E.C. No. 10

ESTIMATES COMMITTEE

Twenty-first Report
1955-56

MINISTRY OF RAILWAYS

(1) Arrears of Track Renewal.
(2) Shortage of Steel on Railways.
(3) Shortage of Sleepers on Railways.
(4) Procurement of and Self-sufficiency in Rolling Stock.

LOK SABHA SECRETARIAT
NEW DELHI
February, 1956.

TWENTY-FIRST REPORT OF THE ESTIMATES COMMITTEE ON THE MINISTRY OF RAILWAYS

Page (ii) H(d); read 'labels' for 'Rabels'.
Page 2, para 6; lines 1 & 2; insert '-' between 'sleepers' and 'wooden'.
Page 5, last but one line; add '*' before "The Alweg Bahn".
last line; read 'a skyroad' for 'akyroad'.
Page 9, Para 27, line 22; read 'also' for 'olso'.
Page 10, Para 31, line 3; insert 'and' between 'Europe' and 'of'.
Para 32, line 14; read 'Railways' for 'ailwaRys'.
Page 11, Para 34, line 1; delete 'the' before 'China'
Para 35, line 2; insert 'to' between 'over' and 'the'.
Page 12, Para 38, line 18; insert 'the' between 'of' and 'two'.
Page 18, Para 59, line 25; read 'on' for 'no'.
Page 19, Para 61, line 6; read 'War' for 'war'.
Page 20, Para 67, line 4; read 'Indiscriminate' for 'indiscriminate'.
Page 22, Para 73, line 5; add ',' after 'all'.
Page 23, Para 74, line 11; read 'Centre' for 'centre'.
Para 75, line 1; read 'Constitution' for 'constitution'.
Page 25, Para 81, line 12; delete ',' after 'public'.
Page 31, Para 100, line 6; read 'Adviser' for 'Advisor'.
Para 103, line 8; add '7' after 'Affairs'.
Page 34, Para 115, line 3; read 'carriages' for 'carraiges'.
Page 40, Para 129, line 6; read 'feel' for 'fell'.
Page 46, last line; read 'exhibit' for 'exhibi'.
Page 53, S. No. 4, line 2; read 'Renewal' for 'Renewa'.
S. No. 5, line 7; read 'Railways' for 'Railway'.
Page 55, S. No.14, line 2; delete 'of' between 'quality' and 'steel'
Page 57, S. No.25, line 10; read 'replacements' for 'rep acem nts'.
Page 61, S. No.37, line 4; read 'seasoned' for 'reasoned'.
Page 63, S. No.47, line 4; read 'additional' for 'additiona'.
S. No.49(b) line 9; read 'for' for 'of'.
Page 66, S. No.58, line 5; read 'Locomotive' for 'Locomotives'.
Page 67, insert Serial No. '60' against reference to para No. '133'.

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Shri H. N. Trivedi—*Deputy Secretary.*

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*Elected Member with effect from the 7th December, 1955 *vice* Shri R. Venkataraman resigned.

INTRODUCTION

I, the Chairman, Estimates Committee, having been authorised by the Committee to submit the Report on their behalf present this Twentyfirst Report on the Ministry of Railways on the subjects:

(1) Arrears of Track Renewal;

(2) Shortage of Steel on Railways;

(3) Shortage of Sleepers on Railways; and

(4) Procurement of and Self-sufficiency in Rolling Stock.

2. The Committee wish to express their thanks to the Chairman and Members of the Railway Board and other Officers of the Ministry of Railways for placing before them the material and information that they wanted in connection with the examination of the estimates. They also wish to thank the representatives of the Ministry of Food and Agriculture, the Forest Departments of the States of Assam, Bombay, Madhya Pradesh and Uttar Pradesh, the Director-General of Supplies and Disposals and the representatives of the Ministry of Commerce and Industry for giving evidence before the Committee which helped the Committee to come to certain conclusions especially with regard to the problem of Steel and Sleepers. They also wish to thank the representatives of the Federation of Indian Chambers of Commerce and Industry, New Delhi, the All India Manufacturers' Organisation, Bombay, the All India Federation of Transport Users' Associations, Bombay, the National Federation of Indian Railwaymen, New Delhi, Sarvashri H. N. Kunzru, M.P., Shanti Prasad Jain, L. P. Misra, K. C. Bakhle, I. S. Puri, V. P. Bhandarkar and B. B. Varma for giving their evidence and making valuable suggestions to the Committee.

NEW DELHI;
The 18th January, 1956.

BALVANTRAY GOPALJEE MEHTA,
Chairman, Estimates Committee.

I

INTRODUCTORY

In their first two Reports on the Railway Ministry, the Committee have dealt with the subjects, "Operation on Indian Railways" and "Railways' Second Five Year Plan".

2. During the study tours of the Sub-Committee, it was noticed that there were a number of instances, where speed restrictions had been imposed by the Railways due to arrears of track renewal. There were also instances of the works already taken in hand being held up due to short supply of steel. It was also noticed that there was a chronic shortage of sleepers (of steel, cast iron as well as wooden) on Indian Railways. The Committee, therefore, decided to give their early attention to these matters. These three subjects, *viz.* the arrears of track renewal, shortage of steel and shortage of sleepers are, therefore, dealt with in this Report. Lastly, the Committee have dealt with in this Report the question of procurement of Rolling Stock by Indian Railways and the steps taken or proposed to be taken by them to attain self-sufficiency in this respect.

II

ARREARS OF TRACK RENEWAL

A. Schedule for Track Renewal

3. Track Renewal is done on condition and circumstances basis and no schedule as such has been laid down for track renewal for different standards of tracks. However, for the purpose of the estimate, it is assumed that rails last on an average 60 years in all, wooden sleepers 12—15 years, Cast Iron sleepers 40 years and steel sleepers 35 years.

4. Sleepers are renewed when they cease to fulfil their function in the track of maintaining the gauge. The main criterion for deciding whether the rails need replacement is the amount and nature of wear of the rail. Generally speaking, when the wear of the rails is more than 5 per cent. on the main lines, renewals become necessary. The rails may require renewal even earlier due to introduction of heavier axle loads.

5. Re-sleepering and changing of rails are not undertaken together, though sometimes it may be necessary as a matter of convenience to do so. Re-sleepering, even though not due on condition basis, may be undrtaken because:—

(a) the existing sleepers may not suit the new rails; or

(b) the sleepers may become due for renewal after a few years and it is advantageous to do complete track renewal together.

In either case the serviceable released sleepers are used elsewhere.

B. Arrears of Track Renewal

6. There has been shortage of steel (including rails and sleepers wooden, cast iron and steel) on the Indian Railways with the result that the track renewal programmes on Indian Railways have been in arrears.

7. The Railway Ministry were unable to give particulars of arrears of track renewal at the beginning of each year for the last four years. The reason offered was that the indents were made within the budgetary limits each year and hence it was difficult now to determine accurately the total arrears of track renewals on condition and circumstances basis year by year. The Committee consider it unfortunate that this information should not have been available with the Railway Ministry, especially in view of the fact that more than 1,600 miles of track was under speed restrictions due to arrears of track renewal. They recommend that in future the information about the arrears of track renewal as well as speed restrictions should be obtained and incorporated in the Annual Report of the Railway Ministry Railway-wise and gauge-wise.

8. The arrears of track renewal on 1st April, 1956, (*i.e.* the beginning of the Second Five Year Plan) will be approximately as under:—

	B.G.	M.G.	N.G.	Total (in miles)
Rail renewals . . .	3,169	3,774	290	7,233
Sleeper renewals . . .	2,835	4,554	..	7,389

9. The actual track renewal programmes executed from the years 1952-53 to 1954-55 is shown below:—

Year	Complete Track Renewal			Rail Renewal			Sleeper Renewal			Total (in miles)
	B.G.	M.G.	N.G.	B.G.	M.G.	N.G.	B.G.	M.G.	N.G.	
1952-53	543	292	19	67	56	27	234	336	44	1,618
1953-54	321	316	6	113	37	17	106	417	53	1,386
1954-55	388	169	10	74	31	43	119	390	25	1,249

10. At this rate, it would take several years before the existing arrears are wiped out, and in the meantime more track would become due for renewal. The tempo of track renewal will have, therefore, to be increased substantially, if the position is to improve. The Committee are definitely of the opinion that topmost priority should be given to wipe out arrears of track renewals. There should be proper planning at the initial stage, so that the materials required are all secured simultaneously and utilised and the grants in the budget for track renewal are not allowed to lapse.

C. Speed restrictions due to arrears of track renewal

11. One unfortunate effect of these arrears of track renewal has been that speed restrictions have been imposed for considerable lengths of the track to avoid possibility of any danger to trains.

12. The position regarding the speed restrictions that had been imposed on this account, as on 1st April, 1952, 1st April, 1953, 1st April, 1954, and 1st April 1955, is given below:

Year	Due to Rails		Due to Sleepers			Due to rails and sleepers		Total mileage
	B.G.	M.G.	B.G.	M.G.	N.G.	B.G.	M.G.	
1-4-1952	400	392	..	396	..	493	14	1,695
1-4-1953	351	434		231		427	272	1,715
1-4-1954	381	446	..	260	..	422	311	1,820
1-4-1955	293	492	42	413	26	216	302	1,784

From these figures it will be seen that restrictions due to arrears of rail renewal have been increasing every year on the Metre Gauge. Also, though the total mileage under speed restrictions due to both factors has shown an improvement on the Broad Gauge, there is considerable deterioration on the Metre Gauge, during 1955, when compared to 1952.

These figures also indicate that about 5 per cent. of the total route mileage of Indian Railways has been under speed restrictions for more than four years. This is a position which cannot be viewed

with equanimity. The cramping effect of such speed restrictions on the ever increasing flow of traffic can very well be imagined. The Committee recommend that the Railway administrations should be directed to concentrate their programme of track renewal specially on those lengths of track, where such restrictions are in force and vigorous efforts should be made to withdraw these speed restrictions by 1st October, 1956, if not earlier.

D. Track Renewal Programme during the Second Five Year Plan

13. The Committee understand that tentatively it is proposed to earmark Rs. 125 crores for track renewal during the Second Plan and that it is proposed to undertake renewal of 2,000 miles of track per year. The tentative programme of track renewal Railway-wise and gauge-wise is given below for the Second Five Year Plan period:—

Railway	Cost (Rs. crores)				Mileages			
	Total	B.G.	M.G.	N.G.	Total	B.G.	M.G.	N.G.
South Eastern	12·5	12·0	..	0·5	1,000	900	..	100
Southern	13·0	6·0	7·0	..	1,200	300	900	..
Central	24·0	21·0	3·0		1,400	1,200	200	..
Western	19·0	9·0	10·0	..	1,700	700	1,000	..
Northern	27·0	21·7	5·0	0·3	1,700	1,100	570	30
North Eastern	17·0	..	17·0	..	2,300	..	2,300	..
Eastern	12·5	12·5	..	..	700	700	..	..
Grand Total	125·0	82·2	42·0	0·8	10,000	4,900	4,970	130

The amount and the mileage allotted are less than what the individual Railways have asked for. The Committee are definitely of the opinion that this programme must not be slowed down on any account. Such slowing down will only result in more engineering restrictions which will hamper the flow of traffic.

E. Miscellaneous

(a) Welding of Rails

14. The Committee understand that welding of rails is still in the initial stages in the country. If welding could be properly done, it would prove very useful eventually, but no detailed plan had yet been drawn up in this connection, as the quotations from the various firms were very high. The Committee understand that extensive welding was being undertaken departmentally in connection with the Calcutta electrification scheme which would give an idea of the cost and other factors connected with the same. The Committee regret to observe that no satisfactory progress has been made in this connection despite the fact that the Indian Railway Enquiry Committee had recommended the adoption of welded rails on a sufficiently large scale. As rightly pointed out by the Kunzru Committee, the advantages of using welded rails are many. The Com-

mittee suggest that the Railways should be asked to chalk out a definite annual programme so that the practice of using welded rails may be extended rapidly on Indian Railways.

(b) *System of Track Inspection*

15. Track inspection is carried out by the Permanent Way Inspectors who go on trolley over the rails and examine the condition of the track. In certain Railways the Hallade Track Recorder is used for determining the suitableness of the track which records the unevenness in the track by a system of movements of the pendulums. It draws graphs with the help of levers which show the defects and the results are communicated to the Assistant Engineers and Permanent Way Inspectors for remedying the defects. The Kunzru Committee had recommended that the Railways should obtain records of the condition of track by the use of the test cars or Hallade Instrument twice a year and that the annotated records should be in the hands of the Permanent Way supervising staff expeditiously. Not much progress appears to have been made in this direction. The Committee strongly recommend that this practice should progressively be adopted and made universal on Indian Railways at a very early date.

(c) *Mono-Rail System*

16. The Committee understand that a Mono-Rail System called the "Alweg Bahn"* has been experimented for a distance of about 10 miles successfully in Germany. It is claimed that the Mono rail has reduced the initial cost and the working expenses to about 60 per cent. of the existing system and that the steel required is also about 80 per cent. less. The Committee understand that the Railway Technical Officers abroad have been asked to study and submit a report on its working, and also that the Railway Research Centre has been asked to undertake a more comprehensive study. The Committee also understand that some experiment was made in this connection in the former state of Nawanagar on a small scale. The data should be collected from the Government of Saurashtra or from the local Railway authorities. The Committee consider that the matter deserves careful consideration and if it could be introduced in the conditions prevalent in our country, it might be tried on certain selected routes, *e.g.* in the proposed ring-railway around Delhi.

(d) *Replacement of heavy rails*

17. The Indian Railway Enquiry Committee had recommended that investigations should be made with a view to evolving lighter and modified sections of rails as standards for the Indian Railways. In the Report of action taken on the Report of the Indian Railway Enquiry Committee, the Ministry of Railways had stated as under:—

> "The present policy of the Railway Board is to limit axle of locomotives to 18½ tons on the Broad gauge and 10½ tons on the Metre gauge and the speed to 60 and 45 m.p.h. respectively on certain sections.

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*"The Alweg Bahn" is a mono-rail type of train and runs on an elevated structure, skyroad—which consists of reinforced concrete beams mounted on concrete pylons.

Investigations are already in progress and the intention is to finalise on rail sections weighing about 77 lb. for the Broad gauge and 48 lb. for the Metre gauge. This would possess the strength of the present 80 and 50 lb. sections respectively. Such results, if attained, would save about 15,000 tons of steel annually in routine rails renewal programme worth about Rs. 50 lakhs annually. A similar technique would apply to steel sleeper improvement."

18. The Committee understand that the Railways had considered the use of lighter rail sections. Further investigations indicated that the proposed rail sections would not be sufficiently strong for heavy main line traffic. As a result of this investigation and on expert advice incorporating experience in other countries, it was finally decided that the 90 lb. redesigned rail section for Broad Gauge and the 55 lb. for Metre Gauge should be tried. The Committee understand that the redesigned rail sections had been laid in the track in certain portions of the Northern and the Central Railways, and that the Research Directorate will be conducting tests on them and that only after the results are known, final conclusions could be drawn.

19. The Committee recommend that, apart from experiments on the redesigned rails, intensive experiments should be carried out in selected areas to see whether rails of lesser weight cannot be utilised with the same amount of efficiency, particularly, in view of the fact that steel is in short supply in the country.

