and here even those who are acquainted with the act of transfer of capital are apt to err; and it is here where, even in the transfer of capital, an interference with the circulating capital of the country takes place.

By most of those who admit the transfer of capital, it is assumed in its operations as virtually instantaneous; and this arises from a confusion of ideas, from a common source of error, treating the transfer at one time as a question of fixed capital, at another as a matter of money, and not preserving the distinction. Hence they say that the money paid for the land gets into circulation at once, which is perfectly true, so far as the bullion handed over is concerned; but it is not true that the transaction thereby created is at once settled, even if we leave entirely out of the question the finding of the money for the landowner; and hence the embarrassment.

The settlement of this point is of particular importance to the monetary interests of the country, because, as it will be hereafter seen, the embarrassment of the process of transfer or investment impedes, not merely the small actual expenditure of capital, which is the real demand on the resources of the country, but the adjustment of the artificial expenditure, against which no legitimate objection can be raised. No one would object to 100,000 miles of railway being laid down in this country, or in India, if they could be laid down without calling upon the resources of the country.

If this could be done, all would allow that it would be a national benefit. If it can be proved that the railways required can be completed with only an inconsiderable drain, or without any injurious drain on the resources of the country, we apprehend that in such case it is desirable to give every facility for their completion.

In the case of a landowner selling land, there are very strong reasons why the transfer should not be direct, and that is because he is required to give up an immediate income for a deferred income, and also a certain income for an uncertain income. It may be perfectly true that the railway income will in all probability be greater than the land income; but perhaps the immediate wants of the landowner, or the absence of other sources of subsistence, do not enable him to await the realization of a deferred income. Hence a re-transfer must necessarily take place, and time is required for this.

There is also a further reason why, in the case of landowners, the process of transfer is protracted, and that is, from the influence of habit landowners are not by their pursuits familiarized with the operations of capital, and hence, instead of being disposed to railway investment, they are rather averse from it; and men who do not suppose themselves destitute of sense will gravely acknowledge, as a matter of pride, that they have never invested in railways, and never will. While they can envy the success of railway capitalists, their ignorance and their prejudices prevent them from following the same career, and the prudent and profitable investment of money is confounded by them with gambling and speculation. At any rate, they will not invest in new railway shares.

Indian undertakings. Thus the "transfer" may be effected in fewer weeks at such a crisis than it can be effected in months at other times.

The period of "transfer" may, undoubtedly, in a disturbed state of the money market, be protracted many months, perhaps a year, and the embarrassment may be most severe. The transfer of capital in the case of contractors' and other profits, is frequently still more complicated. The contractor or tradesman, though he work for a railway, may have no great liking for investing in it, and may prefer an investment in land or on mortgage; and thus the operation becoming more complicated, becomes more protracted. "Transfer of capital" will affect interest paid during the construction of works, directors' salaries, the profits or surplus earnings of railway secretaries, and other functionaries.

Taking promiscuously the expenditure of eight various lines up to 1846, the Great Western, Eastern Counties, Manchester and Birmingham, Northern and Eastern, Taff Vale, Dublin, Lancaster and Preston, and Sheffield and Manchester, the gross expenditure being £15,500,000, the distribution of the expenditure was found to be as follows:—

	£	Per centage.
Parliamentary	440,000	2·8
Surveying and engineering	375,000	2·3
Law	185,000	1·1
Direction and office . . .	170,000	1·0
Works	8,350,000	53·0
Land	2,700,000	17·0
Rails	1,900,000	12·0
Locomotives	545,000	3·5
Carriages	500,000	3·0
Interest	unascertained	5·0
Total	15,500,000	

The minimum proportion, constituting an early "transfer of capital," may be taken as follows:

	Per centage.
Miscellaneous	5
Land	17
Works	18
Rails	4
Locomotives and carriages	3
Interest	5
Total	52

This would, on a yearly nominal expenditure of £40,000,000 on railways in England, effect a reduction to £19,200,000.

A further analysis would enable us to make a considerable reduction for the surplus profits of the laborers, and the surplus profits of the shopkeepers on the supply of produce. If these were taken at one-third, the real money amount of capital might be reduced.

	Per centage.
Works	13
Rails, locomotives, &c.	4
Total	17

On a yearly nominal expenditure of £40,000,000, the supposed real amount of capital to be expended would therefore be reduced to £12,400,000, a sum not so large to be dealt with as to present insuperable difficulties. Whether the real amount is not smaller, it would be presumptuous to say.

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Having considered the process of transfer of

capital, we have next to examine that of the investment of capital, which it has just been shown is on a much smaller scale than is supposed, while if, as we have previously explained, this capital is chiefly an appropriation of unproductive labour, the burthen on the resources of the country must be much diminished.

The capital for the construction of railway works, or, in reality, the food and subsistence of the laborers employed, has to be collected in small and numerous portions from a great many sources. The surplus corn of the farmer, the cattle of the grazier, the corn rent of the landowner, the coal of the coalowner, the cotton and woollen of the manufacturer, contribute to the supply, which is also derived from the fractional portions of commodities constituting the profits of stock of the merchant and shopkeeper. It is needless to enlarge on the necessity for some artificial machinery, by which these supplies may be collected and distributed when and where wanted. The merest tyro in the study of the wealth of nations is able to enforce this.

We may, however, make a pause here, and observe, that the maintenance of the navigators and other laborers does not necessarily involve a heavy strain on the limited resources of the country. The laborer is not solely supplied with food, with animal and vegetable produce, but he consumes largely those articles of manufacture which can be increased by a greater energy of production. This, however, is within limits, for the materials of woollens, linens, and cottons, must be found, although the make may be supplied by a greater energy of existing means.

If the simple "transfer of capital" involves a complicated process, the collection and distribution of the real capital required cannot, under the operation of similar causes, be effected in a manner more expeditious.

If the habits and education of the landowner do not prepare him for the operations of railway investment, still less do those of the farmer or shopkeeper, even where he has a railway at his door. The landowner has a clearer and more immediate call to accept railway shares, for he has to give up his land; but the farmer or shopkeeper has no direct or apparent call for this investment. The manufacturer, merchant, or wholesale dealer, may perceive his interest in the participation in the improvements of his district; he may be able to conceive the process by which the increase of business may give him the means of investment, and he is therefore the local party who invests. The farmer or shopkeeper has a less direct interest, and a smaller stake.

