

Consulting Engineer : Genesis and role in shaping Indian Railways

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“Probably, there never was a country with a people so rich and intelligent, in which roads were so few and travel so difficult.”

Synopsis: Consulting engineers were appointed by Government of India to exercise control & supervision over Railway companies as lack of government regulation & unbridled laissez faire had resulted in frenzied speculation and railway mania in England. They were required to ensure utmost economy, efficiency & safety in construction and operation of Railways, what Dalhousie had termed as a *stringent and salutary control*.

All designs, drawings, plans, estimates and indents were finally approved by the Consulting Engineer. The engineers of the companies originated everything, while the Government's engineers, mostly military engineers with no experience in Railways, 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.

Railway officials resented the unnecessary interference and were quite frustrated to find the focus of Consulting Engineer on petty issues, paltry allowances, bungalows and keeping Railway engineers on tight leash instead of concentrating on areas involving high expenditure. They were being called upon from morning till night for papers, returns, explanations and document that too from an official whom they considered professionally incompetent to evaluate the plans and supervise their works.

They had welcomed the supervision and criticism of Government Engineer, but, in practice they were subjected to, what they called, *minute torment and mischievous supervision*, which retarded the progress of their operations, sapped their energy and created an environment of depression.

Consulting engineers, despite the constant conflict with Rail companies, had played a stellar role in construction and running of railways in India. They had not only organised and approved the surveys & alignments but had also displayed remarkable foresight in taking path- breaking decisions for construction of Railways in India: introduction of latest 88 lbs rails, construction of Iron Bridges instead of Wooden Bridges; embankments and brickwork for a double line, but carrying only a single line of rails, structured record keeping & reporting system by MCDO, approving rules for train operation, etc, to name a few.

Consulting engineer was vested with enormous powers: total financial, technical and regulatory control & supervision; all financial and technical matters required his sanction, making him most powerful official in Railway.

Consulting engineers considered themselves as not mere government officials appointed to oversee and superintend construction of railways in India but the final arbiter, the mentor and custodian of national interest. They believed that cost and construction of Railways, a vast scheme of highest importance for future generation and future public property, national works ,should not be left to the opinions of Railway engineers who could be influenced at the behest of the promoters of the work.

This paper traces the origin of professional clash between Railway engineers and consulting engineer rechristened as Railway inspector after formation of Railway Board and

subsequently re-designated as CRS & its impact on working of Railways.

1. Historical perspective

Consulting Engineers or Government Engineers were appointed by Government of India to exercise control & supervision over Railway companies.

The Directors of the East India Company , recognising the haphazard way, in which Railway schemes had been launched in England, 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.

Lack of government regulation and unbridled laissez faire had resulted in frenzied speculation and railway mania in England. No real checks existed on the financial viability of a proposed railway line. Economic policy of laissez faire left the design and construction of railways almost entirely to private player and, there was no central planning or coordination of railway expansion in Britain.

Wiser from the experience of construction of early Railways in England and other countries, 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.

On the important issue of construction of Railways in India, Lord Dalhousie wrote in his famous minutes that Railways in India should be made by joint-stock companies, under the control and supervision

of the Government. *“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”*. —**Lord Dalhousie minutes 20th April 1853**

Accepting the suggestion to entrust the construction of railways in India to private companies, the Court observed that *“Government officers should be required to exact the utmost economy consistent with perfect safety and efficiency in the original construction of the line and in all buildings and work of every description connected with it.”*

The initial policy of Government of India for the construction and of Railways was the establishment of guaranteed Railways companies of English domicile.

Control over the operation of these companies was at first secured through appointment of Consulting Engineers of guaranteed railways. Some years later local consulting engineers were appointed for the exercise of control over guaranteed Railways and over state owned Railway in the construction of which the state had been financially interested and land has been leased to companies for working. ---
History of Indian Railways: Constructed and in Progress, 1964

These officers (Consulting Engineers/Government Engineers subsequently re-designated as Government Inspectors after six decades when Railway Board was formed and subsequently as CRS) combined the duties of supervision and control on behalf of

government of India and of Inspector under Government of India Railway Act.