III

SHORTAGE OF STEEL ON RAILWAYS

A. Introductory

20. There are thousands of items required by the Railways for which use of steel is necessary. The locomotives which haul the loads are made almost entirely of steel. That is why they are often figuratively called "Steel Houses". The wagons used for carrying goods are also made of steel. The material used for the manufacture of passenger coaches is also mostly steel, whereas the rails on which the rolling stock moves are made entirely of steel. Similarly, considerable amount of steel is required for Bridgework, their parts and fittings and fastenings, heavy and light structurals including bars for building construction and reinforcement works, signalling and interlocking material etc. Proper maintenance of Rolling Stock and track as also further construction and development of Railways are very closely interlinked with the availability of steel and any short supply of this item is bound to have serious repercussions on the progress and efficiency of the Railways.

B. Procedure of procurement

21. The various items of stores required by the Railways are obtained either by manufacture in Railway Workshops or by purchase from outside sources. Items in Railway workshops are manufactured against requisitions placed by indentors and by stores depots. The latter maintain stocks of regular moving items and make recoupments in accordance with the standard stores procedure. Items purchased from outside sources are procured by Controllers of Stores and by the D.G.S. & D., New Delhi. The powers of purchase of Controllers of Stores are, however, limited for D.G.S. & D. items *viz.* upto the monetary limit of Rs. 10,000 in each case. Most of the Railway requirements come within the purview of the D.G.S. & D.'s list.

22. Anticipated requirements of steel are, however, assessed in advance for each quarter of the year and the Ministry of Commerce and Industry make the quota allotments. Demands supported by the Quota Certificate are placed upon the producers or the controlled stockists. Requirements on producers are placed through the Iron and Steel Controller and those on the controlled stockists are placed direct by the Railways. In case the Iron and Steel Controller is not in a position to place the requirements on the producers, he may make allotments from the imported steel and undertake further imports.

C. Steel supply position on Indian Railways

(a) *Items of short supply*

23. The categories of stores, short supply of which materially affected the Railways are as follows:

(i) Track materials, rails, fish plates, steel sleepers and points and crossings;

(ii) Sections of steel required for manufacture of loco, carriage, wagon components;

(iii) Structural steel and plates required for manufacture of wagons by wagon builders; and steel for girder bridges;

(iv) Light and heavy structurals; and

(v) Sections of steel required in connection with Inter-locking and signalling equipment.

(b) *Extent of short-supply*

24. The following table shows the quantity demanded, quantity of steel for workshop and maintenance purposes supplied and the percentage of short supply under each of the years from 1951-52 to 1954-55:

Year	Quantity demanded (tons)	Quantity supplied (tons)	Percentage of short supply
1951-52	62,083	43,420	30
1952-53	68,004	46,741	31·2
1953-54	1,07,008	55,657	47·8
1954-55	1,46,188	73,407	49·7

From these figures it will be seen that the percentage of short-supply is consistently increasing. Failures of supply as expressed in the percentages given above do not give a clear idea of the extent to which the workshops production was held up as it often happens that the entire erection of a structure is postponed, even if a few components are not received according to schedule. Secondly, the non-availability of supplies to the particular sizes and specifications required often necessitates the extra work of converting the bigger sizes by machining etc. to the sizes required, at the cost of heavy expenditure in material, machine hours and labour costs. These factors together with the vagaries in supply of steel often result in the inflation of the stores balances, either due to even available materials not being drawn because all the material required is not forthcoming or at times higher quantities having to be stocked to safeguard supplies of vital items, particularly to units such as Chittaranjan Locomotive Works so that they can ensure continuity of production.

25. Appendix I contains a statement for the years 1949-50 to 1954-55 giving (i) quantity of steel demanded (ii) quantity received, and (iii) percentage of short supply on each individual Railways.

Appendix II gives instances on each Railway where non-supply of steel retarded the progress of work on Railways.

(c) *Lapsing of Funds due to short-supply*

26. It was not possible for the Railways to indicate with absolute precision the extent to which funds allotted for works lapsed due to shortage of steel. A very large proportion of the lapses of funds indicated below, was due to this factor:

(In Lakhs)

Year	Bridges	Percentage of lapse to provision	Structural and other works under Development Fund	Percentage of lapse to provision	Track renewal	Percentage of lapse to provision	Total	Percentage of lapse to provision
1952-53	60·03	54·5	527·32	30·5	70·09	4·9	657·44	20·2
1953-54	71·55	63·1	523·57	18·1	295·89	22·9	691·01	21·6

It would be seen from these figures that more than 20 per cent. of the funds allotted for (i) bridges (ii) structural and other works under Development Fund, and (iii) Track Renewal lapsed mostly due to short supply of steel. The serious situation arising out of the arrears of Track Renewal has already been commented upon earlier; and yet, in spite of these arrears, the funds allotted for track renewal work could not be utilised in full. What is more, the percentage of lapse under "track renewal" has increased substantially for 1953-54, when compared to 1952-53.

(d) Reasons for shortage of steel

27. The Committee understand that the main reason for the heavy short supply of steel was that demands had shot up particularly during the last two years of the First Five Year Plan. The Ministry of Commerce and Industry was able to meet the requirements of all the departments reasonably well upto 1953, (though not promptly enough) but since 1954 the requirements of steel of all the departments have increased considerably, and the required quantity of steel could not be imported to the full extent because the prices prevailing in foreign countries were higher than the prices prevailing in India. The Iron and Steel Equalisation Fund did not have sufficient balance to subsidise the entire requirements while the indentors including the Railways were not ready to pay the import price. With a view to meet the steel requirements of all the departments, the price of indigenous steel had been increased by Rs. 100 per ton which would give roughly Rs. 8 crores to subsidise imported steel Even though funds are available at present, the availability of steel is rather restricted and foreign suppliers are not only quoting very high price but also are not giving delivery according to the schedule. The Railways would have been able to get steel in larger quantity had they been prepared to pay the world price in the early part of 1954 which was comparatively favourable and when the import position was olso somewhat easy. Even then the Railways got about 90 per cent. of whatever iron was imported. The present indigenous production of steel is about 1·2 million tons per annum, while the demand is estimated at about 2·5 million tons.

28. The Committee were given to understand that the problem of supply was only for the next three years *viz.* 1956-57, 1957-58 and 1958-59. In 1959, the supply position would definitely improve with the first extra production from the Tata Expansion Scheme in the latter half of 1958 and also with the first production from the Rourekela Steel Plant in the beginning of 1959.

D. Future Steel Requirements of Indian Railways

29. The current arrears and requirements of the Railways upto 31st March, 1956 are about 3,92,000 tons of steel. The Committee hope that both the Ministries will make endevours to secure these supplies by 31st March, 1956, so that the Railways can start their Second Five Year Plan with a clean slate.

30. Appendix III gives a summary of the requirements of steel and pig iron by the Indian Railways during the Second Five Year Plan period.

31. As regards the first three years of the Second Five Year Plan the real problem was one of acceptance of *Thomas Quality of steel which was being used in Europe of **Millimetre section steel which was available in large quantities provided the Railways were prepared to pay at the world market price. The Ministry of Commerce and Industry expect to supply the Railways the following quantities during the next three years:

Year	Indigenous	Imported (at subsidised rate)	Imported (at world price)
1956-57	3,00,000	2,00,000	Balance requirements.
1957-58	3,50,000	2,00,000	,,
1958-59	5,40,000	2,00,000	,,

* The process of manufacture of Thomas Quality Steel is somewhat different from what is known as the Open Hearth Quality. The sulphur and the phosphorous contents are slightly more in the former.

** In U.S.A. and Great Britain, the specifications of various designs are laid down in Foot-Pound-Second (F.P.S.) System of measurement. On Indian Railways, which closely follow British specifications, the F.P.S. system is in vogue. Most of the Continental countries follow the C.G.S. (Centimetre-Gram-Second) system of specifications.

32. Regarding pig iron, the Committee understand that the supply position would remain difficult for the next two years at least. As against the yearly demand of 1,60,000 tons it would be possible to supply 35,000 tons in 1956-57, 60,000 in 1957-58 and about, 1,20,000 tons in 1958-59. Pig-iron however, could be imported at about Rs. 150 per ton in excess of the Indian price from foreign countries. However, as pig iron is not available at reasonable prices, it would be better to import steel bars instead of pig-iron and press them into sleepers. In view of the importance and the urgency of the demand, the Committee feel that it would be desirable to import steel bars rather than slow down the programme of the expansion of the Railways. The Committee were informed that there was not enough capacity in India for pressing imported bars into sleepers, but if the ailwaRys could give an assurance that they would use steel sleepers in preference to cast iron sleepers for the next five years, pressing plants could be installed by the private sector which was ready to undertake the work. The Committee recommend that Government should examine this suggestion and invite the representatives of the trade to a conference where this question can be discussed and a satisfactory settlement arrived at.

E. Acceptance of Steel of Thomas Quality and in Milli-metre sections

(a) Thomas Quality Steel

33. As regards the Thomas Quality Steel, the Committee understand that though the process of manufacture is different from the 'Open Hearth' quality, there has been improvement in the technique of manufacture in recent years. The Thomas Quality is being used extensively in Europe where it is easily available. The Committee understand that the Railway Board had already agreed to take 10,000 tons of Thomas Quality rails from France as an experimental measure, after deputing their technical experts to France and satisfying themselves about the quality of the steel. If the results are satisfactory, the Committee would urge the extensive use of Thomas Quality of Steel. As steel of Thomas Quality is cheaper and is reported to be available in good quantity, the Committee consider that the cost of imports would be less if the Railways could also accept Thomas Quality steel.

(b) *Steel in Milli-metre Sections*

34. The Committee understand that both the U.S.S.R. and the China have agreed to supply 1,00,000 tons of steel each, a part of which would be available in the first half of 1956 and the balance by the end of 1956. The Committee were informed that the entire quantity made available by the U.S.S.R. and China could be placed at the disposal of the Railways provided they agreed to accept the steel which will be in metric size.

35. As regards the adoption of the metric system, the Committee understand that the difficulty in switching over the system is one of re-designing. The present 90 lb. sections had been rolled to British Standard specifications. Dimensions in the metric system would not be the same. The Committee understand that the Metric sections could be adopted in new lines and in doublings of lines provided the difference was not material. In this connection the Committee would like to point out that the approximate cost of conversion in the process of changeover from the existing system to the metric system would be about Rs. one crore or Rs. one and a half crores as far as Indian Railways are concerned. As pointed out in the 'Memorandum on the Introduction of Metric System in India', published by the Planning Commission even if the actual cost turns out to be double as much, it would represent an insignificant proportion of the developmental expenditure of the Railways during the next Plan. Even if imports continue to be made from the countries which are on the F.P.S. system the Committee would suggest that the new equipment, that might be ordered from them could be arranged to be supplied as they do for continental countries who are on the metric system. The existing equipment need not have to be discarded because of the changeover but only conversion tables will have to be provided. In some cases, extra provisioning would be necessary over a period of time so as to have spare parts manufactured under both the systems. This has already been visualised by the Railway Board in their letter to the Planning Commission on the adoption of Metric System in the Railways, but the advantages of speedy switchover are obvious.

36. The representative of the Ministry of Commerce and Industry assured the Committee that there would be no difficulty in meeting the full requirements of steel of the Railways during the Second Five Year Plan, if the Railways could see their way to accepting Thomas Quality and Milli-metre section steel also. In view of the great importance of this question the Committee held joint discussions with the representatives of the Railway Ministry and the Ministry of Commerce and Industry where the former agreed to have the matter examined expeditiously, and give an early decision.

37. The Committee are glad to note that the Railways have now decided to accept steel of the Thomas Quality for certain purposes and in Milli-metre sections. In view of this decision the Committee now expect that the Ministry of Commerce and Industry will ensure timely and adequate supply of steel to Indian Railways during the Second Five Year Plan.

F. Miscellaneous

(*a*) *Liaison between the Railway Ministry and the Ministry of Commerce and Industry*

38. The Committee were informed that adequate liaison exists between the Railway Board and the Iron and Steel Controller for ensuring that the Railways got the steel required by them. So far as building of wagons is concerned, a monthly meeting is held by the Iron and Steel Controller at which the representatives of the Railway Board, the wagon builders, and the producers are present. As regards other requirements, the Railways have a Liaison Officer attached to the Director General of Supplies and Disposals in Delhi, who reports the shortages to the Iron and Steel Controller. Apart from this liaison the Controllers of Stores of the various Railways approach the Iron and Steel Controller for the supply of steel. The Committee are, however, not fully convinced that adequate co-ordination existed in the past between the two Ministries. The Committee are, therefore, glad to learn that a Liaison Officer is being posted by the Railways in the Iron and Steel Controller's Office itself to watch timely supplies of steel to the Railways. The Committee recommend that there should be periodical meetings between the representatives of two Ministries to review the position of steel supply to the Railways.

(*b*) *Substitutes for steel*

39. The Committee understand that in the Research Station at Lonavala, the Railways are already experimenting the possibility of using more and more prestressed concrete in place of steel. The Committee also understand that experiments with aluminium are being made in the building of coaches. As reduction in the use of steel is an important matter, the Committee suggest that intensive research should be made so that suitable substitutes might be found. Similarly, a drive should be initiated for economising the use of steel. For instance, lot of steel is being used to provide covered sheds over platforms. There appears to be scope for economy in this respect as also in other directions.

(*c*) *Foundries and Furnaces*

40. The Railways have only one Foundry at Ajmer which is being utilised to its full capacity (50 tons a month) and cannot be expanded

further. The Committee understand that another Foundry is proposed to be set up at Chittaranjan and the matter is under preliminary examination. The Committee were informed that it would not be economical to instal a foundry in each Railway Zone as it should be situated either at a place where steel was available or near the big consuming centres. The Committee suggest that the setting up of a Steel Foundry at Chittaranjan should be expedited. The Committee recommend that the feasibility of setting up of a few more steel foundries at suitable places should carefully be examined by the Railway Ministry.

41. The Committee were informed that there were not enough furnaces to use the scrap produced both by the Railways and other manufacturing establishments in the country. The export of scrap was being allowed in the past in large quantities as there was considerable demand in the foreign market. Export of scrap has been stopped since the beginning of 1955 except in the case of light sheet cuttings where export has been permitted, because the Indian Furnaces could not utilise more than 25 per cent. of this scrap. When more furnaces are established and when the sizes of these light sheet cuttings are suitably reduced, export might be stopped. The Committee understand that a number of furnaces have been sanctioned recently but that the licences have not yet been fully utilised. As there is a considerable time-lag between the grant of licence and the actual establishment of the foundry, the representative of the All-India Manufacturers' Organisation suggested that it would be desirable to issue a few more licences as a measure of safeguard. The Committee consider this suggestion worthy of consideration by the Ministry of Commerce and Industry who should also investigate the causes for this time-lag and, if necessary, cancel the un-utilised licenses. If need be, some of the foundries may be ear-marked exclusively for the use of the Railways at selected centres. The Committee understand that the Railways make available all the scrap of iron and steel to the Iron and Steel Controller. The rerollable scrap is given to the Steel Rerolling Association of India, while the industrial scrap is distributed by the Iron and Steel Controller to the various small manufacturers through the State Governments. The Railways supply a good amount of scrap to the Iron and Steel Controller. Considering the fact that the Railways are badly in need of steel, the Committee consider that the Railways themselves should take all measures to utilise the scrap. With this end in view, they can have some more foundries located in or near the area of arisings. In this connection, the Committee would like to invite a reference to the suggestions with regard to the more profitable utilisation of the Nahan Foundry made by some officials who visited the Foundry in 1954 (reproduced in para. 95 of the Thirteenth Report of the Estimates Committee). The Committee consider that Government should constitute a small Committee consisting of representatives of the Ministries of Commerce and Industry, Railways and Production and devise ways and means of maximising the use of Nahan Foundry already owned by Government for meeting the needs of the Railways.