The wants of individuals vary: while one man may be disposed to increase his fixed capital, to invest in land, consols, or on mortgage, another may have the necessity of increasing his floating capital. In very few cases, however, will the real suppliers of the capital be the direct investers. We need scarcely say that the effect of this, as in the case of "transfer of capital," is to give to the intermediate parties or dealers a share or profit in the ultimate object or equivalent of investment. Upon this the solid foundation of the great profits of railway capitalists rests, and it will demand hereafter a closer consideration.

The farmer having surplus corn or produce

does not, perhaps, bring it into the market at once, but keeps it in store; and, when brought into the market, the money price realized has to go through as long a series of transmissions as the money price paid to the owner of the land, perhaps, indeed, more.

The surplus savings of many parties will be by the first holders left for some time in the hands of the bankers, whereby they may be brought into the exchequer bill market, and thence through the consol market into the channels of investment.

In the case of the small shopkeeper and the mechanic, the surplus will probably pass through the savings banks, and the Commissioners of the National Debt, before it is put in a train of adjustment.

It is evident that where any indisposition to profit by the particular channels, or any want of confidence prevails, that the operations of investment must be much impeded, and thereby all the artificial operations of "simple transfer" be paralysed, though against these latter operations no valid objection can be propounded. Whenever the mob of the high vulgar, and the low are bullied and frightened into the belief that railway investment is something damnable, so often will the application of the laboring energy of the community be seriously diminished.

It will be seen that the operations of investment are so artificial and so complicated, that they present at all times serious difficulties in the way of their development. The natural barriers of an artificial career are of themselves sufficient checks no less than the fact, that, to enable railways to be

carried out, they must present a prospect of adequate profit. In these circumstances lie our real safeguard against a plethora of railways; and the only result of the persecutory or hounding process pursued by some public men is to interrupt the really beneficial and efficient operations of the railway system. One thing which has had some influence upon the anti-railway system, and which affords some excuse for it, is a confusion between the process of investment in railway works and the gambling mania in artificial scrip developed occasionally.

On every ground, external interference with railway enterprise is to be deprecated, and particularly the interference of the legislature, because no interference, except the interference of education, can promote the welfare of this branch of industry; but every interference, as interrupting the established course, must be injurious. The man who perversely injures one wheel or pinion in his watch, stops the whole machine; and however delicate are the productions of mechanism, the processes of political economy are still more delicate, and still more easily impeded. We may nevertheless apply to a watch the hand and skill of its maker, but the processes of political economy and the operations of trade are made, defined, and created by the combined influence of society, and the maker or mender cannot be personified nor the efficient powers be delegated.

In regarding the operations of our present system, and availing ourselves of the example of other communities, we shall see that it is eminently calculated to develop and utilize the resources of the country. In all ages it has been our endeavour to

cherish the industry and independence of the people, by giving them encouragement to labor, and the Poor-law Acts of Queen Elizabeth, of Charles II., of William IV., had this intention, if they have not most efficiently carried it out.

In England it has been the endeavour, while providing subsistence for the people, to provide for them work at the same time, by a state provision for the poor. The claims on private benevolence have been relaxed, as some think, most harshly, as many think, most wisely. A poor-law has been defended, on the ground that it promotes frugality on the part of the poor. We doubt if it does; but we consider it produces a higher influence, which has been overlooked—it produces economy among the competent. In Ireland, as in many other countries, the charity of individuals supplied that of the state, and even the poorest laborer contributed to the support of a host of mendicants, whose labor was lost to the community, and whose bad example depraved it. The almsgiver cannot demand work; neither can he, as in this country, so apply his surplus as at once to relieve the object of compassion and increase his own permanent resources. The application of the poor-law to Ireland, among other benefits, greatly promoted the industrial application of labor.

Even in the restricted operations of private benevolence in England, the course may be traced out. It is no uncommon case for a farmer, shopkeeper, or mechanic to have dependent on him, in times of depression, a son, nephew, or kinsman, whom he keeps, but who earns nothing, as he has no productive labor which can be offered to him. Times improve; railway works are being carried on upon

a large scale and with remunerative wages; and the host naturally calls on his kinsman to profit by the opportunity, and earn an independent livelihood. A certain amount of the host's income is thus placed at his disposal, and is invested. In either case the dependant is fed; but in the former case the resources of the host produce no profitable result, and in the latter case provide for him a permanent return. This is an explanation of one class of cases, whereby the railways reap the benefit of a portion of capital already appropriated for subsistence, but not applied to productive labor.

Not the least beneficial result of joint-stock enterprise is, that it affords the best means for applying the small surplus capital of all classes. The want of intelligence on the part of the people generally is the chief obstacle to its due development; but the evident tendency of society is to improvement in this respect, and to the more efficient realization of what Adam Smith attributes to the division of labor, but which, in reality, belongs to the effects of co-operation for the common good.

The operation of real investment in railways, or real supply of capital, or subsistence for the laborers employed, necessarily involves the application of circulating or floating capital, which is regulated by the same laws as that required for the "transfer of capital." It is not that the laborer himself requires a large amount of circulating capital, but the surplus, for instance, of the farmer, in its transit, operates on a considerable amount of circulating capital. The navigator, miner, brickmaker, or ironworker, is by no means given to hoarding of the circulating medium, but to lavish extravagance; the navigator, in particular, in a summer of dissipation, never has, at

one time, three shirts, and in the winter is, as a matter of course, in the workhouse.

We have, in describing the operation of the "transfer of capital," and the "investment of capital," assumed the use of the machinery of a joint-stock company to effect the operations; we have now to examine the schemes for raising the capital. This may be done by Government, or by a joint-stock company; by a government, in the shape of taxation, or loan, or both; by a joint-stock company in the shape of shares, or loan, or both.

A government may raise the requisite funds by taxation; but as such taxes can in nowise be apportioned to the means of the community, this does not admit of discussion as an eligible means.

Under a joint-stock system, the capital may be raised by shares or by loans, or by both in conjunction. In the case of loans, the joint-stock company, having created a work producing an income, pledges that income as a landowner does; but, for causes into which it is not at the present moment necessary to inquire, the market for railway bonds is restricted. The shares in joint-stock companies, supposing the works profitable, necessarily present great inducements to capitalists to invest, more than can be afforded by Government for railway loans, with a restricted rate of interest. The joint stock system stimulates enterprise; the Government system slackens it. We say nothing of the relative mode of administration, because that plays only a small part in the question which is the best system of raising the capital for railway works, though the interference of the Government of India in railway construction and administration has had a very prejudicial influence, and very materially retarded the progress of the system.

