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IN

INDIA

BY

HORACE BELL, M.Inst.C.E.

CONSULTING ENGINEER FOR STATE RAILWAYS
TO THE GOVERNMENT OF INDIA

RIVINGTON, PERCIVAL AND CO.

KING STREET, COVENT GARDEN

LONDON

1894

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PREFACE

THIS work has, by permission, been based upon the records of the Government of India, but is no way whatever to be regarded as having any official authority. It professes to give no more than an outline of the policy pursued on Indian Railways, and the Author has designedly abstained from criticism, and from the assertion of his own views. It is hoped that it may be of interest, if not of some use, to those connected with Indian Railways, and perhaps to a wider circle of readers.

H. B.

CALCUTTA,
January 1894.



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RAILWAY MAP
OF
INDIA
1894

Scale of English Statute Miles

- Note
- Broad Gauge Lines, opened.
 - Do. in construction.
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 - Do. in construction.
 - Principal Steamer Routes.



CHAPTER I

HISTORICAL SKETCH

THE earliest proposals for constructing railways in India were put forward in 1843-44 by the promoters of a company, headed by Sir Macdonald Stephenson. We were then on the eve, in England, of the period known as that of the "railway mania"; the imagination of projectors drew railways penetrating into every known land; and while they expected that they should be mainly financed in Lombard Street, they were still more certain that they could only be carried out by English engineers. It is not to be wondered at that India should have received their early attention. Yet the condition of that country at the time could have given little hope of success. We had but recently conquered Sind, and with a new Governor-General, Lord Hardinge, were rapidly drifting into the struggle with Runjeet Singh, which was to end in an annexation of the Punjab. Thus, apart from the comparative novelty of railways, even in Europe, and in face of much more serious and urgent matters, it would not have been surprising if the "Honourable Board" in Leadenhall Street had regarded the proposals as untimely or premature. This, however, does not appear to have been the view taken at any time, either at home or in India, and notwithstanding that much more weighty business was in hand, the railway promoter found himself in favour, and



a desire shown to help rather than retard the progress of his schemes.

Early in 1845, a formally drawn-up prospectus for a company was put before the Court of Directors of the East India Company, which proposed to raise a capital of one million sterling, for the construction of an "experimental" railway, starting from Calcutta, and extending for 140 miles towards Allahabad. The Company asked at the outset for a guarantee on its outlay of 3 per cent; but were willing, if this was considered objectionable, to be content with a bonus of £30,000 per annum, in order "to encourage the introduction of railways into India," but with the proviso that this bonus should be withdrawn when the net profits of the railway exceeded 3 per cent on the capital of one million. Subsequently, however, it was stipulated that a guarantee, or some equivalent pecuniary assistance, must be held to be an indispensable condition of the proposal. After many discussions, and much deliberation on this and other proposals, the Court of Directors addressed a despatch on the subject to the Governor-General, on the 7th May 1845; the beginning of a correspondence between the Home and the Indian Governments, which is now as bulky as it is interesting as a record of railway policy.

In England, or more properly in the United Kingdom, the progress of railway enterprise has received, and indeed needed but little more than guidance from the State and the Legislature. It sprang with marvellous rapidity into popularity and power. There were no doubts as to its adaptability to the habits and aims of the people, no serious difficulties at outset as to the raising of capital, nor was there any marked indication of an intention on the part of the Government to impose either legal or technical conditions in the shape of control. In India the position was widely different. The great Empire which we now either govern or control, from the Himalayas to Cape Comorin, was, in 1844, far from complete. We had yet to include in our territory the Punjab, Burma, Nagpore, and



Andh. The people had scarcely yet realised that they were to become the subjects of one great and paramount Power, nor had they then more than a faint conception of its strength, as revealed in the Mutiny, or of the closeness of the bond now made possible by roads and railways between distant provinces. Moreover, the habits and condition of the people, except in the vicinity of Calcutta or Bombay, were scarcely altered from what we found them when we first came to the country. The palankin or the house-boat were the recognised vehicles for long journeys, whether for natives or Europeans; the one metalled and bridged road of any importance in the country was the Grand Trunk Road from Calcutta towards Peshawur; and the only means of getting from or to England was by sailing vessel round the Cape. But a still greater divergence between the past and the present was to be found in the system of triple Government, under which India then lay. At home it had the East India Company and a Board of Control, both directing and disputing over and with the Government in India.

It may be readily supposed that under such conditions opinions on proposals to initiate railways in India were curiously varied, and that men of even well-recognised abilities were led to base their views on what we now see were the crudest assumptions, and to anticipate failure in nearly every direction. It was thought then that railways in India might possibly get a fair share of the goods traffic, but next to nothing in the shape of passengers. It was imagined that the climate of the country would be a most serious obstacle. There was a fear of the disastrous effects of the periodical rains, of violent winds, and a vertical sun. The damage that would be caused by insects and by vermin to the banks and the timber sleepers was dwelt on, as well as the effects of tropical vegetation; while a more reasonable and valid objection was raised, in the difficulty which would be experienced in finding competent engineers and workmen for constructing and working railroads in India.

But the most singular feature in the despatch above referred to was the assumption that railways in India would have to deal mainly with goods traffic. The argument was put as follows: "According to the experience of this country (England), by far the largest returns are procured from passengers, the least from the traffic of goods. The condition of India is in this respect the reverse of that of England. Instead of a dense and wealthy population, the people of India are poor, and in many parts thinly scattered over extensive tracts of country; but on the other hand, India abounds in valuable products, of a nature which are in a great measure deprived of a profitable market by want of a cheap and expeditious means of transport. It may therefore be assumed that remuneration for railroads in India must, for the present, be drawn chiefly from the conveyance of merchandise, and not from passengers." The ignorance or inaccuracy displayed in this statement is very striking, more especially if it is borne in mind that this first railway proposal was to traverse one of the most densely populated territories in the world, which, at a moderate computation, must then have had a population on the average exceeding that of England to the square mile. That India was and is poor, as compared with England, was true enough, but it must even at that time, half a century ago, have been sufficiently evident that a large proportion of all classes were both able and willing to travel, whether on business, or pleasure, or from religious motives. The streams of pilgrims who then went across the country on foot may, however, have been thought likely to have scruples in visiting their shrines by railway; but if this idea existed, it has been very amply refuted since then, and, as a fact, in the first three years the receipts on Indian railways from passenger traffic largely exceeded the receipts from goods traffic; and to the present day have continued to show the most extraordinary development.

Shortly after sending this despatch to India, the Court of Directors came to the conclusion that it would be advisable to



send out to India a railway engineer of experience, who should be associated with two officers of the Indian Engineer Corps "of tried and proved ability in that country," and who together, after due inquiry, would suggest some scheme of moderate length as a first experiment. Mr. Simms was the gentleman who was sent out from England, and he arrived in India in September 1845. The Directors of the East India Company were not averse to this construction and administration of railways in India by the agency of companies; but, recognising the haphazard way in which such schemes had been launched in England, they wisely determined that in India the trunk lines at least should be constructed on certain conditions which would give the Government powers of control, and, if necessary, powers of purchase. They therefore suggested for consideration that the detailed plans and estimates of any project, and the constitution and terms of agreement of any proposed company, should be submitted for examination and approval of the Government, and that the books and accounts should at all times be open to inspection by officers appointed for this purpose. In this we may see the first germ of a policy, and the commencement of a system of control, which has since then been gradually elaborated, and has become the distinguishing feature of our Indian railway system. Mr. Simms had not been many months in India before he drew up a memorandum, dated 6th February 1846, in which he made the following suggestions as to the terms which should be offered to English capitalists. As to the assistance to be given by Government, he proposed that a "lease" should be given to a company affording it power to construct, maintain, and "hold" certain lines for a term of years; that land should be given by Government free of cost for permanent works; that no tax should be imposed on the railway as it proceeds; and that a company should have complete control over its servants. On the other hand, the company should make the necessary surveys and plans and submit them for approval, should

construct the lines in accordance with an approved specification, and maintain all works in perfect repair, until the expiration of the lease, when they should be handed over to Government *without payment*. No deviation from a sanctioned plan was to be made without the further sanction of Government, and the inspecting officer was to have power to condemn, stop, or order the reconstruction of any work. If any company failed in their engagements, the Government was to have power to take the whole property into its hands, and do with it as they thought fit. Further, he proposed that on the completion of any line, every working regulation, rule, or bye-law, the tariff of rates and fares for goods or passengers, the number of trains per diem, and times of starting of same, should be approved; in short, every detail was to be submitted for the acceptance of the Government, and no line was to be opened for traffic until all proposed rules had been sanctioned. Moreover, every railway was to carry mails, troops, and military stores at reduced rates. The failure to run one train a day from end to end of a line was to be held to be evidence that the railway had "ceased to be employed as such." All Indian railways were to be constructed on one specification, worked on one system, and supplied with stock of one uniform pattern; while every company was to keep its accounts in approved forms, and the Government to have power to call for any returns, financial or statistical, that might be thought necessary.

Many of these stipulations showed a wisdom and sound judgment which was probably the outcome of discussions with leading men in India, and most of them, with certain modifications, became the basis of the terms on which railways have since been made by companies. As if aware, however, that these proposals were somewhat one-sided, and unlikely to attract capital, Mr. Simms suggested that the Government might, in addition, "think it advisable" to guarantee a small percentage upon the actual cost of the works, which guarantee should not operate until the railway was opened for traffic, and



should cease if a line was not worked regularly or satisfactorily. ✓

✓ In the same month as saw the issue of this memorandum, the Report of a Committee of Engineers on the practicability of introducing railways into India was submitted to the Government, and both communications were dealt with together. The Report stated at the outset that "railroads are not inapplicable to the peculiarities and circumstances of India ; but on the contrary, are not only a great desideratum, but with proper attention can be constructed and maintained as perfectly as in any part of Europe." ✓ The Report then went on to deal with the assumed difficulties mentioned above, and which had been referred to by the Directors of the East India Company in their despatch of May 1845. The Committee, while admitting that in some measure they were valid, did not consider them insuperable, or such as to prevent the immediate prosecution of railways in India. ✓ The Report then went on to recommend the construction in the first instance of a line from Calcutta towards Delhi. ✓

✓ In dealing with this Report, and with the suggestions made by Mr. Simms, the Government of India, then under Lord Hardinge, considered that the proposal to give land free of cost was right and proper, and this concession, which was subsequently adopted, has been a regular and leading feature in all railway concessions up to the present day. As regards the power of becoming eventually the proprietor of railways in India, the Government considered that the option of so doing should be reserved on certain conditions, at the expiration of a certain period, or of entering into new arrangements with a company. This also became a leading feature in all subsequent contracts. The grant of a guarantee of interest was considered impolitic. ✓ It was urged that "any such guarantee would no doubt prove a great encouragement to the projectors of railways in India "; but that "it might encourage persons to embark in speculations based on no reasonable calculation of ultimate profit." It was added significantly, and with no apparent conception of the enormous indirect advantages which railways would confer on

the country, that "it is not the wish, or the interest of Government to encourage any project of this nature, which does not hold out a fair prospect of moderate profit, without being dependent on the Government for its dividends." It was considered that if the Government gave land free of cost it would be sufficient evidence of the active part it proposed to take in promoting such schemes. Yet, though so little disposed to give substantial encouragement to railway enterprise, the Government of India was keenly alive to the importance of reserving the right of control over both the construction and management of railways, and even argued that the concession of free land put a railway company under such great obligations that the Government in return should have the most complete and detailed control over their administration.

These views of the Government of India were sent home to the Court of Directors of the East India Company on the 9th May 1846, and later on, in July, the Governor-General wrote a brief minute on the subject, in which he stated, that in his opinion more substantial aid than had been approved by his colleagues was needed, if companies were to be encouraged to make railways in India. He thought that the gift of land, which might be put at the value of £200 a mile, was incommensurate with the advantages to be derived from railway communication and with the cost of such works, and laid stress on the great military advantages which railways would afford, in addition to their more obvious benefits, commercially and socially. He concluded by recommending a grant of one million sterling, or an annual contribution of five lakhs of rupees (then worth £50,000) to a railway completed between Calcutta and Delhi. In October of the same year the Court of Directors issued a report on the whole question, together with a long list of lines which had been submitted to them by promoters. They agreed that the first line should be made from Calcutta to Delhi, and by the agency of a joint stock company; but the terms on which the line should be carried



through were not arrived at without lengthy discussion between the projectors, the Court, and the Board of Control. The views of the latter have been described as "narrow and obstructive" as compared with the "liberal and practical" views of the East India Company. The Court dissented from the Government of India on the subject of a guarantee, which they held to be essential to the formation of the company, and recommended 4 per cent on all sums paid into the Treasury—up to a certain figure representing a cost per mile of £15,000, under the following conditions, viz. That the Court of Directors should be the sole judges regarding the expediency of granting a guarantee on sums required for extensions; that all profits should be divided between the Government and the railway company; and that a deposit of one million sterling should be paid in before the guaranteed interest should commence. These proposals were not at first agreed to unanimously, but in the end the view of the majority was adopted, and submitted to the Commissioners for India.

On the 19th December 1846 the Board of Control communicated its views to the Court of Directors. They accepted the proposal for constructing railways by means of companies, modified the terms for ultimate purchase, and objected strongly and entirely to the idea of a guarantee, or at least until the Directors of the East India Company were fully satisfied that the money could not be raised without it, and then only for a period of fifteen years. These terms were not acceptable to the promoters; but the Board of Control would not yield, and a long period of delay intervened, during which the Chambers of Commerce of Manchester and Glasgow represented the need for encouraging the carrying out of railways in India, urging that a guarantee of a minimum rate of interest should be granted in the same way as had been given to companies for the construction of railways "in various colonies of the Empire." After further discussion, and a further representation, in June 1847, from the Court of Directors, the Board



of Control reluctantly consented, in view of the then condition of the money market, to raising the rate of guaranteed interest from 4 to 5 per cent and for a period of twenty-five years, and on this basis the projectors of the East Indian Railway Company agreed to make arrangements for carrying out the project.

Further discussions followed, however, upon proposals made for constructing railways elsewhere in India ; and on a project for one in the Bombay Presidency, the terms offered by the Court of Directors were submitted by the promoters to Robert Stephenson and others to report on. They advised that the proposals were inadmissible, and that the directors of railway companies should not accept them. They said, on reviewing the terms, "that the practical effect would be that the Government will choose the line, combat the details of its construction and mode of working, fix the period for its completion, draw up its regulations, limit its rates of charge and its profits, reserve to itself the power of producing very serious delays, and finally withdrawing its guarantee, confiscate the works to its own use and profit." This resulted in further correspondence, until the subject was taken up by Mr. James Wilson, then Secretary to the Board of Control, and on the 19th March 1849, a despatch was sent to the Court of Directors which ultimately resulted in a grant of an absolute 5 per cent guarantee, without limit of period, and legal agreements were shortly drawn up and finally signed on the 17th August 1849. The terms and conditions will be referred to in a following chapter. Towards the end of the year a despatch¹ was sent out to India informing the Government that a company had been formed for constructing an experimental line in Bengal, with a capital of one million sterling. It was considered advisable to make the starting-point Calcutta, to carry the line in the direction of Mirzapore or Rajmahal, and to make the railway on the English narrow gauge of 4 feet 8½ inches as a double line.

Lord Dalhousie had by this time become Governor-General.

¹ Despatch from Court of Directors, dated 14th November 1849.

HISTORICAL SKETCH

II

He had had useful experience at home in dealing with English railways, and was not prepared to accept the views of the Directors without criticism. In July 1850, dating from Chini in the Himalayas, he wrote a minute on the subject, which is well worthy of his reputation as a statesman, and shows the keen interest he had in the success of Indian railways. He objected to the proposed alignment, recommended that the railway should be taken through Burdwan to or towards the coal-fields (as has since been done), that the line should be made single instead of double, and that a broader gauge than 4 feet 8½ inches should be adopted. He was most anxious that this so-called "experimental" line should prove a success. He said that its object "is to prove, not only that it is practicable to construct railways in India as engineering works, but that such railways when constructed will, as commercial undertakings, offer a fair remunerative return on the money which has been expended on their construction, so that the public may thereby be encouraged to invest their capital in the construction of similar works in other parts of India. Such being the object of the present experiment, I am forced to the conclusion, after a laborious and anxious consideration of the documents before me, that if the instructions with which the Government has been furnished are to be strictly adhered to, if the conditions attached to the construction of the present line are not in any respect to be relaxed, there is little hope that the Government will be able to conduct this experiment to a successful issue on any one of the lines that have been indicated." He urged that there was more risk of the ultimate failure of railway enterprise in India from the discouragement which would arise from this experimental line turning out to be unprofitable, on account of the superfluous expenditure required for a double line, than from any accidents which could possibly be caused by its being made a single line. He had grave doubts, as indeed had every one at that time, as to whether railways could be made to pay in India, and on this

point said ¹: "After reading everything that I have seen written on the subject, and conversing, since I have been in India, with everybody who was able to give an opinion worth having on the question of railways in India, I have come to the conclusion that no one can safely say whether railways in this country will pay or not. . . . It remains to be seen whether, as has often been the case in Europe, a passenger traffic which did not previously exist will be created by the formation of a railway. It remains to be seen whether the goods now conveyed on hackeries along the Trunk Road will be transferred to the railway."

The concluding sentences of Lord Dalhousie's minute are worth quoting in full:—

43. I have entered on the questions connected with the commencement of the experimental railway in Bengal at some length because, although it is but a small beginning, and a doubtful one as yet, I nevertheless entertain a hope that in the years to come this great instrument of improvement may be extended over all the land, bringing with it the rich and numerous benefits it is calculated to produce. Looking far before us to this possibility, I am anxious that the Government of India should early take warning from the errors which we have all committed at home in legislating for the regulation of railway works, and that so it should profit by the experience which others have dearly bought.

44. I heartily trust that the East India Company and the Government of India may hold by the principle on which they have acted in the present case. I trust they will ever avoid the error of viewing railways merely as private undertakings, and will regard them as national works, over which the Government may justly exercise, and is called upon to exercise, a stringent and salutary control. This control should not be an arbitrary right of interference, but a regulated authority, defined and declared by law, which is not to be needlessly or vexatiously exacted, but which in my humble judgment is necessary at once for the interests of the State and for the protection of the public.

¹ Lord Dalhousie's Minute of 20th April 1853.



A further development of our Indian railway policy is to be found in another minute by the same hand, written in 1853, which, while dealing with the general question, sketched the direction to be taken by the trunk lines. The minute is marked by great ability and breadth of view, and has been rightly regarded as a very important State paper. He believed that if the lines were judiciously selected they would be largely used by the natives, and that they would in the end be so far remunerative as to relieve the State of the onus of the guarantee. Should it prove otherwise, he held that a payment of a part of it might be "cheerfully borne" in view of the indirect advantages to be derived from railway communication. On the important question as to the agency by which they should be constructed, Lord Dalhousie held that it was advisable that railways in India should be made by joint-stock companies, under the control and supervision of the Government. He recognised that from time to time difficulties and friction might arise on this score, but that this should not be regarded as sufficient reason for condemning this system. On the 17th August 1853, the Court of Directors replied to this minute, and a large scheme of railways was forthwith approved, and surveys ordered. In assenting to the proposal to make over Indian railways to companies, they laid stress on the great need, in view of the guarantee, of strict supervision and economy in the construction of the works. The difficulties above referred to, which were anticipated as the consequence of a system of guarantee, were soon realised, and were felt, as was to be expected, more keenly in India than at home. The powers of supervision were delegated to military engineer officers, whose knowledge of construction, on railways especially, was necessarily limited, and who were not always endowed with the tact and judgment needed for dealing with the questions which arose between them and the companies' officers. The engineers of the companies originated everything, while the Government's engineers were the critics, having the

responsibility of dealing with the details of projects of which they knew little, and being forced to conceal their ignorance by asking for further information or explanation. There was consequently a ceaseless cry of obstruction and delay. Both sides felt themselves unfairly dealt with, and in the end it became necessary to bring the matter before a Committee of the House of Commons (in 1857-58). This afforded an opportunity to both sides for airing their grievances. In concluding their report the Committee observed: "By a judicious adherence to the spirit rather than the letter of the contract, your Committee feel assured that arrangements may be simplified, united action for one common object secured, and railway enterprise in India may before long assume proportions commensurate with the vast commercial, agricultural, and mineral resources of that country."

The result of this inquiry was that matters went more smoothly; the position was accepted as one that had to be worked, and a desire was shown to compromise difficulties, instead of fighting over them; indeed since then there has been a marked improvement in the relations between the railway and the Government engineers. Under this system of guarantee and control, the great trunk lines of India have been constructed—the East Indian, the Great Indian Peninsula, the Madras, the Bombay, Baroda, and Central India, the Sind, Punjab, and Delhi, and the Eastern Bengal Railways, all on the standard gauge of $5\frac{1}{2}$ feet. This very important gauge question will be referred to in a later chapter dealing with its whole history and development. The system of construction by companies under guarantee was not adopted without an attempt on the part of the Government of Madras to induce the Home Government to allow an experiment to be made in that province of direct construction by the State. This was not acceded to by the Board of Control, which in replying to Madras, in 1852, urged that it was of great importance to attract British capital, skill, and enterprise to such undertakings



in India, and that with this view, moreover, the system of contract was "the more eligible and conducive" to this end. They further felt doubts "whether an equally effective control over the expenses of such works could be maintained in India, under general instructions from the home authorities, as that which is now exercised through the Railway Boards meeting in London, under the constant and immediate supervision of the Court." This view was accepted by the Government of Madras, and the guaranteed company became until 1869 the recognised system for railway construction throughout India.

The provisions in the contracts for the ultimate acquisition of the lines by the State, were at the outset considered of much importance, although, as time went on, the desire to enforce these powers grew weaker. But in a memorandum written at the end of 1845 for the Madras Government by Mr. F. G. Simms, the Consulting Engineer to the Government of India, he said that the cost and construction "should not be left to the opinions of any engineers who may chance to be employed by the railway companies, as they are too frequently induced to adopt inexpensive expedients, wise or unwise, to overcome pecuniary or other difficulties which for the time may answer the purposes of the promoters of the work; because I look upon the railways of India as one vast scheme of the highest importance to the future welfare of this great Empire, and although they will be at first constructed and maintained by private companies, yet after a lapse of years will fall into the hands of Government, and become public property."

By the end of 1855 the system of railways projected by Lord Dalhousie was being actively carried out; but the outbreak of the Mutiny in 1857 threw everything into confusion, and not only was the progress of railway construction seriously impeded, but questions of railway policy, judging by the meagre record, were relegated for consideration to quieter times. The trouble of the Mutiny brought out, however, one salient advantage of the guarantee system, in so far that funds for the

prosecution of the works were always forthcoming ; whereas had they been purely State works, carried out by State funds, the exigencies of the time would certainly have resulted in the allotments for the railways being absorbed for more urgent necessities. The companies' engineers did excellent service at this time. When the tide of war passed over their districts, they shouldered their rifles, entrenched positions, and served as volunteer troopers ; and when it had passed away, their proper work was calmly resumed. The pluck and skill shown in the defence of a house at Arrah by Vicars Boyle, with a handful of Sikh soldiers, gave a salutary and notable example to others at that time.