(d) Procurement of steel by barter

42. The Committee were informed that as a measure of augment-

ing supplies especially from Japan, the Ministry of Commerce and Industry were considering a plan for Government taking over the export of Iron and Manganese ores. In return, steel could be obtained from the importing countries. This, in effect, would be a kind of bartering as Government would be getting considerable quantities of steel against ore. (But it would not be possible to substantially increase the export of iron ore on account of transport bottlenecks which, in turn, can be overcome only when steel is available for expansion of yards, large Railway stations, doubling of certain sections of Railways as well as by steady supply of wagons and locomotives). The Committee also understand that the export of ore is proposed to be centralised as a result of which the price of ore would be stabilised. The Committee are glad to learn that a survey of the capacity of particular ports as well as mines is being undertaken before a final decision is reached in the matter. The Committee suggest that this survey might be completed expeditiously and a final decision arrived at quickly so as to facilitate quick inflow of steel for the country. While on the subject, the Committee would like to draw attention to their recommendation in the report on "Operation on Indian Railways", to the effect that rail facilities to intermediate ports should be augmented where necessary, so that a part of export traffic can be diverted to such ports, thus relieving pressure on already heavily congested major ports.

(*e*) *Import by private trade*

43. A suggestion was received by the Committee that procurement of steel from foreign countries might improve if the private agencies were also permitted to import steel. To avoid competition, between the private agencies and the Government, a ceiling price might be fixed for the imported steel. This suggestion is worth consideration by the Ministry of Commerce and Industry.

(*f*) *Uniform Pooled Price of Steel*

44. The Committee also understand that at present there are different prices for steel *i.e.* port prices and the destination prices, leading sometimes to incongruous results. Due to this, the factories located away from ports like Bombay are put to a disadvantage when they submit tenders for their requirements involving the use of steel. The Committee recommend that this point be examined by the Ministry of Commerce and Industry and that the question of having a uniform pooled price throughout the country should be considered carefully so that smaller factories and business establishments are not hard-hit.

IV

SHORTAGE OF SLEEPERS ON RAILWAYS

A. Introductory

45. Rolling Stock moves on the rails, and the rails are kept in position by the sleepers. The sleepers are placed below the rails and perpendicular to them, and serve to hold them in position. The density of sleepers, that is, the number of 'sleepers' per rail depends upon a number of factors such as nature of embankment, density of traffic etc. Generally speaking, N + 1 is the standard for branch lines and N+3 for the main lines, where 'N' represents the length of a rail in yards. There are, however, locations where on account of soft embankments or high intensity of traffic, it is necessary to provide a higher density. The density of sleepers in foreign Railways is generally higher than on Indian Railways, and this partly accounts for better speeds on foreign Railways.

46. The sleepers utilised on Indian Railways are of three types *viz.* (i) wooden (ii) cast iron and (iii) steel. Wooden sleepers can generally be used anywhere; but steel and cast iron sleepers should be used where they are not likely to rust caused by the salinity in the soil or air. The average life of a wooden sleeper is 12 to 15 years, that of steel sleepers about 35 years, and that of cast iron sleepers about 40 years. Wooden sleepers are the best from the point of view of the smooth running of trains. When the condition of the sleepers deteriorates they need replacement. Due to the chronic shortage of sleepers for several years, the programmes of replacement of sleepers on Indian Railways have fallen into arrears. On 1st April, 1956, the mileage of track with arrears of sleeper renewals will be approximately 7,389. In some cases the position is so serious that speed restrictions had to be imposed in the interest of safety. Thus, on 1st April, 1955, 898 miles of track were under speed restrictions due to this factor alone. It is because of this reason that the Committee decided to give their special attention to the problem of sleepers on Indian Railways.

B. Sleeper Purchase Organisation: Its Development and Functions

47. Prior to 1924, the Railway Administrations were making their own arrangements for the purchase of sleepers. The approval of the Railway Board was sought only when imports had to be made. In 1924, it was found that this method of *laissez-faire* led to unhealthy competition among the Railways and the interests of all suffered. To obviate this unsatisfactory feature and stabilise the supplies, the Board arranged for the formation of a Sleeper Pool with three Groups—the Northern, Eastern and Southern. The objects were:—

(a) to meet at intervals and decide on the quantity allocable to each Railway within the Group and Railway indenting from outside the Group;

(b) to fix the pooled rate for each class of sleepers for the ensuing year subject to the approval of the Railway Board;

(c) to fix the control charges for timber for ensuing year (the charges for the service rendered by the Group) subject to the approval of the Board;

(d) to consider tenders and offers from the Forest Departments; and

(e) to regulate the establishment and other business of the Group.

48. The Groups worked under the overall guidance of the Sleeper Pool Committee, of which the Director, Civil Engineering was the President. Joint Timber Advisory Officer was the Secretary of this Pool Committee. This post was, however, absorbed by the organisation of the Director General, Supplies in the Department of Supply in 1940.

49. So far as the Groups were concerned, the Southern and Northern Groups were from the start departmental organisations, the personnel being seconded by the Engineering Departments. The terms and conditions of service were identical, and the personnel interchangeable. So far as the Eastern Group was concerned, presumably because it dealt with the bulk of the work and Government and Company Railways were both involved, a separate organisation was brought into being. The conditions of service of staff were more or less similar to those of the *ex*-B. N. Railway and the gazetted staff were appointed by the Railway Board and formed a separate cadre. The Administrator of the Group was the General Manager, B. N. Railway.

50. It was decided in May, 1954, that keeping in view the many changes that had taken place, the necessity for retaining the separate identity of the Groups as such ceased to be real and in order to develop close co-ordination between State Governments through Forest Departments which had been expanded substantially in recent years, the sleeper groups should be formally abolished and the General Managers should act on behalf of the Board in planning the supply of wooden sleepers and negotiating with the State Governments.

C. Allocation of Forests to Individual Railways

51. The forests in the various States were allocated to different Railways as follows, so far as procurement of sleepers was concerned:

Railways	*Forests in the States*
Northern Railway	Punjab (I), Himachal Pradesh, PEPSU and Jammu and Kashmir.
North-Eastern Railway	Assam, Uttar Pradesh and Nepal.
Eastern Railway	West Bengal, Bihar, Orissa, Madhya Pradesh and Vindhya Pradesh.
Southern Railway	Andhra, Hyderabad, Madras, Mysore, Travancore-Cochin, Bombay and Coorg.
Western Railway	Saurashtra, Madhya Bharat and Rajasthan.

52. The Railways were asked to confine procurement to their own jurisdiction as stated above and to maximise procurement from the State Forest Departments. In order to co-ordinate policy in regard to the procurement of wooden sleepers, Director, Civil Engineering, holds periodical Sleeper Conferences at which quantities, prices, and distribution are decided.

53. The Committee feel that the above distribution of forests is not quite rational. The criterion should be that the area through which a Railway passes should be allotted to that Railway. This would mean saving in transport also. The Western Railway for instance passes through certain forest areas in Bombay State, and yet these forests have not been allotted to that Railway. The Committee understand that a proposal to allot the forests in Gujerat, and a portion of the Bombay forests to the Western Railway is under consideration. The Committee recommend that this should be done early and that a reallocation of forests should be made with reference to the newly created South Eastern Railway Zone, as also the Central Railway to which no forest has been allotted.

D. Procedure for Purchases of Sleepers

54. The procedure for purchasing wooden sleepers depends on whether they are obtained from the State Departments or from private contractors. Meetings are held with the Conservators of Forests or representatives of the State Forest Departments wherein supplies of sleepers that the State Forest Departments can offer, the different species which they can offer, and the prices at which these sleepers can be supplied are decided on. In the case of supplies by private Contractors, the purchase arrangements are made by inviting open tenders and decided on the offers made as a result of such tenders. Certain ceiling prices have been decided on as a result of Conferences between Railway representatives, State Forest Departments and representatives of trade.

55. Cast Iron sleepers are purchased from firms, who manufacture cast iron plates. Orders are placed on such firms after inviting open tenders. The Ministry of Commerce and Industry controls the supply of pig iron and the quantity that can be manufactured is thus controlled by the Ministry of Commerce and Industry. It is worth noting here that there is enough capacity in the country to manufacture cast iron sleepers; but their supply is limited by the shortage of pig iron which is the material used.

56. As regards steel sleepers, indents for these are placed on the D.G.S. & D., Ministry of Works, Housing and Supply in accordance with the quarterly quotas of steel allotted by the Ministry of Commerce and Industry. Steel sleepers are still a controlled item and quarterly quotas for the manufacture of such sleepers are issued by the Ministry of Commerce and Industry and the supplies that can be made to Railways are thus controlled by the Ministry of Commerce and Industry.

E. Passing of Wooden Sleepers

57. The Committee were informed that all sleepers after manufacture are brought to a depot where they are inspected by the Railway officers. In some cases, the Forest Department Officers also do the inspection. All sleepers are 'hammer-marked' with

the inspector's seal. The Railways have Sleeper-Passing Officers for this purpose, some of whom are Civil Engineers and others are those who have been recruited as Timber Passing Officers. One month's training is also imparted to the I.R.S.E. probationers in the Forest Research Institute, Dehra Dun, where they are taught the behaviour of different timbers, the defects developed by timber if it is not seasoned, the effect on the life of various timbers when suitably treated and the suitability of the various timbers not merely as sleepers but also for use in coaches, wagons, doors, panels etc. It appears that 15 years ago, the Forest Research Institute, Dehra Dun, used to recruit a few men and train them up in the Institute for a period of two years and the officers turned out to be good Sleeper Passing Officers. The Committee suggest that the question of re-introducing this system might be examined by the Railway Ministry. They also recommended that meanwhile the Sleeper Passing Officers, each one of whom is required to pass sleepers worth lakhs of rupees every year, are given intensive training at least for a minimum period of six months in the Forest Research Institute, Dehra Dun.

F. Co-ordination with State Governments for Procurement of Sleepers

58. Co-ordination as far as distribution of sleeper supplies is concerned is maintained by the Railway Board as the supplies are short of the demand taking all categories—wood, iron and steel—together.

59. The Committee were informed that at the discussions with the State Governments and representatives of the trade, the D.G.S. & D. was not associated, and that his presence would not be of much use as he was interested only in timber and not in sleepers. His method of operation was through the trade by call of tenders. The Railways proposed to tap the original sources of supply by establishing direct contact with State Governments. But the Committee were informed by the Railway Consultant for procurement of sleepers (a retired I.G. of Forests) that he had recently noticed in Assam that the supply of timber required by the Railways was being procured from two sources *viz.* by the Railways themselves and timber for carriage workshops through the D.G.S. & D. The latter was purchasing Sal timber at the rate of above Rs. 5 per cubic foot for purposes other than sleepers. This system had no justification because Sal, being an excellent timber should be reserved for sleepers only. It was desirable according to him, that all types of timber whether required for sleepers or for carriage workshops should be purchased by the Railways themselves. This question was discussed by the Committee with the D.G.S. & D. who stated that he had fixed the rates for timber in consultation with all the Chief Conservators of Forests in regard to the timber they had to supply to the Railways. There was really no competition because the total output of the Forest Departments was known along with the data regarding the quantities needed by the Railways, the D.G.S. & D. and others. The D.G.S. & D. also agreed that no items which the Centre purchases through two agencies they might compete against each other, and that apart from sleepers, there was a complaint that purchases by the Railways of timber other than

sleepers from the trade was likely to provoke such unhealthy competition. The Committee were informed that to eliminate this competition, a State Forest Officer had been appointed in his Directorate as a Timber Officer to effect proper co-ordination and planning in consultation with the Railways and to keep down emergency purchases to negligible proportions.

60. The Committee feel that in the periodical conferences with the State Forest Departments and representatives of the trade, the D.G.S. & D. should also be invariably associated as he not only procures timber for the Railways but also for other major Departments of the Government of India like Defence, C.P.W.D., the Posts and Telegraphs etc.

G. Co-ordination with the Ministry of Food and Agriculture

61. The Committee understand that in the past there used to be a Forest Officer who functioned as a Timber Advisory Officer in the Railway Board. He provided liaison between the Railways and the sources of supply of timber and advised the Railways on all technical matters concerning timber. In the exigencies of the last war which demanded the centralisation of all timber supplies, the post of Timber Advisory Officer to the Railway Board was abolished. Thereafter the post has not been revived but since 1st April, 1955, the post of Railway consultant for procurement of sleepers for Railways was created for a period of one year. The present incumbent of the post is a retired Inspector General of Forests and the Committee are glad that the Railway Board have at last realised the need for putting an experienced Officer on the task of procurement and hope that he would be able to achieve concrete results during his tenure. As a long-term arrangement, however, the Committee recommend that the post of Timber Advisory Officer should be revived so as to maintain day to day liaison between the Ministry of Food and Agriculture and the State Forest Departments on the one side, and the Railway Board on the other side. This officer will be the counter-part of the Forest Officer appointed in the Directorate General of Supplies and Disposals and the two should work in close contact with one another.

H. Shortage of Sleepers

62. There was a sharp rise in the price of Sleepers in 1947-48 and the Railways have not been able to procure all their requirements. The following table shows the orders placed and receipt of sleepers in the years 1952-53 to 1954-55:—

	1952-53		1953-54		1954-55	
	Demand	Receipts	Demand	Receipts	Demand	Receipts
Wood	23,72,322	15,79,941	25,03,183	20,54,052	26,09,441	16,55,491
Cast-iron	4,74,825	4,03,292	6,86,918	2,94,461	9,59,133	9,45,004
Steel	5,44,811	4,70,267	6,45,920	3,74,051	17,07,717	6,65,842
Total	33,91,958	24,53,500	38,36,021	27,22,564	52,76,291	32,66,337
Percentage of supply	72 percent.		78 percent.		62 percent.	

63. In 1955-56, the Railways have planned to get a total of 59,58,000 wooden, cast-iron and steel sleepers. Of these, wooden sleepers will account for 26,92,000, cast-iron sleepers 26,76,000 and steel sleepers 3,90,000.

64. As a result of short supply of sleepers of all kinds, heavy arrears of replacement have accumulated. The mileage of track requiring sleeper replacement as on 1st April, 1956 will be about 7,389 miles. Due to the arrears of replacements of sleepers speed restrictions had to be imposed on the track as per mileages indicated below:

1st April, 1952	498 miles
1st April, 1953	627 miles
1st Ajril, 1954	696 miles
1st April, 1955	898 miles

The above figures indicate that the position in this respect has been deteriorating from year to year and needs urgent attention.

I. Reasons for Short Supply

65. The Committee were informed that, in June, 1953, the position regarding the supply of wooden sleepers for Indian Railways was brought to the notice of the Central Board of Forestry and it was stated that, while fully appreciating that revenues from Forest Departments were a major factor with State Governments, the position of Railways also required consideration and a reasonable balance between the two interests in respect of prices for wooden sleepers was desirable in the interests of both. The Railways on their part preferred to deal direct with the State Forest Departments and arrangements at reasonable prices on a long-term basis were suggested.

66. Subsequently, in September, 1953, the Minister for Railways addressed the Chief Ministers of all States to enlist their co-operation in maximising the supply of sleepers from their States.

67. The position, however, did not improve as State Governments have stated that the supply of wooden sleepers has gone down due to:

(i) indiscriminate felling in the past, particularly in private or zamindari forests which were not under the control of the Forest Department;

(ii) Forests in easily accessible areas have been worked out and it is necessary to go into the interior and remote and hitherto untapped and inaccessible forests for more supplies;

(iii) The present ceiling rates are not attractive enough to suppliers who prefer to convert timber into other sizes which fetch a higher price.