In the construction of railways in India, what is required is as follows:—

LABOR for earthworks, excavations, embankments, ballasting, &c.
MATERIAL for earthworks is obtained from the soil.
LABOR for bridges and works of art.
MATERIAL for bricks and stones for such works.
LABOR in laying sleepers and rails.
MATERIAL, being TIMBER for sleepers, and it may be, in many districts, for rails.
IRON for rails.

PLANT, being tools and other contractors' plant for construction.

WORKING STOCK, being WAGONS.
TRACTIVE POWER, as horses and bullocks, or
LOCOMOTIVES.

FUEL for working locomotives, being WOOD, or COAL.

Of these, all that must perforce be imported are—

RAILS,
LOCOMOTIVES.

And these only until such period as the development of the Indian iron manufacture, and the establishment of machine works in the hills, supply the local demand.

Labor,
Stone,
Brick,
Timber,

are all found in India, and it would be practicable,

were it desirable, to dispense with the importation of iron rails and locomotives, and work the lines on wooden rails with horses or bullocks, as has, in some cases, been proposed.

The stone, brick, and timber are further reduced to the labor to produce them, and we have the simple question before us, can India, in her present resources, supply the labor requisite for railways and public works? The answer must be, she can.

The Northern Bengal Railway and the Simla and Hill Railways demand a guarantee on the capital to be invested, as indispensable conditions for raising the capital. This is required, because the East India Company having adopted the policy of supervision, has rendered essential the policy of guarantee.

Whatever may be the policy hereafter, these railways, the Oude Railway, and some others now before the public that require immediate adoption, must receive a guarantee as the only practicable means available to the Government of India. Against such a measure no valid objection exists, and since the financial relations of the guarantee have been so ably discussed by Mr. Charles Freshfield, in his letter to Colonel Sykes, late Chairman of the Hon. East India Company, there is no longer an opening for controversy on the facts.

Mr. Freshfield, in that letter, said:—

"On the recent occasion upon which I had the honor of waiting on you, at the instance of, and accompanied by, a deputation of the directors of the Oude Railway Company, I advanced the position that the arrangements between the East

India Company and the various companies formed for making railways in India, embodied in the guarantee of interest, had not up to this point involved present burthen on the revenues or resources of India, and that the experience of the working of the railways (unfavorable as up to this time it must have been, as a fair test of their prospects) was sufficient to dispel the apprehension that there would be any ultimate charge on those revenues and resources resulting from the guarantee.

"The fact which I assumed as the basis of the first proposition was that the East India Company had always hitherto (by reason of the stipulation contained in the contracts that all the capital of the railway companies, as called up, should be paid into their treasury) been in possession of a much larger amount of the capital of the railway company than it had ever been called upon to disburse in the form of guaranteed interest.

"You appeared to doubt the correctness of that assumption; and, in reply, I ventured to express my conviction that, if the accounts were examined, it would be found that the East India Company had now in their hands several millions of the railway capital contributed by the various railway companies, and that even if from that sum were deducted the aggregate of interest paid by the East India Company to the several companies under their guarantee, there would still be a large residue."

"The working of the arrangement between the East India Company and the railway companies is this. The East India Company grants a conditional guarantee, by means of which the capital is raised. In return for this guarantee, it stipulates

for the custody of the railway capital. Out of this capital, it provides for the current interest, employing the balance for its own purposes; and it repays itself the money thus advanced, with interest, out of the revenues of the railway.

"In discussing this subject, however, the possible contingency must not be excluded from view that in the case of some or one of the railways, when completed, and in work throughout, the revenues from traffic may not, at the first opening, realize more than sufficient to pay the current interest. It is not reasonable to contemplate their falling short of this, because, the lines having been selected by the East India Company, and worked under their direction, they are not likely to be so worked as to be burdensome. Assuming the case contemplated to arise, and the capital account of the railway to have been closed, whatever sum shall have been paid by the East India Company up to that time, in the shape of interest, will form an advance by the East India Company to the railway company. Even in that case, however, the East India Company may be protected from actual pecuniary advance by an arrangement with the railway company, to leave in their hands, at interest, such a sum as may be necessary to cover the amount of interest paid. Or, assuming that arrangement to be open to any objection or difficulty, the principal sum might form a portion of the money borrowed by the East India Company on loan. It is not probable that the amount would be large, and if the railway receipts develop as rapidly as the experience hitherto renders probable, the surplus above the guaranteed rate will probably more than provide the interest necessary on the dead charge, regarded as money raised by the East India Company."

"But while this is the immediate financial view of these transactions, there are broader and larger considerations involved in them, which sink the mere pecuniary question into insignificance. Let it be assumed that the construction of the trunk lines of railway in the three presidencies should leave the East India Company with a dead charge of the large sum of five millions sterling, composed of interest advanced on capital unproductive during their construction.

"The numerical force (if I am correctly informed) of the armies of India does not fall short of 300,000 men; the yearly cost of the military establishment considerably exceeds ten millions sterling.

"Can it be doubted that the direct saving to the East India Company in the economy of their military and administrative arrangements, through the introduction into the country of a system of locomotion, which would enable the East India Company to concentrate their forces on any one or more point at a rate of speed of 400 miles a day instead of 10, would far more than redeem a charge of £200,000 or £250,000 paid in annual interest on five millions sterling thus expended?"

"But it is in vain to speculate on this point, unless the money necessary for the purpose could be raised without the guarantee, and a little consideration will show that this cannot be accomplished. The capital for Indian railways is required on a large scale, and with promptitude, independently of the periodical fluctuations of the money market. Under the present arrangements, it is derived from a class of persons who are not essentially speculators. The stock has for some time been

sought for permanent, in many cases for trust, investment, and this is increasing daily. It is the guarantee that produces this effect.

"The portion which would be subscribed by speculators without the guarantee would under any circumstances be insignificant; while, on the other hand, that obtainable if free scope be given to the disposition to treat the stock as in the nature of a government security, is almost unlimited. The Government of India, therefore, if the railways are important to them, are the parties most interested in giving the guarantee, as, without it, it would be vain to hope that money would flow from England into India as it has done, and is at present doing, as freely as it is called for.

"But it may be urged that the time has not arrived for considering the necessity of encouraging further railways in India. The three trunk lines are not complete, and there are two others in progress; these will require a large outlay, and it has not yet been ascertained with certainty that they will be profitable.