2. Guidelines for supervision

Broad guidelines were issued for exercising the control with the view of preventing delay and collision:

“All questions of general importance shall be referred to Government for decision. Under the above will be included the general direction of all lines of railway, the position of stations, the general arrangements of the more important stations and works; but after the general sanction of the Government has been given to any project, all questions of detail may be disposed of, within the limit of the original sanction, by the Consulting Engineer.

All matters of routine, or payments, or acts in accordance with rule, precedent, or special agreement duly sanctioned, or undisputed contingent expenditure, may be dealt with by the Consulting Engineer without reference to Government. All designs, estimates, and indents, whether for works or for establishments - Supervision, for carrying into effect objects already generally sanctioned by Government, may also be disposed of finally by the Consulting Engineer.

The Consulting Engineer may, without reference to Government, reduce the amounts of indents, or direct designs or proposed operations to be modified, if he thinks it necessary; but the Agent in such cases, if dissatisfied with the decision of the Consulting Engineer, may always request that the matter may be referred for the final orders of the Government.

In all cases in which the Consulting Engineer has any doubt as to the decision to which he should come, the question should be referred to the Government for orders.

When the sanction of the Consulting Engineer is given to any proposals of the Agent, in which both of these officers concur, excepting in those matters of great importance specially excepted above, the sanction so given shall, so far as the Government is concerned, be considered final.

The Consulting Engineer shall submit to the Secretary of the Government a weekly schedule of his proceedings, in the usual form, in which shall be explained concisely the nature of all sanctions or directions given under the authority now granted to him."

These powers were subsequently conferred upon every Chief Government Railway Officer in each of the local Administrations.---
Report to the Secretary of State for India in council on Railways in India 1859

"That any alteration in the position of the line of levels desired by the Government Engineer during the survey, or subsequently, and also the whole of the works or designs for the same, be submitted for his approval, previous to being carried into execution, and that during their construction...."

Government Engineer were vested with powers to condemn any portion of the work or works, if they were not being constructed in accordance with the specification drawn up or approved by him in the first instance.

"That the following regulations or bye-laws be adopted as a basis upon which such modifications, amendments, or alterations, as shall, from time to time, appear desirable shall be made, at the suggestion, or

with the concurrence of the Government Engineer, and that provision shall be made for this purpose in the Company's Deed". - Copy of Heads of conditions of Contract suggested as a Basis upon which to frame the Arrangements between the Government and the Railway Company.

3. Supervision leading to excessive interference and parliamentary enquiry

Railway companies agreed to the benefits of government rights of supervision as it provided a system of neutral checks and balance; a system to regulate the extravagant expenditure and cost overrun, but, they resented extremely rigid bureaucratic approach and plethora of paper works.

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. Committee of the House of Commons was appointed in 1858 to inquire into the causes that have led to the delay in the commencement and construction of Railway works. The committee also went into cause of delay due to Government supervision at home and in India. This afforded an opportunity to both sides for airing their grievances.

One of the witnesses in parliamentary enquiry stated:

“ I am very anxious that the Government Engineer should come and criticise our works; but I think that the minute torment that takes place at present is very mischievous, and so mischievous, that we were nearly losing a most valuable chief engineer from the extent to which it is carried.”

During the deposition to the parliamentary committee the frustration of Railways in dealing with consulting engineer was narrated by Mr. D. I. Noad, the Secretary to the East Indian Railway Company.

“Chairman--I wish to ask your opinion as to the advantage or otherwise of the Government supervision, and its general effect in India?”

Mr. D. I. Noad: —looking at the relations who exist between the two bodies, I think it is reasonable that the Government should possess the right of supervision, and moreover, I think the supervision would be highly advantageous to the railway company if exercised rationally. I think it is carried to too minute a point in India; I think our engineers are unnecessarily interfered with.

I think they are called upon from morning till night for papers, returns, explanations and document, which materially retard the progress of their operations, and moreover it creates a kind of depression, and a certain want of energy which is unsatisfactory. I think that is the great evil of the supervision as exercised.”