J. Solution of the Problem

68. The Committee will now discuss the solution of this difficult problem under the following heads :

(a) Survey of Timber Resources.
(b) Relaxation of Specifications.
(c) Supplies from Andamans.
(d) Supplies from Nepal.
(e) Installation of more creosoting Plants—Preservatives.
(f) Royalty in terms of Sleepers.
(g) Price factor.
(h) Use of cement concrete sleepers.

(a) *Survey of Timber Resources*

69. The Committee were surprised to learn that a proper survey of the timber resources has not yet been made in many States. In the Madhya Pradesh it had been started last year in the case of important species. In the Uttar Pradesh, enumeration of only the important species had been carried out. In Bombay there were large tracts which had not yet been put on the development plan. The Committee understand that a complete survey of the forest resources would take 5 to 6 years and that the proposed Forestry Commission would serve as an integrating and co-ordinating body. The Committee consider that the work of making a proper survey of the forest wealth of the country should be undertaken without further delay.

70. The Committee are glad to note that the Railway Board have set up a Committee headed by the Inspector General of Forests to go into the question of supplies of timber and the prices in the various States. This Committee have finished their work in Assam and produced a satisfactory solution. The Committee consists of three Members, one of whom, the Inspector General of Forests, is constant. One is the representative of the Railways and the other Member is the Head of the Forest Department of the State concerned. The Committee consider that it will not be possible for the Inspector General of Forests to bestow immediate and constant attention to the work in addition to his current duties. As this Committee will have to tour as many as 12 to 14 States, it will take a long time to finish their work. The Committee consider that it is of paramount importance to constitute a regular Committee having 2 or 3 constant Members, the respective State Forest Officers being associated while the Committee are on tour, and to finish the work in two or three months. During this period either the Inspector General of Forests may be relieved of his current duties or, in case this cannot be done another high-powered Officer can be placed as the Chairman of the Committee. But before the Departmental Committee proceed on further tours, the Railways should assess their maximum requirements of wooden sleepers for each of the three Gauges separately, during the Second Five Year Plan and intimate the same to the State Governments.

(b) *Relaxation of Specifications*

71. The Committee understand that at the last Sleeper Conference with the representatives of the Forest Departments and the trade at Calcutta, it was suggested that the relaxation of specifications might make more timber available for sleepers. Although some very rough forecasts were given by the State Government representatives about the additional quantities of sleepers that might be available by relaxation of some specifications, no definite proposals have yet been received from any State Government or the trade specifying the exact relaxation of specifications and the additional quantities of sleepers they will supply with such relaxation.

72. The Committee, however, gather that if the Railways would revise their specifications without endangering the track, a larger number of sleepers would be available and rejections would be reduced. Within certain limits, reductions in specifications might be possible. The Committee were informed that the specifications at present in vogue were not all based on any mathematical calculation relating to strength of timber, etc. but were merely *ad hoc* specifications which had come down from the past. In fact, the Committee understand that on the Western Railway recently, Half-round and Top Sawn Half-round sleepers with 9" base have been accepted as it was the old Saurashtra State specification and as it would be difficult to get half-round sleepers with 10" base. The difficulty in getting sleepers for Broad Gauge was that it required sleepers of a big section and of considerable length. The Committee recommend that the necessity for continuance of the existing specifications should be examined by the Railway Research Centre keeping in view the specifications in foreign countries *vis-a-vis* the length of the gauges, the relative qualities of the wood used both abroad and in India, and possible reductions effected. In the matter of sleepers, insistence on high specifications reduces the number of potential sleeper yielding trees. There is a limit to the number of sleepers that could be produced to the specified size from a tree, whereas if dimensions are reduced slightly, more sleepers could be got from the same tree. The Committee were informed that a slight reduction would immediately increase the potential yield and the price factor also would be affected to the advantage of the Railways. The Committee suggest that experiments should be started straightaway by laying a track of a mile or two on the revised measurements in selected places with a view to see how far track maintenance and rail comforts are affected by altering specifications.

(c) *Supplies from Andamans*

73. The Committee understand that sometime back a lease was signed for timber from North Andamans and that the arrangement has been working satisfactorily. Roughly speaking, about 100,000 tons of timber, if not more, could be had from the Andamans in all both for carriage building as well as sleeper purposes. The Committee understand that all Andaman timber required proper seasoning, depending on the use to which they are to be put. The Railway Consultant for Sleeper Procurement who has visited the

Islands, states in his Report that four varieties of timber require no treatment while another four can be used as sleepers after treatment. The cost of a hard wood B.G. Sleeper from Andamans should, according to him, be fixed at a round figure of Rs. 17 in case the sleepers are made in the forests of the Andamans which would result in saving on sea freight etc. on the waste wood.

74. The Committee understand that there has been a drive to export a good deal of Gurjan wood from the Andamans to the United Kingdom and Sudan, much of which goes for the purpose of railways such as making bottom boards in railway wagons etc. In order to investigate whether this policy has been a wise one and whether it is really profitable venture, a Special Officer is being deputed to the Andamans. The Committee consider it imperative that the Railway Ministry should obtain some quantities of each of the known varieties of timber in Andamans and have their properties, behaviour etc. for use as sleepers and for coach and wagon building purposes analysed quickly by their Research centre and the Forest Research Institute, Dehra Dun. It is rather ironical that the Railways in India should face shortage of timber when timber produced in the forests of the country is used thousands of miles away by a sister department in another country.

75. At present, Forestry is in the State List of the constitution. But the forests in the Andamans are all owned by the Central Government themselves. The Committee consider it highly desirable that the forests are all primarily reserved for the Railways, and other Central Government Departments. The Committee realise that the Calcutta Plywood industry is dependent on the supplies from the Andamans and that there are several considerations to be taken into account. But as the whole economy and development of the country depends on Railways, their needs deserve topmost attention. The Committee suggest that the Railway Ministry should take up the matter of reservation of the forests in the Andamans and Nicobar islands and other Centrally administered areas for themselves, and the other major timber consuming departments of the Government of India. An inter-ministerial Conference should be summoned to discuss the issue and a speedy decision arrived at. After the requirements of the Government Departments are met, the needs of private industries can be met by Government themselves.

(d) Supplies from Nepal

76. Nepal has fine sal forests most of them being, however, inaccessible. The Committee understand that 10 to 15 per cent. of the Railway requirements of sleepers can be met from Nepal if roads of the length of 40 to 50 miles are constructed from reaches in the Uttar Pradesh and Bihar. The Committee suggest that the possibility of having an inter-government agreement with Nepal for supply of sleepers either on the basis of what India is giving her under the Colombo Plan or on the basis of a Barter Agreement, might be explored. Roads could be constructed to reach inaccessible forest areas of Nepal on condition of getting adequate quantities of sleepers

or timber in return. The Committee also suggest that the diplomatic representatives of India in Indonesia, Burma, Bhutan and Sikkim, which contain considerable forest wealth should be asked to explore the possibilities of obtaining sleepers from them.

(e) Creosoting Plants

77. Untreated 'chir' sleepers from the forests of Uttar Pradesh and Punjab have a life of only about six years under favourable conditions, but in localities which are moist and are affected by white ants, they rot in less than a year. After treatment with creosote and earth oil, however, their average life is increased to 14 to 16 years. Similarly, evergreen sleepers from Assam have a life of 4 to 6 years untreated, but with treatment their life increases to between 9 and 22 years. Treatment prolongs the life of all sleepers, and soft-wood lasts as long as hard timber after treatment. Reduction in the annual demand for replacements will not only reduce expenditure but will also help in the conservation of the forest wealth of the country.

78. At present the Railways have three sleeper treatment plants, one at Dhilwan on the Northern Railway with a capacity for treating 3 lakhs B.G. units per annum in a single shift working, and the other at Naharkatiya on the North-Eastern Railway with a capacity of 60,000 B.G. units per annum. A third creosoting plant at Clutterbuckganj near Bareilly with a capacity for treating 4·5 lakhs B.G. units per annum in single shift working or about 10 lakhs of M.G. sleepers per year has been brought into operation since November, 1954. The estimated cost is Rs. 41·13 lakhs while the saving is estimated to be Rs. 5 lakhs giving a return of 12 per cent. on the capital outlay. The Committee understand that the cost of treating a sleeper is of the order of Rs. 5-8-0 for B.G. and Rs. 2-8-0 for M.G. The cost of a B.G. sleeper is about Rs. 20-0-0 and the cost of an untreated sleeper plus the cost of treatment also is roughly Rs. 20-0-0.

79. The Committee were also informed that there was a proposal to establish creosoting plants at Olavakkot (on the Southern Railway) and at Calcutta (for treating timber from Andamans).

80. The Committee understand that the Forest Research Institute has data from which it would sort out and analyse the behaviour and properties of 20 to 25 species which could be used as sleepers after treatment. The Institute would take up and even give priority to the work of conducting specific experiments on these species when used as sleepers. While no definite data are available regarding the behaviour of the new varieties of wood when used as sleepers on the track, the Institute has got relevant data of their strength, property etc. It should be satisfactory if hitherto untreated sleepers would last for 10 to 12 years after treatment because they were all of cheaper variety. The Committee recommend that a top-level meeting should be convened between the representatives of the Forest Research Institute, Dehra Dun and those of the Railway Board and 'on the spot' decision taken with regard to carrying out tests in collaboration with each other and

collecting data by arranging simultaneous tests at various places. To start with, 5 new species can be taken up for examination and the work can be finished within 6 months. The Committee are assured that the Forest Research Institute would recommend only those species which are available in the country in reasonable quantities. The Committee understand that the State Governments too can suggest hitherto unused varieties for adoption as sleepers.

81. Wood is a versatile and useful material whose utility can be enhanced by drying and seasoning. Seasoning helps in removing certain essential defects like change in shape, splitting, cracking etc., whereas the life of a sleeper could be prolonged by the aid of preservatives like creosote. The Committee understand that the Forest Departments of State Governments had taken the view that seasoning kilns should be put up by the users of timber like the Railways and the Public Works Department. Actually, at present, there are few seasoning plants in the country. The Committee understand that the matter has been discussed in the Board of Forestry and that it has been decided to set up kilns in 4 or 5 representative localities for demonstrating to the public, and other interests the advantages of seasoning. The Committee were informed that the Forest Research Institute had been carrying on propaganda about the uses of seasoned and preserved timber and it had been suggesting to the Ministry of Defence as well as the Ministry of Railways to insist on having seasoned and preserved timbers and that the Defence Ministry had already issued instructions expressing their preference for employing contractors who had got their own seasoning kilns and to supply seasoned timbers. The Committee suggest that the Railways and the D.G.S. & D. should take similar action which would avoid a great deal of waste.

82. The Committee are of the opinion that the Railway Ministry should consider the question of setting up a few more creosoting plants, at least one for each zone so as to reduce leads and incipient rot in transit and to maximise the use of scores of varieties of soft wood. The Chief Conservator of Forests, Bombay, stated that if a seasoning-*cum*-treatment plant was installed by the Railways, in the State, the rate of production of wooden sleepers could be increased by 25 per cent.

83. The Committee understand that if continuity of orders is assured for some time, the private sector will be prepared to establish a few creosoting plants in the country and they suggest that this question should also be examined further in consultation with the representative bodies of industry like the All India Manufacturers' Organisation, Bombay.

84. The Committee were informed that a resolution recommending that the Railways should set up seasoning and preservative plants, failing which States might set them up themselves, provided they got a long term contract, was passed in a meeting of the Central Board of Forestry. The Committee suggest that this resolution should be given serious consideration as ultimately the Railways themselves are to benefit by establishing such plants which will repay the investment in a pretty short time. There need

be no fear of paucity of wooden sleepers once these plants are established all over the country. Some of them may not only serve the needs of the Railways but other Departments of the Central Government and their Nationalised Undertakings.

85. The Committee understand that as far as creosote (which is very useful for preserving wood), is concerned, coal tar is being burnt in the steel industry and the supply is getting short. The Ministry of Commerce and Industry has been requested that this should not be allowed to happen and that the production of creosote should be increased. The Committee recommend that the Ministry of Railways should take up the question at a higher level with the Ministry of Commerce and Industry so as to facilitate increased production of creosote in this country.

(*f*) *Royalty in terms of sleepers*

86. The Committee were informed that the question of reduction of royalty levied by the State Government had to be examined with reference to the local conditions, prevailing prices and so forth. This point will form part of the work of the Ranganathan Committee set up to go into the question of prices, specifications etc. The Committee were also informed that it might be possible for the Railways to get more sleepers by a process whereby instead of taking royalty from the contractors in cash, the State Governments might take from them sleepers of that value and negotiate directly with the Railways. It was suggested that this procedure might be beneficial both to the State Governments and the Railways. They were informed by the representatives of the State Governments of Uttar Pradesh, Madhya Pradesh and Bombay that the system was worth trial. The Committee recommend that this suggestion may be considered further.

(*g*) *Price factor*

87. The Committee understand that despite the adverse factors of indiscriminate felling of forests in the past and also the inaccessibility of interior forests, a larger number of sleepers can be produced, once the question of price is settled. The question did not arise before and during the war in view of the fact that timber was not cut for the specific purpose of producing sleepers. The supply was in the shape of logs and beams which were otherwise useless. The price factor became entirely different when timber was cut for production of sleepers. The Committee were informed that the price of sleepers had to be rather high as interior sources of supply could be tapped only by constructing roads and bridges at some places and by putting up saw mills. This meant extra expenditure which was reflected in the price of sleepers. The Committee are of the opinion that the question of price can and should be amicably settled between the representatives of the Railways and the State Governments.

88. The Committee understand that about 80 to 90 lakhs of sleepers will be required every year during the Second Five Year Plan and that the maximum number of wooden sleepers that could be had from out of the existing resources of the country will be

about 50 per cent. the remaining being met by cast iron and steel sleepers. The Committee are not convinced that the country's forests cannot meet a major portion of the requirements of the Railways. The Committee observe that in foreign countries like the U.S.A. and U.S.S.R. where steel is available in plenty and where the *per capita* consumption of steel is much higher than in India, wooden sleepers are preferred to steel or cast iron sleepers (because they are the best so far as comfortable riding is concerned). The Committee understand that if the rates are suitably increased and certain other miscellaneous species of wood are accepted after treatment, and if the specifications are slightly reduced, the production would considerably rise. A large area of forests is far away from the nearest rail heads and is unconnected by roads. Several parts of the country like Vindhya Pradesh remain untapped. The Committee suggest that an All-India Conference presided over by the Minister for Railways and Transport should be convened wherein the problem of supply of wooden sleepers and timber for wagon and coach building for the Railways during the Second Five Year Plan should be discussed. Each State should be allotted its own quota and requested to play its part towards the fulfilment of the Railways' requirements during the Second Five Year Plan. The detailed questions of costs etc. can best be left to the departmental Committee which will tour the States. The Committee feel that with a bold and imaginative policy, the problem of sleepers can be solved successfully and expeditiously. The Railways should also explore all avenues of augmenting their supplies departmentally. In this connection the following extract from "A DESIGN FOR THE LAYOUT OF INDIAN TRANSPORT AND COMMUNICATION SYSTEM" by Dr. Govind Balakrishna Deodikar, (published by the Indian Society of Agricultural Economics, Bombay), makes interesting reading:

> "Some of the Railways in Latin America have solved their fuel problem in an interesting manner which deserves our attention. They have introduced from Australia fast growing species of eucalyptus and other trees and maintained their plantation continuously along both the sides of the railway line. Due to the fast growth of the trees, the railways have become self-sufficient in a very short time in respect of their requirements not only as regards the fuel but also other needs such as sleepers for the rails, poles for the telegraphs, timber for carriages and so on."