There would seem to have been no tendency towards any change in railway policy, or any defined doubt as to the continuance of the system of guarantee, until the year 1863-64, when various projects were before the Government for the construction of railways by companies with assistance in some form or other, and it became necessary to formulate the conditions and limits of such assistance. The most prominent of the proposals were those put forward by the Indian Branch Railway Company for the construction of lines in Oudh and Rahilkund on the basis of a subsidy of 1000 rupees per mile per annum for twenty years, for each mile open, with an additional allowance for each large bridge, land being given free to the company for a term of ninety-nine years. Mails were to be carried free, and reduced fares allowed to officers and soldiers, and for the carriage of public stores. The works were commenced on this basis in 1863-64, but prior to the execution of a formal contract between the Company and the Secretary of State. Towards the end of 1864 representations were made to the Government, that unless more favourable terms were conceded than those proposed in the original negotiations, it would not be possible to raise money for the completion of the entire system, and later on, a demand was made for a guarantee of 5 per cent on a certain portion of the capital. In replying to this in

December 1865, the Secretary of State, then Sir Charles Wood, declined to do more than advance a small sum necessary to complete one of the lines, on which advance interest at 5 per cent was to be charged. If this was not accepted, he was willing to take over the works as they stood, "at the present market value of the shares." To this the Directors responded by proposing to raise the amount required on debentures, but eventually requested the renewal of the offer of the loan, which in March 1866 was agreed to. Up to this period the Company had only succeeded in raising £200,000 out of a proposed capital of two millions, and before two months had elapsed the Company was again in difficulties, owing to the failure of a bank. Further help was asked for, which, however, was distinctly declined.

In the meanwhile negotiations had been carried on with the Great Indian Peninsula Railway Company for extensions of their system, on somewhat similar conditions to those granted to the Indian Branch Railway Company, with the similar feature of the grant of a lump sum subsidy for a term of years. The negotiations were complicated by the fact that one of the proposed lines was to run through a native state, from which it was hoped that further assistance would be derived. Proposals of the same nature were also made by the Bombay and Baroda Company. But the same difficulties arose in each case. Money for any railway in India was in fact not then obtainable in London without some form of Government guarantee, and in the end the Secretary of State had to give way. He sent to the Government of India a draft of a fresh contract proposed to be made with the Indian Branch Railway Company, and admitted that the idea of obtaining capital for Indian railways without guarantee was practically abandoned. The guarantee proposed was 5 per cent on a capital of four millions, and the profits of the line above this figure to be equally shared with the Company. The reply to this, on the part of the Government of India, was made at the end of 1867, and the important

despatch in which it was conveyed was accompanied by minutes by the Governor-General Sir John (afterwards Lord) Lawrence, and the Members of his Council. A long and able note by Captain (now General Sir) E. C. S. Williams, K.C.I.E., R.E., was also sent with the despatch, in which the system of guarantee was reviewed, the principles exhibited on which aid had been afforded to railways in other countries, with an outline for a new system, and a sketch of a proposal for the construction of railways by the State itself. One point in the despatch is of peculiar interest, it being stated, among the matters of chief importance was that of making arrangements for the ultimate transfer to the Government of India of the whole of the Indian railways constructed by English capital, "with the view to the prevention of a too great investment of such capital in India."

The proposals of the Government of India may be said to have been contained in the Governor-General's minute above referred to, the principal of which were briefly as follows. That no company should be allowed very large development of its operations, on the ground that this might be inconvenient, or even dangerous, to the Government, and at the same time "proportionately inefficient." That a fixed limit should be placed to expenditure on guaranteed interest, and that the Government should fix an average rate of mileage cost, and on no account guarantee interest on any sum beyond this rate. That the companies and their servants should be regarded as the agents of the Government for the purpose of constructing railways, and that the Government be empowered to dismiss or suspend all railway servants at its discretion; that land should only be granted for 99 years instead of 999 as proposed in the new contract with the Oudh Company (formerly Indian Branch Railway Company), and the "right of entry" after that period be absolutely secured to Government; and that Government should for political reasons by degrees obtain possession of all the railways. The reply of



the Secretary of State for India, then Sir Stafford Northcote, to these proposals are contained in three despatches, dated in January and August 1868. In the two first, the Secretary of State considered that it would be desirable to distinguish, as clearly as possible, between commercial and political lines; that the former should be such as would "open up districts whose natural resources are at once the largest, and the least developed," while competing lines should not be promoted, but care taken to scrutinise the grounds upon which any line is said to be in competition with another. As to such lines, he held that they should be constructed by companies, and under a system of guarantee, adding, however, that this system tended to weaken the ordinary motives to efficient management and superintendence, and he invited suggestions for additional precautions on this score. With regard to the political lines, he was "inclined to think that direct Government action might be preferable, as the guarantee system did not appear to be one admitting of indefinite extension, and that if a line had to be made on which there was a prospect of commercial loss it would be best that the Government itself should make it, so as "not to weigh down the market for railway securities by the introduction of a stock which is never likely to rise to a premium." /

\ An important point made in the despatch from which quotation has been made, was that it was desirable, as regards the progress of future railway extension, to fix a limit to the sum that should be regarded as the annual charge to be borne on railway account, and thus "establish a system under which, in proportion as the revenues of India were relieved of the charge on account of the older lines, by their becoming self-supporting, new ones might be taken up in their place." / The despatch of the 24th November 1868, to the Government of India, dealt with the views of Lord Lawrence as referred to above, expressed decided objections to the policy there sketched out, and made no further reference to the question of the



construction of railways by the direct agency of the State. In March 1869, however, the Government of India, still under Lord Lawrence, took up this matter in earnest, and submitted with it a long and most able minute by the Governor-General, the ultimate effect of which was to completely revolutionise railway policy in India. Up till then the construction of railways by companies, under a guarantee, or some equally effective assistance, had been held by both the Secretary of State and the Indian Government to be, if not the most economical, the only possible way of carrying out and administering these works. The strong common-sense of Lord Lawrence, his intimate knowledge of the country and its people, and a just appreciation of the value of the large body of engineers who were then carrying out public works under the Government, enabled him to make out an unassailable case against this, and to banish for many a year a system which at the time seemed likely to press very severely on the revenues of the Empire.

It is difficult, within the limits of this sketch, to do justice to Lord Lawrence's minute. It is, in fact, a careful and well-reasoned essay, in which the comparative advantages of the guarantee system, and direct construction by the State, are drawn with firm lines, and the conclusion is arrived at that "for the future railways should, as far as is consistent with actual and implied engagements with the existing companies, be carried out by the Government itself." Dealing with the character of the control which should be exercised by the Secretary of State over railway matters in India, he referred to the difficulties which must arise, and had probably already developed, owing to the undue influence of the India Office. He said—

I am fully impressed with the propriety, and even the necessity, of placing in the hands of the Secretary of State for India, the most complete control over the administration of India in all its branches, and I hope that nothing I am now saying will be



considered as implying a desire to weaken that control. But the power exercised in England over affairs actually conducted in India, should surely be essentially one of control, and the initiation and practical direction of measures should as far as possible remain in the hands of the Indian Government. I cannot think that it is conducive to good administration to remove from the cognisance of the local authorities—for the purpose of placing it in the hands of the Secretary of State—the principal management of transactions which already involve an outlay of 100 millions sterling, and must probably extend to double that sum, and which are entirely carried out in India, and at the charge of the Indian revenues. I must ask permission to state my opinion in plain language on this very important point, to the effect that the true interests of India demand that the Secretary of State's direct action in relation to Indian railways should be exercised only so far as is essential for the prompt despatch of that part of the business connected with them, which is necessarily carried out in England; and that beyond this, his intervention should as a rule be limited to the control of the Indian authorities, on whom should be placed the same complete responsibility for railway management, both in respect to administration and finance, as is placed on them in all other branches of public business. I feel in the strongest manner that real success in the economical and efficient management and extension of railways in India can only be attained by the frank adoption of this policy.

— The minute contained a careful review of the probable financial position of Indian railways, and an estimate of the amount, which was placed at two millions, that the revenues could bear as an annual charge on their account, to meet charges for guaranteed interest, land, loss by exchange, and Government supervision. An estimate of the probable future earnings of the existing lines, and of the new lines to be made, seemed to show that the country might afford to invest $3\frac{3}{4}$ millions yearly in the prosecution of railway extension, and at the end of twenty years the yearly charge on the revenues would be reduced to about one million. In estimating the net

charge for interest on new lines it was, however, assumed that the rate of interest would be 5 per cent—a figure which was largely reduced as time went on, and has now become nearer $3\frac{1}{2}$ per cent. The gross average earnings of all Indian railways was estimated to reach £30¹ per mile per week after twenty years, or in 1889, and although the circumstances have materially altered since this estimate was made, and many hundreds or thousands of miles of military and famine lines have been carried out, which were not then contemplated, the actual figure has, as it happens, closely approximated to this, having been during 1891-92 about Rs.286 per mile per week. After sketching out a programme for future railway extension, following in a great measure the lines of Lord Dalhousie's minute of 1853, Lord Lawrence concluded his minute in the following terms: "Skill in engineering work implies the successful adaptation of the art of construction to varying circumstances. For a poor country, economy is one of the essential conditions to be complied with, and its requirements may be as rigid as any of those imposed by physical conditions. Wholly to reject railways for a country which is not able to support lines of the most costly description is quite unreasonable; and if, on a further examination in detail of the probable cost and returns of any of the lines, which otherwise seem desirable, the expense of lines of the ordinary gauge seems prohibitory, while lines of a narrow gauge would be financially practicable. I should consider it a most mistaken view to reject the narrow gauge line. And so with any other modification of ordinary practice. For complete success in the great operations which the Government of India has before it, broad views, and a ready adoption of all truly sound measures, whether out of the usual course or not, are essential, and it will be a source of lasting regret if the progress of this country, which of all others depends on the improvement of its means of internal communication, should be retarded

¹ Then Rs.300.



by the weight of administrative prescription or engineering prejudice."

In replying to the Government of India in July 1869,¹ the Secretary of State (then the Duke of Argyll) accepted their views. He said that whatever may have been the reasons which had led to the introduction of the guaranteed system in India, the time had now evidently arrived when "both in raising and in expending such additional capital as may be required for new lines in India, the Government should secure for itself the full benefit of the credit which it lends, and of the cheaper agencies which ought to be at its command." Surveys were ordered to be made forthwith, and in concluding his despatch the Duke of Argyll informed the Government of India that, regarded as a whole, the arrangements proposed in the three despatches under acknowledgment appeared to him to be "well adapted for providing in India gradually, regularly, and with all advisable rapidity, a fairly complete national system of railway communication." The question of the gauge upon which the new lines were to be constructed was reopened in a despatch from the Government of India, No. 51, of the 17th May 1870. They admitted the evils of a break of gauge in a country in which a railway system was approaching completion, but regarding Indian railways as being as yet in their infancy, and that a narrower gauge than the 5 feet 6 inch gauge, then in force for the main trunk lines, would better accord with the financial and economic condition of the country, they urged that what India now wanted was an extensive scheme of light lines, on which the traffic should be worked at low speeds, and proposed for a large part of the railway extension now contemplated in India "a narrow gauge track, laid on a substantial road and subway, with rails proportioned to the limited wheel loads of the improved engines now obtainable, and to the moderate speed required by the circumstances of the country."

¹ Despatch No. 42, of 15th July 1869.

This was replied to in October 1870.¹ The conclusions of the Government of India,² as regards the adoption of a narrower gauge for future extensions, were agreed to, and the report of a Committee appointed by the Secretary of State to consider the gauge to be adopted was enclosed. This subject is dealt with at length in a subsequent chapter. The conclusion arrived at in the end was to adopt a gauge of one metre (3 feet 3 $\frac{3}{8}$ inches), on which, at the date of this work, over 7000 miles of line have been constructed. The Government of India set to work vigorously, organised a new railway branch of the Indian Public Works Department, into which were drafted most of the engineers then in Government service who had had railway experience in England; and to these were added others who were available from the Staffs of the guaranteed companies, and a certain number of Royal Engineer officers. The money for this new system of direct construction by the State was raised in London by the Secretary of State on the credit of the Indian revenues. The sums expended on railway extension between the years 1870-92, the rate of interest per cent, and the rate of sterling exchange on the rupee, are given in the following table. The figures of expenditure include construction by direct State agency, and the sums spent in recent years indirectly by the State, through the agency of assisted companies, such as the Southern Mahratta.

¹ Despatch No. 72, of 26th October 1870.

² Then under Lord Mayo.

Financial Year.	Sums expended in Rx. ¹ on State Railways.			Average rate of Interest for Loans.	Average rate of Sterling Exchange on the Rupee for the Year.
	From Borrowed Money.	From Revenue.	Total.		
1870-71 . .	452,748	9,569	443,179	3.98	s. d. 1 10 ³ / ₄
1871-72 . .	650,170	4,175	645,995	3.93	1 10 ¹ / ₄
1872-73 . .	1,430,047	14,863	1,444,910	..	1 10 ³ / ₄
1873-74 . .	2,424,526	39,409	2,463,935	3.90	1 10 ³ / ₄
1874-75 . .	3,106,430	114,481	3,220,911	3.94	1 10 ³ / ₄
1875-76 . .	3,245,401	29,680	3,275,081	3.98	1 9 ³ / ₄
1876-77 . .	2,965,110	38,260	3,003,370	3.92	1 8 ¹ / ₄
1877-78 . .	4,158,174	50,896	4,209,070	3.94	1 8 ³ / ₄
1878-79 . .	3,465,221	171,782	3,637,003	3.96	1 7 ¹ / ₄
1879-80 . .	2,987,383	1,786,155	4,773,538	4.00	1 8
1880-81 . .	3,212,893	2,317,395	5,530,288	3.58	1 8
1881-82 . .	2,213,773	1,131,470	3,345,243	...	1 7 ⁵ / ₈
1882-83 . .	1,883,542	347,019	2,230,561	3.97	1 7 ¹ / ₈
1883-84 . .	3,382,367	470,486	3,852,853	...	1 7 ¹ / ₈
1884-85 . .	3,526,152	1,209,958	4,736,110	3.20	1 7 ³ / ₈
1885-86 . .	4,712,828	1,221,055	5,933,883	3.52	1 6 ¹ / ₄
1886-87 . .	5,123,105	406,635	5,529,740	3.46	1 5 ¹ / ₂
1887-88 . .	2,251,776	80,945	2,332,721	...	1 5
1888-89 . .	1,178,111	23,308	1,201,419	3.12	1 4 ³ / ₈
1889-90 . .	2,794,458	19,734	2,814,192	2.98	1 4 ¹ / ₂
1890-91 . .	2,881,783	54,512	2,936,295	3.02	1 6
1891-92 . .	2,770,336	648,028	3,418,364	3.18	1 4 ¹ / ₄

The contracts with the guaranteed lines empowered the Government, by giving six months' notice, to acquire them on certain terms after the first twenty-five years, and one of these railways could have been taken over in 1874. During the year 1869, however, negotiations were entered into by the Secretary of State for India, and without reference to the Government of India, for relinquishing this right on certain conditions. These were in substance, that on the understanding that the State would extend the existence of the companies for a second period of twenty-five years, and would forego the arrears due by the companies for guaranteed interest, a new contract should be executed, in which it should be

¹ Rx. represents conventional sterling, assuming that ten rupees equals one pound.

stipulated that for the remainder of the lease surplus profits over and above 5 per cent should be divided equally between the companies and the Government. The intentions of the Home Government became known to the Government of India, but indirectly only, and a protest was sent by them, as soon as possible, against this policy, although, as it happened, too late to have any effect on the ultimate decision. The despatch of the Government of India¹ indicated, and in forcible language, the objections taken to the proposal. It pointed out that various considerations had made it seem desirable that the Government should acquire the guaranteed lines as soon as possible, and that the concession by the companies with respect to the disposition of surplus profits was in effect no concession at all; while, on the other hand, the surrender of arrears of interest, and of the right to acquire the lines after the first twenty-five years would mean a very serious loss to Government. There was, the despatch said, no apparent object in making such concessions. "The credit of the Government was never better; the undertakings of these companies are approaching completion: their demands on the money market have almost ceased, and their stocks are quoted at a considerable premium. It is, therefore, in vain that we seek to discover the grounds which have actuated Her Majesty's Government in this matter; and looking at the stage at which it has arrived, as evidenced by the interpellations in Parliament, we cannot but regret that no opportunity was afforded us of placing your Grace in possession of the views we entertain on this important question."

As already mentioned, this protest arrived too late to effect the decision arrived at by the Secretary of State, and new contracts on the above conditions were granted, first, to the Great Indian Peninsula Railway, and later on to the Bombay, Baroda, and the Madras Railways. It is not possible to offer the reasons which led the Home Government to adopt this

¹ Despatch No. 80, of 12th August 1870.



course, which was taken not only against the opinion of the Government of India, but in the face of facts which should seemingly have offered good grounds for a decision of a directly opposite character, viz. to acquire these lines for the State at the earliest possible date. It may be admitted that it was then difficult to foresee the enormous expansion of the Indian export trade which followed shortly after, and it may also have been deemed sound policy to sacrifice some share of the public revenues for the purpose of encouraging and attracting the investment of English capital in India. The result has anyhow been distinctly felt in the financial position of the Empire, and there can now be no difference of opinion in the matter. The loss to the State has, on the other hand, been a very material gain to the shareholders of the first two of the lines above mentioned, and as an illustration of this the figures for 1891-92 may be taken as showing the share of surplus profits of the Great Indian Peninsula shareholders, which in that year was Rs. 5,187,260, and of the Bombay and Baroda shareholders Rs. 1,798,260, besides contributions to Provident Funds. In calculating this surplus, moreover, the interest paid in England is converted into Indian currency at the rate of exchange named in the contracts, viz. 1s. 10d. per rupee. The amounts paid to the companies are, therefore, more than a moiety of the true surplus, after meeting interest charges, since the loss by exchange—*i.e.* the difference between 1s. 10d. and the actual rates of exchange, now much lower—is not taken into account, the whole loss falling on the Government. In any half-year during which the net earnings fall short of the interest charges, as in the case of unusually heavy debits against revenue for maintenance charges, the deficiency is borne wholly by the Government. The following table, extracted from a note by the Accountant-General, Public Works Department, shows the results to the State of the above contracts with the lines mentioned, and the Madras Railway—the only three now remaining of the older guaranteed

railways—for the year 1891-92, the figures being in Rx. or tens of rupees :—

	CHARGES.					Gain or Loss (+ or -) to the State.
	Net Traffic Receipts.	Interest.	Surplus Profits.	Contribu- tions to Provident Funds.	Total.	
	Rx.	Rx.	Rx.	Rx.	Rx.	Rx.
Great Indian Peninsula . .	2,272,863	1,716,453	518,726	17,004	2,252,183	+ 20,680
Bombay, Baroda, and Central India . . .	822,344	595,638	179,826	7,498	782,962	+ 39,382
Madras . . .	397,911	757,339	757,339	- 359,428
Total . .	3,493,118	3,069,430	698,552	24,502	3,792,484	- 299,366

Having decided that future railway extensions should be carried out directly by the State, no action was taken by the Government for the next ten years in any other direction, and private enterprise, whether aided or unaided, received no further encouragement during this period. The greater part of the new mileage was carried out on the metre gauge, with the intention that this should be adopted for subsidiary or feeder lines, but with a full recognition nevertheless that the main traffic routes should be accommodated by the standard gauge. The metre gauge was to carry light local traffic. For the latter half of this period the portfolio of Public Works in the Council of the Governor-General was held by General Sir A. Clarke, R.E., whose wide administrative experience in other fields greatly strengthened the position of the Government in dealing with this new development in their railway policy. A new and terribly potent element was, however, to be introduced into the question. During the years between 1874 and 1879, the country was visited by a succession of most serious and widespread famines, which, in spite of colossal efforts for relief,



resulted in an appalling loss of life, and of property in field cattle, without counting the loss to the State in the remissions of land revenue. It cannot unfortunately be said that famine was a new calamity in India. In the famine of 1837, in the North-West Provinces and Rajputana, over a million lives are believed to have been lost, and perhaps double that number in the famine of 1869; while in Orissa in 1866 famine is said to have swept away one-third of the population. The famines of 1876-78 in Madras, Bombay, and Mysore are said to have resulted in the death of more than four millions of people, and the cost of relief and of remission of revenue came to fully eleven millions sterling. As was truly said by Sir Theodore Hope in a paper read before the Society of Arts in 1890, "these figures do but imperfectly indicate the loss to the people, whose savings of years were depleted, whose cattle died in enormous numbers, whose enfeebled condition rendered them an easy prey to a whole army of fatal diseases, even after actual famine had ceased, and among whom the normal birth-rate was not recovered for some years." There were two directions in which protection was obviously needed against such calamities. One was the extension of irrigation works, and the other, and the more pressing, was the improvement of the means of communication by which the surplus produce of one area could be rapidly and readily diverted to that in which famine was impending. A Famine Commission, appointed in 1880, insisted on the great importance of railways in the prevention of famine, and it became clear from their recommendations that the progress which was being made in this direction by means of State construction was inadequate to meet the requirements of the country. The Commission considered that 5000 miles of line were urgently needed, and the country could not be held to be safe from such calamities in the future until the Indian railway system could show an aggregate of 20,000 miles.

The outcome of this was the projection of large and

important schemes of famine-protection railways, but unfortunately the outbreak of the Afghan War led to the diversion of the resources of the State to another and more immediately urgent direction than that of famine protection, and it became increasingly evident that if railway extension was to be carried out with the rapidity which was necessary it would be impossible to rely solely on the operations of the Government. In June 1880 (previously to the arrival of Lord Ripon as Viceroy) a despatch had been sent to the Secretary of State,¹ in which the views of Lord Lytton and his Council were advanced as regards the provision of funds for railway extension. Its main features were that light cheap lines might be constructed on the separate financial responsibility of Provincial Governments. The Parliamentary Committee of 1879, on Indian Public Works, had, it should be observed, limited the funds to be borrowed by the Imperial Government for "productive" works, such as irrigation and railways, to $2\frac{1}{2}$ millions sterling annually. In replying in September 1880, and in January 1881, the Secretary of State, then Lord Hartington (now Duke of Devonshire), thought the time had come for reverting to the agency of private enterprise in support of the direct operations of the State, and that although so far it had not been possible to attract investment without a guarantee, an endeavour should be made to attract capital "on the exclusive security of the success of the undertakings." Should, however, this prove to be impracticable, it might be necessary to offer some form of modified guarantee. The later despatch laid down certain principles to be rigidly adhered to with respect to future expenditure on productive² works, and the construction of

¹ Despatch No. 184, Finance, of 8th June 1880.

² For the inclusion of any work in the "productive" class, it was held to be necessary that there should be reasonable prospect of its paying 4 per cent on the capital invested within a maximum limit of five years from date of the line being opened for traffic. On the other hand, "protective" works were held to be such as were not directly remunerative, but were necessary to guard against future expenditure in famine relief.



railways was to be considered on "commercial principles," no new line being undertaken that did not offer fair promise of paying 4 per cent within five years of being opened for traffic. Meanwhile Lord Ripon had assumed the Viceroyalty, and was prepared to accept a vigorous policy in the extension of railways, more especially as to those which were destined to afford protection against famine.

Lord Ripon was earnestly and ably supported in this object by the financial member of his Council, then Sir Evelyn Baring (now Lord Cromer). The views of the Government of India may be held to have been embodied indeed, in his Financial Statement in March 1881. In this it was held that an outlay of $2\frac{1}{2}$ millions annually on productive public works, including railways, was wholly inadequate to meet the wants of the country, that it was now necessary to abandon the hope of getting such works constructed with greater rapidity and that it was to be expected that English capital could be attracted, to some at least of the projects then proposed, without a guarantee being insisted on. He said—

It has always appeared to me to be a remarkable fact that India—with all its magnificent and, as yet, only half developed resources, and with all the security to life and property resulting from a Government which, whatever be its objects, is at all events strong, honest, and well-intentioned—should, up to the present time, have been obliged to pledge the full security of the State in order to attract any considerable portion of the surplus capital of England. I hope that some railways afford sufficient attraction to induce private individuals to undertake their construction without the aid of Government, or, at all events, with a minimum amount of such aid. I do not question the wisdom of the policy which would permit capitalists to embark in this field.