It was only the extreme desire on the part of the Government officers to carry the work forward, and their *extreme courtesy and gentlemanly bearing* throughout these proceedings, that total deadlock could be averted and work continued somehow.

Railways had taken immense pains to collect together one of best staffs of engineers but they felt that most of their practical experience

was frittered away under the existing system of supervision by government engineer.

Railway engineers were quite peeved as their plans were approved by a person who did not have technical competence and did not inspire any professional respect. They wanted an experienced civil engineer and not a military engineer to vet their plan and works.

“Do you consider that, if the supervising officer, on the part of the Government, had been himself a civil engineer, he would have required so much explanation? —I know I should not.

You can state that as a civil engineer?—certainly; because men who are brought up to it all their lives, see the fitness of things more readily than those who are learning as they go, to a certain extent.” - Evidence of Mr. Bruce during parliamentary enquiry

Extracts of minutes of evidence taken before the select committee on East India Railway:

“Can you inform the chairman of the Committee whether they have felt a certain amount of soreness and irritation in consequence of being superintended by gentlemen for whom they have the greatest respect as gentlemen, but whom they do not consider qualified to superintend the works which they were constructing, from the want of the unnecessary education for that purpose ?

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.

—that is so. Every one of our engineers who has been sent out, arrives in India with the belief (whether it be so or not is not for me to say), that his practical experience is far greater than that of the man to whom he has to submit his plans, and he really has, rightly or wrongly, no confidence whatever in the decision arrived at by the engineers of the Government, who are military engineers. I think that most of the irritation which undoubtedly has existed, and still exists, would have been avoided, had the supervision been entrusted to the hands of a civil engineer.”

The control of the Government exercised, through consulting engineer, was pushing the cost up as the focus of consulting engineer was on checking little petty items of expenditure which hardly had any bearing on the overall cost while his suggestions led to substantial increase in overall cost.

Extracts of evidence given by Mr. Bruce during parliamentary enquiry:

“Was the control of the Government exercised, generally speaking, with a view of keeping down the cost of the line?—No.

Will you give us your reasons for stating that?—With scarcely an exception, the supervision of the Government was exercised in a contrary direction.”

“State some instances in which the Government supervision was not exercised in keeping down the cost ? — I would mention that, as a general rule, the supervision of the Government officer was exercised in checking little petty items of expenditure which had no bearing, to any extent, upon the price of the work ; but when he did act in any matter of importance, it was, without exception, in the direction of making it cost more money instead of less ;

for instance, near Madras, when we first began, we had a gradient going down from the Canal Bridge at 1 in 528 ; that gradient the

Government engineer required me to alter and to make level for a considerable distance, say two miles, the gradient itself being a short one of about half a mile. Of course that involved the necessity of considerable embankments, extra coat of bridges and so on. I am not calling in question the expediency of that alteration, but merely saying that where I endeavoured to make work cheap, the Supervision of the Government was in the direction of making it dear.

There was another instance in district 5, where we had rather a heavy rock cutting to encounter. I wanted to save time because labour there was very scarce, and it was a district frequently visited by cholera. I intended to make rather a sharp curve round it at a radius, I think, of about half a mile: that was objected to, and we had to go through the hill. Then, again, in district 7 we had some gradients, the depth of which I forget but the Government engineer made me alter them to make easier gradients at a great increase of expense and loss of time. Then in respect to district 16, I wanted to make some sharp curves to avoid a heavy cutting down to Malabar, at a radius of about 25 chains ; that was objected to, but, I think, I was ultimately allowed to do it.

Railway officials were quite frustrated to find the focus of consulting engineer on petty issues, allowances, bungalows and keeping Railway engineers on tight leash instead of concentrating on areas involving high expenditure.