(*h*) *Cement concrete sleepers*

89. Small numbers of proprietary types of cement concrete sleepers have been tried out on Indian Railways in the recent past *e.g.*, Dowmac, Stent, Franki-bagon.

90. The Committee were informed that a French design, which had given good service in France under very fast and heavy traffic, is now being examined. Their fastenings, however, are very costly. Attempts are being made to get these fastenings for 500 to 1,000 sleepers. Other designs with different fastenings not as expensive as this are being evolved by the Central Standards Office and

sleepers of these designs will be experimented but to a limited extent. In view of the shortage of wooden and steel sleepers, the Committee are of the opinion that the use of cement concrete sleepers should be extended on Indian Railways. There should not be any insurmountable difficulties in the way, especially when the French Railways are successfully using them.

V

PROCUREMENT OF AND SELF-SUFFICIENCY IN ROLLING STOCK

A. Introductory

91. A detailed study of operation on Indian Railways has revealed that there is acute shortage of Rolling Stock—locomotives, coaches and wagons—on Indian Railways, due to which they are not in a position to carry the traffic offered expeditiously. As a matter of interest, the Committee give below an extract from an article on "ROLLING STOCK NEEDS OF INDIAN RAILWAYS" that appeared in the 'Statesman' on the 31st December, 1955:

> "While railway assets have deteriorated over the years, the rate of replacement and addition to rolling stock being insufficient to overtake the accumulated arrears, pressure of traffic has increased phenomenally in the post-war period. At the moment, the railways find themselves completely unable to handle the extra volume of goods traffic, resulting from the additional production during the First Five Year Plan."

It is, therefore, necessary to procure more Rolling Stock on an adequate scale to cope with this situation. Procurement of additional Rolling Stock creates its own problems. When the strength of Rolling Stock on line is increased, the requirements of annual replacements of such stock also increase. It would, therefore, be necessary to step up the indigenous capacity for manufacturing Rolling Stock on a scale large enough at least to meet the requirements on replacement account. Moreover, with the increase in the Rolling Stock on the system, the facilities in the workshops, running sheds and sick lines have also to be correspondingly increased so that light and heavy repairs to Rolling Stock and their periodical overhaul are attended to promptly and thoroughly. These allied problems will be discussed by the Committee in this Chapter.

B. Procedure for the procurement of Rolling Stock

92. Important specialised Rolling Stock items, such as locomotives, loco-boilers, carriages, wagons, coaching underframes, wheelsets, fire-boxes and transportation cranes obtained in bulk are procured by the Railway Board to meet Railways' requirements.

93. The procurement arrangements for such items fall under two main categories:—

(*a*) *Foreign procurement*

Items which cannot be manufactured in India or for which enough manufacturing capacity to meet the demand within the required period is not available.

(b) *Indigenous procurement*

Items which cannot be manufactured or for which adequate capacity does not exist in Railway Workshops and for which manufacturing capacity exists in the country.

(a) FOREIGN PROCUREMENT OF ROLLING STOCK ITEMS ARRANGED BY THE RAILWAY BOARD

94. The arrangement for procurement of Rolling Stock items from abroad is made:—

(i) by inviting global tenders;

(ii) under the U.S.A. Technical Co-operation Aid; and

(iii) under the Colombo Plan.

The last two arrangements are temporary and will cease, when no further aid is given.

(i) *Procurement by inviting global tenders*

95. As regards items under category (i) above, the requirements are consolidated in the shape of a hand-out. This hand-out contains description, quantity, delivery required, drawings and specifications of each item along with necessary directions for the submission of offers by a specified date.

96. A notice regarding the items included in the hand-out is published in the Indian Press and copies of the hand-out are given to:—

(1) Foreign Missions and Embassies in India with a request to give wide publicity among the manufacturers of their respective countries;

(2) Indian Ambassadors and Indian High Commissioners, Director General of India Stores Department (D.G., I.S.D.), London and India Supply Mission (I.S.M.), Washington with a request to give wide publicity through the Press, Trade Journals etc.

(3) Well-known foreign manufacturers, for their information.

97. The offers received are opened just after the closing date by a Committee of Directors of the Railway Board.

98. An abstract of the offers with respect to price, delivery and other special aspects included in the offer, is prepared for each item separately. These abstracts are subjected to a preliminary examination by the Directors' Committee. The offers, which are within a reasonable price range, are then examined by the Central Standards Office (C and W and Loco) in their technical aspect, particularly with regard to deviations from specification. Negotiations are then carried out by a Committee of Directors, consisting of Director, Railway Equipment, Director, Finance (Expenditure) and Director, Mechanical Engineering, with accredited representatives of reliable firms or firms whose offers are technically acceptable and suitable in other respects *viz.*, delivery payment, guarantee terms etc. On the completion of negotiations, the deal is finalised with the approval of the Railway Board and advance letters of acceptance are issued in terms of the deal concluded.

99. Final orders on the firms located in Europe and United States of America are, however, placed by the D.G.,I.S.D., London and

Director, I.S.M., Washington who enter into formal contracts with them in accordance with the letters of acceptance. Contracts in the cases of firms not located within the orbit of the D.G.,I.S.D., London and I.S.M., Washington, for example, firms in Japan, are placed by the Railway Board direct.

Inspection and shipping of Rolling Stock items procured by the Railway Board from abroad through global tenders

Inspection of stock obtained from U.K. and Continent of Europe

100. The inspection is arranged by the D.G., I.S.D., London. There is a team of Railway technical Officers attached to the D.G., I.S.D., London, for inspection of Rolling Stock and other specialised railway equipment. In addition, a high level technical Officer is attached to the High Commissioner for India in London as Railway Advisor, who acts as Railway Consultant to the D.G., I.S.D. London.

Inspection of stock obtained from Japan

101. The inspection in Japan has been entrusted to the Japanese National Railways at 0·4% of the cost. A team of six Indian Railway Inspectors has, however, been sent to Japan to be associated with the Japanese National Railways Inspectorate in carrying out important items of inspection and to act as advisers for clarifying any technical reference pertaining to inspection, specifications, etc., made by the Japanese National Railways.

Shipping

102. For the stock obtained from the U.K., and Continent of Europe, shipping is arranged by the D.G., I.S.D., London.

For the stock coming from U.S.A. and Canada, shipping is arranged by the India Supply Mission, Washington.

For the stock ordered in Japan, shipping is arranged by the Indian Embassy in Japan.

(ii) *Procedure for the procurement under U.S. Technical Co-operation Aid Programme*

103. The Rolling Stock are procured by a procurement agency *viz.*, the General Services Administration, Washington. The General Services Administration invite tenders on global basis on the basis of the specifications furnished by the Ministry of Railways and evaluated by the same agency. The selection is made in consultation with the Director of Technical Co-operation Mission in New Delhi and the Representative of the Government of India, [Joint Secretary, Ministry of Finance (Department of Economic Affairs) and the Railway Ministry who assist them in their evaluation and selection. The final selection is then made by the Co-Directors in consultation with the Ministry of Railways. Inspection of the stock is the responsibility of the General Services Administration who may co-opt any Indian Government Railway Officer as nominated by the Ministry of Railways.

(iii) *Colombo Plan—Economic Assistance from Canada and Australia*

104. The necessary specifications for the Rolling Stock requirements under this aid programme are supplied by the Ministry of

Railways to the Ministry of Finance (Economic Affairs Department). The procurement arrangements are made by the Government of Canada and the Government of Australia and are restricted to those countries.

Inspection of stock obtained from Canada

105. The inspection of stock obtained from Canada under the Colombo Plan has been arranged by the Canadian Government to be carried out by the Canadian Inspection Services, under the Controller General, Department of National Defence, Inspection Services, Ottawa (D.N.D. Inspection Services). An Indian Railway Officer has, however, been associated with D.N.D. for the inspection in Canada.

106. In regard to the inspection of stock obtained from Australia under this Plan, no officer has been deputed by the Ministry of Railways for the purpose, as the orders for the stock have not yet been placed by the Australian Government.

(b) INDIGENOUS PROCUREMENT OF ROLLING STOCK ITEMS ARRANGED BY THE RAILWAY BOARD

107. The Railways' requirements for Rolling Stock items (wagons, locomotives, coaches, underframes, boilers and wheels) are drawn up and the indigenous capacity available in the country for the manufacture of these items is firmly booked to its maximum capacity nearly a year in advance of the financial year against which these items are to be procured, though formal orders are placed only after the budget of the year concerned is passed by the Parliament. The price and other contract terms are finalised by the Railway Board by negotiations with the firms concerned.

Occasionally tenders for items, for which the indigenous capacity is not definitely known, are issued in the press in India to ascertain the position.

Inspection

108. The inspection work is conducted by the organisation under the Director of Inspection, Calcutta, under the Ministry of Works, Housing and Supply.

C. Rehabilitation of Rolling Stock on Indian Railways

109. For the reasons explained earlier in the Report on "Railways' Second Five Year Plan", there was an unduly large percentage of overaged rolling stock in circulation on Indian Railways at the beginning of the First Five Year Plan. It is true that the Rolling Stock is not condemned merely on the basis of age limit and if it is found that any locomotive, carriage or wagon is in a fit condition to run even after completion of the prescribed limit, its life is extended, if necessary by making suitable repairs etc. Thus, at any time there is bound to be a certain percentage of overaged Rolling Stock in circulation on any Railway system. Normally, however, this percentage should not exceed 10. Excessive percentage of overaged Rolling Stock in circulation not only causes considerable expenditure in the shape of frequent replacements of various components, but also causes a strain in the workshops for

their efficient maintenance. In the case of locomotives, the incidence of engine failures tends to be higher for overaged engines. As, however, the procurement of Rolling Stock from foreign and indigenous sources has been limited and as the demand of traffic has been steadily increasing, the Indian Railways have been forced to keep a much larger percentage of overaged Rolling Stock in service. On 31st March, 1951 (*i.e.* at the beginning of the First Five Year Plan) the percentage of overaged stock to the average authorised stock was 30·3 for locomotives, 35·9 for coaches and 27 for wagons. During the First Five Year Plan period, the Indian Railways did earmark more than half of its planned expenditure for procurement of Rolling Stock and machinery. Simultaneously, however, more and more Rolling Stock was attaining the prescribed age limit with the result that the additional Rolling Stock procured in the First Five Year Plan is not enough to bring the overaged Rolling Stock within 10% of the authorised Rolling Stock. The percentage of overaged Rolling Stock to the average authorised stock on 31st March, 1956 (*i.e.* by the end of the First Five Year Plan) is expected to be for locomotives 32, for coaches 27·7, and for wagons 16·5. It was not possible to step up further the tempo of procurement of Rolling Stock during the First Five Year Plan due to (a) limited funds available, (b) limitations of foreign exchange available and (c) limited indigenous capacity. The Indian Railways will, therefore, have to concentrate on procuring more Rolling Stock, firstly to wipe off the arrears of rehabilitation and secondly to meet the additional demands due to increased production in the country in different spheres.

D. Authorised Rolling Stock on Indian Railways

110. The figures of average authorised Rolling Stock on Indian Railways are given below for 31.3.1951 (actual), for 31.3.1956 (anticipated) and for 31.3.1961 (anticipated, on the basis of the tentative Second Five Year Plan of Indian Railways):

Date	Locomotives	Coaches	Wagons (in four wheelers)
31-3-1951	7,016	20,351	2,04,305
31-3-1956	8,795	22,771	2,71,774
31-3-1961	10,460	27,872	3,83,148

From these figures it will be seen that the percentage increase in the average authorised Rolling Stock at the end of the First Five Year Plan over the figures at the beginning of the Plan will be 25 for locomotives, 12 for coaches and 25 for wagons. The anticipated percentage increase at the end of the Second Plan over the figures at the beginning of the Plan will be 19 for locomotives, 25 for coaches and 41 for wagons.

111. Assuming that the Railways do have all the Rolling Stock as estimated, the number of locomotives, coaches and wagons per route mile on Indian Railways would compare with the corresponding figures for the United Kingdom as under:

	Locomotives	Coaches	Wagon
United Kingdom	·98	2·98	58·37
India	·31	·82	11·3

These figures, therefore, indicate that the anticipated Rolling Stock on Indian Railways as on 31st March, 1961 cannot be regarded as excessive and that there will still be considerable scope left for adding to their strength to meet the increasing requirements of traffic.

E. Expansion of the repair facilities in Workshops and Sick lines

112. When additional Rolling Stock is put in circulation on a Railway system, provision of additional facilities to attend to their repairs and periodical overhaul becomes necessary. Unless this additional capacity is provided, the maintenance of the Rolling Stock is bound to go down resulting in uneconomical usage of the stock.

113. The existing Railway workshops were planned many years ago for repairs of Rolling Stock then owned and for manufacture of duplicates for their running maintenance. Since then, additional Rolling Stock has been added from time to time, but the Indian Railways have lost considerable workshop capacity due to partition of the country. The Rolling Stock owned by the ex-East Punjab Railway lost workshop servicing facilities in Moghalpura workshops and that owned by the ex-Assam Railway lost the workshop servicing facilities in Saidpur workshops. The existing workshops on the Indian Railways have not only had to deal with the increased quantum of work due to the increase in Rolling Stock on respective Railways, but have also had to undertake the repairs of Rolling Stock of the ex-East Punjab and Assam Railways after the partition. There have been spasmodic expansions in the workshop capacity, but this has not been done on a planned basis. Minor works connected with expansion of workshops have been carried out from time to time commensurate with the availability of funds. Similarly, additional machine tools and plant have been installed on the existing floor area of manufacturing shops resulting in considerable congestion. The expansion of the workshop capacity on a planned basis is, therefore, absolutely necessary.

114. On the basis of the anticipated increase in the holding of Rolling Stock envisaged during the Second Five Year Plan, the Railway Ministry have calculated that the following additional P.O. H. capacities will be required in the Railway workshops.

Stock	B.G.	M.G.
Locomotives	344	307
Coaches (4 wheelers)	6,205	9,867
Wagons	43,866	17,197

115. It will be necessary to remodel and equip several running sheds and carriage and wagon depots to maintain addtional locomotives, carraiges and wagons. It has been roughly estimated that approximately 40 running sheds and 40 carriage and wagon depots would require to be remodelled. The cost of remodelling and new workshops to be provided on different Railways would be approximately Rs. 28·5 crores. The cost of remodelling of the running sheds and carriage and wagon depots would be approximately Rs. 8·5. crores. While on the subject, the Committee would like to suggest that the sites for the new workshops should be carefully selected from the point of view of the suitability of the place.

116. With the increase in the Rolling Stock and increased capacity for attending to their repairs and periodical overhaul, there will also have to be a corresponding increase in the supply of spare parts of the Rolling Stock. Unless adequate and steady flow of various components of the Rolling Stock is maintained, to feed the workshops, the standards of maintenance and the speed of overhauling are bound to be reduced. The Committee, therefore, welcome the proposal of the Railway Ministry to instal two Locomotive spare part production units in the country. They hope that this proposal will be given effect to without undue delay. They would also recommend that a careful investigation should be carried out to see whether there would be necessity of establishing similar units for the spare parts of carriages and wagons. If this investigation reveals the necessity of such units, immediate steps should be taken to instal such units at suitable points. The Committee lay great stress on the timely availability of spare parts of the Rolling Stock required in the workshops, running sheds and sick lines, because it came to their notice that in several instances the repairs and periodical overhaul of the Rolling Stock were held up for want of spare parts.