He then proceeded to combat the objection that railways were monopolies, and should therefore be in the hands of the State, or that to concede the right of building a railway was in effect to part with one of the most productive resources in its hands.

It is true that a railway is generally a practical monopoly. The State should therefore exercise so much supervision over its working as will prevent the monopoly being exercised in a manner detrimental to the public interests. Thus the State should possess a right of inspection in order that the line may be certified by competent authority to be safe for the transport of goods and passengers. It should regulate the maximum tariff, and fix the gauge on which the line is to be constructed. It is especially necessary that a conditional right of purchase after the lapse of a certain period should be reserved. But when provision has been made for these, and some other points, which I will not now enumerate, the necessity for State interference ceases. The interests of the public do not necessarily demand that the State should create an artificial monopoly in its own favour, in respect to the construction of all railways.

As regards loss of revenue, he held that if the profits of a railway were "left to fructify in the pockets of the people," they would be more advantageously employed than would be the case were they paid to the State, with a great chance of their being employed on unproductive expenditure; while the indirect profits to the State, and to the country, resulting from railway communication, would be obtained equally well, whether railways are constructed by Government or by private agency. He was not without hope, moreover, that native capital could be induced to enter this field, and that he should regard such a movement "as an important factor in the practical education of the people. . . . If ever the natives of this country are to be schooled in the first rudiments of self-government, it is desirable that they should be encouraged to act for themselves in such matters, rather than that they should rely always upon that coercive philanthropy which insists upon doing everything for them."

Following on this statement the Government of India put forward their views in a despatch, No. 92, Railway, of the 22nd July 1881, to the Secretary of State for India. They reviewed



the policy hitherto adopted in the following words: "We began with the system of guaranteed private enterprise inaugurated by Lord Dalhousie. After a lengthened trial, succeeded by an abortive attempt to encourage the expenditure of private capital by means of subsidies, this system was condemned by Lord Lawrence in a minute which he left behind when he retired from the Viceroyalty, and in which he expressed his preference for the plan of State railways constructed by Government with borrowed money. His successor, Lord Mayo, adopted this plan, and pushed it on with energy and vigour. But after a time strong objections were felt, especially at home, on financial grounds, to unlimited borrowing for public works, and of late years successive Secretaries of State, acting in accordance with the recommendations of a Committee of the House of Commons, have placed numerous restrictions upon the railway expenditure of the Government of India." They pointed out that these restrictions practically allowed no more than fifty lakhs of rupees annually for such lines as could not be classed as "productive," but which were nevertheless urgently needed to protect the country from famine. Under these circumstances they felt obliged to admit that they had no hope of being able to effect what was urgently needed, without dangerous delay, except by entrusting their railway works to private enterprise, "under a safe and reasonable guarantee." They proposed that interest granted under such guarantee should be a charge on the sum set aside for expenditure on Famine Protective Works. This despatch was followed by another,¹ in which the Government of India proposed the following conditions under which private enterprise should be again allowed to construct railways under a limited guarantee. That Government should determine the direction of lines, and, if required, make the necessary surveys; give land practically free for ninety-nine years; allow interest on capital during construction, and make up the earnings to a

¹ No. 113, of 24th September 1881.

certain percentage to be agreed on for five years after opening ; retain powers over rates and fares and powers of purchase, and be repaid advances of interest by a division of surplus profits over the agreed percentage.¹ /

These proposals were replied to by the Secretary of State in the following December,² and were not agreed to. He stated, as before, that his view of "private enterprise" was that it should be based, not on a guarantee, but "on the exclusive security of the success of the enterprise," and that it was of the essence of this policy that the proposals should not be made by the Government but by capitalists themselves. He said, "I can conceive nothing more injurious to the success of the policy of enlisting private enterprise in the development of railway enterprise in India than to lay before the public a large scheme of railways, avowedly of an unremunerative character," and as regards the proposal to employ the agency of companies for the construction of other than "productive" lines, he did not regard it with favour ; but that no other agency than that of Government for such lines could be expected.

The result of this reply was to stop further development of the contemplated policy for the time ; but meanwhile the portfolio of Public Works in the Viceroy's Council had fallen to Sir Theodore C. Hope, to whose marked vigour and ability the railway system of India owes much. In concert with Sir Evelyn Baring, who was still Financial Member of the Council, he drew up the terms of an important despatch³ from the Government of India. This observed that the last formal and complete declaration on the subject of this policy by the Secretary of State was that railways should be constructed (1) by unaided private enterprise to the utmost possible extent ;

¹ This new departure resulted in the floating of the Bengal Central, the Assam, and the Southern Mahratta Railways, all partly aided lines (see chap. ii.)

² No. 365, Financial, of 8th December 1881.

³ No. 29, of 23rd January 1883, to Secretary of State, Department of Finance and Commerce.



(2) under guarantees of limited amount and duration, when unaided enterprise was not obtainable; (3) by the State out of borrowed money, or surplus revenue, provided they would probably pay 4 per cent within five years; out of the three-quarters of a million allowed for protective works, if they would not afford such a return on capital, and under special arrangements, if made under the actual pressure of war or famine. The Government of India pointed out how these views restricted operations which had been shown by the report of the Famine Commission to be vitally necessary, and they proposed to classify railway extensions under two schedules. They held that some limit must be assigned to capital expenditure, from funds borrowed by the State, for unprofitable lines of railway, and proposed that Schedule A should include indispensable railways, while Schedule B should include railways which, though mostly desirable in themselves, were not indispensable for protection or other urgent purposes, and might be left to private enterprise, aided only by the free grant of land. Schedule A contemplated the construction of 3837 miles of railway, including lines in progress, of which nearly the whole was "productive"; but only 1500 miles could be held to be "unproductive." Three agencies were proposed for the construction of these lines, viz. that of Government, of "Construction and Working Companies," and of private companies under limited guarantee. The despatch was accompanied by a minute by Sir T. Hope, in which, dissenting from a majority of the Council, he advocated the placing of the grants for Imperial Public Works upon the basis of a quinquennial contract, similar to what had been made for administrative purposes with Provincial Governments.

As marking a fresh epoch in the policy of the Government of India it may be well to give some extracts from this despatch, and to summarise portions of it:—

2. During the last two years the policy of the Government of India has been unsettled. We do not think that this is a matter

for surprise or for regret. In inaugurating a policy under which railways should, to some extent at all events, be constructed through the agency of private enterprise, it was almost inevitable that there should be a period of transition during which it would be exceedingly difficult to adhere to any fixed policy. It was easy to declare beforehand the broad aim which the Government sought to attain, viz. the construction of railways through the agency of unaided private enterprise. But experience alone could show how far that aim was attainable. It is now clear that the present condition of things is open to considerable objection. In the absence of any very clearly-defined principles for our guidance, each case has to be considered on its merits. The result of this state of things is that there is a risk of drifting unawares into the adoption of measures which may prove a source of future embarrassment. We have now had two years' experience of the private enterprise policy. During that time a certain number of facts have been accumulated which, we think, are sufficient to enable us to lay down a definite policy, at all events for the immediate future, say for five years.

The Government of India would not discuss the question of the principle on which railways were to be constructed in future, or whether by the State directly or by private agency. They were content to assume that the Home Government avowed a policy of constructing these works by unaided private enterprise, and, further, that the main portion of the required capital must come from England, although every facility should be given to local capitalists to subscribe. They pointed out that a public works policy in India must in a very great degree depend on the financial position, and that in face of an unstable standard of value, and the precarious position of the opium revenue, great caution was necessary before incurring fresh liabilities, especially if it should involve any increase of taxation. Indeed, they went so far as to say that they would regard increased taxation as a greater evil than relatively slow progress in railway construction, more especially in the case of railways which were not urgently needed as a protection against

famine. As regards the absorption of profits from railways as a substitute for taxation, the Government of India, while admitting that much might be said against this course, considered that "the practical necessities of the financial situation" might oblige them to recognise those profits as a source of income in the immediate future.

After pointing out the directions in which private enterprise had already advanced under the new *régime* of a "limited guarantee," and that there were signs of less distrust on the part of capitalists in viewing Indian railway schemes, they urged that while it seemed likely that no difficulty would now arise in obtaining the means for constructing "productive" lines, the means for making "protective" railways seemed still quite inadequate. They held, therefore, that it was now necessary to invert the system hitherto in force. They said,—

We consider that instead of continuing State agency for the construction of productive lines of railway, we should, for the future, as far as possible, exclude the action of the State altogether from this field of enterprise, and that, as a general rule, the Government should only undertake the construction of railways which, from their unprofitable character in a commercial sense or other causes, cannot be made by private agencies. A good deal might be said in favour of this policy from the point of view of abstract principle. It will, however, be sufficient for our present purpose if we look wholly at the practical issue which is involved. And the practical issue is this—that the adoption of this policy, for the time being at all events, will alone permit of the speedy construction of those railways which are urgently required as a protection against famine.

The despatch then dealt with the financial aspects of this new policy, pointing out that it involved a complete reversal of that which had obtained during the last few years.

— The essence of the present policy is that railways constructed by the State should, generally speaking, be self-supporting. The essence of the new policy is that the railways constructed by the

State need not, and often will not be self-supporting. It is sufficient to state the facts thus, in order to show that the change of policy will materially affect the financial position of the Government, and it becomes of the highest importance to inquire whether the change may be made with a due regard to financial prudence. It is obvious that some limit must be assigned to capital expenditure, from funds borrowed by the State, on unprofitable lines of railway. A policy which involved borrowing to an indefinite amount in order to construct such lines, must almost infallibly lead in the end to most serious financial embarrassment. The possibility of giving practical effect to the policy depends, indeed mainly, on the amount of money which it is proposed to sink in investments which are not calculated to yield a rate of interest equal to that at which the Government of India is able to borrow. This rate may be taken at 4 per cent per annum.

The proposals as regards funds for carrying out the programme as exhibited in the Schedules above referred to were, firstly, to increase the loan raised annually of $2\frac{1}{2}$ millions for productive works of all kinds, including navigation, by the sum of £350,000, the whole sum being in future held available for both productive and unproductive works; and, secondly, by making arrangements with companies, involving an annual liability of £250,000, of which it was proposed that £200,000 might be hypothecated from the Famine Fund of $1\frac{1}{2}$ millions. The sum of £200,000 was the estimated burden, under the worst conditions, which was to be expected on the three principal "protective" railways which were put forward. The Government of India further proposed that private companies should in future receive no other aid than that of the free grant of land, but that, on the other hand, the State should raise no claim to a share in the direct profits from such lines. They were prepared, moreover, to allow the debit of interest during construction to the capital account.

The Secretary of State replied to this on the 16th August



1883, and regarded the proposals, more especially in their financial bearing, as going far beyond what had been considered by the Famine Commission as necessary for the protection of the country; as likely to involve an annual expenditure of three times the amount ($2\frac{1}{2}$ millions) now authorised to be expended from borrowed money; and to cause, by such large expenditure, a rise in the price of labour and materials, which might largely detract from their financial success. He admitted, however, that the present restriction on the limit for borrowed money should be removed, or the limit extended, and that with this view the Home Government had decided to propose the appointment of another Select Committee to re-examine the policy which should be pursued in the extension of Indian railways, and with special reference to the recommendations of the Famine Commission. The views of the Secretary of State were combated by the Government of India,¹ but the Secretary of State declined to pursue the discussion, or to entertain certain proposals of private companies, pending the result of the inquiry by the Parliamentary Committee. The Government of India, however, returned to the charge, and in January 1884 again reviewed the whole position, submitting modifications of the Schedules A and B, and justifying their previous statements that the outlay proposed was neither sudden nor excessive. The proposal of Sir T. C. Hope above referred to, as regards a contract basis for the supply of funds for Public Works, was mentioned. It was said that he considered "that the profits of Indian railways should not, for a few years, be swallowed up in the general expenditure of the Empire, but should be devoted, in one form or another, to that railway extension which the country so urgently needs for its protection from famine, the development of its external commerce, the counteraction of the fall of silver, and the general enrichment of its people. In short, he would let railways breed railways. . . . For this proposal it is claimed that in addition to minor

¹ Despatch No. 269, of 24th September 1883.



technical advantages, it would promote thrift in expenditure, furnish a stimulus to increasing receipts, as similar contracts in the case of Provincial Governments have been found by experience to do, and also provide a means of railway extension sufficiently rapid, but under the strict security for financial soundness which the contract limit would entail." This proposal was not, however, supported by the Government.

Early in 1884 Sir Auckland Colvin took over the post of Finance Member of the Viceroy's Council. He was not disposed to wholly agree with the policy which the Government of India proposed to adopt. He admitted that "protective" railways must be made by borrowed money, but that a scheme of real and urgently-needed projects of this nature should be laid down, and that Government should be empowered, but not obliged by any programme, to spend on them, and not on "productive" works, so much of the borrowed capital ($2\frac{1}{2}$ millions yearly) as was not devoted to irrigation. Moreover, that similar conditions should apply to the utilisation of the Famine Grant, which should be expended as capital only, and not as interest. The substance of the minute was to recommend the concentration of effort on carrying out protective works, and to restrict expenditure on so-called productive works. He said, "All we can at present do for commerce is to tell it what lines it is at liberty to construct, to give the land necessary for its railways, and to see that no obstacles are thrown in its way."¹

In the meantime the Select Committee of the House of Commons had been at work, it having commenced its sittings in March 1884, and it reported in July of the same year, making the following principal recommendations :—

1. That the evidence in favour of a more rapid extension of railways is conclusive.

¹ The other members of the Government dissented from Sir A. Colvin's views, and a minute supporting their position, by Sir T. C. Hope, sent home to the Secretary of State with Sir A. Colvin's minute.

2. That all the leading trunk lines with their principal feeders should be on the broad gauge.
3. That the rigid technical distinction between productive and protective lines cannot be maintained.
4. That the amount proposed to be spent on railways by the Government in the next six years was moderate.
5. That the limit of $2\frac{1}{2}$ millions of borrowing fixed in 1879 might safely be enlarged.
6. That a fixed scale of expenditure should be maintained over a considerable term of years.
7. That money may be borrowed in England for schemes approved by the Secretary of State.
8. That the bulk of these lines should be made self-supporting.
9. That no portion of the Famine Grant should be hypothecated as interest on capital.
10. That railway extension should not involve additional taxation; and
11. That the Secretary of State should be responsible for deciding what amounts may with safety to the finances be borrowed for Public Works.

The Secretary of State informed the Government of India that he concurred with the general tenor of the Committee's recommendations, and made certain proposals as regards finance, to which the Government of India replied in September 1884,¹ submitting a forecast of the requirements for the next six years, and recapitulating its views and recommendations regarding the concession of certain projects to companies. To this the Secretary of State replied, fixing the sum to be borrowed yearly for Public Works at 350 lakhs of rupees absolutely, and that no expenditure in excess of this except from revenue was to be incurred. This decision and the grounds for it were communicated in a despatch, No. 148, of the 27th November 1884.

In the same year, 1884, the gauge question again came up, owing to the difficulties which were experienced in deciding upon the gauge required for each project, the decision having

¹ Despatch No. 150, of 29th September 1884.

been based, of late years, on the supposed financial prospects of the line, and the views of the Government for the time being. The Government of India communicated its intentions on the subject in a despatch to the Secretary of State in April 1884,¹ and the policy on this point then recommended was practically endorsed by the recommendations of the Select Committee of the House of Commons. This subject will be fully dealt with in Chapter V.

Another era of companies' lines, side by side with State lines, both in construction and administration, was thus commenced under Lord Ripon's Viceroyalty. It was hoped at first that railways which appeared likely to be remunerative would be taken up by companies either without a guarantee, or at most a guarantee for a limited number of years. Two small schemes were started in 1881, on a limited guarantee, and early in 1882 a larger scheme, that of the Southern Mahratta Railway Company, was started on the basis of the railway belonging to the State, but being worked and the funds being supplied by the company. A guarantee was given on the capital of 4 per cent for seven years, and $3\frac{1}{2}$ per cent subsequently, together with a fourth share to the company of net profits. Later on in the same year another company, the Bengal and North-Western, was launched without any guarantee, a share in profits over 6 per cent being only reserved for Government. Other projects were under negotiation, when it became obvious that money could not be raised in England without a definite guarantee, and two important lines were launched in 1885 and 1887—the Bengal-Nagpore, and the Indian Midland—on similar conditions to the Southern Mahratta Company, but with a permanent guarantee of 4 per cent, and one-fourth of surplus profits over and above this figure. Thus the system of railway construction by the agency of companies was

¹ Despatch No. 48, Railway, 22nd April 1884, which was rendered necessary owing to the persistent efforts of the Secretary of State to force the metre gauge for adoption on what were evidently trunk lines.

practically a reversion to the policy of Lord Dalhousie, the difference being that each line was held to be State property from the outset, the rate of interest was 4 instead of 5 per cent, the State had power to fix rates and fares, and the lion's share of profits over the guaranteed figure was taken by the State. In referring to this new departure, in a paper read before the Society of Arts in June 1890, Sir Theodore Hope was of opinion that this system of using both State and companies' agencies worked well, and was well suited for a permanence, in so far that State debt and State establishments could be kept at a moderate level, that there would always be some railways, which, for military or other reasons, it was desirable that the Government should keep in its own hands; while there were others, with which a company could most conveniently deal. Another advantage which could have been claimed, was that the two systems introduced a healthy rivalry between State and companies' lines, both in cheapness of construction and in subsequent working.

An important feature in railway policy, relating to rates and fares, may here be briefly touched upon though dealt with at greater length in a subsequent chapter. The through opening of the Rajputana Railway, metre gauge, which belonged to the State, led in 1881 to a representation from the Calcutta Chamber of Commerce to the effect, that low rates were being charged to Bombay, and in consequence that traffic was being diverted to that port which formerly found its way to Calcutta. On this an assurance was made by Government, that the through rates from the common point, Delhi, should not be lower to Bombay than to Calcutta. Meanwhile the Secretary of State had had his attention drawn to the matter at home, and in March 1882,¹ a reference on the subject was made to the Government of India. The Secretary of State held that "the natural course of traffic on two lines, proceeding from the same place to ports on different sides of the continent of India,

¹ Despatch No. 41, Railway, of 1882, to Government of India.

should not be interfered with by any idea of adjudicating on the rivalry between them, and that the advantages due, either to geographical position, or other circumstances, should furnish no reason for imposing on either artificial restrictions, in the shape of enhanced rates in order to produce an equal return of profit on the capital of both." In replying to this, the Government of India disclaimed any intention to "adjudicate" in the rivalry between the two ports, but affirmed that their orders had been passed on the principle that a line with cheap fuel and easy gradients can afford to carry goods at a lower mileage rate than one not possessing these advantages, and that to keep the rates on the former at a level with those on the latter, would be prejudicial to the country served by the more cheaply-worked line. It was their desire, they said, "in the interest of the country generally, that all rates should be reduced to the lowest limit which will give a fair profit, and this cannot be attained by the adoption of uniform mileage rates on all lines." To this view the Secretary of State (Lord Hartington) objected *in toto*.¹ He said "that to attempt to proportion rates on competing lines to the supposed aggregates of the factors of cost of transport on each is impracticable, and would not be desirable if it were practicable," that it should be left to the managers of lines to fix such rates as they might deem most advantageous, and that the interest of trade and of the railways would be better served by accepting the legitimate consequences of competition. To this the Government of India responded by the issue of a circular letter, embodying and accepting the view of the Secretary of State. At the same time, it is not surprising that the Government of India, as the owner, or potential owners, of all the Indian railways, should have viewed with anxiety, or even alarm, the outbreak of a war of rates which threatened to imperil their financial results; but it would be now readily admitted that the remedy they then proposed to adopt was one

¹ Despatch from Secretary of State, No. 132, Railway, of 19th October 1882.



that was equally impracticable and impolitic ; while that which was accepted, on the advice of the Secretary of State, was, and has been proved to be, the sound one.

— An important outcome of this correspondence was, that it led to a consideration of the question of the agency by which certain groups of lines could be most properly and economically worked. The State lines, as completed, had hitherto been made over to State officials to be worked without consideration as to their bearing or position with respect to adjacent or connected railways, and it seemed advisable, both on this account and with the view of economy, to review the position, and if necessary to make over the working of some of these lines to companies. Any rearrangements in this direction were necessarily complicated by the terms of the contracts with the guaranteed railways, and no alteration in their working agencies was possible until their contracts expired. The first move was made in 1884 by the making over of the Rajputana-Malwa metre gauge system—a State concern—to the Bombay, Baroda, and Central India Railway Company on a lease, or working agreement for a term of years, the State being assured of a fixed percentage on the capital cost of the line, and taking a large share of surplus profits over and above this. In taking this step the Government of India expressly declared that it was in no way due to its being recognised that State management was inferior to that of a company ; but that in substituting private agency, under due control, for that of the State, it was probable that incentives would be created towards more vigorous and economical management, and that it might be expected that the State, whether directly or indirectly, would not be a loser by the arrangement. In contrast to this, about the same time the contract of the Eastern Bengal Railway expired, and was not renewed ; the line was acquired by the State, and made over for working to State agency, which was then administering a large metre gauge system in connection with it. Later on similar action was taken in the purchase of the Sind and

Punjab Railway, and in its adoption, under State management, into the north-eastern frontier railway system. Other cases of the same sort have been dealt with on similar lines after due consideration of the circumstances, the general tendency being perhaps towards the making over of State lines to be worked by companies' agency on working agreements.