"I mention these cases as showing the directions which the supervision of the Government engineer took: but in other matters, when money was in question, or work was in question, it was generally with regard to small things ; for instance, the bungalow question, which occupied a great deal of time. I can mention one or two other instances. I had about 3 rupees disallowed upon peons' belts. Then there was a considerable controversy about the allowance of 10 rupees, the expense of a time Keeper. The engineers were at that time spending of course, considerable sums of money, and it was necessary that we should have a time-keeper. I mention that to show that the economy

was, in small and trifling things, only calculated to irritate men who had the spending of thousands of pounds."

Colonel Kennedy, himself once a consulting engineer, accepted during the enquiry the need of posting competent professional for consulting engineer.: "but I think it would be a very great evil indeed to get a man not in every way fitted for the important task, because he acts as a sort of arbiter between the professional men of every company, and that requires great judgment and very high qualities indeed."

The Committee, however, came to the conclusion that "though some cases have been cited in which the Government superintendence has been productive of vexation and annoyance to the railway officials," "no very material delay in the construction of the various lines appears to have resulted there from." They believed "that the progress of railroads under construction in India will bear favourable comparison with that of English lines."

They considered that the main impediments to progress consisted in the necessity of transporting the materials from this country, the difficulties of conveying them to their destination when they reached India, the effect of the climate upon European constitutions, the failure of contractors, and the lengthy correspondence between the Directors in London, and their agents in India, and the various Government Departments. They showed that the Santhal rebellion in 1855, and the subsequent mutiny, were productive of most serious delays; and that the natural features of the country present formidable difficulties, and involve the construction of vast works, which necessarily postponed the completion of the whole lines.---

Report to the secretary of state for India in council on railways in India, to the end of the year 1859. By Juland Danvers, Esq., Secretary, Railway Department, India Office.

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 brought a temporary rapprochement and 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. ---

RAILWAY POLICY IN INDIA-- BY HORACE BELL

Railway officials would in future again raise the problems faced in dealing with government engineer before the committee that was formed under the Chairmanship of Thomas Robertson, appointed by Secretary of State for India in Council in 1901 to evaluate the performance and working of the Railway Board. Railway officials highlighted the great inconvenience and difficulty experienced by them in carrying out their duties owing due to the excessive interference of the Government Consulting Engineers in India and their Deputies, and the Government Examiners of Accounts, in all matters connected with the administration of the Railway.

It was stated: *"Earlier government control was only limited to principles and main items of expenditure, which had now developed into a close examination and criticism of the most petty details, and that fault was found about the most trifling matters and opinions expressed how things might have been done differently, which led to no good and were only a source of irritation."*

It was pointed that Government Control, exercised by the Consulting Engineer, was not effective due to his absence from his headquarters for several months in the year and the frequent changes in the staff of the Consulting Engineers' offices rendered it impossible for these officers to acquire a thorough knowledge either of the railways or of the Company's officers or their methods of working, and resulted in vexatious references, and necessitated the whole ground being gone over again with each new arrival.

Their long absence prevented the verbal discussion of matters with the responsible controlling officers, caused delay-sometimes serious delay—in the conduct of business and often led to misunderstanding and friction.

“The present Consulting Engineers are a body of conscientious, zealous, and capable gentlemen, and I can only speak of them with high praise; but under the new order of things which has arisen since the contracts were revised, a continuance of the system of control now exercised through the Consulting Engineers can only result in hampering development and retarding progress.” **REPORT ON THE ADMINISTRATION AND WORKING OF INDIAN RAILWAYS.**
By **THOMAS ROBERTSON, C.V.O., Special Commissioner for Indian Railways.**

In his report (1903), Sir Thomas recommended setting up of a Railway Board consisting of a President or Chief Commissioner, and two other Commissioners all of whom should have a practical knowledge of Railway matters and should be 'men of high railway standing'. The Board should be assisted by a Secretary, a Chief Inspector of Railways.-
Robertson's Report, 1903, pp. 53-54.

The Railway branch of the Public Works department of the Government of India was abolished and the control of the railway was

transferred to a Railway Board consisting of a chairman and two members. The Board assumed office in March 1905, and in the same month the Indian Railway Board Act was passed investing the Board with all powers of supervision and control of government under the Indian Railways Act of 1890.