F. Workshop Management

117. The Committee feel rather concerned about the workshop management on Indian Railways, because it came to their notice that the efficiency of railway staff in the workshops was at a low ebb. Some of the Chief Mechanical Engineers were frank enough to admit that this was so. However, it has to be borne in mind that heavy arrears of replacement of Rolling Stock consequent to the War, increase in the number of classes of locomotives involving multiplicity of parts to be manufactured with attended difficulties, general shortage of raw material, thefts of duplicates and unavoidable dilution in skilled and supervisory staff as a result of partition have been adverse factors that have caused undue strain on the workshop management. As the arrears of replacement of Rolling Stock are gradually wiped off, as more and more locomotives of standard design are brought into use and as the position in regard to the supply of raw materials including components improves, the situation in the Railway workshops will also ease. In the meantime, a special drive will have to be initiated to improve the efficiency of Railway workshops and increase their output.

118. The question of workshop management assumes a special importance in the present context in view of the general shortage of Rolling Stock on Indian Railways.

119. In their Report "Operation on Indian Railways", the Committee have observed that the percentage of Rolling Stock under or awaiting repairs is on the high side and that immediate reduction in this percentage is necessary to make more Rolling Stock available for traffic. This percentage can be reduced by adopting two methods, *viz.* (i) by increasing the speed with which the Rolling Stock is repaired or periodically overhauled and (ii) by improving the standard of repairs and periodical overhaul. Both these items are closely connected with the efficiency in the workshops.

120. Similarly, the Committee also observed that the mileage given by the locomotives on Indian Railways is low and that there is considerable scope for improvement in this direction. Now, one effective method of improving the mileage taken out of the locomotives is to resort to increased pooling of locomotives. Experience in the past has shown that pooling of locomotives can be effected successfully, only if the standard of maintenance and of periodical overhaul in the running sheds and the workshops is high. It is, therefore, clear that better utilisation of Rolling Stock for traffic purposes is intimately connected with the efficiency of workshops (as also of the running sheds and sick lines).

121. The Committee now discuss some special aspects of workshop management and offer suggestions for improvement.

(a) *Rationalised programme for construction of coaches in Railway Workshops*

122. The present annual capacity of Railway Workshops for building Timber Body Coaches (including Contractors) in terms of bogies units is as under:

Railway	B.G.	M.G.
Central	72	12
Eastern & South-Eastern	168	..
Northern	25	100
Southern	68	171
Western	27	42
North-Eastern	—	100
Total	360	425
By Contractors	25	140
Grand Total	385	565

These figures indicate that the Western Railway is much behind others in respect of the coach building capacity. This needs looking into.

The potential capacity of the workshops has, however, been recently assessed by the Workshop Reviewing Committee as follows:—

Yearly capacity in terms of III Class bogie (timber body) Broad Gauge

Railway	Railway Workshop	By Contract	Total
Central	112	25	137
Eastern	264	—	264
Northern	36	—	36
Southern	80	—	80
Western	24	—	24
Total	516	25	541

Yearly capacity in terms of III Class bogie (timber body) Metre Gauge

Central	12	—	12
Northern	108	—	108
North-Eastern	150	180	330
Southern	205	—	205
Western	48	36	84
Total	523	216	739

In view of the shortage of coaches on Indian Railways the Committee recommend that the Railway Board should take early steps to step up the capacity to the figures assessed by the Workshop Reviewing Committee.

The Committee also recommend that the Railway Board should prepare a final construction programme for the Second Five Year Plan period without any delay and authorise the Railways to enter into commitments to the limit of their building capacity for procuring such items which would be essentially required for coach building purposes, *viz.* timber, electrical fittings, roof fittings, lavatory fittings etc. The increased production of coaches through rationalised construction will largely depend on timely and adequate supply of under-frames. The question of setting up a manufacturing unit for the construction of under-frames should also be examined and decided by the Railway Ministry at a very early date.

(b) *Maximum utilisation of the capacity of machinery and plant in Railway workshops*

123. The Committee were given to understand that there were instances of costly machinery with higher capacity being installed, but maximum use of the same not being made due to the fact that the capacity of the other allied machines and plants had not been correspondingly increased. There is, thus, an urgent need of standardizing the sizes of general purposes machine tools which by and large cover the requirements of Railway workshops. The Committee are glad to note that this work was specifically entrusted to the Railway Workshop Reviewing Committee, which have recently submitted their Report. The Committee understand that this committee have already standardised the sizes of general purposes machine tools in consultation with the Indian Machine Tool Manufacturers Association. The Committee hope that no time will be lost in implementing the recommendations of the Railway Workshop Reviewing Committee. The Committee also recommend that the question of introducing multiple shifts in certain sections of the workshops should be considered seriously with a view to obtain the maximum output from costly machinery and plant.

(c) *Retention of a boiler for the life time of a locomotive*

124. At present the life of a boiler is taken to be half that of the locomotive with the result that with the manufacture of locomotives, an equal number of additional boilers have to be manufactured. The Workshop Reviewing Committee have indicated that, if complete new fire-boxes with requisite number of stays for Broad and Metre

Gauge boilers are manufactured at Chittaranjan and TELCO respectively, it would be possible for Railways to effect renewal of fireboxes as and when required without much difficulty. In that case, it will not be necessary to order loco boilers on replacement account in future. Net saving on this account would be of the order of about Rs. 1.75 crores per annum. The Committee understand that the proposal is already under the consideration of the Railway Ministry. They recommend that this proposal may be given earnest consideration and early decision arrived at.

(d) Belt system of repairs to Rolling Stock in Railway Workshops

125. The Kharagpur Workshop on the South-Eastern Railway have a rationalised method of undertaking the periodical overhaul of the Rolling Stock. A brief description of this method as adopted in the carriage shop at Kharagpur is given below for ready reference:—

> "One of the best features in the carriage shop is in respect of segregating coaches that require heavy reconditioning from the normal repairs and the former are dealt with in a separate shed to allow smooth progress in the carriage repair shop. The shed where reconditioning of such coaches is carried out can accommodate 12 units in terms of 4-wheelers and we understood that in the past coaches were regularly programmed for reconditioning when they reached an age ranging from 18 to 20 years. At this time, a coach was extensively stripped for careful examination of bottom sides, floor members and pillars, and such renewal or repair, as was considered necessary, was undertaken. This ensures smooth passage of those coaches through shops during subsequent periodical overhauls. This type of repair in other railway workshops is carried out at haphazard intervals and this fact is, to a very large measure, responsible for imbalance between day to day load arising from such repairs and the strength of staff, resulting in general delay in periodical overhaul work. We find that by segregation of such repairs and timely arrest of further deterioration of the body members, Kharagpur shops have been generally able to complete periodical overhaul to coaching stock in a short 18-working day schedule and is a feature which may, with advantage, be adopted by other carriage repair shops. If they have no separate accommodation for such reconditioning work, certain room in the carriage repair shop could be set apart for such work under the independent charge of a separate gang or gangs as apart from the other carriage repair staff."

126. The Kunzru Committee had also recommended the adoption of this method of "belt system" for the periodical overhaul of Rolling Stock in different workshops of Indian Railways; but much progress does not appear to have been made in this direction.

127. With the adoption of this system, it would be possible to standardise the time required for the P.O.H. of locomotives, carriages and wagons as under:

Standard time for P.O.H. of B.G. Rolling Stock

Locomotives	18 working days
Carriages	20 working days
Wagons	4 working days

The Committee recommend that the Railway Ministry should immediately initiate measures with a view to achieve the above targets as early as possible. Similarly, targets should be laid down for the P.O.H. of M.G. Rolling Stock also. The Committee understood that by the introduction of systematic working on the above line, the time taken for periodical overhaul at Jodhpur was reduced from 8·5-working days to 2·6-working days for M.G. wagons.

(e) *Production, Planning and Control in Railway workshops*

128. Production, planning and control as functions of a workshop are primarily concerned with the co-ordinative mechanism of factory operation designed to ensure that the required product shall be produced by the best and cheapest method of the required quality at the required time. This involves a lot of planning and forethought for the execution of each order. Somewhere, someone has to think out the what, where, how and when of each job and the thinking part finished, someone has to arrange that the plans and decisions are put into effect. This generally involves a system of shop orders and clerical routine for setting plans in motion and watching the progress of events to see that they work out right. The organisation for such control is deficient in Railway workshops, resulting in considerable loss of time, material and energy. The Committee recommend that proper organisation for production control should be set up in each major workshop on Indian Railways.

(f) *Introduction of piece work/bonus system in Railway workshops*

129. As early as 1949, the Railway Board accepted in principle that the objective to be aimed was the introduction of piece work/bonus system in Railway workshops as an incentive to increase production and they directed Railways to introduce time studies of the different operations in workshops and to consider suitable methods of recording the output of individuals or small groups. The progress in this direction has, however, been extremely slow except in the Chittaranjan Locomotive Works, which have determined time allowances for almost all W.G. components and such allowances include various elements, *i.e.* the loading and unloading time, setting up time, machining and gauging time etc. etc. The Committee were informed that the employees in the workshops are suspicious about the time studies of the various items of work and they are generally averse to the system of payment by piece work. The Committee had the opportunity of discussing this point with the President of the National Federation of Indian Railwaymen. He stated that the Federation would certainly welcome a scheme of payment on piece work and the bonus system, because this will not only increase production which is in national interest, but also it will increase the earnings of workers. He, however, felt that the present emoluments of the workers

should be safeguarded in the revised scheme and the worker should not lose in the bargain. While the Committee accept that the "norms" of work to be fixed should be based on the standard of reasonable efficiency of an average worker and not on the existing low efficiency, yet they feel that the scheme to be evolved should be such as will not result in material losses to the employees. They fell that it should be possible to evolve a scheme which will keep the "norms" at a sufficiently high standard and at the same time ensure that individual employees are not put to any undue hardship. Any additional bonuses to be given will, of course, depend on the extra work performed and additional production achieved over the standards fixed. It has to be recognised that the workers' interest in increased production can be stimulated by appeal to his own interests. The Committee, therefore, recommend that each Railway should evolve the system of piece work rating and bonuses in its major workshops and the co-operation of the National Federation of Indian Railwaymen and its local branches should be sought in this matter with a view to complete the scheme as early as possible. They do appreciate, that to start with, the standards in different workshops will have to be different in view of the local conditions such as the type of plant and machinery, nature of work etc., but uniformity should be gradually attained.

(g) *Introduction of a proper system of costing in Railway workshops*

130. In this connection, the Committee give below the following pertinent observations of the Kunzru Committee, 1947:

> "It is surprising that the financial organisation of a commercial organisation of the magnitude of the Indian Railways should have neglected the costing side of railway accounting. Financial control over the enormous expenditure involved demands that each and every activity of the railway workshop should be costed scientifically. We would suggest that immediate steps should be taken towards this end. This will necessarily involve major changes in the organisation of workshops and the appointment of extra staff. It is not possible for us to go into this question in detail. We would suggest that properly qualified Officers should be entrusted with the least possible delay with the duty of working out and giving effect to a comprehensive scheme for introduction of full costing in workshops."

131. The progress made on Indian Railways in this direction is very slow. A cost accounting unit on modern lines has been set up at the Locomotive Manufacturing Works, Chittaranjan. The Committee recommend that the Officers from the Indian Railways should be sent to the Chittaranjan Locomotive Works for a short period to take intensive training in this subject and that a cost accounting unit should be set up in each major workshop of the Indian Railways.

G. Self-sufficiency in manufacture of Rolling Stock

132. The procurement of Rolling Stock is for two purposes, (i) for rehabilitation and (ii) for meeting the demands of additional traffic. During the First Five Year Plan of the Railways, in view

of the arrears of rehabilitation and general shortage of Rolling Stock, more than 50 per cent. of the expenditure of the Railways' Plan was for the procurement of Rolling Stock and machinery. A major portion of this was imported from various countries. During the Second Five Year Plan also, procurement of Rolling Stock will form one of the major items of expenditure of Indian Railways and about one-third of the expenditure will be incurred on this item alone. The paramount necessity of building up indigenous capacity for the manufacture of Rolling Stock for Indian Railways is, therefore, obvious and needs no stressing. It will not only assist in saving foreign exchange, but will also give a great fillip to indigenous industries and create employment. The Committee are, therefore, glad to observe that the Railway Ministry has appointed a special committee, called the Railway Equipment Committee, to examine and offer suggestions for the development of indigenous capacity for the manufacture of Railway stores including Rolling Stock and their components. Development of indigenous capacity is no doubt a slow process and in the interim period, some imports of Rolling Stock from various countries will have to be resorted to. The Committee, however, suggest that the recommendations of the Railway Equipment Committee should be given topmost priority and the indigenous capacity in the country stepped up as expeditiously as possible with a view to reduce substantially the expenditure on imported Rolling Stock.

133. The indigenous capacity required to be created in the country will no doubt depend on the final shape of the Second Five Year Plan of Indian Railways. As soon as the Plan is finalised, the Railways should lose no time in taking action for building up the indigenous capacity, so that by the end of the Second Five Year Plan, the country becomes more or less self-sufficient as far as the requirements of Rolling Stock and their components are concerned. As a matter of fact, the Committee visualise the possibility of India supplying Rolling Stock to the other neighbouring countries at a not very distant date.

134. The proposals for increase in the indigeneous capacity for manufacturing Rolling Stock that are under the consideration of the Railway Ministry are indicated below:

(a) Locomotives

135. The Committee were informed that the TELCO have been asked to increase their manufacturing capacity of Metre Gauge locomotives. In the Chittaranjan Locomotive Works, which has already achieved the target of 120 per annum, the target has been recently revised to 200 average size locomotives and 100 spare boilers. Also, orders have been issued to the effect that a plan should be drawn up for producing 300 locomotives a year (Broad Gauge). This target is expected to be achieved by about 1958. The Committee were also informed that the requirements of locomotives depended on the development of Railways in regard to electrification and dieselisation. With a quest for oil being intensified now, the Railways could progressively go in for dieselisation, if oil was

struck somewhere. It was, therefore, thought that, for the present, 400 should be the optimum annual production of steam locomotives that should be aimed at. There might be a gap of 50 to 100 steam locomotives per annum at the end of 3 or 4 years. After the capacity for 400 locomotives was developed, time would be opportune to consider whether the Railways should develop more capacity for steam locomotives or go in for diesel or electric locomotives. The Committee would like to add here that the present trend in foreign countries is to replace steam traction by diesel electric traction. In the United States, practically all the Class I Railways operate diesel electric locomotives to a considerable extent. A large number of the long distance passenger and fast goods trains are being hauled by diesel traction. For heavy work the steam engine has probably reached its maximum power and weight. With careful planning, fewer locomotives will be necessary for diesel traction. Diesel engines will practically eliminate smoke and fumes. The Committee were, therefore, glad to learn that a decision regarding dieselisation would be taken, once the position regarding oil was clear and that the switch over would not be a long or difficult process.

(b) *Coaches*

136. The Committee were informed that the following steps had been taken to step up local production:—

(i) 800 per year in Railway workshops;

(ii) 180 per year in Hindustan Aircraft Ltd. which is also planning to increase its capacity to build more coaches;

(iii) The targets of production at the Integral Coach Factory, Perambur are as under:

1955-56	20
1956-57	100
1957-58	200
1958-59	300
1959-60	350

By introducing two shifts and other methods, the annual production might be eventually stepped up even beyond 350 at a later stage;

(iv) It is proposed to set up another coach factory for producing integral coaches for the Metre Gauge;

(v) Messrs Jessops and Co. have increased their supply of coaches to the Railways;

(vi) Private agencies have been approached for the production of Metre Gauge coaches on the basis of supply of under-frames by the Railways; and

(vii) Some concerns, who were building coaches for the Railways, would be asked to increase their production.