✓ In 1879 the Government considered it desirable to convene a conference of railway officers of both State and companies' lines to discuss and determine certain questions of importance which had arisen in the working of Indian railways. This, the first, conference met in January 1880, and since this conference others have been convened, and with great benefit to the administration of Indian lines. ✓ The same year saw the institution of a Provident Fund for servants employed on State railways, all employes being obliged to subscribe to it, and voluntary subscriptions to a certain extent allowed besides. Government gave depositors the same rate of interest as was allowed in the State Savings Banks, and as an inducement to employes to take an interest in the economical administration of the line they were engaged on gave them an annual bonus from net profits. This fund enabled the Government before long to abolish the pension system for railway servants. ✓

✓ Brief reference must here be made to the policy of Government in the matter of military railways. The importance of the railway system in India for military purposes was naturally recognised at the outset, and great stress was laid on this in Lord Dalhousie's minute of 1853. But until the outbreak of the Afghan War, at the end of 1878, no comprehensive views had been taken of the interconnection of our frontier communications, nor any programme laid down for railway construction for purely or mainly military objects. ✓ This must be attributed in some measure to the pressure of famine troubles for several years previously, and the severe tax they imposed on the resources of the State. The Afghan campaign revealed, however, the need, not only for improved means of moving



troops along our frontier, but for improvement in the connections and capabilities of existing lines leading from our military centres. The value of railway communication during this campaign was vividly illustrated in the case of the railway which had been rapidly pushed across the desert to the mouth of the Bolan Pass, where one train, in a day of sixteen hours, was found to do the work which it would have required 2500 camels to do in a fortnight. Up to the year 1883 no very definite policy had been pursued in dealing with military or frontier railways, but during the Viceroyalty of Lord Ripon this question was taken up seriously, and a definite programme, which was estimated to cost over five millions sterling, was submitted to the Secretary of State in 1884. The Government of India proposed, though not unanimously, that this outlay should preferably be derived from borrowed funds, on a separate and distinct loan, which should be discharged within thirty years by terminable annuities and a sinking fund. The scheme received the approval of the Home Government, but exception was taken to the financial proposal. The Secretary of State admitted that such works were both urgent and exceptional in character, but that, nevertheless, their cost should as far as possible be met from revenue, and that for such purposes borrowed money should only be had recourse to when funds from revenue were exhausted. He was, however, prepared to allow an extension to the limit of the annual sum borrowed for public works, and decided to raise the figure from $2\frac{1}{2}$ millions to 350 lakhs of rupees in conformity with the recommendations of the Parliamentary Select Committee of 1884.¹

The result of this decision was a correspondence between the Government of India and the Secretary of State on the financial bearing of their railway policy. One point which arose in this bears strongly on the general question of the construction of railways by the direct agency of the State, and

¹ At an exchange of 1d.-4d. to the rupee the 350 lakhs are now considerably less than $2\frac{1}{2}$ millions.



deserves particular notice. The attention of Sir T. C. Hope, the Member of the Viceroy's Council for Public Works, had for some time been drawn to the serious public inconvenience, and even positive pecuniary loss, which resulted from the way in which funds for railway construction were provided by the Finance Department, and in 1883, as already mentioned, he had concluded that the only satisfactory way of meeting this difficulty was that an informal agreement, or contract, should be made for five years with the Public Works Department, and that within the limits thus fixed to leave this Department a free hand in utilising to the best advantage the funds placed at its disposal. This had not met with approval; but in 1886 Sir T. C. Hope took the opportunity of referring to the subject again on an intimation from the Secretary of State that certain considerable lapses had been allowed to occur in the railway grants. He pointed out that neither at home nor in India was there an adequate appreciation of the fact that uncertain supplies, of either funds or materials, must certainly lead to such lapses, and that it appeared to be considered that such supplies could be turned on or off "as readily as water from a tap." He showed that the procedure by which stores were obtained from England for State railways frequently involved delays, which in turn generally implied lapses of the grant for the year; that these lapses were not necessarily regranted in the next year, and in consequence the programme of construction of a line was thrown out, works might have to be suspended in order to provide money for stores arranged for in the previous year, or, as might happen, material might arrive at the port of destination and no funds be available to meet the cost of transit to the works. Thus money had to be withdrawn from some other work, and its programme disorganised, the only certainty in the vicious circle being that of waste of time and money in one quarter or another. He dealt earnestly, moreover, on the effects of sudden withdrawals and expansions of funds according to the financial or political position at the



time. He said, and most truly, "Large works, such as railways, cannot profitably be executed by dribblets. Once started, economy is best secured by keeping the establishments at their full working power by supplying materials in a regular flow at the time they are actually required, and by completing successive sections as an aid to the rest. Starting and stopping work from time to time spasmodically; suddenly discharging labour carefully collected and trained, and as suddenly endeavouring to re-collect it; keeping highly-paid staff partially or wholly unemployed for months; at one time sending out material which there are no funds for utilising, at another suspending field work for want of material; and operating throughout on uncertain and fluctuating resources—this is a mode of business which no mercantile firm could pursue with impunity, or would even contemplate seriously."

The soundness of these views could scarcely be denied by those who were in the least degree conversant with the nature of railway operations, and it may be assumed that they would have been regarded with more favour by the Government of India as a whole had the country and its finances been free from sources of serious embarrassment. Among these actual and potential famine may be said to have held the first place; while secondly, the possibility at that time of war with Russia entailed a new and evidently prolonged outlay on works for the defence of the Empire. But the great and increasing difficulty of the Government lay in the fluctuation in the exchange value of silver, the standard of the currency. Had there been any reasonable hope of finality in this it could have been accepted as a heavy but transient burden, to be met temporarily by retrenchment or increased taxation, or by both; but the Government could not but recognise that it was more likely to increase than to decrease, and that no prudent system of finance could, in the face of this difficulty, justify their entering into any undertaking which should bind them to a heavy and regular annual expenditure on public works. The table on



p. 28 shows the fall in exchange between the years 1870-71 and 1891-92.

For some years the financial difficulties of the Government had been ominously increasing, both on account of the fall in the exchange value of silver, and from the necessity, then fully recognised, of expending large sums yearly in works for the defence of our north-western frontiers. Thus the guarantees in sterling, given to the Indian Midland and Bengal-Nagpore Railways, were most reluctantly assented to, notwithstanding the urgency which appeared to attach to them as famine protective lines. Indeed it had seemed to Sir Auckland Colvin, then Financial Member of Council, that the increasing obligations of the State would render it necessary to impose fresh taxation to meet them, and to this step there were grave difficulties and objections. On this point the Secretary of State in a despatch to the Government of India, dated 29th July 1886, observed that while he did not in the least overlook the importance of extending the railway system in India, both for the purpose of providing additional means of protecting the country against famine and for developing its resources, he said that he must impress upon the Government that even these unquestionable advantages might be too dearly bought if they were compelled, in order to meet their expenditure, to resort to increased taxation; adding that measures which might have seemed highly desirable, when there was a fair prospect of a surplus of revenue, must be suspended in the changed condition of affairs. In spite, however, of these views, and of their bearing on the immediate position, the grant of a 4 per cent sterling guarantee was eventually made to the Bengal-Nagpore Company in February 1887, on similar terms to the contract of the Indian Midland Company. It was allowed, nevertheless, that unless the position materially improved—a contingency which in no way seemed probable—no further assistance to private enterprise could be given in this shape, and that unless some other system could be found by



which English capital could be attracted to railway construction in India, the extension of these works must, for the future, depend on such allotments as could be provided by the State from revenue or from the fixed amount of the annual loan for public works. In December 1887 the portfolio of Public Works in the Viceroy's Council was assumed by Sir Charles Elliott, K.C.I.E.

It became necessary to seek some new form in which the requisite assistance or encouragement could be given to the English investor, while not involving the incubus of a guarantee. After some considerable negotiation, the new departure took the shape, in 1889, of an agreement on the part of the Government with the Delhi-Umballa-Kalka Railway Company, in which the latter was to construct a line in connection with the East Indian Railway with the grant of free land only; but on the condition that on the completion of the railway the line should be worked by the State for 50 per cent of the gross receipts. In October of the same year the Government of India addressed a lengthy despatch to the Secretary of State,¹ in which a programme was sketched for future railway extension. In this despatch only casual reference was made to the possible co-operation of private enterprise, whether in the direction above referred to or in any other, and appeared to contemplate future operations as being mainly the result of direct State agency. In November the Secretary of State (Viscount Cross) in a despatch, No. 132, Railway, in acknowledging the receipt of the programme above mentioned, gave a very definite expression of the views of the Home Government as regards the employment of companies on Indian railways. He pointed out that the steadily increasing receipts on these concerns fully justify the anticipation that further extensions, if judiciously carried out, would yield "a fair return" on the capital invested. He agreed with the conclusion which had practically been adopted by the Government of India and his

¹ No. 14, Railway, of 1889.



predecessors that the choice between direct State agency and that of companies must depend on the circumstances of each case, that while generally the multiplication of agencies should be avoided, both might still be employed, but that financial conditions should predominate in arriving at a decision on this point. He was disposed, however, to think that it was expedient to as far as possible enlarge the scope afforded by railways in India for private enterprise, and thus diminish the burdens and responsibility of the Government, promote decentralisation, and encourage the spirit of emulation which would result from a variety of management. He therefore held that "in the case of projects for which the requisite capital can be provided, and the working conditions arranged on reasonable terms, the plan of employing companies in the construction, and still more in the working of railways, possesses certain recommendations that will frequently make it expedient to give that agency the preference." The continuance of the system of guarantee, whether for a short or long period, was plainly objected to; but a hope was expressed that other means, then under consideration, might be found by which the requisite aid might be given to companies, and reference was made to an idea of advancing money to them from a sum of ten millions which had recently been raised on the authority of Parliament for special application to railway extension in India. A company was to raise one-third of the cost of a line, the remainder being advanced by the Government in India, and interest on the company's share of the capital was to be a first charge on the net earnings of the line. The despatch further contained a suggestion for the institution of Local Boards, in connection with the administration of Indian railways, from whose advice marked benefit might be expected. A reference was also made to the question of gauge, and the Secretary of State recorded his concurrence in the recommendation of the House of Commons Committee of 1884 on this subject to the effect that all leading trunk lines should be

on the broad ($5\frac{1}{2}$ feet) gauge, while the metre gauge as a rule should be confined "to tracts where that system is already in successful operation, and to local lines where the traffic is likely to be so light that the cheapness of construction more than counterbalances the undoubted disadvantage of break of gauge."

The views of the Government of India on the above-mentioned despatch were given in March 1890¹ (Lord Lansdowne being Viceroy). They fully agreed that the multiplication of agencies was an evil to be avoided, and more especially as regards working companies which were "always exposed to the temptation of trying to divert traffic into their own lines, and to block other lines by prohibitive rates." This evil it was hoped to minimise by the creation of a Railway Commission; but it was considered that there would always be the danger of a small company occupying the most remunerative part of a tract of country, and thereby increasing the difficulty of providing for the extension of a line to portions likely to be less productive. A proposal made in the Secretary of State's despatch was referred to, which was to allot a certain area to each trunk line, and require all extension within that area to be made by such line. This was agreed to as being eminently sound in theory. "Its effect would be to discourage purely competitive lines, to give the benefit of railway communications to the greatest extent of country with the least possible expenditure, and to economise working expenses by concentrating the traffic of a country on a railway system adequate for it." It was, however, pointed out that although this principle might be readily adopted on a blank map, it was a different matter to apply it in a case where, as already in India, railways had been constructed with disregard to it, and thus making it impossible to define the natural sphere of each system. The financial difficulty was, moreover, no light one, in so far that a scheme might be submitted by a company which had funds but had

¹ Despatch No. 55, dated 25th March 1890.



not the claim to the territory, while on the other hand a company which held this right might not be in a position to find the funds. On the question of gauge, the Government of India alluded to proposals then before them (to which reference will be made farther on) to reserve certain areas for each gauge, and stated that although the evils of break of gauge had as yet been little felt in India, it was to be expected that as the railway system increased and became "closely interlaced" the inconvenience would become so sensible as to render a large expenditure justifiable in order to alter the gauge on some lines.

The financial proposals made in the Secretary of State's despatch did not meet with approval from the Government of India. They held that the assistance thus given would secure none of the advantages which were to be expected from private enterprise, and that it was in fact nothing less than a sterling guarantee on a company's share of the capital in another form. The condition that the State should be required to advance so large a proportion of the capital seemed to the Government of India to be likely to lead to serious difficulties in the event of war or famine, which would impose serious strain on the finances, and thus render it impossible to meet the requirements of a company. The Government might consequently be exposed to claims on account of the stoppage of the works. The ideal of private enterprise in Indian railways, in the view of the Government of India, was that a company should require nothing more than the free grant of land; but they were not prepared to support the creation of companies "which would have a very limited interest in the concern from which they take their name, which would contribute only a small portion of the capital at an unnecessarily high rate of interest, yet on what is really absolute security, and which, for the rest of their capital, would have to draw, from the Government Treasury, funds in the management of which the State could thereafter have but little influence, and from which it would probably get

a very poor return." They considered that rather than raise funds in such a way, for expediting railway extension, it would be better and safer to increase the borrowing powers of the Government of India than to enter into arrangements with private companies which would pledge the supply of money to them without reference to the state of the finances at the time.

Meanwhile negotiations had been in progress between the Secretary of State and the South Indian Railway Company, on the expiration of the contract of the latter, for the basis of a new contract, under which the lines then forming the system were to be taken over on a working lease by a new company, which was also to find capital for extensions. Ultimately, in November 1890, the contract was executed on conditions very similar to those which had been sketched in the Secretary of State's despatch above noticed. The Company was held to be formed primarily for the purpose of working, managing, and maintaining the existing lines, and to raise one million sterling as capital for the purpose of extension, this sum being held to be equivalent to 140 lakhs of rupees, and the interest on this, at $3\frac{1}{2}$ per cent for three years, and thereafter at 3 per cent, to be a first charge on the net revenues of the line. The second charge on the receipts was to be interest at 3 per cent on the Government share of the capital, *i.e.* the original cost of the line, while any surplus over and above these charges was to be divided in proportion to the capital subscribed by the Government and the Company. The contract to be for twenty years, and at its expiration or determination the Company's capital to be repaid in London, in sterling at par. As may be gathered from the sketch already given of the views of the Government of India, these terms were considered by them to be too advantageous to the Company; but in this the Secretary of State felt unable to agree, holding that under the circumstances less favourable terms would have led to the failure of the negotiations. Early



in 1891 the Secretary of State, Lord Cross, returned to the subject,¹ and expressed his views generally as regards the employment of the agency of companies. He said that the policy which had dictated the action taken as to the South Indian Railway Company, was in effect that of his predecessors, and with this he was in complete accord. He was not disposed to discard the agency of companies, "which had been so largely employed by the State from the first introduction of railway communication into the country," adding that on "various substantial grounds, some of them not less important than immediate financial considerations," it was expedient to continue the employment of companies in both the construction and working of railways in India. It was at the same time evident that the terms and conditions on which this policy was to be carried out must vary according to the circumstances of each project, the state of the money market, and the aspect of the finances of the country, and that only in this sense were negotiations for new lines to be regarded as constituting a new departure. He concluded by stating that if the encouragement of private enterprise was to be confined to the offer of terms upon which, under certain conditions, it might be impossible to negotiate, railway extension from this source must be indefinitely postponed, or the whole burden must devolve on the State.

This despatch was replied to by the Government of India in October of the same year.² They repudiated any intention of pressing for the exclusive employment of direct State agency, while on the contrary they would cordially welcome the co-operation of companies, but that this might be obtained at too high a price, and in this sense private enterprise as properly understood would not be secured. They had no desire to employ State agency further than to secure adequate employment for their existing establishments, which they believed,

¹ Despatch No. 16, Railway, of 5th February 1891.

² Despatch to Secretary of State, No. 107, of 14th October 1891.



moreover, were fully as efficient as those which were employed by companies.

At this point this sketch of railway policy in India must be brought to a close, the later developments being noticed in another chapter. It should be observed however, that the discussions referred to in the preceding pages, as to the conditions on which the employment of companies should be encouraged, did not imply that there was any cessation, or even material diminution, in the expenditure on railways by the State itself. In the year 1892-93 about 310 lakhs were expended by Government under this head, and in part from revenue, on new lines, while about eighty lakhs more were devoted to new works and improvements on existing lines. The demand under this latter head is in fact growing heavier year by year, and already trenches severely on the strictly limited funds available annually for railway expenditure.

If the salient features of this brief sketch be passed in review, it will be seen that there have been three distinct phases of policy. From the beginning up to the year 1869, the construction and working of railways was left entirely to companies under some form of guarantee. From 1870 to 1880, on the other hand, nearly all new lines were constructed by the direct agency of the State and with State funds; while from the latter year up to the present time, the operations of both the State and of aided companies have gone on together. The proposals made in 1883 by the Government of India, which have been referred to at some length, were to lease the productive lines to private enterprise, while the unproductive lines were to be carried out by the State either directly or indirectly. To a great extent this policy has been adhered to; but until a stable figure of exchange can be attained for our Indian currency, it must be acknowledged that the assistance of private enterprise on any large scale is not to be reckoned upon without a guarantee in some form or other. Thus so far the expectations of 1883 have not been realised. For the future



the very serious financial difficulties in which the Government now finds itself forbid the hope of any continuous or forward policy. It cannot afford to give definite assistance to private enterprise, and the day seems at hand when the expenditure of the State itself must be greatly restricted. The outlook can in fact be improved in one way only, viz. by the establishment of a stable sterling value for the rupee.



CHAPTER II

GUARANTEES AND ASSISTANCE

IN the previous chapter an outline has been given of the phases through which the policy of the Government of India has passed in dealing with their railway system, from the beginning to the present day. It is necessary, however, to give a more detailed description than that sketch affords of the character of the assistance which it was deemed necessary to concede to private enterprise in Indian railways, and the nature of the co-partnership, and the control, which was reserved for the State in the contracts. Whatever may have been the changes in the attitude of the Government towards the promoters of companies, for constructing or working railways, no intention has been shown to relinquish or diminish the rights of the State to share, either immediately or in future, in the profits of each undertaking, or to weaken its powers of control and supervision. The initiation of this policy may perhaps be properly attributed to Lord Dalhousie, who before he became Governor-General, in the early days of Indian railways, had had exceptional opportunities of observing the ill effects of the supineness of the Government in England, in its relation to railway enterprise, and who showed a clear determination to avoid this mistake in India. In accepting the co-operation of companies in the commencement of these works, and in the grant to them of a guarantee of interest on their capital, he exercised the right of the State to

direct their operations, and to require that their development should be carried out on definite and well-considered lines. The advantages of this course, to both the investor and to the general public, has been incontestable; it has protected the shareholder at home from the mistakes of injudicious and inexperienced agents, and has enabled the Government to have its railway system designed with due regard to the interests of all classes. ✓

✓ The earliest agreements with companies under guarantee are dated in August 1849, and were between the Secretary of State for India and the East Indian and Great Indian Peninsula Railway Companies. The prolonged negotiations which preceded their completion have been noticed in the preceding chapter. The first recorded proposal was made in December 1844, by Mr. (now Sir) Macdonald Stephenson. ✓ The Government of India were at first opposed to any form of guarantee, while on the other hand the Court of Directors of the East India Company were of opinion, in which they were undoubtedly right, that money could not be raised in England for the purpose without aid in this, or some other equally tangible form. The outcome was on the whole, and in the light then available, on the prospects of railway enterprise in India, a fairly equitable one. ✓ The Government relieved the shareholders of all risk, gave them some expectation of profit over and above the guaranteed interest, and in return claimed reasonable powers of control and the right of purchase. ✓ The following are the principal conditions of these contracts :—

The Government would determine the route to be followed, and had power to alter or extend it.

Land was provided by Government for all works on a lease for ninety-nine years.

The necessity and expediency of all works was to be certified in writing to the Company.

The Government had power to determine the number, speed, and times of running of trains, to approve the fares leviable, and



to require a reduction of these when the line paid over 10 per cent.

Entire control and superintendence was reserved for Government over the servants of the Company, and free access stipulated for to all books, papers, and accounts, together with the appointment of an unpaid Government Director who had power of *veto*.

The expenditure of the Company to be submitted to Government for approval and sanction, and only expenditure so approved to be carried to the Capital Account.

Gross receipts to be paid into Government Treasury.

Interest at 5 per cent per annum, to be paid to the Company on capital paid into the Treasury, for ninety-nine years.

A reserve fund was to be instituted for making good deterioration, the net profits of the line being applied in the first instance towards the repayment of interest to Government. The accumulated interest debt was to bear simple interest only, at the rate of 5 per cent per annum, and when the profits exceeded the amount payable on the guarantee, one-half of such excess was to be credited to the Company, and the other half to be applied firstly towards payment of interest on the debt, and then towards the extinction of the debt itself. When the debt and interest had been discharged the Company was to take the whole of the surplus net receipts.

Provision was made for the carriage of mails and postal servants free of charge, and for the carriage of troops and military stores at reduced rates.

At the expiration of the term of ninety-nine years the land and works to become the property of Government, the rolling stock and other movable property being paid for at a fair value.

The company might voluntarily surrender the line after completion, on giving six months' notice, when the Government would refund the capital outlay.

The Government had the option of purchasing the line within six months after the first twenty-five years, or first fifty years, the sum to be paid being the full amount of the value of all shares and capital stock, calculated on the mean market value in London during the preceding three years.

In case of default by the company in finding capital, or in the execution of the works, in working the line, or in any other way,

the Government could, on giving three months' notice, take possession of the line on payment of the capital outlay within six months, less debts. Moreover, if the line was not properly maintained when open, the Government had power to do what was necessary, and to deduct the cost from the sum due for guaranteed interest.

Instead of repaying capital directly, the Government was empowered to commute this by granting annuities, payable half-yearly, for the remainder of the term of ninety-nine years, the rate of interest to be used in calculating the annuity to be the average rate of interest during the preceding two years received in London on public obligations by the Secretary of State for India.

Finally, the Government bound itself to promote such legislation as might be necessary to enable the company to fulfil the objects of the undertaking.

The instructions of the Court of Directors were very explicit as to the exercise of the powers of the Government in respect to the supervision over the companies under this contract. They required that this control should not only be effective, but even minute, extending both to the operations of the companies during construction, and after the lines had been opened for traffic. The rules laid down for the guidance of the inspecting officers of Government, who were then, and have since been termed "Consulting Engineers," were drawn up on very definite lines, which were briefly as follows :—

All questions of general importance were to be referred for decision to the Government, and under these were to be included the general direction of each line, the position and the general arrangement of stations and works. After such sanction was given the Consulting Engineers had powers to deal with details.

All designs, estimates, and indents, whether for works or for establishments, were to be approved by the Consulting Engineers, who could reduce the amounts of indents, or require designs, or proposed operations to be modified ; with the stipulation that the



agent of a company could, if dissatisfied, refer matters for the decision of the Government.

The proper exercise of such powers, in the interest both of the State and of the Company, demanded a capacity for judicious compromise on both sides—conditions which unfortunately were seldom fulfilled. The railway officials objected to what they considered over-interference, demurred to giving detailed designs and estimates, discussions and delays occurred too frequently, and in the end a Committee of the House of Commons was appointed, in 1857-58, to inquire into “the causes of the delays that were alleged to have occurred in the construction of Indian railways.” These delays were classified as follows :—

1. Those arising from Governmental supervision at home and in India.
2. Those incidental to the execution of extensive and complicated public works under such circumstances in a distant country.
3. Those produced by political causes, such as insurrection and mutiny.
4. Those arising from the natural difficulties which the face of the country presents.

The Committee arrived at the conclusion that, although some cases had been brought forward in which the control of the Government had been productive of vexation and annoyance to the railway officials, no very material delay could be charged to this circumstance. They held that the Government had acted wisely in giving over railway enterprise in India to companies, that a guaranteed interest was indispensable to induce capital to embark in such undertakings, and that in order to protect the State from undue expenditure control was not only requisite, but valuable, in the interests of the shareholders themselves. At the same time, the Committee thought that under a system complicated

in its character, and necessarily somewhat cumbrous in its machinery—a system, moreover, the greatest defect of which lay in the facility it afforded for the evasion of responsibility—a clear and distinct definition of the duties, responsibilities, and extent of jurisdiction of all heads of departments, and those under them, was essentially requisite for its smooth and successful working; always assuming that due care was taken to entrust discretionary power only to men who were to be relied on or competent to distinguish an effective general control from too minute an interference in detail. They concluded by expressing their belief that what was needed was a judicious adherence to the spirit rather than the letter of the contract. The effect of this inquiry was distinctly beneficial in improving the relations between the railway officials and the Government officers. There was a marked improvement in expediting the disposal of business, a feeling of mutual respect and confidence arose on both sides, and, to quote the words of one who had full opportunity of observing the improvement in these relations, “the officials of the company learnt that the (consulting) engineers with whom they have to deal are competent as well as practical men, obliged to be so from the very nature of the duties they have always had to perform, and that no captious opposition or unfair criticism was to be anticipated from them.”