The abolition of the Consulting Engineers and the appointment in their place of Government Inspectors were also suggested. These were given effect to in a modified form in 1908.

The working of Railways and existing arrangements were again reviewed by the Acworth committee in 1920-21.

During the deposition, it was pointed out that the consulting engineer was more than the guardian of Government interests, he was also the adviser and counsellor of the agents, who at all times had at hand for their assistance in difficult or unusual circumstances, a trained official versed in railway matters of a wider scope than that covered by any individual railway, and also conversant, as no company's agent could be, with the methods and propensities of Government.

The control expected by Government from their Consulting Engineers was of too meticulous and hide-bound a nature; the consulting engineers were not always well chosen, and their strength was not always properly maintained (the exigencies of Government service in the railway department did not always allow of sufficiently experienced men being appointed, or of their number being adequate for their duties.

Under that system the consulting engineers to Government were also the Government inspectors of railways, and it was largely due to this

confusion of "Administration " and " Control " that the system fell into disrepute

Extracts from the report are reproduced below:

"The "Consulting Engineers" at the headquarters of company's railway administration were in constant touch with the company's officials and nothing was done without their knowledge and consent, and once a month an official meeting was held at which all the heads of- the departments attended and all sanctions and other important matters were put on record.

These most useful officers were abolished and Government Inspectors were appointed in their place whose only duty was to report on the state of a railway. A copy of the last inspection report of the Bengal and North Western Railway is enclosed and it need only be further explained that the Agent, Heads of Departments and District Officer who are all very busy men spent several weeks in attending on the Government Inspector on his Inspection tour and have subsequently to go through the monumental report item by item and deal with it. Are the results obtained worth the work involved?"-- Report of the Committee appointed by the Secretary of State for India to enquire into the administration and working of Indian Railways.VOL. I IV.

Consulting Engineers : early days and their contributions in shaping Railways

Consulting engineers, though widely criticised, were instrumental in development and construction of Railways in India. Mr. Simms had the unique distinction of being first consulting engineer being appointed in India on 13 September,1845, who was succeeded by Major J.P.Kennedy on 1st Nov 1850, followed by Major W.E. Baker on 11 March 1851,and Captain H. Yule on 6th November, 1857, all drafted from engineering crops of military. Post of consulting engineer India remained till 1860 and a new post "Joint secretary to the Government

of India and consulting engineer Bengal government” was created after abolishing post of consulting engineer to the Government of India. Capt C. J. Hodgson was the first incumbent of new post.

Subsequently consulting engineers were appointed in other provinces: Lieutenant W. H. Greathed was appointed as Deputy Consulting Engineer on 10 Jan. 1855 for North Western Provinces, Major J. G. Medley was appointed as Deputy Consulting Engineer on 30 Sept. 1858 for Punjab. Captain George Sim was appointed Consulting Engineer for Madras on 27 Feb. 1860 and on 26th June 1850, Captain J. H. G. Crawford was appointed as Superintending Engineer, for Bombay.-- . **—Accounts and papers of the House of Commons 1864**

Mr. Simms, the first consulting engineer of Railway, not only organised and approved the survey but also decided alignment of EIR but in a very pragmatic manner. In a path breaking decision, he recommended the experimental line should be constructed with embankments and brickwork for a double line, but carrying only a single line of rails due to funds limitations. This method of construction seemed to him applicable not only to the Railroad between Calcutta and Raneegunge, but also to all proposed extensions in India, and this advice has in practice been acted on.

In another communication dated January 20, 1846, MacDonald Stephenson sought the views of Consulting Engineer on use of cast iron annealed rails, which was firmly declined by Mr. Simms.

“Dear Sir,—I have to request your attention to the subject of the rails and sleepers to be made use of in the construction of Railways in this country; and, with reference to the former, I enclose a communication from Mr. R. Brunton, the Engineer of the Porto Novo Iron Works, upon which I would beg the favour of your opinion z—lst. Whether you will

under the circumstances permit the use of Cast Iron Annealed Rails, and 2nd, if you think it expedient to make trial of them, to what test Will you decide upon their being previously subjected?"