137. The Committee understand that production in the railway workshops cannot be increased to any substantial extent because

of the fact that the requirements of maintenance have been increasing on account of increased stock which influences the rate of production. It might go up from 800 to 1000. The Committee recommend that this should be stepped up to 1280 which is the maximum coach building capacity as indicated earlier. The Committee are of the opinion that there is scope for increasing this capacity if the contract system through workshops is tried on a wider scale.

138. Here the Committee would like to point out that it had been brought to their notice that due to the bunching of receipts of under-frames from foreign countries, these under-frames were unduly held up and exposed to weather conditions. The Committee suggest that the Railway Board should investigate thoroughly the causes of inordinate holdups, estimate the losses incurred and fix responsibility for the same. The Committee also recommend that the overall position of under-frames on different Railways should be periodically reviewed by the Railway Board and prompt steps taken for despatch of these under-frames to points where required for coach building. In view of the acute shortage of Coaching Stock in the country, the necessity of reducing the idle time of the under-frames cannot be overstressed.

(c) *Wagons*

139. In regard to the building up of the indigenous capacity of wagon building, the Committee understand that the Railway Equipment Committee (Kotak Committee) have submitted their interim report on the subject and that the report is under examination.

140. The Committee consider it necessary that the idle capacity in the Hindustan Shipyard should be utilised to its full capacity for assembling wagons for the Railways. In this connection, the Committee would like to reiterate the recommendation contained in para 74 of their Fourteenth Report on the Ministry of Production. The Committee suggest that the Production Ministry should examine the possibilities of utilising the idle capacity available there for the benefit of the Railways in consultation with the Railway Ministry.

141. The Committee would also recommend that the Railways should encourage production of various components required for building the Rolling Stock in the private sector with a view to (a) reduce the pressure on major manufacturing projects and (b) to encourage the development of local industries round about the major projects in the private sector.

H. Miscellaneous

(a) *Shortage of special type of wagons*

142. Apart from the general service wagons for carriage of ordinary commodities, there is also an acute shortage of special type of wagons, such as tank wagons for mineral and vegetable oils, wooden floored and ventilated wagons for carriage of perishable goods, refrigerator vans, specially designed wagons for carriage of heavy oversized consignments etc. The question of building up sufficient indigenous capacity for such type of wagons and

the Rolling Stock for electric and diesel traction should also receive special attention of the Railway Ministry. As soon as the Second Plan is finalised, the Railway Ministry should properly assess their needs and take measures to build up indigenous capacity for the same as soon as possible.

(b) *Re-conditioning overaged stock*

143. As the shortage of Rolling Stock on Indian Railways will persist for some time, the Committee recommend that suitable reconditioning plants for re-conditioning the overaged Rolling Stock on an extensive basis may be established for the time being. Such reconditioning will no doubt be an expensive process, but it will assist in the interim period to press more Rolling Stock into service till such time as adequate reserves are built up.

(c) *Marking "major repairs" on the panels of wagons*

144. The Committee were informed that history sheets were kept only in respect of locomotives, but not in respect of individual coaches or wagons. The Committee suggest that the question of providing history sheets for individual coaches might also be examined by the Railway Ministry. In regard to the wagons, the date of P.O.H. and the place where it was done are indicated on the wagon. The Committee would suggest that the major repairs undertaken should also be indicated on the wagons in suitable code words. This will give a connected account of the major defects noticed in a particular wagon and might also result in suitable modifications in designs for future constructions.

(d) *Locking arrangements for brackets for wagon labels*

145. When a wagon is loaded with goods for a particular destination, the particulars of the consignor, the consignee, the weight of goods, the booking station, the destination station and the *via* are indicated in two wagon labels, which are specially prepared at the booking station and inserted in the two brackets which are provided on each side of the wagon. During the course of its journey, these wagon labels provide a quick guide to the shunting staff as to where the wagon is destined for. At the destination station also, in the absence of the receipt of invoice, these wagon labels assist the goods shed staff in locating the consignee and connecting the consignment. The wagon label is, therefore, a valuable guide from the point of view of preventing mis-despatch of wagons which might result in subsequent claims. These wagon labels can, however, be easily taken out from the brackets. This is sometimes done either through mistake or mischief. In either case, it increases the chances of the wagon remaining unconnected for a long time. The Committee would, therefore, recommend that suitable locking arrangements should be provided on these brackets, so that the wagon labels, once they are inserted, cannot be taken out. The Committee feel that little extra expenditure incurred on this account will be compensated by the reduction in claims due to the wagons being mis-despatched or remaining unconnected.

(e) *Distribution of overaged stock on individual Railways*

146. The Committee suggest that the statistics showing the percentage of overaged Rolling Stock (locomotives, coaches and wagons separately for B. G. and M. G.) should be given in the form of a statement in the annual administrative Reports of the Railway Board, for each Railway separately.

NEW DELHI:
The 18th January, 1956.

BALVANTRAY GOPALJEE MEHTA,
Chairman, Estimates Committee.

APPENDIX I

Supply of Steel to Railways

(Figures in tons)

Years	Quantity demanded	Quantity received	Percentage of short supply	Quantity demanded	Quantity received	Percentage of short supply
	EASTERN			SOUTH-EASTERN		
1949-50	34627	21200	38%	12576	5031	60%
1950-51	34550	23967	32%	5029	2012	60%
1951-52	33198	20303	39%	8228	3291	60%
1952-53	36175	22516	39%	6519	2608	60%
1953-54	36000	21323	40%	10667	4267	60%
1954-55	41557	30872	26%	14805	5922	60%
	NORTHERN			SOUTHERN		
1949-50	..	..	..	..	..	..
1950-51	..	..	..	..	..	..
1951-52	..	..	..	..	..	..
1952-53	3977	1094	73%	6403	3358	47%
1953-54	13224	2177	83%	11282	3344	70%
1954-55	13079	2566	81%	8937	3288	63%
	CENTRAL			WESTERN		
1949-50	33286	50995	..	12573	5732	54%
1950-51	8037	12350	..	11503	12935	..
1951-52	9925	9625	3%	5167	4050	21%
1952-53	8371	8116	3%	3008	2930	2%
1953-54	29704	20715	30%	4294	2324	46%
1954-55	32072	8990	72%	9574	3288	66%

	NORTH EASTERN		
	[Quantity demanded during the 6 years 1950-55	Quantity received during the 6 years 1950-55	Percentage of short supply]
1949-50	..	..	..
1950-51	..	..	..
1951-52	..	..	..
1952-53	..	..	..
1953-54	..	..	..
1954-55	..	..	..
1950 to 1955 (for 6 years N.E. Rly. only)	43000	25000	42%

NOTE:—1. *Central Railway* has given the information by calendar years. Since 9 months of a financial year are included in a calendar year, hence the information has been exhibited in the statement against the corresponding financial years, so as to fall in line with other Railways.

2. *N. E. Railway* has supplied lumpsum figures for 6 years' demands and receipts, the overall percentage of which works out to 42%.

3. The statements do not exhibi supply position of rails and fish-plates.

Years	Quantity demanded	Quantity received	Percentage of short supply	Quantity demanded	Quantity received	Percentage of short supply	Quantity demanded	Quantity received	Percentage of short supply
	CHITTARANJAN LOCO WORKS			GANGA BRIDGE PROJECT			INTEGRAL COACH FACTORY		
1949-50	11268	8451	25%	..	..	..	..	..	..
1950-51	11953	10347	9%	..	..	..	..	..	..
1951-52	5565	6151	..	..	..	..	..	..	..
1952-53	1570	4138	..	..	..	..	1981	1981	..
1953-54	1390	1060	24%	..	..	..	447	447	..
1954-55	18586	12540	32%	1850	925	50%	5728	5016	12%

APPENDIX II

Instances where non-supply of steel retarded the progress of works on Railways

1. Central Railway:

The position of steel in the Railway was sound up to April, 1953, which was mainly due to large quantities indented during the war years and received during the years 1949-51. Shortage of steel was beginning to be felt towards the middle of 1953 and emergent direct purchases had to be made to meet the situation. Shortage of steel has not so far adversely affected the maintenance works to any appreciable extent.

The supply position for workshops requirements was not unsatisfactory except in the case of spring steel, for which special arrangements were made in 1954. No hold up occurred for maintenance works owing to shortage of steel.

The progress of Civil Engineering works was delayed in the years 1953-54, and 1954-55 owing to shortage of steel.

The programme of the Railway in respect of track renewals was generally carried out to end of 1952 but in the next two years, the programme could not be maintained due to non-availability of rails and fish plates. The position continues to be acute even now as far as rails and fish plates are concerned and the difficulty has extended now to steel sleepers, cast-iron sleepers and also points and crossings. During 1954-55 relaying works to the extent of 144 miles and replacement of points and crossings programme could not be undertaken.

2. North-Eastern Railway:

(i) The result of short-supply of steel has been throwing back the completion date of many works undertaken. This has resulted in the necessary improvement to line capacity or other capacities not being available in time.

(ii) Six important bridge works were delayed on account of non-supply of steel during the years 1950-55.

(iii) Gorakhpur Workshop Remodelling Scheme, wagon and coach building and repair work, supplies against order for materials to be manufactured, and track renewal and repair work suffered due to non-receipt of steel, especially, panel plates, sheets, bolts and rivets etc. as also rails, fish plates, steel sleepers, and points and crossings etc.

3. Western Railway:

The short-supply of steel has affected the works and maintenance on the Railway to an appreciable extent but it has not been possible to work out the extent in facts and figures. As far as maintenance is concerned, the short supply has resulted in certain arrears of maintenance, and in the case of workshops, where the out-turn has to be

maintained in spite of short-supply, resort had to be had to the use of alternative or substitute material. Such a procedure had to a certain extent resulted in inconvenience and higher cost owing to material not exactly meant for the purpose having to be used with additional operations and modifications where necessary. As regards works, the non-supply of steel has resulted in the throw forward of several works from year to year and had resulted in lapse of funds.

4. Eastern Railway:

Due to short supply of steel, the rolling mills and the Bolt and Nut shops on Eastern Railway, could not be worked to full capacity thereby causing idle labour. Further, as sufficient raw material was not available, full requirements of Loco and C. & W. duplicates could not be manufactured and adequate supplies to the Running Shed could not be maintained.

As the materials usually manufactured in the Workshops could not be obtained due to shortage of raw material some of these items had to be purchased through trade at higher rates.

Due to shortage of steel, some Engineering Works also could not be taken in hand and works progress could not be completed.

5. South-Eastern Railway:

Precise information cannot be furnished in the absence of any specific reports from the Depots or from the Principal consuming Departments.

6. Northern Railway:

No statistics have been maintained of the effect of short supply on the various Rolling Stock, Engineering, Electrical and Signalling Programmes, but from the fact that there is a back log of 17,914 tons the effect on the various programmes can be roughly gauged.

7. Southern Railway:

This Railway has suffered considerable inconvenience and loss by not getting certain classes of steel in requisite quantity and quality as indicated below:—

(a) Some bolts and nuts machines had to be rendered idle for want of $\frac{5}{8}''$, $\frac{3}{4}''$ and $\frac{7}{8}''$ bars in tested quality as we could not get these bars in time from the producers or stock holders.

(b) Uneconomical manufacture of Loco and Carriage fitting by using bigger sections of steel, when the correct smaller sections were not available. No less than 6 cases where alternative raw material had to be used have occurred during 1954.

(c) Delay in recoupment of rivets, washers, pins and other smaller C. & W. fittings, normally manufactured in Railway Workshop, due to raw material not being available.

(d) Hold-up of engines due to some vital items not manufactured in shops due to lack of raw materials such as draw bars, pins, Gudgeon pins and axle guards, etc.

(e) Planning and production in Railway Workshops is made difficult as stores work orders are held up for want of correct raw material.

(f) Construction of buildings and sheds has been delayed on account of heavy structural steel being not available.

(g) Re-inforced concrete work has also been delayed on account of tested smaller sections of bars not being readily available.

These cases cited above are not stray cases, and the cumulative effect of raw material not being available in time has retarded the progress on Southern Railway to an appreciable extent.

3. Chittaranjan Loco Works:

There has been no actual hold up on production due to non-supply of steel. It, however, has meant very intense progressing and chasing with frequent intervention by the I. & S. C. to get supplies from producers. At times substitute sizes had to be used increasing thereby the wastage and labour charges. The deliveries as planned on local producers have seldom been kept with the result that very much higher stocks had to be maintained to ensure timely supplies to production shops. Considerable relief in supply of steel was obtained through large imports of plates in the latter half of 1954.

4. Integral Coach Factory:

The Project as it stands is only in its infant stage and production has not yet commenced. In view of this and due to vigorous chasing work adopted by this administration and the timely co-operation of the I. & S. C. and M/s Tatas, Madras, we have been able to meet most of the demands for steel without much delay. Hence there has not been any appreciable short supply of steel to affect adversely the progress of work in this project.

APPENDIX III

Requirements of Steel and Pig Iron

	1956-57	1957-58	1958-59	1959-60	1960-61
A. STEEL FOR CONSTRUCTION PURPOSES	3,16,000	3,28,000	3,43,000	3,49,000	3,51,000
B. RAILS AND FISH PLATES.	+2,65,000 (Outstanding)	2,65,000	2,65,000	2,65,000	2,65,000
C. STEEL SLEEPER BARS.	1,30,000	1,30,000	1,30,000	1,30,000	1,30,000
D. WHEELS, TYRES, AND AXLES . . .	58,000	59,000	60,000	60,000	60,000
TOTAL STEEL (A+B+C+D) .	7,69,000	7,82,000	7,98,000	8,04,000	8,06,000
E. PIG-IRON . . .	1,60,000	1,60,000	1,60,000	1,60,000	1,60,000
TOTAL IRON AND STEEL . .	9,29,000	9,42,000	9,58,000	9,64,000	9,66,000

N. B.—The above estimate is based on increased use of cast iron sleepers due to non-availability of indigenous steel sleepers in adequate quantity and high cost of imported steel sleepers.

APPENDIX IV

Statement showing the Summary of conclusions/recommendations of the Estimates Committee relating to the Ministry of Railways—

(1) ARREARS OF TRACK RENEWAL. (2) SHORTAGE OF STEEL ON RAILWAYS. (3) SHORTAGE OF SLEEPERS ON RAILWAYS (4) PROCUREMENT OF AND SELF-SUFFICIENCY IN ROLLING STOCK.

Serial No.	Reference to Para. No. in the Report	Summary of Conclusions/Recommendations
(1)	(2)	(3)
		(1) ARREARS OF TRACK RENEWAL
1	7	The Committee consider it unfortunate that information regarding the arrears of Track Renewal at the beginning of each of the last four years was not available with the Railway Ministry, especially in view of the fact that more than 1,600 miles of track was under speed restrictions due to arrears of Track Renewal. The Committee recommend that in future information about the arrears of Track Renewal as well as speed restrictions should be obtained and incorporated in the Annual Report of the Railway Ministry, Railway-wise and Gauge-wise.
2	10	At the present rate of clearance of arrears of Track Renewal, it would take several years before the existing arrears are wiped out, and in the meantime more track would be due for renewal. The tempo of Track Renewal will have, therefore, to be increased substantially if the position is to improve. The Committee are definitely of the opinion that topmost priority should be given to wipe out arrears of Track Renewals. There should be proper planning at the initial stage, so that the materials required are all secured simultaneously and utilised and the grants in the Budget for Track Renewal are not allowed to lapse.
3	12	About 5% route mileage of Indian Railways has been under speed restrictions for more than 4 years. This is a position which cannot be viewed with equanimity. The cramping effect of such speed restrictions on the ever increasing flow of traffic can very well be imagined.