Having noticed the first practical difficulties in working the system, reference must be made to what were ere long recognised as the advantages and disadvantages of the guarantee system on wider issues. It has been stated that in 1853 the Government of India, as represented then by Lord Dalhousie, was in favour of it; but he was nevertheless impressed with the necessity of seeing that the sums to be guaranteed should be based on sufficient data, as regards the cost of the works, “well and economically” carried out, and that some provision should be made to ensure the completion of a line within some period to be named, recommending, however, that the terms

should be liberal, both as regards time and money. These views were not definitely adopted in subsequent contracts made by the Home Government, but later on, in a despatch, No. 2, of the 29th November 1858, Lord Canning, then Viceroy, again referred to the great need for restraint on the capital outlay. He said "that in any future contracts involving a guarantee an essential element should be, that previous to the commencement of work a thorough and critical estimate should be made of the whole line with its works, from actual survey and inquiry—exactly such an estimate, in fact, as would be required by a company in view of inviting tenders in England for a lump sum contract, but embracing the cost of engineering establishment; that this estimate should be subjected to the criticism of our officers, under the injunction that a liberal spirit is to be exercised in this criticism; and that after adding a handsome margin to this for contingencies, the gross sum, and no more, should be the amount on which the Government guarantee interest."

The then President of the Viceroy's Council, Sir J. P. Grant, took a stronger view. He objected to the dual management, and especially to the financial basis of the system. He said that it really implied "the raising of money by a special public works loan, but under conditions the most disadvantageous possible for the public, who must be taxed for the payment"; that the money was not raised at the lowest market rate, and that instead of repayment being at the option of the borrower (the Government), this could not be done, whatever the loss might be in keeping it; while the lender could at any time reclaim it, or an equivalent annuity, whatever the financial position of the Government might be at the time." The Finance Member of Council, Mr. S. Laing, writing in April 1861, also recorded an opinion against the system, on the grounds that the management was non-resident and that the data as to first cost and probable traffic being so uncertain, the companies looked almost exclusively

to the guarantee. He considered that these two factors went far towards neutralising all the advantages of private enterprise, and that although, as a general rule, and under ordinary circumstances in commercial matters, joint-stock management must be held to be greatly superior to that of a Government, yet that this advantage could not be claimed when the real company was 5000 miles away and the guarantee absolute. The shareholders had their 5 per cent whatever happened. This was probably all that they expected, and consequently no adequate motive existed for restraining the outlay on the works. ✓

On the other hand, the system offered advantages which, although brought less to notice, were nevertheless clearly recognised by the Government. The one which stood out most prominently, and especially during the troubles of the Mutiny period, was that neither the political nor financial position of the Government had any effect in curtailing the supply of funds for the purposes of railway extension. On the faith of the guarantee, the companies found money without demur or difficulty, and for a definite purpose only; while had the capital been raised as a Government loan, for distribution to the companies, there was every likelihood that it would, on more than one occasion of financial stress, have been diverted to other more urgent public necessities. ✓ To quote the words of an officer,¹ writing in 1868, who was well qualified to offer an opinion: "This advantage will be acknowledged by all, but can only be fully appreciated by those who have seen with dismay canals almost useless for want of distributing channels, roads entirely so from the absence of bridges, and buildings half erected falling to ruin for want of a roof. The steady and unfluctuating supply of needful funds is a great and decided benefit, for which Indian railways have to thank the guarantee system. Had they been constructed on funds raised by a direct Government loan the Indian railway system would

¹ Colonel E. Davidson, R.E., *The Railways of India*. 1868.



not in all probability have been half completed by this time, instead of being nearly finished as it is."

Another, though less obvious, advantage of the system was to be found in the probability that the holders of shares in railways in India would be led to take a wider and more definite interest in Indian affairs, and in the general progress and welfare of the country. Moreover, the operations of the companies introduced a new and much-needed non-official element, from which a freshness and independence of opinion was derived on many matters. The railway engineers were always a welcome addition to the centres of Anglo-Indian life, and in the stormy days of the Mutiny their vigour, pluck, and readiness of resource made them prominent figures in the struggle, and formed a by no means insignificant addition to our strength. Yet, curiously enough, the presence of the non-official element was still regarded with some amount of jealousy and suspicion even then; and in drawing attention to the possible dangers that might arise from the overgrowth of English companies in India, the Government laid stress on the necessity for their having power to summarily dismiss railway officers whose action might be held "to endanger the peace and security of the country." The companies' officials had in fact for many years to feel themselves regarded as necessary evils, as being in the country to a certain extent on sufferance, and having to tread warily in their relations with the natives and with Government functionaries as such.

— Regarded from our present standpoint, the terms of the guarantee appear to be unduly onerous on the Government; but it has to be borne in mind that India was then an almost unknown country to the English investor, that the Government was not in a position to carry out such works itself, and that there was a desire to attract English capital into the country. The guarantee for a term of ninety-nine years applied to all money paid into the Government Treasury and expended with the sanction and approval of the Government.

When the capital account thus sanctioned was closed, which was then considered both possible or desirable, so much of the subscribed money as was not required for the undertaking was to be returned to the companies. The contracts provided that the amount advanced by Government on account of the guarantee was to be eventually repaid from the future profit of the railways, and under the following arrangement. Net receipts were to be paid into the Government Treasury. If they amounted to less than the sum due for guaranteed interest, an addition had to be made from the revenues of the country to make up that sum. If they amounted to more, half the excess was to be added to the shareholders' dividend, and the other half applied to the repayment of monies previously paid by the Government for guaranteed interest; while if the receipts did not suffice to meet the cost of working and maintenance, the deficiency was charged against the guarantee.

➤ When the whole arrears due to Government under the guarantee had been repaid (with simple interest), the companies were entitled to the whole profits. Many years elapsed before any one railway earned a dividend equal to the guaranteed figure, and there is still one that has not yet accomplished it.¹ The result was that enormous arrears of interest due from the companies accumulated, and in the end were remitted on the drawing up of fresh contracts, under which the Government assumed a larger share of future surplus profits. —

➤ By the end of the year 1859 eight companies had been formed for the construction under guarantee of nearly 5000 miles of line, with a capital of 52½ millions, and the works were being vigorously prosecuted. The largest concern at that time was the East Indian Railway Company, with a capital of nineteen millions. — It had already been noticed that the employment of so many different agencies implied the existence of a more expensive and complicated machinery than if the

¹ The Madras Railway.



Government had retained these works in its own hands ; and moreover that so many companies involved unnecessary expense in the administration in England, while they were liable to create a competition amongst them for materials and freight, which would unduly raise prices. But the policy at the time was to encourage so-called "private enterprise," and at the same time to assign such limits to the sphere of each concern as would tend to prevent the creation of inconvenient monopolies. The fear that the competition between the companies for materials and freight would enhance the cost of these transactions was perfectly justifiable. The material to be sent out from England for each mile of railway may be taken at an average of 250 tons, representing for 5000 miles a total of $1\frac{1}{4}$ million tons, which in the four years 1855-58 gave freight to 2518 vessels ; and as the export trade of India was then in its infancy, compared with its present figures, and as ships were only sent out for return cargoes, it may be supposed that this unusual demand for carriage to India must have led to abnormal rates. No difficulties had been experienced up till the end of 1860, in the raising of capital by the guaranteed companies, and considerable balances had been accumulated to their credit, but the troubles of the Mutiny period had forced on the Government the necessity of making heavy loans in the English market, and this had the effect of seriously interfering with the financial operations of the companies. This difficulty became at one time so acute, that it was in contemplation to raise funds through the direct agency of Government, and to guarantee no further projects until the lines then sanctioned had been completed. Fortunately, the additional difficulty of exchange did not then exist ; the sterling value of the rupee stood at 2s., while the rate under the contracts was 1s. 10d. In the following year, however, the condition of the money market improved considerably, the sound financial position of India was accepted with more confidence by the public, the value of railway securities rose steadily, and Government

was relieved from the need for raising money on behalf of the companies. The crisis which was then happily tided over has, however, a significant bearing on the relations between guaranteed companies and the Government of India, or indeed of any Government, under similar political conditions. The suspension of extensive railway operations, at a certain stage of progress, would materially injure the Government, the companies, and above all the public. A large outlay might remain unprofitable, and much positive loss might be incurred, in leaving the works unfinished.

Except under the subject of rates and fares, to which reference will be made in another chapter, no material addition to the railway policy in India can be traced up to the end of 1863. An important question then arose as to the proper distribution of outlay by the companies, between capital and revenue. A clause in the contracts provided that a charge to capital might be made for such "additions, alterations, and improvements" as, having been made with the approval of the Government, "are properly chargeable to capital." This left matters in a very indefinite form, and as soon as the lines began to feel the incidence of maintenance charges, it became necessary to define what "properly chargeable" meant. After a full discussion of the question, and after ascertaining the practice which commonly prevailed on English railways, the matter was decided by a despatch to the Government of India, dated the 9th March 1864, from Sir Charles Wood, then Secretary of State for India, the rulings in which have continued in force on Indian railways up till now. Some extracts from this despatch are worth quoting.

7. I think it advisable, however, to take this opportunity of laying down some general rules, which may be of assistance in enabling you to decide questions of charging expenditure to Capital or Revenue.
8. There can be no doubt that the expense of an additional line of railway, of the doubling of an existing line, of the

- original construction of any work, including that of those intended to be only temporary, as well as of all additions to existing work, ought to be charged to Capital Account.
9. When new lines form a junction with an existing railway, the expense of the junction and all its concomitant appliances of stations, sidings, signals, etc., is properly chargeable to Capital Account, and the cost should be divided in such proportion as may be fair, between the two companies for whose mutual and joint benefit the junction is made.
 10. The cost of additional stations and of any important building not previously contemplated, which is added to an existing station, should be charged to Capital Account.
 11. The cost of maintaining, in a proper condition, the works when completed, must be charged to Revenue Account; but when any extraordinary casualty may occur, such as the destruction of a bridge by flood, the case must be regarded as exceptional, and the cost of construction or replacement must be charged to Capital or Revenue, or divided between them, as may be deemed proper, according to the circumstances of the case.
 12. In relaying rails, if the original rails have proved too light, and additional strength in weight of iron or steel be required, the Capital Account should bear the difference between the cost of the new and improved rails and that of replacing the old rails by rails of a similar character, Revenue being chargeable for relaying and all other expenses. The same principle should be applied to replacing by iron sleepers those of wood originally laid down.
 13. In the locomotive stock, the Capital ought to bear the first expense of any addition which may be made to the existing stock, and of any important improvement or alteration which may be made in the same, as well as of all machinery which is absolutely new, and not merely in replacement of old; but all repairs and less important alterations of the existing stock of engines, carriages, and waggons already paid for, and handed over for working

purposes, should be charged to Revenue. The rolling stock and plant after being once paid for from the Capital must be kept up by Revenue to its full complement.

14. In no case should the cost of mere appurtenances of stock, after the opening of a line, or of a change such as the substitution of one mode of lighting for another, whether in engines, carriages, stations, or signal-lamps, the cost of which has already been paid for out of Capital, be admitted as Capital expenditure. These properly belong to the Traffic Revenue Account.

The despatch then went on to deal with the old difficulty as to the closing of the capital account of a line, and pointed out that finally to close such an account, either at first opening or at any given period, was practically impossible, inasmuch as to do so would imply that the utmost requirements for its future working had been duly provided for. This could never be the case, "as it is invariably found that the traffic upon a railway steadily and progressively increases long after its opening, and therefore to finally close the capital account of Indian railways, and prevent the application to them of any additional capital, must be fraught with injury to all parties, whether guarantors or guaranteed." The despatch concluded by saying that these rules were not intended to interfere with the arrangements which had been made with each company, by which the cost of maintenance for a certain period after opening was allowed to be charged to capital.

Two attempts had been made on a small scale previous to the years 1863-64, to raise capital for railway extension in India without a guarantee, viz. by the Indian Branch Railway Company in Northern India, and by the Indian Tramway Company in Southern India. Their endeavours had met with but small success, and a lengthy correspondence resulted, between the Government of India and the Secretary of State, as to the possibility or otherwise, of constructing railways with assistance from the State, in some other form than that of a

guarantee, which it had been virtually decided should not be extended farther than was necessary to complete the main trunk lines. After much discussion and deliberation it was decided to encourage the construction of lines on the standard ($5\frac{1}{2}$ feet) gauge, by the grant of land free of cost, and a maximum subsidy of £100 a year, per mile open, for twenty years from the date of opening. This system was to involve no other interference on the part of the Government than was necessary in the interest and for the safety of the public, while it made it incumbent on the projectors in their own interests to complete their works economically and rapidly; a limit of time being fixed, failure within which to open a line carried with it a reduction of the period for which the subsidy was payable. At first this proposal seemed likely to be received favourably by the public, but it was doomed to early failure, as it was found that these terms were not liberal enough for the then feeling in the money market at home with regard to Indian investments. Modifications which were proposed of this system of subsidy had no better success. There was in fact still ample opening for investors in India and elsewhere, on a guarantee of interest, and it seemed to be understood that any investment out of England, at that time, must be assured, without fail, of a return of 5 per cent. Thus after negotiations between the Secretary of State and two companies, extending over the years 1864-67, the Secretary of State addressed the Government of India in March 1867,¹ informing them that it had been found necessary after all to revert to a guarantee of 5 per cent, and a contract on this basis was drawn up with the Indian Branch Railway Company for the construction of railways in Oudh and Rahilkund.

The principal differences between this contract and the former contracts with a guaranteed company were briefly as follows :—

1. Estimates were to be formed for the cost of the works, and

¹ Despatch No. 18, Railway, of 23d March 1867.

if the Secretary of State should, after perusing them, not desire to co-operate further with the Company in the proposals made, the contract could be terminated on repayment of cost of the surveys, and the money which had been paid in by the Company to be refunded.

2. The rate of exchange was altered from 1s. 10d. to 2s.
3. The grant of land was in perpetuity, instead of being only for ninety-nine years.
4. The Company to fix rates and fares within maxima, which should be settled by the Secretary of State, such rates being reduced if the net earnings exceeded 10 per cent on capital, so as that profits should not exceed this figure.
5. The State could purchase the line at any decennial period, after twenty years, instead of only after twenty-five and fifty years.
6. The guarantee was absolute on all, instead of only on approved expenditure.
7. The Company was to be subject to any future enactments for the regulation of railways.

In replying to the Secretary of State in December 1867,¹ the Government of India, then under Lord Lawrence as Viceroy, accepted the necessity for reverting to the guarantee system, but took exception to the views of the Secretary of State and to the terms of the contract, and held in substance that no company should be allowed the opportunity of a very large development, because this might be inconvenient, and even dangerous, to the Government on account of the responsibility for interest, and at the same time the company might be proportionately inefficient. That a fixed sum should be stated as a limit to expenditure on guaranteed interest, extension of capital being only allowed as net receipts reduce the actual charge. That the Government when considering new projects should fix an average mileage rate of cost, and determine that it will not guarantee interest on any sum exceeding this. That the companies and the servants should be required

¹ Despatch No. 125, of 3rd December 1867.



to look on themselves as the agents of the Government for the purpose of constructing railways according to its wishes, and that they must understand that no interest will be given on outlay made "under the virtual dictation of companies and their engineers." That Government be empowered to dismiss or suspend all railway officials at its discretion. That land should be granted for ninety-nine years, and the right of entry, after that period, secured to Government. That it was politically dangerous, and might be very embarrassing to Government, to allow very large capitals to be invested in guaranteed railways in India, and that the Government should either by special contract or actual purchase ultimately obtain possession of all such works. That the method proposed in the contract for the repayment of the interest guaranteed was open to objection, in so far that instead of dividing surplus earnings over 5 per cent between the Government and a company until the debt was extinguished, either the whole surplus should be taken by the State until the debt was paid, or that the half surplus be taken by the State absolutely and permanently; but preferably that the State should take the whole surplus till the debt was paid, and the half surplus thereafter permanently.

Replying to this in 1868,¹ the Secretary of State (Sir Stafford Northcote) stated his inability to concur in these views. He said that it was essential, in working the guarantee system, that the confidence of the investing public, or, in other words, of the "money market," should be secured; that "due regard should be paid to the constitution of joint-stock companies, as regulated by Parliament"; and that if a certain class of railways in India is to be constructed by the agency of guaranteed companies, such terms must of necessity be given as will attract them, and not such as would repel them from entering into contract. He felt certain that no company would consent to look on itself and its servants as the mere agents of the Government, liable to removal or suspension at its pleasure,

¹ Despatch No. 90, of 24th November 1868.

and that no reputable engineers would take service with a company under such conditions. As to the view of the Government of India, that large companies might be politically dangerous or embarrassing to Government because of the responsibility for interest, he pointed out that if the Government became the owners of the railways it would be by means of borrowed capital, and that the responsibility would only be in another form. Generally, this despatch held that the terms of the contract with the Oudh and Rahilkund Company (formerly Indian Branch Railway Company) had no important defect, and that if more stringent conditions had been enforced higher terms would have been needed; while in the opinion of the Secretary of State, the political and military advantages of the Indian railways would have been so far cheaply purchased even had they been more costly, and that he was not disposed to hinder their extension by the exaction of too onerous terms.

This divergence of opinion between the Home and Indian Government, on issues which the latter then thought of great importance, led, there can be little doubt, to a rapid development of the views of the latter as regards the construction and administration of railways by the direct agency of the State. A tendency had already been shown in this direction in previous communications, and had been so far favoured by the Secretary of State as to lead him to agree to this policy being adopted for political lines only. Before leaving India, in 1869, Lord Lawrence wrote a minute, dated 9th January of that year, in which he boldly and most ably advocated the relinquishment of the guarantee system, and the construction by Government itself of all future railway extensions. His views were endorsed by his successor, Lord Mayo, and accepted by the Duke of Argyll, then Secretary of State. A more detailed account of this phase of railway policy will be found in another chapter, and it is sufficient to say that for the next twelve years the guarantee system lay in abeyance, so far at least as the initiation of any new company. The



introduction of the metre gauge dates from this period, and is dealt with in the chapter on this subject.

Between the years 1874-79 a series of disastrous famines had visited India, and on these followed the Afghan War. The great difficulties experienced in sending food with sufficient rapidity for the relief of scarcity, and of moving troops towards the frontier from our military centres, led the Government of India to the conclusion that more rapid progress was needed in railway extension, and that it might be possible to supplement the efforts of the State by enlisting the aid of private enterprise again, but without the assistance of a guarantee. In January 1881 the Marquis of Hartington (now Duke of Devonshire), then Secretary of State for India, addressed a despatch to the Government of India, in which this policy was approved, on the basis of capital being subscribed "on the exclusive security of the success of the undertaking"; but that if this should prove to be impracticable, it might become desirable to consider whether some modified form of guarantee could be adopted, such as, with respect to time and to the rate of the guarantee, would give the shareholders "a real interest in the efficient and economical administration of the railway." This was in effect the proposal of Major E. Baring (now Lord Cromer), who was then Financial Member of the Viceroy's Council. It happened that the time was favourable to this new departure. The credit of India was good, money was plentiful in Europe, and capitalists were ready to take up investments in almost any direction. The result of this was that a scheme of apparently a very promising nature, in Bengal, was taken up on the above basis by an eminent firm of financiers, and the Bengal Central Railway Company was formed in London in 1881. Before describing the terms of the agreement with the Secretary of State, it will be advisable to go back a little and notice a very important step which had just previously been taken in regard to the largest of the guaranteed companies.

The Government of India had the right in 1879, under the contract with the East Indian Railway Company, to acquire that line, and it was decided to carry out this operation. The negotiations terminated in an arrangement by which the Government availed itself of the right to purchase the whole undertaking by the grant of annuities, and made over the working of the line to a new company on a new contract. This contract is dated the 22nd December 1879, and the terms of the purchase were based mainly on the provisions of the original contract. The capital stock amounted to £26,200,000, and the company was entitled to be paid either in cash, at the average price of the stock during the three previous years, or by an annuity for seventy-three years equivalent to it. The average price of the stock was taken at £125, so that the total amount, if payable in cash, amounted to £32,750,000. The Government, however, preferred to make the payment in the shape of an annuity, and one of £5:12:6 was allowed in lieu of the £125. At the same time the company was allowed to defer a portion, leaving £6,550,000 in the hands of Government to be regarded as the capital of the new company, on which they receive 4 per cent interest in the first place; and secondly, one-fifth of the net profits after providing for working expenses and other charges. Under this arrangement the Government secured an agency for working the line which had been eminently successful in the past, and in giving up one-fifth of the net profits to the new company it was considered that the line was "likely to yield more satisfactory results than the best conceivable official management without that stimulus." The arrangement, moreover, had the prominent advantage of redeeming the whole cost of the line in a period of seventy-three years. Under the new contract the Government has full powers of control, the company being bound to work and maintain the whole system to the satisfaction of the Government, to give running powers for the stock of other lines, and to construct auxiliary or branch lines

upon terms to be agreed upon. The term of this contract is for fifty years, but the Secretary of State or the company may terminate it at the end of the twentieth, or at the end of any succeeding fifth year, on giving two years' clear notice.

It may be well to notice briefly the price that the State has had to pay (in the shape of one-fifth of the net profits of this concern) by availing itself of the agency of the new company in its administration. The following table shows the sum paid yearly to the deferred annuitants, and the rate per cent received by them, including the 4 per cent stipulated under the contract :—

Year.	Amount in Rx. ¹ paid as Fifth Share of Net Profits.	Rate per cent in Sterling received by Deferred Annuitants.
	Rx.	£ s. d.
1880	177,269	6 4 6
1881	206,386	6 12 4
1882	178,807	6 4 6
1883	210,772	6 12 6
1884	129,298	5 11 5
1885	178,229	6 0 0
1886	159,593	5 16 0
1887	173,477	5 17 0
1888	127,834	5 6 6
1889	91,534	5 0 6
1890	114,258	5 6 0
1891	275,021	6 17 3
Average . .	168,540	5 19 2½

The Government of India has thus paid on the average the sum of Rx. 168,540 yearly on the assumption that a Board of Directors in London is better able to work the line, and to make it more fully successful than if worked by its own railway administration in India, from which, as it happens, the present principal officers of the company have been obtained. This question need not here be discussed. It will be referred to in a subsequent chapter.

¹ Rx. represents conventional sterling at ten rupees to the pound.

Reverting to the scheme of the Bengal Central Railway, it may be mentioned that it was based on surveys and reports prepared by Government officers, from which the prospects of the line were shown, as it ultimately proved, too confidently, to be exceptionally good. The prospectus of the promoters adopted the facts and figures of the Government reports, which were made public without reservation, and on the faith of these a Company was formed as stated, in 1881, to carry out the scheme, the money being subscribed twice over. The terms of the agreement with the Secretary of State were briefly as follows :—The direction and location of the line to be subject to the approval of Government, and the general character of the works to conform with the established standards of Indian broad gauge lines. Land to be given free of rent for ninety-nine years. The Secretary of State to pay 4 per cent on the capital deposited with him until withdrawn for the purposes of the Company; and until the opening of the “primary” undertaking throughout, or until June 1886, the Secretary of State to advance to the Company such sums as, together with the net earnings of the line, should give the company 4 per cent on the capital withdrawn for expenditure. All sums so advanced to be repaid with simple interest at 4 per cent by appropriation of half the net earnings above 5 per cent on the capital. The Secretary of State to have power to purchase the line and its equipment at the end of thirty years, or fifty years, from the 1st January 1882, on giving one year’s notice, and paying £125 for each £100 of stock. At the end of ninety-nine years the works and buildings of the line to become the property of the Secretary of State, who should pay the value of the rolling stock and movable property. Rates and fares to be within a maximum to be fixed by Government, and in case of failure to run at least one train a day, the Government to have power to take possession on repayment of the capital expended. Until all advances had been repaid by the Company their accounts to be audited by an officer appointed by Government.