"If there were any risk of the new railways interfering with the subscription of the capital for those under contract, it would be matter of grave doubt whether they ought to be now encouraged. Or, if there were any serious doubt of a value in the railways to the revenues and resources and material interests of the Indian Empire equal to the burden of the guarantee, the same considerations would arise. But the time is past for the former, and I assume that there is no doubt, in reference to the latter point, that there are numerous lines of railway in the construction of which, whatever their immediate results to the companies

undertaking them, would have the effect of enhancing the revenues and resources of India to an extent far beyond their cost, in the form of an annual guaranteed interest."

Although it is now supposed that very little capital will be supplied from India, yet, in the long run, the whole capital will be supplied from that country, and the application of the capital of this country will only be in the nature of a temporary loan, from which, however, we shall derive a large annuity from the surplus profits realized. We have, in the first instance, to supply capital to set the machinery of investment in action, and the question is, whether that will require the transmission of specie from this country to a great extent; and the answer must be that it will not.

The Hindoo laborers who are employed as navigators require to be fed and clothed, but not with specie; they are fed with rice and clothed with cotton. The food is of Indian growth; and the only contingency under which specie may be supposed to be required to purchase rice is, in case the production of India is not sufficient and it is necessary to import it from abroad. Even then, it would be probably purchased with English manufactures. If increased food is required for the Hindoo navigators, it will be supplied by the increased production of India, and the stimulus which will be applied will be to the agriculture of India. This stimulus will not be chiefly in the shape of specie, but chiefly in that of English goods; for, supposing specie to be temporarily required, it will only be for the adjustment of the transactions, and will ultimately return into circulation, except such portion as is hoarded. The real operation, after all, is to make the Hindoos form the rail-

ways, and enable us to reap a large portion of the profits.

No careful thinker can avoid coming to the conclusion, that the excitement of railway construction in India will, of itself, cause an increased demand for English goods, so that at each step one operation will be found harmonizing and co-operating with another, like a well-planned and highly-finished train of wheel-work. The grand feature of Indian railways is, that they admit of the realization of a large profit, with a very small outlay of capital, by the development of the resources of India. In the early stages of Indian enterprise, there will be an accumulation of profit by contractors and workmen, and by tradesmen dealing with them, and this will constitute a capital seeking investment, which will come into the railway market, and which, in obedience to the laws regulating these operations, will be attended with profit to the English investers. The "transfer of capital" which takes place in the purchase of Indian iron, stone, lime, bricks, timber, and materials, will also constitute an Indian contribution towards railway investment. The profits of the merchants and retailers on the increased exports of English manufactures will form a further portion of Indian railway capital.

In a subsequent stage of railway proceedings, when larger operations are carried on, and more capital will be required, the development of railway traffic will in India, as here, have effected a large economy of agricultural production, and will have stimulated an increase, so as to supply new resources. In India, a great deal will be done by the distribution of the varied resources of the country, the productions of one part being made to supply the deficiencies of another, and new production being

thus facilitated where before it was impossible. Vegetable produce, which, if now raised, must rot before it can be brought to market, will then be made available; manufactories which were impossible will be practicable; the sphere of enterprize will be enlarged; the reward of exertion will be increased; and, with the addition to the working power of the country of the vast engine of railway traction, it cannot be doubted that its wealth and capabilities will rise enormously above the present standard.

The food and produce now raised in India, lost for want of transport, or wasted from deficient means of transport, will afford abundant means for the construction of railways. If we consider how much the expansion of the Burdwan collieries, by means of the extension of the East Indian Railway to Ranegunge, has added to the material power of Bengal, we cannot fail to recognise how much the productive results of railways will contribute to the resources for the development of public enterprize.

APPENDIX.

EXTRACTS FROM THE PRESS.

HOMEWARD MAIL (BENGAL), *March* 17, 1857.

NORTHERN BENGAL RAILWAY COMPANY.—The prospectus of the Northern Bengal Railway Company (limited) is issued, with a proposed capital of two millions (subject to increase), in 100,000 shares of £20 each, on which the deposit is fixed at 3*s.* per share. The object of this undertaking is to construct a northernly extension of the East Indian Railway Company's line, which will soon be completed to Rajmahal. The Northern Bengal Company proposes to carry a line thence to Dinajepore and Darjeeling, accommodating the districts of Rungpore, Malda, and Purneah. The total length of railway to be constructed will be between 200 and 300 miles, to be undertaken in sections, as the Indian authorities may direct. Sir George Bonham, Bart., is chairman of the undertaking; Sir Macdonald Stephenson, vice-chairman; and the Board is otherwise respectably constituted. It includes the name of Archibald Campbell, who has occupied a responsible official position in those districts for above twenty years, and who speaks in the most favorable terms of their traffic and re-

sources. Darjeeling, owing to the healthiness of its climate, is a sanitarium of great importance to the community of Calcutta; and it is alleged that the East India Company, in order to increase the means of communication between these places, have it in contemplation to expend £150,000 on an improved road to Darjeeling. Upon these grounds the directors are in communication with the East India Company, with a view to obtain a guarantee. The prospectus remarks:—" Should this arrangement, which is regarded by the directors as an essential and indispensable condition, not be effected, the deposit of 3*s*. per share will be returned, less the expenses which shall have been incurred." The shares are quoted par to 5*s*. premium, with 3*s*. paid.

WEEKLY DISPATCH, *March* 8, 1857.

A railway has been projected, called the Northern Bengal Railway, to pursue a northern direction from the point where the East Indian Railway diverges to the north-west near Rajmahal. The new line will accommodate the districts of Rungpore, Malda, and Purneah, a country of great traffic and vast resources. It will bring sugar, cotton, hemp, and tea to Calcutta. It will reach Darjeeling, which is a sanitarium to the community of Calcutta. It is registered as a company with limited liability, and the particulars will be found in our advertising columns.

ECONOMIST, *March* 7, 1857.

Northern Bengal.—It is proposed to construct a branch line from the Rajmahal line of the East Indian Railway, in a northerly direction to Dina-

jepore and Darjeeling, for the accommodation of the districts of Rungpore, Malda, and Purneah. The total length of the railway proposed to be constructed will depend on the route selected, and will range between two hundred and three hundred miles.

THE TIMES, *July* 7, 1857.