Simms in letter dated 27th January 1846 replied:

"As respects the Sleepers, I cannot, at present, say what kind of timber will be best suited for the purpose. I am strongly impressed with the idea that Payne's process will be found to answer, but it remains to be seen whether Sleepers, so prepared, will be cheaper than importing them from Maulmain, of a quality that will need no preparation; these, being matters of cost, more particularly concern you.

As to Rails, I have not fully made up my mind what weight of rail I shall think it best to advise for adoption, and, therefore, cannot inform you; this, however, will not interfere with your proceedings, as it is not likely your Company will enter into contracts for rails previous to their obtaining the concession of the line from the Government: and iron is more likely to fall in price some time hence than otherwise. I may, however, state that Cast Iron Rails will not have my sanction."

Consulting engineers were not only government officials appointed to oversee and superintend construction of railways in India but they were the final arbiter, mentor and custodian of national interest who felt that 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 were too frequently induced to adopt inexpensive expedients, wise or unwise, to overcome pecuniary or other difficulties at the behest of the promoters of the work.

" 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."- **Memorandum to Madras Government by Mr. F. G. Simms, the Consulting Engineer to the Government of India, in 1845.**

Consulting engineer F.W.Simms in his report to F.J Halliday Secretary to the Government of India, showing remarkable foresight and vision, strongly recommended for adoption of 84 lbs Rails, the heaviest of any yet employed in England, for improved comfort and safety.

"but with respect to the weight of the rails, 84 lbs. to the yard, I would also most strongly recommend their adoption, as combining the greatest utility and ultimate economy.

By the adoption of lighter rails a saving might be effected in the first instance, but impressed as I am with the importance of having a substantial Permanent Way, I am inclined to disregard any such saving in comparison with the whole cost, and the solid advantages to be derived from having good upper works to the Railway, both as to ultimate outlay and comfort and safety in travelling."

- **Selections from the records of the Government of India(Home Department),-report on the proposed Railways in Bengal - Calcutta Carbery, Military Orphan Press 1853**

Chief engineer Turnbull had wanted to make wooden bridges in EIR for their cheapness and expediency but consulting engineer Mr. Simms did not permit the use of wood due to its rapid decay and advised to construct Iron Bridges instead. Mr. Turnbull, on 6th Aug 1850, submitted plan for box Girder Bridge, with three 80 feet spans, to cross the Bailee Khal, but consulting engineer in UK James Meadows Rendel advised him to use, recently patented, still to be proven for large scale Rail road application, Warren truss design instead; an

example of using the latest technique in Rail road construction. --
History of Technology, Volume 11, edited by Norman Smith

Railway Company sought the advice and approval of Consulting Engineer for finalising their plan. One of the most difficult engineering challenges was bridging the river Sone, the task was so challenging that at one time EIR wanted to drop the idea of bridging the river and terminate rail lines at both ends.

“Dean Sir—Conformably with your kind permission, and that of the Government, that upon occasions on which the Railway Company might require your counsel and advice, they might apply for it, I have now the pleasure to address you, and request your opinion upon the course most advisable to be adopted, in regard to the examination of the bed of the River Soane” .-- **Copies of Correspondence between Mr. F. W. Simms, consulting Engineer, and Mr. R. Macdonald Stephenson, Managing Director of the East Indian Railway Company., East Indian Railway Company, Sasseram, 30th Nov., 1845.**

Major J. P. Kennedy. Consulting Engineer to the Government of India, introduced the system of monthly reporting of the progress, ubiquitous MCDO, we find in all the Railway offices.

“I am persuaded that the most effectual mode of ensuring an efficient and economical application of funds in the construction of engineering operations is that of bringing under the frequent periodical revision of the controlling authority an abstract view of the total expenditure incurred, together with the corresponding progress effected in the work, and the consideration of all matters affecting its interests.