The Government of India was informed of this agreement by a despatch from the Secretary of State dated 11th August 1881, in which it was stated that the aim in the negotiations for the contract had been "to avoid all unnecessary interference with or control over the affairs of the Company, and to secure for the Government only such powers of supervision as will protect the interests of the State in respect of the power of purchase, and the repayment of the advances for interest made while the line is being constructed." It was expected that this railway would be the forerunner of many to be launched on similar terms, and indeed had the anticipated traffic on the line been even approximately realised, this expectation might have been fulfilled. Unfortunately, however, for both the Government and the Company, the line turned out to have been misjudged as a lucrative one, and its ill success from the first and subsequent troubles were a source of serious embarrassment to both parties, and eventually destroyed the confidence of investors in lines which were not supported by more tangible forms of assistance. The later phase of the Company was that the Government had to submit to a new contract (in 1887), granting a sterling guarantee of $3\frac{1}{2}$ per cent on the capital expended, or likely to be expended, while the sum due for arrears of interest was cancelled. Shortly after the launching of this Company another, the Rahilkund and Kumaon Railway, was started on a similar basis, and in 1882 a larger concern, the Bengal and North-Western Railway, was floated without guarantee, the Government giving the land and allowing 4 per cent to be paid from capital for a period not exceeding five years. The shares of both of these concerns were taken up readily at first, though ere long fell in price; but the energy and ability of the Company's agent in India and the absorption by the latter of the Tirhoot State Railway has completely changed their position, and at date the shares are at a considerable premium.¹

¹ It should be mentioned that in the contract of the former of these lines

In accordance with the views already mentioned, a despatch was sent from the Government of India, in July 1881,¹ to the Secretary of State, in which the urgent need of enlisting private enterprise in Indian railways was insisted on, the then financial position of the country showing that there seemed no hope of it being possible to carry out all the needed extensions to protect the country from famine by direct Government agency, and for such projects as were approved, it was proposed to give "a safe and reasonable guarantee," *i.e.* limited in amount and duration. It was considered that each concession should be dealt with on its own merits, so that there should be the least possible burden on the finances, and at the same time to give companies the greatest possible interest in the working of their lines; while a preference was indicated in favour of a low rate of interest for a longer time than for a high rate for a shorter term. The first important result of this change of policy was the creation in 1882—the contract being dated the 1st of June of that year—of the Southern Mahratta Railway Company, which was to take over works already commenced in the Deccan for famine protection, and to carry out a large system of metre gauge lines designed for this object. The contract of this Company with the Secretary of State was on an essentially new basis, and except in one important particular, to be mentioned hereafter, may be regarded as the prototype of subsequent agreements of the same nature. It embodies, in fact, two distinct functions for the Company. On the one hand the Company is an agency for raising a certain sum of money, *viz.* three millions sterling, for the Secretary of State, on which he guarantees interest, during a fixed period for construction of 4 per cent, and thereafter of $3\frac{1}{2}$ per cent. This sum was to be made over to the Secretary of State, and

a small subsidy of Rs.40,000 yearly is given by the State, and in both contracts the Government shares equally with the Companies in net profits when the line has paid 6 per cent to the shareholders.

¹ Despatch No. 92, Railway, of 22nd July 1881.



in the words of the contract, "all moneys paid by the Company under this section shall belong absolutely to the Secretary of State, who shall not be deemed a debtor to the Company in respect thereof." The above-mentioned sum was in effect a loan raised by the Company for the Secretary of State on a guarantee of interest. Subsequent clauses of the contract stipulate that the Company shall construct certain railways, and that for these purposes the Secretary of State shall provide the requisite funds (Clause 29), and that all receipts whatsoever of the Company, exclusive of the interest payable on the capital raised by it, should be paid into a Government Treasury. Having constructed the lines, the Company (although it is not specifically so stated in the contract) was to work them, and from the net earnings (Clause 42) three-fourths were to be taken by the Government and one-fourth by the Company. On this point it is to be particularly noticed that the above clause contains no condition for a first charge against gross earnings to provide for interest on capital paid by the Secretary of State; and that the Government has to reimburse itself on this account from the three-fourths' share of the net earnings of the line. This perhaps too liberal condition has not been repeated in subsequent agreements with other lines, it being stipulated that net earnings shall mean that gross earnings have been first charged with sums due for interest paid by the Secretary of State on the capital raised by the Company. The justification for the concession made to the Southern Mahratta is to be found in the fact that the lines to be made by it were essentially for famine protection, that they could not be expected to be remunerative for many years (they have not yet paid 3 per cent), and that the money loss to the State was to be accepted as the necessary price for securing the protection of certain large districts from famine. This system of railways is in fact State property, the Company being merely an agency for working it under stringent conditions as to maintenance, supervision, and power over rates and fares.

In 1883 another new departure was made in assisting private enterprise by granting to a small concern, the Tarkessur Railway Company, a very favourable working arrangement for a branch to be made without guarantee on the capital. This branch, twenty-two miles in length, was to take off from the East Indian Railway (a State line), and the nature of the agreement accorded to the Company is practically that the line is worked and maintained by and at the percentage of working expenses of the home line, and of the net receipts one-fifth is taken by the working company and four-fifths paid to the Tarkessur Company, less a charge of 5 per cent on the gross receipts for use of rolling stock. This small Company has been eminently successful, but its success has been due to exceptional circumstances, viz. firstly, to the very favourable terms for working; secondly, to the unusually heavy passenger traffic on it, and thirdly, to it having been a very cheap line to construct. Its promptly profitable career has, however, given a great impulse to this form of State assistance, and several other schemes have been proposed, and one important one, the Delhi-Umballa-Kalha Railway, carried out on similar terms, while later on, as will be noticed subsequently, this has become the recognised basis for assistance in the construction of branch lines by independent companies.

Two projects of great importance had been put down in the list of "protective" famine lines to be carried out, if possible, by private enterprise. One was the Bengal-Nagpore line, running from Nagpore through a highly productive part of the Central Provinces, to a point (Assensale) on the East Indian Railway, and the other a system of lines through Central India with junctions at Agra and Cawnpore, and terminating on the Great Indian Peninsula Railway at Itarsi. Negotiations for placing these schemes in the hands of companies extended over a considerable time, and eventually, viz. in October 1885, a contract was executed with the Indian Midland Railway Company for the latter of these projects. The terms of the contract were

generally similar to those of the Southern Mahratta Railway above referred to, the Company being the agents for raising a loan for the Secretary of State, and at the same time allowed to construct and work the lines mentioned in the contract. The rate of interest on the capital raised was, however, increased to 4 per cent for the whole period of the contract ; but the first charge on the earnings, after paying working expenses, is devoted towards payment of interest on the capital, and the net earnings over and above this are, in the first place, to be applied to the repayment of interest not repaid, and of the residue, if any, of the surplus, three-fourths were to be paid to the Secretary of State and one-fourth to the Company, "free from all control." All money so payable to the Company was to be paid in India, and the receipts of a year, and not those of the half year, were to be the basis of calculation. It was, moreover, distinctly stipulated (Clause 56) that the line as and when completed was the property of the State, together with all the movable property of the concern. Stringent clauses have been inserted as to supervision, the maintenance of the line, powers over rates and fares, the audit of accounts, the definition of "working expenses," the working of other lines, the grant of running powers to other lines and other facilities, and other minor conditions of control. The Secretary has power to terminate the contract at the end of the year 1910, or of any succeeding tenth year, on twelve months' previous notice, or by default on six months' notice. On termination of the contract, the Secretary of State is merely bound to repay such capital as shall have been provided by the Company, and in such case the Company is bound to relinquish possession of the whole line, land, and movable property of the concern. The subsequent contract (in March 1887) with the Bengal-Nagpore Railway Company was couched in precisely similar terms.

Both the above-mentioned Companies, and the Southern Mahratta, have, perhaps for want of a better means of defining their character, been termed "assisted" companies, as



opposed to the "guaranteed" companies ; but as will be seen, the term "assisted" does not properly explain their relation to the Government. Their contracts might, in fact, have been in two documents instead of in one—the first representing the terms on which the Companies raised a certain sum of money for the Secretary of State for India at a certain rate of interest, and the other being an agreement for constructing certain lines, and subsequently working them on lease for a definite period, and on certain conditions of copartnership with the State.

The railways constructed by these Companies have been carried out by them merely as agents and disbursers for the Government. The lines belong to the Government. As regards the capital raised, these Companies are as much "guaranteed" as the older ones ; but, on the other hand, the terms under which they work the lines are greatly more advantageous to the State than those of the older contracts under the guarantee. It may be added, that in each case the Government could have raised the necessary funds itself at a considerably lower rate of interest, but was debarred from this course by the restriction of its borrowing powers by the House of Commons Committee, referred to elsewhere. There were, moreover, other causes which made it appear desirable to entrust these lines to what has been called "private enterprise." The expression "enterprise" is scarcely applicable in such a case, if it is intended to convey an implication of risk. There could be but little risk in lending money to the Government of India at 4 per cent, together with a definite prospect of an addition to this in the future from surplus profits ; while the high price the shares have steadily held in the London market effectually disposes of any such view of the investment.

The financial stress due to exchange, to the heavy outlay imposed on the country for frontier defences, and other causes, became so serious in 1885 that the lines above mentioned would certainly have been deferred much longer had it not



been that they were regarded as being of the greatest importance as famine protective works. The negotiations with the promoters of the Bengal-Nagpore Railway extended over something like four years, owing partly to the impossibility of meeting the terms required by the Company in the face of the existing obligations of the Government.¹ The urgent necessity for the line led, however, in the end to the acceptance of the new burden ; but it was then practically acknowledged that India could no longer afford to face the cost of further sterling guarantees, and that unless some other means could be found of attracting English capital, railway extension in India must for the future depend on what could be effected from the annual State loan for Public Works. The solution of this difficulty was offered in 1889, by a proposal to make a line 162 miles in length in connection with the East Indian Railway, between Delhi and Kalka, on terms based on those above referred to of the Tarkessur Railway, but embodying conditions giving greater control to the State and a share in surplus receipts. The contract with the Secretary of State stipulates that the Company shall make the line on being given land free, and that the Government of India will undertake to work it and maintain it at 50 per cent of the gross receipts. A second agreement made between the Secretary of State and the East Indian Railway Company (which is working a line now belonging to the State) provides that this Company shall work and maintain the Delhi-Kalka Railway for 48 per cent of the gross receipts, which shall include the provision of rolling stock. The State thus receives 2 per cent of the gross receipts as a direct contribution, in addition to its share in the surplus profits from the East Indian Railway. The 2 per cent may be held to represent the cost of Government supervision and control.

It is as yet too soon to estimate the future of this form of

¹ Also greatly to discussions with the Secretary of State as to details of construction.

assistance to private enterprise in Indian railways, but so far as can be judged from the present position in the market of the Delhi-Kalka shares there does not appear to be much likelihood that it will offer sufficient attraction in its present shape for the investment of English capital. The primary conditions of the success of a project, started on similar terms, must be in the careful and judicious selection of the line on the advice of persons intimately acquainted with the tendencies of trade in India, and with the details of railway working, so as to be able to afford a close and reliable estimate of receipts and of the cost of working the traffic. Another almost equally important condition is, that there shall be no ambiguity or obscurity in the provisions of the agreements, especially when, as in the case of the Delhi-Kalka line, or indeed in any other started on similar terms, those agreements are threefold, or between three parties, whose interests are not in complete harmony. Their interests are, in fact, in line, so to speak, in one direction only, viz. in making the new railway the most effective and remunerative dividend-paying machine. But with this aim in view both the State and the working company show a not altogether unreasonable inclination to force the new company to provide funds for the improvement of the line—a course for which the shareholders have not shown much appreciation, and hence difficulties have arisen which unfortunately have tended to throw some discredit on the arrangement.

For some years previously a large and important scheme had been under investigation for a system of metre gauge railways, on the east of the Bramaputra river, with the object of connecting Assam with the old but now rising port of Chittagong on the Bay of Bengal. As soon as the project was complete, if not before then, the Government of India was approached by promoters under the intention of forming a company for the carrying out and working of these lines. By this time the Government had found its financial position



so seriously affected by the loss in exchange, and the outlook in the future so unpromising, that it had been forced to the decision to refuse to entertain any proposals which involved a sterling guarantee. In consequence of this, endeavours were made to obtain capital for the scheme in London on the basis of the concession of waste lands along the line, and the grant of mining rights in an area adjoining the projected railway, which was supposed to be rich in minerals, more especially coal. These attempts, however, were not successful, it being impossible to satisfy investors or financiers on the conditions imposed on this form of assistance, and it was found necessary to again consider the grant of a guarantee. In the meanwhile, the Secretary of State had received offers in other directions, and eventually, though in opposition to the views of the Government of India, a company was formed in London in 1892 under an agreement of a somewhat novel character. Premising that the cost of the whole scheme might be about $5\frac{1}{2}$ millions sterling, the company was to raise the sum of $1\frac{1}{2}$ millions in shares of £10. On this the Secretary of State guarantees interest at $3\frac{1}{2}$ per cent during construction, or until June 1898, and thereafter at 3 per cent until the determination of the contract. The balance of the funds necessary for constructing the line is to be found by the Secretary of State, and net surplus profits are to be divided between the Government and the company in proportion to the capital supplied by each. Under the contract the line belongs to the State. The capital account is to be debited with all sums advanced as interest by the Secretary of State, and, after deductions for contributions to a provident fund, the interest charges are to be a first charge on the net earnings of the line.

New conditions, which have been for some time under consideration, have recently been issued¹ by the Government, for encouraging investment in the construction of branch and feeder lines, on the basis of their being worked by the railway

¹ Resolution No. 924, Railway Company, of 15th September 1893.



with which they are connected. The main features of these conditions are as follows:—(1) The free use of such land as may be required for the undertaking; (2) the provision of rolling stock, and the maintenance and working of the new lines by the main line administrations; (3) the free use of surveys made at State expense; (4) the carriage of stores and materials on favourable terms; and (5) the grant of a limited rebate from the main line earnings towards ensuring to the shareholders in the new lines a dividend of 4 per cent per annum on approved capital expenditure. In addition to this, it is proposed, if legal powers can be obtained, as to which there is not likely to be any difficulty, to allow interest to be paid from capital during construction at the same rate, viz. 4 per cent. In offering these conditions, the Government of India has distinctly laid down that no concession will be given for any project unless it is shown to have reasonable prospect of financial success, and in any case all plans and estimates must be approved by the Government. These terms practically ensure a minimum return of 4 per cent on capital invested in such lines, while there is no restriction as to the maximum return, or any stipulation as to division of surplus profits over and above a certain figure with the State. It is consequently anticipated, and with good reason, that such concessions will offer considerable attraction for English capital, and in a form which involves no risk whatever. It should be added that the Government reserves the right of purchase of such lines at the expiration of twenty-one years, and thereafter at successive intervals of ten years, at twenty-five years' purchase, based on the average net earnings for the five years immediately preceding the purchase, provided that the price shall not exceed the total capital expenditure by more than 20 per cent, and shall not be less than the capital expenditure. Purchase may be also made at the expiration of fifty years on payment of the actual capital outlay.



CHAPTER III

STATE CONSTRUCTION AND ADMINISTRATION

It was shown in the first chapter that the construction and workings of railways in India was at first entrusted to guaranteed companies, and that it was not until the year 1867, under the Viceroyalty of Lord Lawrence, that the objections to their policy were distinctly formulated and seriously discussed. Endeavours had been previously made to induce the investment of English capital in Indian railway schemes on less onerous conditions than that of a guarantee, in the form either of a lump sum or annual mileage subsidies, accompanied by the free grant of land. It was soon found, however, that only a feeble response was to be expected to such conditions, and in such cases as took shape, notably in that of the Indian Branch Railway, it eventually became necessary to revert to the guarantee as the only means of securing the completion of the works. The cost of the guaranteed railways up to this time had, for sundry reasons, largely exceeded the original estimates, while the anticipations of traffic had as yet not been realised, and with the result that there was a steadily increasing charge on the revenues on account of interest. It thus became urgently necessary for the Government to review its position, and, if the requirements of the country in the extension of the railway system were to be fulfilled, to determine the nature of the agency by which this should be effected, and the financial measures which would be involved. In December 1867 a



despatch on the subject was submitted to the Secretary of State for India,¹ accompanied by minutes by the Viceroy and the members of Council, to which was added an able and exhaustive note on the guarantee system by Captain (now General) Sir E. C. S. Williams, R.E., and also a note by Colonel (now General) C. H. Dickens, R.A., then Secretary to the Government of India in the Public Works Department. General Williams' note would deserve lengthy notice. It discussed the advantages and disadvantages of the guaranteed system in India, sketched the systems under which railways had been promoted by the State in other countries, submitted proposals for a new system for encouraging railways by State aid in India, and referred, though in brief and cautious terms, to the desirability of an experiment being made in the construction of railways by direct State agency—a proposal which, although at the time wholly opposed to authoritative opinion in India, was destined to see early fruition. Neither in Lord Lawrence's minute, nor in those of any of his Council, is there any mention of this policy; all that was insisted on, and with practical unanimity, was that action should be taken towards the ultimate acquisition by the State of all the railways, and that this aim should be steadily kept in view.

In replying to this, in two despatches of the 16th and 24th January 1868, the Secretary of State for India (then Sir Stafford Northcote) dealt with the question of State construction in the following terms: "You have recently come to the conclusion that the guarantee system should, so far as regards irrigation works, be superseded by a system of direct Government agency. The reasons for this decision, however, are not applicable in the case of railways, as the question of possible interference with the land revenue does not here arise. At the same time, there are other considerations which ought not to be lost sight of. The main objections to guarantees, in connection with railways, are that they tend to weaken the ordinary

¹ Despatch No. 125, Railway, of 3rd December 1867.



motives to efficient management and superintendence, and recent disclosures as to the state of the works on the Great Indian Peninsula line afford new proofs that there is much room for apprehension on this score. I am therefore anxious to know whether any, or what additional precautions, can in your opinion advisably be taken to secure good workmanship under the guarantee system, which, in spite of its obvious defects in certain particulars, I am disposed to regard as upon the whole the one best adapted for the extension of one class of railways, viz. the commercial. For the political class, I am inclined to think that direct Government agency might be preferable." This declaration did not seem likely to advance matters or to lead to any immediate or material change of policy ; but later on, in the same year,¹ the Government of India in referring to negotiations then in progress with certain companies, in which some important points in connection with State control were involved, expressed a hope that the question of direct action by the State would be regarded in a broad light, and not merely from that relating to its bearing on the money market. They said that "such a point of view is no doubt important, but at present its importance is in some sense of a minor order. There is no doubt that the Government could raise money for railway undertakings and make all other necessary arrangements without the intervention of companies at all." They also pointed out that in the arrangements with capitalists, and in the details of contracts, the Government of India were not given sufficient opportunities of offering opinions, while the practical working of them had to be carried out in India.

A change in the Ministry placed the Duke of Argyll in power as Secretary of State early in 1869, and in March of that year the Government of India addressed a despatch to the Home Government,² in which they openly and strongly advocated direct construction by the State. Lord Mayo had

¹ Despatch No. 122, Railway, of 15th August 1868, to the Secretary of State.

² Despatch No. 24, Railway, of 15th March 1869.

then became Viceroy ; but before leaving India, Lord Lawrence had recorded a minute, dated 9th January 1869, in which he showed his complete conversion to this policy. In this he urged, that under the guarantee system of construction, the Government was liable to a permanent and probably increasing charge for interest, the burden of which was accentuated by the fact that under the existing arrangements the Government could derive no profit from the most successful railway, while it bore the whole loss of those which did not pay ; that there was, in fact, no set-off of profit against loss in the Government share in these transactions. "The whole profit goes to the companies, and the whole loss to the Government." He said that he was "thus led to ask what are the reasons which should induce the Government to accept the position in which it is placed by the present system of railway construction ? . . . Can it be really essential for satisfactory progress that such a distribution of losses and gains should continue, and is there any sufficient ground for placing the State in so false a financial relation to the construction of railways as that under which the former must bear all loss, and cannot possibly obtain a set-off by any gain ? These questions involve the discussion of the character of the agreements which have till now been entered into with companies for the construction of railways in India, and the policy under which these works are entrusted to companies in preference to being executed by the direct agency of the State."

He urged that the issue was, whether the agency of companies afforded any such special convenience or advantage to the State as to justify the Government in giving them terms which were alike unsatisfactory in a financial and administrative point of view, and that the only possible reply could be in the negative. He foresaw that a doubt seemed likely to be thrown on the expediency of direct Government action as regards the presumed incapacity of the Government to carry out and manage such undertakings. But on this point he, at least, felt no hesitation. He pointed out that the history, so far, of the



operations of guaranteed companies had given illustrations of management as bad and as extravagant as anything which the worst opponent of Government agency could suggest as likely to result from that system, and that the best conducted and cheapest of these lines had been carried out entirely under departmental management, *i.e.* without the intervention of contractors, in a way that, in short, differed in no respect from that which was followed on Government works under the Public Works Department. With reference to the Indian share of the work, he was satisfied that "under a reasonable system" the Government could at least secure as great ability to carry out the works, and with no greater outlay. The experience of twenty years under the guarantee system had shown, in the opinion of Lord Lawrence, that there was no reason to expect that the Government could derive any financial advantage in obtaining the capital for railways through the agency of companies, unless they could carry out the works and manage the lines very much more cheaply than could be done by the Government through its own agency. His own view was that the latter course would be the most economical to the State, and that the Government had already at its disposal a sufficient number of officers who were both qualified in railway work and in local experience; while he saw no adequate reason for supposing that if Government deliberately borrowed money for railway purposes only, there need be any necessity for stopping operations on every occasion of financial difficulty.

The despatch above referred to, from the Government of India, was practically based on Lord Lawrence's minute. He said, "We assent to these views, and to the arguments on which they are based. The conclusion opposed to direct Government action in such matters, which has been most commonly adopted till the last few years was doubtless justified by the circumstances of the time in which it was formed, and we are very far from questioning the great value of the work actually

performed by companies in the prosecution of railways in a period of undoubted difficulty. But the whole conditions of the problem have since changed, and in this, as in numerous other matters of great public importance, modified methods of action are necessary to meet the altered circumstances of the time. . . . Although we thus desire to substitute as far as possible, in the future extension of railways, the direct action of the State for that of companies, it is yet proper that we should consider the cases in which companies may, from any causes, be again entrusted with the construction of new lines." They pointed out that there were two fundamental conditions which it was desirable to impose on a company, viz. the limitation of the financial responsibility of the Government, and the protection of the public against the possible evils of an authorised monopoly. The first mainly affected the operations of construction, and the second those of working the lines. The key-note of the whole despatch was that unless railways could be constructed more cheaply than had been the case hitherto, further extension would soon have to be stopped, or the finances of the country become seriously disordered. It insisted on the paramount importance of a very strict limitation of first cost, and the views of the Government on this point are worth quoting. "An extravagantly-constructed railway is permanently a financial failure. To a poor country like India this lesson is of exceptional importance. Here the needful capital for railway construction can only be obtained at the risk and under the guarantee of the State. An unsuccessful railway is therefore a public burden. Resources which might otherwise be applied to the extension of material or administrative improvements are permanently diverted to provide for the payment of interest on capital which has been misapplied, and remains unproductive. Even in a country of such extraordinary wealth and productive power as England the wasteful expenditure of railway capital has become a serious evil, and it may be affirmed with the most complete



certainly that if India cannot manage to provide itself with railways which shall so far pay, or at least to cover the ordinary rate of interest on the necessary capital, the progress of railways must very soon be stopped, or the finances be brought into a condition of extreme disorder." It was shown that the average cost of Indian railways, single line, had up to that time reached about £17,000 per mile, while the income of the very best line had then barely risen to a figure sufficient to pay the guaranteed interest, 5 per cent, and that the average was about 3 per cent. They pointed out, moreover, that the lines already made, or in course of construction, occupied the best fields for railway enterprise, and that it could not be expected that further extensions then contemplated could do as well. They were confident that by making suitable arrangements, the cost of railways could be largely reduced; that it was no longer necessary to look to England for guidance in railway construction; and that they might now, "with complete propriety, claim the same degree of discretionary power in dealing with the administration and construction of Indian railways as is exercised in relation to all other branches of the administration and all other classes of public works." They further urged that the proposal to make over the profitable or "commercial" lines to companies, and to leave the unprofitable or "political" lines to the State was unfair and unpracticable, and concluded by saying that unless the necessary conditions, as regards economical construction and management, could be secured in arrangements with companies, it was desirable that in the future their agency should be altogether dispensed with for the construction of Indian railways.