RAILWAYS AND INDIAN REVOLTS.—The late disastrous events in India have produced a very powerful effect on the Indian Railway department, and the authorities are pledged to the development of the railway system. Had the East Indian Railway been complete from Calcutta to Delhi, as it ought to have been, instead of halting half way, the late disastrous events at Meerut and Delhi would never have occurred, or within twenty hours troops would have been conveyed there, whereas it will now take about eighty days to march. Had the Northern Bengal Railway been complete, fresh English battalions could have been poured down from Darjeeling to Calcutta and the Valley of the Ganges; and had the Simla Railway been complete, the Commander-in-Chief would, in six hours, have proceeded with his staff and European forces from Simla and Soobathoo to Delhi. Now, a fortnight, at least, will be spent in concentrating the requisite forces. It is expected that the salutary example of these comparisons will lead to the immediate guarantee of the Northern Bengal Railway, the Simla Railway, and other lines. The electric telegraph communication has been already productive of the most beneficial influence, in giving increased efficiency to military movements and the energetic action of the Government.

BUILDING NEWS, *June* 26, 1857.

INDIAN ARCHITECTURE.—Great endeavors are now being made to obtain branch railways to the small English towns in the healthy hill regions of India. The Northern Bengal Railway, now under the consideration of the Indian Government, will connect Calcutta with its sanitarium, Darjeeling. This is a kind of Windsor to Calcutta, in the Sub-Himalayas, in a healthy English climate. Another line is proposed to Simla, and a company for railways to all the hill regions. These towns of Simla, the season residence of the Governor-General of India, and of the Lieutenant-Governor of the north-west provinces of Darjeeling, the seat of the Deputy-Governor of Bengal, of Ootacamund, Mussoorie, Dalhousie, Soobathoo, and others above Dhera Dhon, and on the Neilgherries, are small towns with detached villas, churches, schools, libraries, invalid barracks, orphan institutions, and other English establishments, and are the elements of a European colonization of India.

Simla or Dalhousie will, it is expected, be ultimately made the capital of India, and Darjeeling of Bengal, so that the superior government authorities now chiefly resident in the hills, will be liberated from attendance in the unhealthy Presidency cities. The English towns are healthy residences for architects; but at present the business is small, though they can practise in the cities of the plains, keeping their offices in the hills; but with the opening of the railways there will be a large field of employment. The chief structure now going on is the central prison for Europeans in the Neilgherries; but district prisons are proposed, and, it is expected, with an increase of the European force, that numerous barracks will be erected. These buildings are chiefly carried out by Government military architects, but there is good scope for English contractors and clerks of the works.

RAILWAY RECORD, *March* 7, 1857.

RAILWAYS IN INDIA. — THE NORTHERN BENGAL RAILWAY COMPANY. The undertaking which has at length been brought in a formal shape before the public, under the title of the Northern Bengal Railway, has for some months been spoken of as about to make its appearance, and from the names which appear on the prospectus, no doubt can be entertained that the data upon which the proposed line has been based have received the most careful attention. Mr. Hyde Clarke, the secretary, many years ago—in fact, so long since as the initiation of the railway system in India in 1845-6—published some very valuable contributions on the subject of traffic in connection with railways in India; and the well-earned reputation of that gentleman for a searching investigation of every subject to which he devotes his attention is a sufficient guarantee for the accuracy of the estimates stated in the announcement before us.

The proposed line is designed to run due north of Calcutta, being a continuation of the line of railway already open to Ranegunge to the hill country at Darjeeling, traversing in its route the districts of Rungpore, Malda, and Purneah. The total length of railway to be constructed will be between 200 and 300 miles, which, of course, will be undertaken in sections, as may be determined upon by the East India Company. It is estimated that the cost of the railway will not exceed £9,000 per mile, which, however, we confess, appears to us somewhat high. As to the estimated returns, it may be stated generally that the lower country already sends largely to Calcutta, for consumption and shipment, sugar, tobacco, cotton, hemp, jute, rice, oil-seeds, &c.; and in the upper country the production of copper and the growth of tea is energetically promoted. The hill regions produce

coal, copper, and other minerals, but they are only worked on a small scale as yet. We should add, also, that Darjeeling is the great sanitarium of European population at Calcutta—a fact which, in itself, is sufficient to ensure a first class traffic of considerable importance. Indeed, increased facilities of communication between Calcutta and the hills are so highly appreciated by the East India Company, and have become an object so desirable to the residential European community, that the Court of Directors are understood to contemplate an outlay of no less than £150,000 sterling in the construction of an improved high road to Darjeeling. We cannot entertain a doubt that the best form of high road, the railway, will commend itself to the adoption and support of the Company.

In a military point of view, too, the northern extension from Ranegunge is deserving of the cordial support of the Government. The Darjeeling district lies on the frontier of the kingdom of Nepaul, and the locality recommends itself as admirably adapted to the purpose of a military depot. It strikes us that this is a most important element of consideration in estimating the value of this line.

MORNING POST, *Monday, March* 2, 1857.

Another Indian railway company has been introduced to public notice to-day, under the designation of the "Northern Bengal Railway," the prospectus of which will be found elsewhere. The proposal of the promoters is, to make a line of railway from a point on the East India Railway, probably Rajmahal, to Darjeeling, a well-known resort of invalids from Calcutta, &c., for the purpose of regaining health. The length of the line will be from 200 to

300 miles, according to the route eventually fixed upon, after the survey is completed, for the railway to follow, and it is estimated that it may be constructed at a cost not exceeding £9,000 per mile. In the several routes proposed for adoption very important and populous towns are included, the traffic from which will, of necessity, pass over the line and ensure the success of the enterprise, even should no increase take place. The grounds upon which the public and the East India Company are called upon to support this undertaking are summed up as follow:—

"That it is a natural and necessary extension, in a northerly direction, of the East India Railway, near Rajmahal, where it diverges to the north-west, and will open up the communications to the north-east. That it is required for developing the advantages of the sanitarium at Darjeeling and the neighbouring districts. That it would be admirably adapted for the purposes of a European military depot on the frontier of Nepaul."

The capital proposed to be raised is £2,000,000, in shares of £20 each, and the directors of the company seek a guarantee from the East India Company as an "essential and indispensable condition," failing which the deposit will be returned to the allottees. The board of directors possess every claim to the confidence of the public, from their high standing in society, and their cognizance of the requirements of the Indian community.

MORNING STAR.—*Monday, March* 2, 1857.