I am anxious therefore at once to establish this principle at monthly intervals, and accordingly I beg now to offer the first Monthly Progress Report of the operations under the East Indian Railway Company, consisting of an abstract of the outlay from the commencement, as furnished by the Accountant’s Department, and an abstract of the

work effected, as furnished by the Engineering Department, showing the whole of the expenditure and the corresponding work done from the commence”.

- **Selections from the records of the Government of India(Home Department),-report on the proposed Railways in Bengal - Calcutta Carbery, Military Orphan Press 1853**

Mr. G. L. Molesworth was appointed as Consulting Engineer for State Railways in the year 1871, whose designs and methods of construction are credited with success of State Railways. 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.

Some Consulting Engineer went overboard in discharging their duties, Consulting Engineer of Madras suggested establishment of toll booths on roadways as adjoining Rail lines were failing to attract adequate passenger traffic. The idea was dropped after massive public protest.

“Official Floundering.”—The Madras Times thus described a foolish attempt to benefit the Railway at the expense of the public:—

“Captain Johnston, the Consulting Engineer for the Madras Railway, finding the western trunk road is preferred to “the line”, suggests the establishment of toll bars on the road. This would simply amount to a prohibitive tariff on the use of the highway! It is not sufficient to interfere in the disposal of property; legislation must point out the road by which the property is to be conveyed to market! Whether the traffic takes the right way or not, it is quite clear that the Consulting Engineer has lost his. The Government kindly undertake to put him right in the following terms; — **THE ENGINEER'S JOURNAL, RAILWAY, August 13, 1859**

Nit picking by his predecessor Consulting Engineer *for the Madras Railway* Colonel Pears was reported by media “*Colonel Pears however,*

the late consulting Engineer at Madras, seems to have been a man who was never in his element except when fault-finding.”- THE ENGINEER'S JOURNAL November 18, 1858

In practice it was the relationship between consulting engineer and agent/chief engineer of railway company that decided the effectiveness of the arrangement: *“It is a strange thing that in the North-west and till lately in Madras, there has been a great deal of unpleasantness, while in Bengal matters have been tolerably smooth, and in Bombay they could not have been more felicitous. This leads to the conclusion that everything depends on the men chosen by the Government to fill the post of Consulting Engineers. Such a delicate post requires not only men of acknowledged ability, but men possessed of great tact, urbanity, and sterling good qualities”.*

Never a truer word been spoken that had a wide resonance amongst Railwaymen and which still remains highly relevant.

1. Railways of India by Edward Davidson, London 1868.
2. History of Indian Railways: Constructed and in Progress, 1964
3. Railway Poljcy in India-- By Horace Bell, M.Inst. C.E. Consulting Engineer For State Railways to The Government Of India
4. Extracts from the Minutes of Evidence taken before the Select Committee on East India Railways, 1858
5. Selections from the records of the Government of India(Home Department),-report on the proposed Railways in Bengal - Calcutta Carbery, Military Orphan Press 1853
6. Copies of Correspondence between Mr. F. W. Simms, consulting Engineer, and Mr. R. Macdonald Stephenson, Managing Director

of the East Indian Railway Company., East Indian Railway Company, Sasseram, 30th Nov., 1845.

7. Accounts and papers of the House of Commons 1864
8. REPORT ON THE ADMINISTRATION AND WORKING OF INDIAN RAILWAYS.
By THOMAS ROBERTSON, C.V.O., Special Commissioner for Indian Railways.
9. Report to the secretary of state for India in council on Railways in India 1859
10. History of Technology, Volume 11, edited by Norman Smith
11. Lord Dalhousie minutes 20th April 1853
12. Report of the committee appointed by the Secretary of State for India to enquire into the administration and working of Indian railways: presented to Parliament by command of His Majesty. / East India (Railway Committee, 1920-21).
13. THE ENGINEER'S JOURNAL, RAILWAY, August 13, 1859
14. THE ENGINEER'S JOURNAL November 18, 1858
15. Simmons, J., The railway in England and Wales 1830-1914, p. 48
16. Reed, M. C., Investment in Railways
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