The Government of India addressed the Secretary of State again on this subject in March 1869,¹ drawing attention more particularly to the serious liabilities which were being incurred by the State under the system of guaranteed companies; that the State was bound to pay a fixed rate of interest to the

¹ No. 28, of the 22nd March 1869.

shareholders, whatever the cost of the line, or whatever the character of the management might be ; and that while the Government only was seriously interested in securing economy, no substantial co-operation in this direction was to be hoped for from the companies. Attention was also drawn to a very serious phase of the company system, viz. that the Government of India was by degrees losing its power of control over them, in so far that its decisions were not accepted as final in India, but were habitually referred to the Boards of Direction in London. The position of companies was compared with that of the Government in plain terms. It was urged that the former "have only to supply the capital, and to *receive* their interest from the Government, whatever be the outlay, and whatever be the results of the undertakings," while on the other hand, the Government had "to *pay* the interest on the capital in full, and to be satisfied with the partial set-off derived from the net profits. To the shareholders it is comparatively unimportant whether the first outlay is strictly confined to what is necessary or not. Their capital is an investment, the return from which is guaranteed under all circumstances ; and even, in some cases, wasteful outlay may be directly advantageous to them, as leading to the creation of a stock which may be sold at a premium." This despatch reopened up the question of gauge, and held that too much importance had been attached to uniformity in the case of a country like India, where the distances were very great, and the centres of population far apart. For passenger traffic in India the evil of a break of gauge was, they considered, of no moment ; while in the case of goods traffic the cost of transshipment between lines of different gauge would not exceed the cost of transport over ten miles of railway, and the practical inconvenience would amount to no more than would be represented by this charge. The financial considerations against the adoption of the broad gauge throughout the country they held to be insuperable, but otherwise they would have wished to adhere to a uniform gauge.



The Duke of Argyll, then Secretary of State, replied to this on the 15th July 1869. He held that whatever may have been the strength of the considerations which had led the Government twenty years before to entrust the construction of railways in India to companies under guarantee, he was prepared to agree with the Government of India that the time had now arrived to take up a fresh position and to "secure for itself the full benefit of the credit which it lends, and of the cheaper agencies which ought to be at its command." As a whole, the proposals in the despatches above referred to were assented to, and the necessary surveys ordered to be made forthwith. He recognised, however, that the success of the proposals would depend in great measure on the "character of the machinery" created for the purpose of giving effect to them, and asked for detail on this point. One important feature of this despatch was in the acknowledgment of the inequality of the position between the guaranteed companies and the Government, in the division of net profits (above the guaranteed rate of interest), and in the assent to the proposal of the Government of India, that in future these profits should be divided with the Government, and the right to require the repayment of guaranteed interest should be abandoned. The various lines which had been proposed by Government were reviewed in detail, and generally approved, and those to be taken up in the first instance were to be dealt with on their relative importance, and "by the supply of labour to be obtained without detriment to agriculture, or to the progress of other public works."

The very important question of the gauge for the extensions of the railway system which were here contemplated is dealt with at length in Chapter IV ; but it may be stated that while the Government was prepared to carry out the trunk lines on the broad gauge of 5½ feet, it proposed to make all subsidiary lines on the gauge of one metre. Following out this idea, it was then decided that the lines intended mainly for military purposes, on the western and north-western frontiers, would



amply serve commercial and political demands if made on the metre gauge. This was at first assented to by the Secretary of State, but was strongly opposed by Lord Napier of Magdala, then Commander-in-Chief. The decision of the Government arrived at in 1871 was, however, at first carried out, on both the Indus Valley and the Punjab Northern Railways. Very strong opposition was soon shown in England, and persistent representations were made to the India Office that no saving worthy of consideration would result from the adoption of the narrower gauge. To this agitation the Secretary of State (the Duke of Argyll) deferred, and allowing the question to be reopened, the Viceroy (Lord Northbrook) and his Council recommended that both the lines above referred to should be made light broad gauge, *i.e.* with rails of 60 lbs. to the yard, basing their recommendations on the military and political bearings of the case. Early in 1874 the Duke of Argyll, while urging that he still considered that the metre gauge would have sufficed for these lines, gave way to the arguments adduced, but proposed a permanent way on the broad gauge of 45 lbs. to the yard. To this the Government of India demurred, and on being considered again by Lord Salisbury, who had then become Secretary of State for India, the proposals of the Government of India were accepted. A similar but less important controversy took place at this time as to the gauge for the system of railways which, passing through Rajputana, was to connect Delhi with Bombay, but the metre gauge was eventually adopted.

The original intention as to the character of these lines was, that they should be cheaply, yet solidly constructed, and this has been consistently and thoroughly adhered to. The "pioneer" American line is, for many reasons, impossible in India. The climate generally, the intensity of the seasons, the profusion of vegetable and insect life, and the general want of suitable timber, forbids, both on the score of first and of ultimate cost, the rapid and temporary construction which in



the Western States of America is equally possible and economical. During the Viceroyalty of Lord Mayo an impression became prevalent that if the American system could be adopted, matters would get on faster and the money go farther, and the Government was consequently led to engage the services of an able and experienced American engineer, in order to ascertain what amount of foundation there was for this view. After remaining two or three years in the country this gentleman (Mr. Miller) gave it as his opinion that the conditions of railway construction in India differed entirely from those in the United States, and that practically he had little or nothing to object to as regards Indian methods or designs, which in fact he readily adopted in the works he carried out in India.

— The metre gauge lines were started with a formation width (in bank) of 12 feet, increased subsequently to 14 feet, and latterly to 16 feet, with 2 to 1 slopes, carefully trimmed and grassed. The permanent way was laid at first with Vignolles section rails of 36 lbs. to the yard, spiked to transverse wooden sleepers, 6 feet long by 8 inches by 4 inches. Later on the weight of rails was increased to $41\frac{1}{4}$ lbs. (steel), and for roads with heavy traffic to 50 lbs. The State lines on the broad or standard ($5\frac{1}{2}$ feet) gauge were laid at first with a 60 lbs. rail, which was latterly increased to 75 lbs., and will shortly be 85 lbs. as the standard, with 100 lbs. rails for heavy inclines, on which engines of exceptional character are required. In every case the lines have been unusually well ballasted—an essential condition in a country where the heavy rainfall is confined to four or five months in the year, and where timber sleepers would be otherwise exposed to rapid destruction from white ants. In view of the failures that occurred on one of the earlier guaranteed lines, special care was taken in the design and execution of masonry, and all girder-work was specially designed to types for certain fixed spans, being of rivetted work throughout, and all being rigorously tested before being passed for traffic. On small spans the road was carried on transverse

sleepers, resting on the top flanges, and secured by hook-bolts. The works at stations were reduced to a minimum, and were in fact almost too cheap and incommodious. All the lines were single, and at ordinary crossing stations a loop-siding and short "lay-by" for loaded or damaged vehicles was all that was provided. At first, none of the lines were fenced, and all engines were consequently fitted with "cow-catchers." The axle loads of metre gauge engines did not in the beginning exceed 6 tons and that of waggons 4 tons, and both coaching and goods stock was four-wheeled, and fitted with central buffer and coupling combined. The minimum radius of curves was fixed at 100 metres, or say 335 feet. Latterly, as will be seen from the list of standard dimensions in the Appendix, the loads have been increased, and the ordinary four-wheeled waggon now carries 12 tons gross with a tare of about 3 tons, while bogie stock is in use on many lines. The average distance between stations averaged about 8 miles, and except at large stations the whole of the station staff were natives. The lines were, and still are worked under the "line clear" system, whereby the station-master at say A cannot start a train to B until the station-master at the latter has replied in the affirmative to a telegram asking if the line is clear, and on receipt of this message the fact is written on a form and handed to the driver of the train to be despatched. Speeds on the metre gauge were at first limited to 15 miles an hour, but at present mail trains run between stations at about an average of 25 miles an hour. On these trains European or Eurasian drivers are generally employed; but on goods and mixed trains natives (mostly Mussulmans and Parsees) are now largely employed in this capacity. They are found to be perfectly competent within a certain range, and while steady and sober to a far greater degree than the European or Eurasian, their emoluments need not be more than one-half of what is necessary for the European. Their weakness lies in an insufficient knowledge of English, and in want of "head" and judgment in positions of difficulty.



The new and important venture upon which the Government of India had thus been launched, involved both the collection and organisation of a large railway staff, and the determination of suitable machinery for control and supervision. As regards staff, a large and rapidly expanding department of Public Works offered a valuable nucleus of engineers, who could claim railway experience at home, and who, at the same time, had the great advantage of a knowledge of the country, the people, and the language. They were strengthened by some officers of the Royal Engineers, by direct recruitment from England, and by some officers from the guaranteed railway companies; and, on the whole, work was commenced under very promising conditions in this respect. Each line was placed in charge of an engineer-in-chief, the work being divided into "divisions," of from fifty to sixty miles in length, on each of which was the divisional engineer, with generally two assistants. They carried out the works as a rule themselves, by means of petty contractors or task work, although, in a few instances at first, large schedule contracts were given to European contractors. The arrangements for the general direction and control of these lines were rendered somewhat complicated by the fact that at that time the Local Governments had considerable powers in influencing the administration of the guaranteed lines, and that, consequently, it was deemed advisable that they should have even greater influence over the operations on State railways. The intention of the supreme Government was, however, that the control of both systems should eventually be centralised, and that the arrangements should tend towards this. The views of the Government of India were embodied in a resolution in 1871.¹ In this it was decided that the Consulting Engineers for the guaranteed lines, who until then had been associated with the Local Governments, should in future come invariably under the orders of the Government of India, and that in addition to

¹ Nos. 1883-1901, Railway, of 29th September 1871.



their present duties, they should exercise some measure of supervision over a portion of the new State lines. The remainder would be supervised directly either by the supreme Government or the Local Government concerned. These arrangements were not destined to continue in force very long, nor indeed was it intended that they should. Further reference will be made to this point.

— In the same year, 1871, the Government of India appointed as their Consulting Engineer for State Railways Mr. G. L. Molesworth, Mem.Inst.C.E.,¹ to whose marked abilities, experience, and judgment their success is largely due. In June 1872 Mr. Molesworth, after visiting all the lines then in progress, submitted a report in which the character and prospects of the projected State railways were discussed, and suggestions made as to their design and method of construction. He was of opinion that the adoption, for subsidiary lines, of the metre gauge, was a wiser course than that of making light lines, for light loads and slow speeds, on the standard gauge. He was supported in England by Mr. (now Sir) A. M. Rendel, as adviser to the Secretary of State in the provision of English material, and who, as one of the original proposers of the new gauge, and from his commanding position in the profession, has afforded invaluable service to the Government. The direction of the new lines was left largely at first in the hands of Mr. Molesworth; but it was evident that with the mass of technical detail to be disposed of at the outset, it was impossible to give adequate attention to general administration, as regards establishment, funds, stores, etc., and that the division of responsibility was showing a bad effect on the progress of the works. It was clear, moreover, that the volume of business in connection with both the State and the guaranteed lines, required some additional and special organisation in the Public Works Branch of the Government of India. Two courses were considered, one the appointment of a Director for State railways,

¹ Now Sir Guilford L. Molesworth, K.C.I.E.



who would be empowered to deal independently with the bulk of the references, and who would refer minor technical questions to the Consulting Engineer, or that a Board of Direction should be constituted, the members of which would be selected for their special qualifications in the different branches of railway working and construction. The former course was eventually adopted (in April 1874), the first incumbent being Lieutenant-Colonel E. C. S. Williams, R.E.¹ This appointment was necessarily one of great importance, requiring exceptional judgment and ability—qualities which fortunately were amply shown in the new Director. The initiation and organisation of a new branch of the public service, the supervision and control of extensive works all over the country, the arrangements for the working of open lines, the management and proper disposal of a large staff, and the judicious apportionment of the funds provided, involved duties which, with the steady expansion of operations, became apparently too heavy for one person. Consequently, in 1877, it was deemed necessary to increase the number of Directors, by dividing the country “into systems,” each in charge of a Director, and to add further a Director of Stores. The length of open line at the time was little more than 650 miles, the lines under construction about 1200 miles, and those under survey about 1100, and it would appear now that the increase was rather beyond what was really requisite; in fact these appointments were not approved by the Secretary of State, though not wholly for this reason. The correspondence which ensued on this subject ended, in September 1879, in the appointment of a Director-General of Railways, with a Deputy and Assistants for certain branches of the work. This post was combined with that of Deputy-Secretary to the Government of India in the Railway Branch of the Public Works Secretariat, while as Director-General the office carried powers similar to those which had been accorded to the Directors of

¹ Now Lieutenant-General Sir E. C. S. Williams, K.C.I.E., Government Director of Indian Railways at the India House.

the four "systems" as regards State lines. He was further charged with the supervision of the guaranteed lines, which were under the immediate control of the supreme Government, and had powers of sanction with regard to these lines similar to those pertaining to the Governments of Bombay and Madras. There was to be no alteration in the system then existing, as regards railways which were under Local Governments, either as to their powers or relations with the supreme Government; but a time was approaching when this point was to become a source of frequent discussion with the Home Government. The officer first appointed to the post of Director-General under these new conditions was Major-General J. S. Trevor, R.E.

The duplication in one and the same official, of functions which might in some respects be regarded as antagonistic, implied that the position was one of considerable difficulty; but in spite of its anomalous conditions, it has on the whole worked well, while it would have been scarcely feasible, without a very radical change of system, to have introduced any better arrangement. As Director-General alone, the duties were sufficiently heavy and responsible to have satisfied the most eager worker. He was charged with the direction of the surveys for new projects for State lines, the supervision and criticism of these projects when under preparation, the general control of the works and the establishment of them when in progress, and of the lines open for traffic. As Deputy-Secretary to the Supreme Government, on the other hand, instead of being an independent executive officer, with wide powers and direct responsibilities, he found himself acting merely as the mouthpiece of the Government of India, and thus not infrequently corresponding with himself as Director-General, and controlling and even criticising his action in that position. The explanation, and perhaps the sufficient justification for this dual appointment, was found in the more rapid disposal of business, in the curtailment of office establishment, and in the need, under the existing conception of the status of the



Director-General, of his being in close connection with the central Government. In this dual capacity it was a matter of some delicacy to decide in which of them it was desirable to take action, a distinct line having to be drawn between the views of the individual, as the executive functionary, and the collective opinion of the body representing the Government of India. In according approval to the creation of this appointment, the Secretary of State held, nevertheless, that it would not be necessary to continue it for any considerable time. He looked forward to the early probability of the Government of India being able to free itself, as far as possible, from direct executive functions, in regard to the railway system, and that eventually the construction, control, and working of the State lines would be made over to Local Governments. He thought that this should be the declared aim of the Supreme Government, that thus the functions of the Deputy-Secretary, as Director-General of Railways, would be "progressively restricted," and that the necessity for this separate office might possibly cease altogether. At this time, out of a total of about 8000 miles of State lines, either under construction or open for traffic, about 1800 miles were controlled by Local Governments, and it appeared to the Home Government that further decentralisation in this direction was not only possible but that it was out of the question, "that the railway system of a tract as large as the greater part of Europe, could be satisfactorily managed by a single central authority"; while efficient control over the details of railway administration on the part of the central Government was impossible, in view of the enormous and constantly increasing burden of other administrative duties. All that seemed necessary was to lay down general rules, and having settled questions of principle, the duties and responsibilities of supervising the management and controlling expenditure should be left to local authorities.

The Government of India did not find it possible to give their entire acquiescence or immediate effect to the course thus

indicated ; but early in 1888 measures were adopted, which were directed, as far as was then possible, towards fulfilling the intentions of the Home Government, but which did not materially diminish the duties or the responsibilities of the Director-General. The blot in the proposals or intentions of the Secretary of State was one of an essentially practical nature. It had not been seen that in order to obtain efficient supervision and control, in a matter so special and technical as that of railway construction and administration, it would be a necessary condition that duly qualified officers should be attached to Local Governments for this duty. It is not clear that this was fully recognised at the time, even by the Government of India ; nor was it indeed possible to provide for its proper fulfilment, in every case, without adding unduly to the cost of a provincial establishment. The weakness of local supervision, unaided in this respect, has been prominently shown in several ways, and in some important cases ; indeed so marked has been the evidence of this defect, that it has recently been in contemplation, on the grounds both of economy and of sound administration, to revert in great measure to a centralisation of authority in the conduct of operations on State lines. It may, however, be regarded as probable, that before many years have elapsed, the growth of private enterprise, and the making over of the working of all, or nearly all, the State railways to companies, may effect a considerable reduction in the scope of the functions now exercised by the Director-General, and that consequently the appointment may ere long disappear. It must be, however, admitted that there was ample justification for the principle insisted on by the Secretary of State ; for the earlier years of the administration of State railways showed an almost morbid desire to centralise supervision over the most trivial details. Every work had to be designed to certain types, irrespective of local conditions ; the dismissal of subordinates, or even menial native servants, was forbidden without sanction from

headquarters, alterations of rates or designs had to be referred in the same way, and as an instance of the extent to which this interference was carried, it is on record that the question of the "write-off" of three broken lamp glasses was not thought unworthy of disposal by the Supreme Government. A very great change has been effected of late years in this respect. Both the Engineer and the Manager have now very extended powers, with results which are in every way satisfactory, while the saving in delays, in correspondence, and in friction, is equally noticeable.

—Up to the period of the introduction of State railways nearly every appointment under the Government in India implied that, subject to good conduct, continuous service was to be looked for, and the grant of a pension or gratuity on retirement. The new departure, on what was essentially a commercial undertaking of great magnitude, rendered it necessary to resort to recruitment on a different basis for employes of all ranks, whose services could certainly not be engaged for an indefinite time, and to offer employment to men obtained from England on short term covenants of from three to five years; while to men—mostly natives—engaged in India, the conditions of discharge were fixed at one or, at most, six months' notice. Such service was to carry no claim to pension on retirement. The promulgation of rules to this effect led, naturally and speedily, to the recognition of the danger, especially in India, of enlisting large numbers of men to whom no other inducements were offered towards zealous or at least good service, than the hope of preferment, or the renewal of an agreement, and thus it appeared to be politic to afford to such employes some regular system of saving, and to encourage this by some contribution from the earnings of the concern in which they were engaged. This led to the institution of a State Railway Provident Fund (in 1880), under the regulations of which every European employed on the new footing was obliged to contribute one-sixteenth, and every native one-thirty-second

part of his salary to the Fund. To this the State added a contribution in the shape of one-half of 1 per cent of the net earnings of the railway each half-year, to be distributed amongst the contributors in proportion to their compulsory deposits, and the aggregate bonus so granted was not to exceed the contribution (compulsory) of the said period. In case such bonus was, on the other hand, considered insufficient, the Government declared its willingness to specially consider the matter. No money could be withdrawn from the Fund, except on the decease of the contributor, or on his leaving the public service, although under special circumstances money might be withdrawn temporarily, but had to be replaced in the Fund by small additional deductions from salary. In addition to compulsory deductions, voluntary subscriptions might be made to the Fund, on which interest was given, under Savings Bank Rules, at $3\frac{3}{4}$ per cent per annum. The effect of this Provident Fund has been in every way satisfactory and salutary, and has been beneficial both to the State and to the servants to whom its provisions apply. It has given men a definite interest in the success of the undertaking they are engaged on, it has relieved them in great measure from the anxiety inseparable from the terms of their service, and has afforded the State some degree of security for economical working and conscientious service.

— An important feature in the administration of Indian railways was established shortly after the appointment of a Director-General, in the shape of the assembly of the first of a series of conferences of railway officials, delegated from both State and guaranteed railways. The powers of control which could be claimed by the Government over the latter, under their contracts, did not include the right to interfere in minor matters of detail ; while in those in which it would have been possible to decide and to insist on, it was wisely held to be impolitic to take action without eliciting the opinions and advice of those who had to work under such rulings, and whose



hearty concurrence it was in every way desirable to enlist, in view of the interest which the State had in the successful results of these lines. It was, moreover, necessary that methods which had been adopted on State lines should be discussed and reviewed before a tribunal of experts, and, above all, that, as far as possible, an approach to uniformity of system in all essential points should be aimed at on all railways. The first meeting, in 1880, was eminently successful, and was presided over by the Director-General of Railways. A code of general rules was agreed to for the working of all lines, agreements were come to as to the interchange of rolling stock, and for recording charges for shunting and other miscellaneous engine service, proposals were discussed for the adoption of uniform classification of goods, and rules were agreed to for the preparation of half-yearly statistics. This latter point has been a salient and unique feature in Indian railways, and their value has been amply recognised both by railway officials and the general public, for whom the figures are compiled and tabulated in the annual reports of the Director-General. An obvious advantage of these conferences has been that of the personal knowledge and *rapprochement* between the railway officials, and the possibility of free discussion of most points. The introduction of the Government as an owner and operator of railways produced a keen and healthy rivalry between their officers and those of the companies, and many a difficulty which seemed insuperable to one side or other has been "thrashed out" at these meetings, and a decision arrived at and eventually adopted by both sides. In the earlier years of the State lines their working compared somewhat unfavourably with that of the older ones, partly on account of the rigid centralisation, to which reference has been already made, but largely owing to the incomplete state of the new lines, the want of rolling stock, and the poor and difficult country they passed through compared with the general character of the guaranteed lines. The Government of India were assailed from more than one



direction on this point, but resolutely defended their own men, urging that time must be given for due development; that it was unfair to compare results by the percentages of working expenses to gross receipts on lines which were being operated under such unfavourable conditions; and that the true criterion should be "whether the traffic had been moved with punctuality and despatch, and whether the net earnings of a line bear a reasonable proportion to its capital cost."¹ Without criticising this somewhat untenable doctrine, it may be safely asserted that the State official has amply vindicated the attitude then taken by the Government, and has shown that when given free scope and responsibility for results, he has been able to work as cheaply, and generally offer returns quite as satisfactory, as those of the older railways; while of late years those lines have drawn their principal officers from the staff of the State railways.