The Prospectus of the Northern Bengal Railway has been issued. The object of the company, which it is proposed to establish upon the principle of

limited liability, with a capital of £2,000,000, in 100,000 shares of £20 each, is to construct a northerly extension of the East Indian Railway from Rajmahal to Dinajepore and Darjeeling, thus accommodating the populous districts of Rungpore, Malda, and Purneah. The total length of railway to be constructed will be between 200 and 300 miles, in sections, as the East India Directors may require. The districts to be accommodated send largely to Calcutta, for consumption and shipment, sugar, tobacco, cotton, hemp, jute, rice, oil seeds, &c.; while the production of copper and tea are being extended, for all which these lines will be the chief route. The hill regions also produce coal and other mineral productions, and the railways proposed command the traffic to Assam and Central Asia. Besides this, Darjeeling, which enjoys a climate equal to that of England, is a sanitarium of great importance to the community of Calcutta, and will command a first-class traffic, which will be greatly increased when the distance is reduced from a week of laborious travelling to a single day of convenient transit. The East India Company have felt it to be so great an object to increase the means of communication between these places, that they have it in contemplation to expend £150,000 on an improved high road to Darjeeling. These advantages will secure a favorable reception of the undertaking from capitalists. The directors, at the head of whom is Sir George Bonham, Bart., late Plenipotentiary in China, and Governor of Hong Kong, are, it is added, in communication with the East India Company, with a view to place the company upon the same basis as the other Indian railway companies, under a guarantee of a minimum rate of interest. This arrangement is regarded as an essential and indispensable condition.

DAILY TELEGRAPH.—*Monday, March* 2, 1857.

The Prospectus of the Northern Bengal Railway Company is just issued. The undertaking is to be carried out on the principle of limited liability, with a capital of £2,000,000, in 100,000 shares of £20, or 200 rupees each. Sir George Bonham, K.C.B., late British Plenipotentiary in China, and Governor of Hong Kong, and Sir Macdonald Stephenson, are chairman and deputy-chairman of the newly-formed association. The object of the association is to construct a northerly extension of the East India Railway to Dinajepore and Darjeeling, and 200 to 300 miles of railway will have to be constructed, at an estimated cost not exceeding £9,000 a mile. A very favorable opinion has been expressed of the commercial capabilities and resources of the country through which the proposed lines will pass.

DAILY NEWS.—*Monday, March* 2, 1857.

The prospectus of the Northern Bengal Railway Company (limited) is issued, with a proposed capital of two millions (subject to increase), in 100,000 shares of £20 each, on which the deposit is fixed at 3*s.* per share. The object of this undertaking is to construct a northerly extension of the East Indian Railway Company's line, which will soon be completed to Rajmahal. The Bengal Northern Company proposes to carry a line thence to Dinajepore and Darjeeling, accommodating the districts of Rungpore, Malda, and Purneah. The total length of railway to be constructed will be between 200 and 300 miles, to be undertaken in sections, as the Indian authorities may direct. Sir George Bonham, Bart., is chairman of the undertaking, Sir Macdonald Stephenson, vice-chair-

man, and the board is otherwise respectably constituted. It includes the name of Dr. Archibald Campbell, who has occupied a high official position in those districts for above twenty years, and who speaks in the most favorable terms of their traffic and resources. Darjeeling, owing to the healthiness of its climate, is a sanitarium of great importance to the community of Calcutta, and it is mentioned that the East India Company, in order to increase the means of communication between these places, have it in contemplation to expend £150,000 on an improved road to Darjeeling. Upon these grounds the directors are in communication with the East India Company, with a view to obtain a guarantee. The prospectus remarks, "Should this arrangement, which is regarded by the directors as an essential and indispensable condition, not be effected, the deposit of 3s. per share will be returned, less the expenses which shall have been incurred."

MORNING CHRONICLE.—*Monday, March* 2, 1857.

A new railway company, called the Northern Bengal, has been announced, with a capital of £2,000,000, in 100,000 shares of £20 each, 3*s.* per share deposit. The object of the present undertaking is to construct a northerly extension of the East Indian Railway from Rajmahal to Dinajepore and Darjeeling, and accommodate the districts of Rungpore, Malda, and Purneah. The total length will be between 200 and 300 miles, to be undertaken in sections, as the Court of Directors of the East India Company may direct. The proposed lines will, it is stated, accommodate a country of great traffic and vast resources. The lower country sends largely to Calcutta, for consumption

and shipment, sugar, tobacco, cotton, hemp, jute, rice, oil seeds, &c.; and in the upper country the production of copper and tea are being extended. The hill regions also produce coal and other mineral productions; and the railways proposed command the traffic to Assam and Central Asia. It is estimated that the cost of the railway will not exceed £9,000 per mile. The directors are in communication with the Honorable East India Company, with a view to obtain a guaranteed rate of interest. Should this not be effected the deposit of 3*s*. per share will be returned, less the expenses which shall have been incurred. The allottees will not be required to execute any deed.

MORNING ADVERTISER.—*Monday, March* 2, 1857.

The prospectus has been issued of the Northern Bengal Railway, with a capital of £2,000,000, in £20 shares. This states as follows:—

"The East Indian Railway is open to Ranegunge, on the route to Delhi, and will soon be completed to Rajmahal. The object of the present undertaking is to construct a northerly extension to Dinajepore and Darjeeling, accommodating the districts of Rungpore, Malda, and Purneah. The connexion may be made by one of several routes, as shown on the accompanying map, the comparative advantages of which can only be determined by actual survey. The total length of railway to be constructed will be between 200 and 300 miles, to be undertaken in sections, as the Court of Directors of the East India Company may direct. Negotiations are pending between the directors and the Honorable East India Company, from whom a guarantee, similar to that enjoyed by the other Indian railway undertakings, is expected."

MORNING NEWS.—*Monday, March* 2, 1857.

"A new railway company, called the Northern Bengal, has been announced, with a capital of £2,000,000, in 100,000 shares of £20 each, 3*s.* per share deposit. The object of the present undertaking is to construct a northerly extension of the East Indian Railway from Rajmahal to Dinajepore and Darjeeling, and accommodate the districts of Rungpore, Malda, and Purneah. The total length will be between 200 and 300 miles, to be undertaken in sections, as the Court of Directors of the East India Company may direct. The proposed lines will, it is stated, accommodate a country of great traffic and vast resources. The lower country sends largely to Calcutta, for consumption and shipment, sugar, tobacco, cotton, hemp, jute, rice, oil seeds, &c.; and in the upper country the production of copper and tea is being extended. The hill regions also produce coal and other mineral productions; and the railways proposed command the traffic to Assam and Central Asia. It is estimated that the cost of the railway will not exceed £9,000 per mile. The directors are in communication with the Honorable East India Company, with a view to obtain a guaranteed rate of interest. Should this not be effected the deposit of 3s. per share will be returned, less the expenses which shall have been incurred. The allottees will not be required to execute any deed.

MORNING HERALD.—*Monday, March* 2, 1857.

A new undertaking in connection with our East Indian empire has been brought out. It is introduced to public notice as the Northern Bengal Railway Company (limited). The capital is £2,000,000, to be raised in 100,000 shares of £20, or 200 rupees each, with power to increase. The

deposit is to be 3*s*. per share on application, and it is determined that all issues of new stock shall be offered rateably among existing shareholders. We are aware that the East Indian Railway is open to Ranegunge, on the route to Delhi, and will be soon completed to Rajmahal. The object of the present undertaking is to construct a northerly extension to Dinajepore and Darjeeling, accommodating the districts of Rungpore, Malda, and Purneah. The connection may be made by one of several routes, the comparative advantages of which can only be determined by actual survey. The total length of railway to be constructed will be between 200 and 300 miles, to be undertaken in sections, as the Court of Directors of the East India Company may direct. A report has been published by Dr. Campbell, who has for nearly twenty years occupied an official position in the districts which the proposed railway will traverse. The lower country produces and sends largely to Calcutta, for consumption and shipment, sugar, tobacco, cotton, hemp, jute, rice, oil seeds, &c.; and in the upper country the production of copper and tea is being extended, for all which these lines will be the chief route. The hill regions also produce coal and other mineral productions; and the railways proposed command the traffic to Assam and Central Asia. Besides this, Darjeeling, which enjoys a climate equal to that of England, is a sanitarium of great importance to the community of Calcutta, and will command a first-class traffic, which will be greatly increased when the distance is reduced from a week of laborious travelling to a single day of convenient transit. The East India Company have felt it to be so great an object to increase the means of communication between these places, that they have it in contemplation to expend £150,000 on an improved high road to Darjeeling. It is

estimated at present that the cost of the proposed railway will not exceed £9,000 per mile. The directors are in communication with the East India Company, with a view to obtain a guarantee of a certain amount of interest; and if this most desirable object be not attained, the deposit of 3*s*. per share will be returned, less the expenses incurred. Mr. T. R. Crampton has been nominated as engineer to the company.

RAILWAY GAZETTE.

THE NORTHERN BENGAL RAILWAY.

We differ altogether in opinion from those writers who affect to entertain considerable apprehension lest inconvenience should arise in the finance of the country by advances on account of railways in India. Appreciating also the usefulness of a Government guarantee upon capital employed in this direction, we are by no means satisfied that it is for the advantage of railway enterprise in India that these guarantees should be given. The encouragement which the guarantee afforded at a time when the public were not so fully alive to the importance of this movement was, doubtless, extremely valuable; but experience has shown that the guarantee of the Government has been very dearly purchased at the cost of Government interference in the control and management of these great undertakings. It was admitted from the very first moment that the desirableness of introducing railways into India became a conviction on the public mind, that the quicker they were made and the sooner the great main arteries of communication were completed, the greater would be their value to the Imperial interests. It is now eleven years since the two great lines in the presidencies of Bengal and Bombay were set on foot, and, thanks to the

paralyzing influence of Government protection and interference, neither is yet completed, but each "like a wounded snake drags its slow length along." All the ordinary motives which in independent private enterprise should incite to energetic prosecution of the work in hand, have been practically silenced by the guarantee. The capital assumes the character of an investment, and the five per cent., and not the completion of the work for which the money was associated, becomes the primary object of the shareholders. It is true that an expectation exists, well founded, we believe, that in time the development of traffic will result in a very handsome surplus dividend over and above the rate of interest fixed by the guarantee. But it has been demonstrated by Col. Kennedy, the able engineer of the Bombay Baroda, and Central India Railway Company, that the prospects of such a return become small by degrees and beautifully less, just in proportion as the time extends for the completion of the work. In short, if some of the works now in progress extend to a given period of sixteen or eighteen years before they are completed (the term of concession or lease being ninety-nine years), the amount of indebtedness, as the Americans say, will assume a magnitude which will make it practically impossible to extricate the undertaking from its liabilities. It is obviously, therefore, the duty of the Government to expedite the completion of these works, not only in view of the special interests of the undertaking, but also of the empire at large!

But to return to the subject of the newly projected line, the Northern Bengal Railway. It is intended to run from the Ranegunge station of the East Indian Railway Company due north into the hill district at Darjeeling, which is the sanitarium of the European population at Calcutta. The dis-

trict traversed includes Rungpore, Malda, Purneah, and Dinajepore. The ultimate direction of the line, however, is yet to be determined upon. The distance will vary between 200 and 300 miles.

From the inquiries which have been already instituted, and the documents published in reference to the produce of the lower as well as the upper country, there is abundant evidence of the existence of a sufficiently remunerative traffic, at an outlay of £9,000 per mile, which is the estimated cost. Taking a military point of view, the northern terminus of the line abutting on the frontier of Nepaul especially marks it an admirable locale for a military depot. The undertaking has been for some time before the Board of the East India Company, and no doubt will be placed upon the same basis in respect of guarantee as other important railway undertakings in India, particularly as the position of the European community of Bengal in the Government will be very strong. The Board is unexceptionable. Mr. Crampton is the engineer, and Mr. Hyde Clarke the secretary. Some doubt was felt on Tuesday, and the shares declined, in consequence of a notion that the projected Great Northern and Eastern Bengal Railway is in competition with, whereas it is an extension of, the Northern Bengal Railway.

TIMES.—*March* 2, 1857.

The prospectus has been issued of a new Indian Railway Company, to be called the "Northern Bengal," with a capital of £2,000,000, in £20 shares. The object is to open up the rich country on the north of the East Indian line, by constructing a branch from Rájmahal to Dinajepore and

Darjeeling, the hill district on the frontier of Nepaul. By this route of between 200 and 300 miles, transport would be furnished for a large amount of valuable produce, and the long sought means of preserving the health and life of Europeans by a cheap and ready access to a climate like that of England, would be fully attained. Among the promoters are some of the best-known names connected with Indian enterprise.