The changes of policy, which have from time to time been forced on the Government, have led to a variety of shapes in the growth of the Indian railway system. The list of the lines now open, with the mileage for each gauge, is given in the Appendix, which also shows the different conditions as to ownership, and the agencies by which each line or groups of lines are being worked at present. In this we see State lines worked by the State, State lines worked by companies, guaranteed lines, assisted lines, lines owned by native States and worked by them, and lines similarly owned but worked by separate agencies. The conferences, to which reference has been already made, have done much towards introducing some degree of uniformity in what may be called traffic questions in this medley; but until quite lately no steps had been taken in this direction in the almost equally important question of assimilating the practice of these different railways in the construction of their rolling stock. In 1889, however, this want was at length clearly recognised by the Government, and

¹ Despatch to Secretary of State for India in 1880.



arrangements were made for the annual assembly of a Committee of Locomotive and Carriage Superintendents, at which representatives would be found from all the principal lines, including those of the State. The functions of this Committee, which was to meet at some large railway centre (varying each year), were defined as follows, viz. : "That it should deal with all matters relating to the mechanical improvement of locomotive and carriage stock, and the design, construction, running, and repair of the same ; to determine what standards shall be adopted ; to arrange for such experiments as may appear desirable ; to publish papers of professional interest, and generally to consider and report upon all technical, administrative, or financial questions connected with rolling stock, workshops, station machinery, etc., which may be proposed by the members themselves, or by the Government of India." The decisions of this Committee are determined by the votes of the members, the voting power of each being based upon the number of axles in his charge. It is, however, understood, and is noted on the annual reports of the Committee, that all its decisions are subject to the approval of the agents, Boards of Directors, or other authorities for individual railways, and of the Government of India in all cases. The expenditure in connection with their meetings, the cost of experiments, models, and publications, is met by contributions from each line represented, in proportion to its mean open mileage for the year. Designs accepted by the Committee are divided into three classes, viz. :—

1. Absolute standards.
2. Provisional standards.
3. Approved designs.

The first is a design or dimension, the general adoption of which is prescribed by a Government order, such as automatic brake connections, or dimensions between centres of buffers. The second, or provisional standard, is a design or dimension, recommended for adoption, but which needs further trial to

warrant its general acceptance by a Government order. The last, an approved design, covers that of a design or pattern approved by the Committee as a good example of the best practice in India up to date, and, as expressed in one of the reports, it was expected that "from time to time for each class of vehicle fresh designs will be added to the 'approved' list, and designs which may be superseded will be removed." Thus it is hoped that by degrees the differing types and patterns on Indian railways will be reduced in number, inferior or obsolete designs will be gradually eliminated, and year by year *each* line in India will conform more nearly to the practice which by the common consent of *all* lines has been determined to be the best.

Until the institution of this Committee, each railway had been working pretty well on the isolated views and opinions of their Workshops' Superintendents for the time being, with the result that the tendency of their practice was more towards the multiplication and divergence of types than otherwise. In a small country, or in one more particularly in which facilities for the interchange of stock is not of vital importance, this evil would not demand the close attention of the Government ; but in India, with its vast distances, its constant liability to famine and frontier wars, both of which may involve the sudden and extensive movement and massing of stock of all kinds from perhaps one end of the Empire to the other, it was a matter of great moment to the Government of India to endeavour to introduce order into approaching chaos. The exigencies of military operations particularly required, moreover, that carriage and waggon stock should be adapted, as far as possible, to the proper transit of troops, material of war generally, and animals (not excluding elephants), without materially affecting their utility for the purposes of the public ; and that stock should be also of such design as would be suitable for movement over the heavy grades and sharp curves on the frontier railways. In this, and in other directions,



the Committee has already done most valuable work. The results of their meetings are compiled in the Technical Section of the Public Works Department, which is in charge of the Consulting Engineer for State railways to the Government of India, and from whence the annual report is issued, and the decisions of the Committee brought to the notice of the Government. This Technical Section is another extremely useful feature in the administration of Indian railways. It has been instituted with the intention of making it a centre for information on all technical questions in connection with Indian railways, of preparing and issuing types and standard dimensions of all kinds, and of editing and publishing original papers or translations on subjects of special interest.

Brief notice must be made of another feature of interest in the State administration of Indian railways, *i.e.* in the formation of a Railway Service Corps for military operations. The first movement in this direction was made in 1874, when it was proposed that an attempt should be made to train a company of native sappers on State lines to serve as engine-drivers, mechanics, and platelayers in case of need. Little, however, resulted from this, and later on, in 1887, a proposal was considered for forming military companies of railway staff from volunteers from European regiments serving in India. To this the military department gave full support, and arrangements were made with a view of forming a corps for service on the frontier; but difficulties of a legal nature arose against this proposal, and it eventually fell through. Previously to this, in 1885, in a despatch¹ from the Secretary of State on the subject of the taking over and working by the State of all the frontier lines, it was suggested that on such of those as had more particularly military or political objects it might be desirable to have them worked by a corps of this kind, on somewhat similar conditions to those which obtained in

¹ No. 10, Railway, of the 22nd January 1885.



Germany, France, Russia, and elsewhere. The Government of India foresaw, however, "the insufficiency for the object in view" of putting any one part of the system in exclusive charge of a corps of this kind, and proposed, as an alternative, that all the European staff on the amalgamated frontier railways, then owned and worked by the State, should be required, as the conditions of their engagements, to become volunteers, under the Indian system, and from them should be taken a picked body of men and officers, who should be enrolled, under advantageous conditions, for service either within or beyond the frontiers. This proposal was the one eventually adopted with the concurrence of the Home Government,¹ the corps while employed in the field being recognised as combatants, and "entitled to share in the privileges of that position." Subsequently the scope of the scheme was enlarged, so as to include natives for subordinate work and volunteers from other railways, to take the place on the frontier lines of the Railway Service Corps. Nominal rolls of all volunteers, both European and native, are now recorded, and the numbers and class of men entered show a very useful, or indeed invaluable, addition to the military strength in case of serious frontier trouble.

— Generally speaking, it may be said that the administration of railways by the direct agency of Government has, in all the essentials of working, differed in no material degree from that which has characterised that of the companies' lines; indeed it has been the aim in many directions, on the part both of the State and the companies, to assimilate their methods. In contrasting the results on both, it must be borne in mind that the lines in the hands of the guaranteed companies covered the best ground in respect of local and through traffic, while those constructed by the State directly, or those carried out under "assisted" terms indirectly, have

¹ Despatch from Secretary of State, No. 11, Railway, of 4th February 1886.



been designed either as feeders, as lines for military or political purposes, or for the relief of possible famines. The certainty of an adequate return on the capital expenditure on these railways was but in few cases expected, but indirect advantages, of scarcely less importance to the State, were their first recommendation. It might even be held that the Government had originally no definite intention of obtaining anything more from their railways than the interest borne on their capital cost, and that in the event of any greater return than this the excess might be surrendered in the shape of reductions in rates and fares. Of late years, however, very serious fiscal and financial difficulties have arisen, due to a variety of unforeseen causes, but mainly induced by the fall in the exchange value of the currency, with the natural or inevitable result that the Government has been forced to regard their railway receipts as a very considerable source of Imperial revenue, and that the State railway manager has been stimulated to keep as keen a watch on net profits as the most zealous employes of the companies' lines. This point will be referred to more fully in the concluding chapter.



CHAPTER IV

HISTORY OF THE GAUGE ON INDIAN RAILWAYS¹

IN 1845, two private associations under the designation of the "East Indian" and the "Great Indian Peninsula" Railway Companies² were formed in England; but the projectors found it impossible to raise the necessary funds for their proposed schemes without the assistance of Government. The application for this aid led to a protracted discussion; and it was not until 1850 that any practical commencement of railway construction took place in India. Early in 1849, it was determined to assist these Companies by guaranteeing to them a certain fixed rate of interest on their capital expenditure, and the deeds of contract with both Companies were sent out to India towards the close of the year. Paragraph 13 of the transmitting despatch runs thus: "With respect to the weight of rails and gauge of line to be employed on these railways, we are disposed to recommend those used by the North-Western Company here, namely, a gauge of 4 feet 8½ inches, and a weight of rails of 84 lbs. to the yard, as combining the greatest utility and economy." At that time Lord Dalhousie was the Governor-General, and Mr. W. Simms, C.E., the Consulting Engineer to the Government of India for Railways. The despatch was duly considered in India. The Consulting Engineer for Railways reported on

¹ The first portion of this chapter is largely a reprint of one on this subject in the Administration Report on Indian Railways for 1880-81, by Colonel W. S. Trevor, R.E., then Director-General of Railways in India.

² Mr. J. Danvers' Report on Indian Railways to end of year 1859.



the subject, and the Governor-General recorded a minute, both of which were transmitted to the Court of Directors with a despatch recommending that a gauge of 6 feet be adopted for Indian railways.

Mr. Simms recorded his reasons for recommending a wider gauge than 4 feet 8½ inches as follows :—

The wider gauge of 5 feet 6 inches, which I would recommend for adoption, will give 9½ inches more space for the arrangement of the several parts of the working gear of the several parts of the locomotive engines ; and this additional space will be more needed in India than in Europe, not only on account of the machinery itself, but it would lower the centre of gravity of both the engines and carriages, the result of which would be to lessen their lateral oscillation, and render the motion more easy and pleasant, and at the same time diminish the wear and tear.

The lowering of the centre of gravity, consequent on the adoption of the wider gauge, appears to me of great importance for another reason, namely, the fearful storms of wind so frequent at certain seasons of the year, and I think it very probable that in one severe nor'-wester, not to mention such hurricanes as that of 1842, the additional 9½ inches of width might make all the difference between the safety and destruction of the trains ; and one such accident attended, as it doubtless would be, with great loss of life, would probably retard the progress of the railway system in this country very considerably.

The following extract from Lord Dalhousie's minute refers to the question of gauge :—

32. The Court of Directors have recommended at the same time the use of the narrow gauge of 4 feet 8½ inches for the railway about to be constructed. Although the letter of the Court recommends, but leaves to the Government of India to determine, as to the gauge which should be adopted on this occasion, I consider the question to be one of such moment as to deserve a careful consideration and an authoritative and conclusive decision by the highest authority connected with the Indian Empire, who

alone can have access to that full information and extended experience which would make such a decision really and satisfactorily conclusive.

33. The British Legislature fell unconsciously, and perhaps unavoidably, into the mischievous error of permitting the introduction of two gauges into the United Kingdom. The numerous and grievous evils which arose from that permission are well known, and will long be felt throughout all England. The Government of India has it in its power, and no doubt will carefully provide that, however widely the railway system may be extended in this Empire in the time to come, these great evils shall be averted, and that uniformity of gauge shall rigidly be enforced from the first. But I conceive that the Government should do more than this, and that now, at the very outset of railway works, it should not only determine that any uniform gauge shall be established in India, but that such uniform gauge shall be the one which science and experience may unite in selecting as the best.

34. At one time this question was much before me; and although I should not myself attempt to offer an opinion on so vexed a question, yet I may venture to form one on the recorded views of men competent in every way to judge. The evidence which has been given before the Gauge Commissioners in 1846, and evidence which has been given from time to time before the Committees of Parliament, backed as it has been by very high authority abroad, is, I venture to think, sufficient to show that the narrow gauge of 4 feet 8½ inches (a measurement adopted originally at haphazard and from the accident of local circumstances) is not the best gauge for the general purposes of a railway, and that something intermediate between the narrow gauge of 4 feet 8½ inches and the broad gauge of 7 feet will give greater advantages than belong to the former, and will substantially command all the benefits which are secured by the latter.

35. The circumstances which have been brought forward by Mr. Simms in his report, applicable especially to this country, strengthen the reluctance which I feel to introduce the 4 feet 8½ inches gauge into India without a very deliberate reconsideration of the question with reference to India, under the direction of the Honourable Court, by the Board of the East Indian Railway



Company. I should not have felt satisfied that I had done my duty if I had not brought this question pointedly under the consideration of the Court, requesting them formally and finally to determine whether a wider gauge than the 4 feet 8½ inches ought not to be established in India, and whether the gauge of 6 feet which was recommended by engineers of eminence in England, and which was preferred also, if I recollect rightly, by M. de Pambour, should not be introduced on the experimental line in Bengal, and at the same time on the line which is in course of construction at Bombay.

In reply to this despatch, the Court of Directors were "disposed to think" a gauge of 5 feet 6 inches was the most suitable, and communicated that decision to the several Indian Railway Boards in London.¹ This decision did not coincide with the views of the authorities; and Major J. Pitt Kennedy, who had succeeded Mr. W. Simms as Consulting Engineer for Railways, suggested that further reference to the Court of Directors might be made. To this Lord Dalhousie assented, recording his opinion in a minute. The referring paragraphs are as follows:—

2. It does not appear from the despatch of the Honourable Court whether their determination to fix the gauge at 5 feet 6 inches was the result of any deliberate inquiry, or whether the figure was merely indicated as a mean between the extremes of the present narrow gauge and that which I took the liberty to suggest. If the Honourable Court have fixed upon 5 feet 6 inches for the Indian gauge on high recognised authority, and adhere to it, of course the Government has only to obey. But if it is not the case, the Court will pardon the importunity which, for their own present and future interests, urges them to take other counsel before they issue a peremptory mandate on this important point.

3. I know of old that particular figures have been fixed upon originally for a gauge, and for others proposed in substitution of it, without the author of the proposal being able to give any reason

¹ Despatch No. 46, from Court of Directors to the Government of India, dated 4th December 1850.

whatever for selecting the particular dimensions he has specified. The original narrow gauge of 4 feet 8½ inches was adopted for no other reason than because it happened to be the width of the colliery tramway on which locomotive power was first tried. When a general alteration was proposed, I recollect it being said that the principle on which one gentleman proceeded was to take all the different gauges, strike the average, and propose the figure that resulted as the best universal gauge. But I think that many good reasons were formerly given for the superiority of a 6 feet over the broad and narrow gauges, and I feel confident that many more could be given why that gauge should be selected for India, in preference to either of the original gauges, or to the one now selected by the Honourable Court.

4. At all events, if formal inquiry has not been entered into, I earnestly request the Honourable Court to permit the question to be so far reconsidered as to receive such reports and evidence on the subject as are suggested by Major Kennedy in the 15th paragraph of his present report. If this is not in accordance with the resolution of the Honourable Court, I shall much regret it; for I think that those who come after us will see cause to lament that the originators of this great system in the East did not profit so much as they might have done by the errors of their predecessors in Europe.

A communication to this effect was made to the Court of Directors,¹ but the recommendation to increase the gauge to 6 feet was not assented to, the Court of Directors saying that their decision had been "arrived at after a very careful consideration of the subject, and with the best opinions that we could obtain. That decision having been communicated to the railway companies who have entered into contracts for the execution of works, and for the provision of materials on the presumption that it is final, it would lead to much inconvenience and expense if any alteration were now permitted."²

¹ Government of India to the Court of Directors, No. 3, dated 7th March 1851.

² Court of Directors to Government of India, No. 45, dated 20th August 1851.

This decision was accepted by the Government of India, and the 5 feet 6 inches gauge was adopted as the standard gauge for the trunk lines in British India.

Early in 1857, the Court of Directors received several proposals for the construction of railways through Rahilkund and through the then newly annexed province of Oudh. The Court conceived that the time had come for ceasing to grant guarantees, and anticipated that the companies would have no difficulty in raising the necessary funds, with only moderate assistance from Government. These proposals were referred to the Government of India for a full report on the system of communications in that part of India, and suggesting that the kind of railway required should be distinctly indicated.

The Government of India suggested that, in preference to giving any more guarantees (the Court of Directors having intimated, meanwhile, that their expectations regarding the raising of money in the English market without a guarantee were unfulfilled), the State should undertake to build its own railways in Oudh.¹ Lord Stanley, who was Secretary of State when this matter came up for decision,² was not of opinion that Government should build its own railways, although he did not object to Government doing so on a small scale, such as connecting its iron works at the foot of the Naini Tal hills, etc., to the trunk lines. This policy was reiterated by Sir C. Wood, who succeeded Lord Stanley as Secretary of State, and the surveys for railways in Oudh were conceded to certain railway companies. The various proposals were reviewed in a note, dated 7th September 1861, by Lieutenant-Colonel H. Yule, then Secretary to the Government of India for Public Works. As regards the gauge, Colonel Yule remarked :—

The results of the cattle-draught line as here exhibited are more precisely favourable. Were the enterprise destined to remain

¹ Secretary of State to Government of India, No. 16, of 24th February 1859.

² Despatch from Secretary of State, No. 106, of 29th October 1859.

purely local, this might therefore be preferred. But such a line is not capable of great development; a large traffic derived from a wide extent of country would choke it, and demand an amount of live and dead stock excessively unwieldy and unmanageable.

If the cattle line were adopted, I adhere to the view expressed in 1855, that the gauge of the great railways should be altogether discarded. I can see no object in adopting it sufficient to compensate for the great additional weight which it will involve. Nay more. I would now extend the same views to the light locomotive line. I do not dispute for one moment that the great primary network of continental railways should be of one gauge. But we propose here quite a different style of work. Is it worth while, on account of the necessity of transshipment at two eventual points of contact—one of which will probably be on a great river (the Ganges at Cawnpore) likely to remain unbridged for a generation, and therefore a break in any case—to give up a great economy? In the English gauge controversies there was no separation, either in character or locality, between the lines of different gauge. It was but the predilection and practice of one set of engineers pitted against those of another set, on lines of the same character constantly interlacing. I must at the same time apologise for venturing such an opinion after the views of Government and of Lord Dalhousie have been so strongly expressed the other way.

The views were adopted by the Government of India, for in December 1862, when Mr. J. E. Wilson, the Agent for the Indian Branch Railway Company, reported to Government that he was "prepared to enter into definite arrangements for the construction of the roadways and the laying down of light railways thereon" in Oudh and Rahilkund, the Government of India, in passing orders on the reference, laid down the following conditions as regards the gauge :—

The first point that calls for remark is the gauge, to which you make no special allusion. . . . His Excellency in Council is of opinion that it will be essential to insist on the adoption of the standard Indian gauge of 5 feet 6 inches in the case of all



railways that are intended to form portions of main lines. But when the lines proposed are designed as *bonâ fide* tramways, that is, feeders to the main system but not essential parts of it, and when the expected traffic may warrant the outlay necessary for the formation of a full gauge line, the Government of India will sanction, as it has already done in the case of the Nalhati line, narrow gauge light lines, as a temporary expedient, on the conviction that such lines will be replaced by full gauge lines of a more substantial character whenever the development of the traffic renders such a change advisable. Where such narrow gauge lines are sanctioned, it will therefore be an advantage that they should be of the lightest and most economical description compatible with safety and the necessary degree of permanence, in order that there may be the least possible difficulty in the way of the change when it has become expedient, and that there may be no doubt as to their temporary and provisional character, and no risk of their being permitted to grow into a system which would compete with the system constructed on the standard or national gauge.

A slight digression here is necessary to give an outline of the objects of the Indian Branch Railway Company, and how they were affected by the question of the gauge. Of all the numerous companies that were projected for building light railways in India, this was the only one in Northern India that actually did proceed to make lines in India.¹ The original projector of this Company was Mr. J. E. Wilson; and it was his desire to lay light lines of railway on existing roads, but on a narrower gauge to that on the trunk lines, and thus act as feeders to the trunk lines. This idea seemed the only feasible method by which a large network of light railways could be spread over India; it was welcomed by Lord Canning as a probable solution of a most difficult problem, and was heartily backed by him during the latter months of his stay in India.³

¹ P. W. D. Pros., June 1864, No. 61 F.

² *Ibid.*, January 1868, No. 24.

³ Lord Canning was succeeded by Lord Elgin on 12th March 1862.

The first offer made by this Company was to construct a light line of 4 feet gauge on a road which the Government of Bengal were just completing between Nalhati station on the East Indian Railway and Azimganj, situated on one of the effluents of the Ganges and on the road to Murshedabad. This line was actually made without a guarantee, was opened for traffic on the 21st December 1863, and is still working on its original gauge. It was, however, bought by the Government in 1868, and has since been relaid to the standard gauge.

This Company then desired to make a light line between Cawnpore and Lucknow and other lines in Oudh and Rahilkund, and they actually did complete the Lucknow-Cawnpore line. The Company, however, found that they could not raise sufficient capital to continue their ventures, and appealed to the Secretary of State for a guarantee. This was eventually given, and the Indian Branch Railway Company merged into what is now known as the Oudh and Rahilkund Railway Company. But before permission to construct the Lucknow-Cawnpore line was given, the views of the Indian Government had considerably changed. Lord Elgin's Government would hear of no narrow gauge railways, except in such detached and fragmentary sections as held out no promise of being ever worked remuneratively from the heavy cost of the independent establishments. Indeed, it seems that Mr. J. E. Wilson himself had changed his ideas, for it is stated that he "readily accepted the 5 feet 6 inches gauge for all his lines," etc. This is to be found in the note written on the whole matter by Colonel Strachey immediately after Lord Elgin's death, and in which is embodied, as far as was known, Lord Elgin's opinions in the case.

Sir C. Trevelyan, in a minute dated 4th September 1863, also recorded a strong protest against making either light railways or railways on any other but a uniform gauge. The following extract refers to the question of gauge :—



I have always been of opinion that a fallacy is involved in the idea of light railways. The railway experience in England is greater than that of any other country. For many years after our railway system commenced, there was a constant craving after a cheaper kind of railway. Project after project appeared for the formation of light railways or tramways, but they were all dropped. Atmospheric and other eccentric forms of railway were attempted ; but, however specious the light railway principle might be, there was something in it which always led to its being abandoned on close examination ; and it never arrived even at the dignity of an experiment. Cheap agricultural railways are now being made in various parts of the country, but they are all solid, full-gauged railways, quite capable of bearing the rolling stock of the main lines with which they are connected, and their cheapness arises only from their being single lines ; from the landed proprietors asking moderate rates for their land, because they are convinced of the advantage to them of the railways ; and from the Parliamentary expenses having been reduced to a mere trifle.

Experience is so much better than theory, that I will not waste time in endeavouring to account for these results. The fact seems to be that a metalled road is a cheap medium of communication, and so also is a solidly constructed railway, but that a railway which is constructed in such a manner that it will not admit of the full application of the power of steam is not an economical medium.

The practical difficulties in the way of converting a narrow gauge into a full gauge railway are so great, that I look upon the power which it is proposed to reserve to the Government of ordering such a conversion to be entirely illusory. Earthwork, bridges, rails, rolling stock, all have to be constructed on a different scale for a narrow and medium gauge, and, as observed by the Honourable the President, in the event of conversion, a small section of the earthwork and ballast and some buildings will be all that would be saved.

The "longitudinal" line, of which the Indian Branch Railway Company desires the concession, is no branch but a main line more than 500 miles long, passing through some of the richest and best populated provinces of the Empire. Even the branches to Cawnpore and Koorja, connecting this line with the East

Indian, are so important, that the Government very properly stipulated that they should be laid on the standard gauge. The commonest foresight, therefore, requires that the main line as well as these branches should be laid on the standard gauge; and if the Branch Railway Company obtains the concession, it must change its name and concentrate its efforts on the construction of an entire system—main line and branches—on the splendid field which will be placed at its disposal. The Indian standard gauge is 5 feet 6 inches. The gauge fixed upon by a Government Commission for the Irish railways as the smallest which could with advantage be adopted was 5 feet 3 inches.

The negotiations with the Indian Branch Railway Company were reported to the Secretary of State in April 1864 (Sir J. Lawrence, Governor-General), and the despatch was accompanied by all the notes and minutes that had been written in Lord Elgin's time. The arrangements made by Lord Elgin's Government were assented to generally; and the following extracts from the despatch will show that a gauge narrower than 5 feet 6 inches was deprecated, unless nothing better could be got without a guarantee :—

13. In contemplating the construction of light railways of the 5 feet 6 inches gauge, Lord Elgin had never intended that the *engines* of the heavy lines should run on them. It was well understood that in England engines of one company are rarely run on the line of another, and that the practical working of railways is not compatible with such a system of interchange of engines, and that all that is ever requisite is the interchange of waggons and carriages. A 5 feet 6 inches gauge light line was accordingly considered to mean a railway capable of carrying at a moderate speed the ordinary passenger and goods vehicles in use on the Indian main lines.

14. Having these views, Lord Elgin authorised an arrangement being made with Mr. Wilson, by which the character of the Oudh and Rahilkund lines was to be defined, by declaring that the maximum load per wheel should be $3\frac{1}{2}$ tons, and the maximum speed 15 miles an hour. This will allow of the ordinary waggon