TIMES.—*March* 5, 1857.

Northern Bengal.

It is proposed to construct a branch railway from the Rajmahal line of the East Indian Railway, in a northerly direction, to Dinajepore and Darjeeling, for the accommodation of the districts of Rungpore, Malda, and Purneah. The total length of the railway proposed to be constructed will depend upon the route selected, and will range between 200 and 300 miles. The promoters state that the proposed lines would accommodate a country of great traffic and vast resources. One great advantage of the line would be that of affording rapid access from Calcutta to Darjeeling, which, it is stated, enjoys a climate equal to that of England, and would command a first-class traffic, in consequence of the healthy position. The cost of the railway is estimated at about £9,000 per mile. From the report of Dr. Campbell, of Darjeeling, it appears that the population of that place is 50,000; that the climate is as healthy as any in the world, and very agreeable, and is more favorable to the health of children than that of England; and that the hills are

well suited for the growth of tea and coffee. He states that the districts through which the proposed lines are intended to pass yield a revenue of £450,000 per annum, and have a population of more than 4,000,000. He represents labour as abundant and cheap, and the country as abounding in produce and materials.

ILLUSTRATED LONDON NEWS, *August* 15, 1857.

TEA IN INDIA.—DEODHUNGA, THE HIGHEST MOUNTAIN IN THE WORLD.—Not many years ago, England imported from India cotton piece goods. Not so now. We have inundated the latter country with finer fabrics than the Indian can produce, besides being more durable and much cheaper; although the cotton grown in India has two long land journeys to perform, two long ship voyages to undergo, and four custom-houses to pass through, besides being manufactured, bleached, and dyed.

We have also beaten the Chinese in their porcelain ware. Who will say that Worcester cannot produce as beautiful china ware as ever left China? And so shall it be with her tea. We, in India, have discovered that the tea tree is indigenous to the Himalaya mountains from China to Ladâk, a distance of nearly 2,000 miles. We have discovered that we have a favorable climate for the growth of tea, a proper soil for the plant, abundance of labor, and experiments have shown that success will and must attend any attempts to rear the tea plant in the Himalayas. May not the day arrive when we may be independent of the saucy Chinaman, and, instead of sending our ships to Canton for our tea, we shall send them to Calcutta for the rich and well-flavored teas of Assam, Cachar, Darjeeling-Kumaon, and other tea-growing districts, now

springing up along the broad front of our splendid mountains?

The crop of the Assam Tea Company for 1854-55 was 538,094 pounds of good, wholesome, delicious black tea. The crop of 1855-56 was 638,789 pounds, of which 301,244 pounds has already been shipped to England, and the crop of 1856-57 is expected to yield 700,000 pounds; and this from an infant plantation! Already do iron boats navigate the narrow streams leading to some of the factories, carrying coal for steam machinery. Houses with corrugated galvanized iron roofs are starting up, new clearances are being made, and new grants of land being applied for and obtained.

Darjeeling, one of the many hill sanitaria in the Himalaya mountains, which lies upon the same meridian of longitude as Calcutta, is indebted for the introduction of the tea plant to Dr. A. Campbell, the superintendent of the sanitarium. The introduction of the plant into Darjeeling was more as a garden experiment; and in order to obtain an evergreen, the experiment was followed up by several house proprietors at the place, Dr. Withecombe, Mr. James Grant, of the Civil Service, and Captain Samler, who all followed the example set by Dr. Campbell; but it was to Mr. Charles Quintin, of the Civil Service, that we are indebted to the tea plant being planted and cultivated with the intention of obtaining a marketable tea from the leaves; it was by his recommendation that Captain Samler cleared some waste ground, and sowed tea seed, which germinated. The plants, by their healthy and vigorous growth, gave much promise of the experiment succeeding; a company was speedily formed for the cultivation of tea and coffee, the success of which is still in futurity. Several thousand acres of forest land have been cleared, from 2,500 feet elevation above the sea to 5,900; sixty

or seventy acres have been planted, besides six nurseries, in which a ton of seed has been sown this year. Mr. R. Fortune, the celebrated authority upon tea and its manufacture, in comparing the climate of the Himalayas with that of China, says, that " although some important differences occur, yet, upon the whole, there is a great similarity."

Five tons of tea seed will be in the ground before May, 1857.

The Government has generously distributed 1,600 pounds of tea seed to the natives of the hills round about the sanitarium; and, as these men are all inveterate tea drinkers, we may soon expect all the principal heads of villages will have their own tea plantations, they having taken up the matter in great earnestness and spirit. At present the native tribes in the Himalayas drink tea that is imported from Thibet, which has to perform a land journey of several thousand miles before it reaches their doors. It is a coarse, harsh, black tea, which arrives in blocks or bricks of six or seven pounds weight, and eight inches in length and four inches deep, and is sewn up in raw kidskins, the tea appearing through the stitches at the sides. It costs two shillings a pound, whereas the tea that they will raise themselves will be drunk on the spot for ninepence per pound.

Tea, as at present drank in these mountains, when cooked, is excellent in taste, and highly refreshing to the thirsty traveller or husbandman. It is made after the following extraordinary manner:—Into a large iron cooking pot, full of boiling water, perhaps holding three gallons, a quantity of black tea, that has been chopped from the end of a " Thibet brick," is thrown together, with a little salt, butter, and parched barley meal; this mess, after having been well stirred, is served up in a metal tea pot, each partaker of the tea producing

his or her own wooden tea-cup from the bosom folds of their capacious clothes, and when the cup has been frequently filled, and as readily emptied, it is licked clean by the owner, and replaced whence it was taken; every one being supposed to carry a tea-cup about the person, as a Londoner does a pocket-handkerchief; ten or twelve cupfuls is considered no extraordinary drink for a tea-loving Bhoatia.

In the accompanying view is shown the sanitarium of Darjeeling, which gives an excellent idea of the tea mountains; though Darjeeling itself, being at an elevation of 7,400 feet, is a little above the plantations. In the distance is the great mountain Deodhunga, sixty miles west of Darjeeling, close to the spot whence this sketch was taken, at an elevation of 11,500 feet; wild tea trees were in blossom, just below the fir forest. Deodhunga, 29,002 feet in height, being on the left hand of the spectator, and Kunchinginga, 28,176 feet in height, being on the right hand; a wonderful and glorious sight.

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