1	2	3
		The Committee recommend that the Railway Administrations should be directed to concentrate the programme of Track Renewal, especially on those lines of track where such restrictions are imposed, and vigorous efforts should be made to withdraw these speed restrictions by 1-10-1956, if not earlier.
4	13	The Committee are definitely of the opinion that the scheduled programme of Track Renewa of 2,000 miles of track every year during the Second Five Year Plan must not be slowed down on any account. Such slowing down will only result in more engineering restrictions which will hamper the flow of traffic.
5	14	The Committee regret to observe that no satisfactory progress has been made with regard to the welding of rails despite the fact that, the Indian Railway Enquiry Committee (1947) have recommended the adoption of welded rails on a sufficiently large scale. The Committee suggest that the Railway should be asked to chalk out a definite annual programme so that the practice of using welded rails may be extended rapidly on Indian Railways.
6	15	The Committee strongly recommend that the practice of obtaining records of the condition of track by the use of the Test Cars or Hallade Instruments twice a year and placing the annotated records in the hands of the Permanent Way Supervisory Staff expeditiously should be progressively adopted and made universal on Indian Railways at a very early date.
7	16	The Committee understand that the Railway Technical Officers abroad have been asked to study and submit a report on the working of the "Alweg Bahn" Mono Rail system in Germany and also that the Railway Research Centre has been asked to undertake a more comprehensive study of this subject. The Committee consider that the matter deserves careful consideration and if it could be introduced in the conditions prevalent in our country, it might be tried on certain selected routes *e.g.*, in the proposed ring-Railway around Delhi.

1	2	3
8	17—19	The Committee recommend that apart from experiments on the redesigned rails, intensive experiments should be carried out in selected areas to see whether rails of lesser weight cannot be utilized with the same amount of efficiency, particularly in view of the fact that steel is in short supply in the country.
		(2) SHORTAGE OF STEEL ON RAILWAYS
9	24	Non-availability of the required quantities of steel has considerably affected the programme of development and expansion in the Railways.
10	26	More than 20% of the funds allotted for (*i*) Bridges, (*ii*) Structural and other works under Development Fund and (*iii*) Track Renewal lapsed in the years 1952-53 and 1953-54 mostly due to short supply of steel.
11	28	The Committee understand that the supply position would definitely improve with the first extra production from the Tata Expansion Scheme in the latter half of 1958 and also with the first production from the Rourkela Steel Plant in the beginning of 1959.
12	29	The Committee hope that both the Ministries of Railways and Commerce and Industry will make endeavours to secure the current arrears and the requirements of the Railways of about 3,92,000 tons of steel by the 31st March, 1956 so that the Railways could start their Second Five Year Plan with a clean slate.
13	32	In view of the importance and urgency of the demand for steel, the Committee feel that it should be desirable to import steel bars rather than slow down the programme of expansion of the Railways. The Committee recommend that Government should examine the possibility of private firms establishing plants for pressing imported bars into sleepers provided the Railways could give an assurance that they would use steel sleepers in preference to cast iron sleepers during the next five years, and arrive at a satisfactory settlement of the problem by convening a conference with the representatives of the trade.

1	2	3
14	33	The Committee would urge the extensive use of Thomas Quality of steel provided the results of the uses of 10,000 tons of Thomas Quality rails obtained from France as an experimental measure are satisfactory. As steel of Thomas Quality is cheaper and is reported to be available in good quantity, the Committee consider that the cost of imports would be less if the Railways could also accept Thomas Quality steel.
15	35	The Committee understand that the Metric sections could be adopted in new lines and in doublings of lines provided the difference was not material . Even if imports continue to be made from the countries which are on the F.P.S. system, the Committee would suggest that the new equipment that might be ordered from them could be arranged to be supplied in Metric system. The existing equipment need not have to be discarded because of the change-over but only conversion tables will have to be provided. In some cases, the extra provisioning would be necessary over a period of time so as to have spare parts manufactured under both the systems.
16	37	The Committee are glad to note that the Railways have now decided to accept steel of Thomas Quality and in millimetre sections. The Committee now expect that the Ministry of Commerce and Industry will ensure timely and adequate supply of steel to Indian Railways during the Second Five Year Plan.
17	38	The Committee are not fully convinced that adequate co-ordination existed in the past between the Ministries of Commerce and Industry and Railways. The Committee are, however, glad to learn that a liaison officer is being posted by the Railways in the office of the Iron and Steel Controller to watch timely supplies of steel to the Railways. The Committee recommend that there should be periodical meetings between the representatives of the two Ministries to review the position of steel supply to the Railways.
18	39	As reduction in the use of steel is an important matter, the Committee suggest that intensive

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		research should be made so that suitable substitutes for steel might be found. Similarly, a drive should be initiated for economising the use of steel.
19	40—41	The Committee suggest that the setting up of a steel foundry at Chittaranjan should be expedited and also that the feasibility of setting up a few more steel foundries at suitable places should be carefully examined. The Committee understand that there is considerable time lag between the grant of licenses and actual establishment of foundries. The question of issuing a few more licenses as a measure of safeguard, may, therefore, be considered by the Ministry of Commerce and Industry. The Ministry should also investigate the causes for this time lag and, if necessary cancel the unutilised licenses. If need be, some of the foundries may be earmarked exclusively for the use of the Railways at selected centres.
20	41	Considering the fact that the Railways are badly in need of steel, the Committee consider that the Railways themselves should take all measures to utilise the scrap and have some more foundries located in or near the area of arisings. The Committee would like to invite a reference to the suggestion with regard to the more profitable utilisation of the Nahan Foundry made by some officials who visited the Foundry in 1954 (reproduced in para 95 of the 13th Report of the Estimates Committee). The Committee consider that Government should constitute a small committee consisting of representatives of the Ministries of Commerce and Industry, Railways and Production and devise ways and means of maximising the use of Nahan Foundry already owned by Government for meeting the needs of the Railways.
21	42	The Committee are glad to learn that a survey of the capacity of particular ports as well as mines is being undertaken before a final decision on the question of export of ore by the Government themselves is reached. The Committee suggest that this survey may be completed expeditiously and the final decision arrived at quickly so as to facilitate quick inflow of steel in return from the importing countries.

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22	43	The Committee consider that the suggestion with regard to procurement of steel from foreign countries by private agencies, fixing a ceiling price for the import of steel is worthy of consideration by the Ministry of Commerce and Industry.
23	44	The Committee understand that at present there are different prices of steel, *i.e.*, port prices and the destination prices, leading sometimes to incongruous results. The Committee recommend that this point should be examined by the Ministry of Commerce and Industry and the question of having a uniform pooled price throughout the country should be considered so that smaller factories and business establishments are not hard hit.
		(3) SHORTAGE OF SLEEPERS ON RAILWAYS
24	45	The density of sleepers on foreign Railways is generally higher than on Indian Railways and this partly accounts for better speeds on foreign Railways.
25	46	Due to the chronic shortage of sleepers for several years, the programmes of replacement of sleepers on Indian Railways have fallen into arrears. On 1-4-1956, the mileage of track with arrears of sleeper renewals will be approximately 7,389. In some cases, the position is so serious that speed restrictions had to be imposed in the interest of safety. Thus, on 1-4-1955, 898 miles of track were under speed restrictions due to arrears of replacements of sleepers.
26	53	The Committee feel that the distribution of forests of the country amongst the various Railways is not quite rational. The Committee consider that the criterion should be that the area through which the Railway passes should be allotted to that Railway resulting in saving in transport also. The Committee recommend that the proposal to allot the forests in Gujerat and a portion of the Bombay forests to the Western Railway, reported to be under consideration should be done early and that a re-allocation of forests should be made with reference to the newly created South-Eastern Railway Zone as also the Central Railway to which no forest has been allotted.

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27	57	The Committee suggest that the question of re-introducing the system of recruitment of Sleeper Passing Officers by the Forest Research Institute may be considered by the Railway Ministry. They also recommend that, meanwhile, the Sleeper Passing Officers, each of whom is required to pass sleepers worth lakhs of rupees every year, should be given intensive training at least for a minimum period of six months in the Forest Research Institute, Dehra Dun.
28	60	The Committee feel that in the periodical conferences with the State Forest Departments and representatives of the trade, the Director General of Supplies and Disposals should be invariably associated as he not only procures timber for the Railways but also for other Departments of the Government of India.
29	61	The Committee are glad that the Railway Board have at last realised the need for putting an experienced officer on the task of procurement of sleepers and hope that he would be able to achieve concrete results during his tenure. As a long term arrangement, however, the Committee recommend that the post of Timber Advisory Officer should be revived so as to maintain day to day liaison between the Ministry of Food and Agriculture and the State Forest Departments on the one side, and the Railway Board on the other. This officer will be the counterpart of the Forest Officer appointed in the Directorate General of Supplies and Disposals and the two should work in close contact with one another.
30	64	As a result of short supply of sleepers of all kinds, heavy arrears of replacement have accumulated, and the position in this respect has been deteriorating from year to year and needs urgent attention.
31	69	The Committee consider that the work of making a proper survey of the forest wealth of the country should be undertaken without further delay. The Committee are glad to note that the Railway Board have set up a Departmental Committee headed by the Inspector General of Forests of the Ministry of Food and Agriculture to go into

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		the question of supplies of timber and the prices in the various States. The Committee consider that it will not be possible for the I. G. of Forests to bestow immediate and constant attention to the work in addition to his current duties. As the Departmental Committee will have to visit as many as 12 to 14 States, it will take a long time to finish the work. The Committee, therefore, consider it of paramount importance to constitute a regular Departmental Committee having two or three constant members, the respective States Forest Officers being associated with the Committee while on tour, to finish the work in two or three months. During this period either the Inspector General of Forests may be relieved of his current duties or, in case this cannot be done, another high powered officer may be placed as the Chairman of the Committee. But before the Departmental Committee proceed on further tours, the Railways should assess their maximum requirements of wooden sleepers for each of the three Gauges separately, in the Second Five Year Plan and intimate the same to the State Governments.
32	71-72	The Committee recommend that the necessity for continuance of the existing specifications for sleepers should be examined by the Railway Research Centre keeping in view the specifications in foreign countries *vis-a-vis* the length of the Gauges, the relative qualities of the wood used both abroad and in India, and possible reductions effected. The Committee also suggest that experiments should be started straightway by laying a track of a mile or two on the revised measurements in selected places with a view to see how far track maintenance and rail comforts are affected by altering specifications.
33	73-74	The Committee understand that there has been a drive to export a good deal of Gurjan wood from the Andamans to the United Kingdom and Sudan, much of which is utilised by the Railways. In order to investigate whether this policy has been a wise one and whether this is really a profitable venture, a special officer is being deputed to the Andamans. The Committee consider it imperative that the Railway Ministry

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		should obtain some quantity of each of the known varieties of timber in the Andamans and have their properties, behaviour etc., for use as sleepers and for coach and wagon building purposes, analysed quickly by their Research Centre and the Forest Research Institute, Dehra Dun.
34	75	The Committee consider it highly desirable that the Forests in the Andamans are all primarily reserved for the Railways, and other Central Government departments. The Committee suggest that the Railway Ministry should take up the matter of reservation of the forests in the Andaman and Nicobar Islands and other centrally administered areas for themselves and the other major timber consuming departments of the Government of India. An inter-Ministerial conference should be summoned to discuss the issue with a view to arriving at a speedy decision in the matter. After the requirements of the Government departments are met, the needs of the private industries may be met by Government themselves.
35	76	The Committee suggest that the possibility of having an inter-Governmental agreement with Nepal for supply of sleepers either on the basis of what India is giving her under the Colombo Plan or on the basis of Barter Agreement might be explored. Roads could be constructed to reach inaccessible forest areas of Nepal on condition of getting adequate quantities of sleepers or timber in return. The Committee also suggest that the diplomatic representatives of India in Indonesia, Burma, Bhutan and Sikkim which contain considerable forest wealth should be asked to explore the possibilities of obtaining sleepers from them.
36	80	The Committee understand that the Forest Research Institute, Dehra Dun, has got data from which it could sort out and analyse the behaviour and properties of 20 to 25 species of wood which could be used as sleepers after treatment. The Committee understand that the State Governments too can suggest hitherto unused varieties of wood for adoption as sleepers.

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		The Committee recommend that a top level meeting may be convened between the representatives of the Forest Research Institute, Dehra Dun and those of the Railway Board and "on the spot" decision taken with regard to carrying out tests in collaboration with each other and collecting data by arranging simultaneous tests at various places. To start with, 5 new species can be taken up for examination and the work can be finished within six months.
37	81	The Committee were informed that the Forest Research Institute had been suggesting to the Ministry of Railways to insist on having reasoned and preserved timber and that the Defence Ministry had already issued instructions expressing their preference for employing contractors who had got their own seasoning kilns and who would supply seasoned timbers. The Committee suggest that the Railways and the Director General of Supplies and Disposals should take similar action.
38	82-83	The Committee are of the opinion that the Railway Ministry should consider the question of setting up a few more creosoting plants, at least one for each Zone so as to reduce leads and incipient rot in transit and to maximise the use of scores of varieties of soft wood. The Committee also suggest that the question of installation of a few creosoting plants by the private sector be examined further in consultation with representative bodies of industry like the All India Manufacturers' Organisation, Bombay.
39	84	The Committee suggest that the resolution adopted by the Central Board of Forestry recommending that the Railways should set up seasoning and preservative plants, failing which the States might set them up themselves, provided they got a long-term contract, should be given serious consideration as ultimately the Railways themselves are to benefit by such plants.
40	85	The Committee understand that coal tar is being burnt in the steel industry due to which the

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		supply of creosote is getting short. The Committee recommend that the Ministry of Railways should take up the question at high level with the Ministry of Commerce and Industry so as to facilitate increased production of creosote in the country.
41	86.	The Committee recommend that the question of obtaining more sleepers by a process whereby instead of taking royalty from the contractors in cash, the State Governments may take from them sleepers of that value and negotiate directly with the Railways be considered further, as this procedure might be beneficial both to the State Governments and the Railways.
42	87	The Committee consider that the question of price which seems to be a stumbling block in the way of getting more sleepers can and should be amicably settled between the representatives of the Railways and the State Governments. The Committee are not convinced that the forest resources of the country cannot meet a major portion of the requirements of the Railways.
43	88	The Committee suggest that an All-India Conference presided over by the Minister of Railways and Transport should be convened wherein the problem of supply of wooden sleepers and timber for wagon and coach building for the Railways during the Second Five Year Plan should be discussed. Each State should be allotted its own quota and requested to play its part towards the fulfilment of the Railways' requirements during the Second Five Year Plan, leaving the detailed questions of costs etc., to the Departmental Committee which will tour in the States. The Committee feel that with a bold and imaginative policy, the problem of sleepers can be solved successfully and expeditiously. The Railways should also explore all avenues of augmenting their supplies departmentally.
44	90	In view of the shortage of wooden sleepers, the Committee are of the opinion that the use of cement concrete sleepers should be extended on Indian Railways.

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		(4) PROCUREMENT OF AND SELF-SUFFICIENCY IN ROLLING STOCK
45	91	A detailed study of operation on Indian Railways has revealed that there is an acute shortage of Rolling Stock due to which Indian Railways are not in a position to carry the traffic offered expeditiously. It is obviously necessary to procure more Rolling Stock on an adequate scale to cope with the situation.
46	92—108	The Committee describe the procedure followed by the Railway Board for procurement of Rolling Stock.
47	109	The Indian Railways will have to concentrate on procuring more Rolling Stock—for two reasons ; firstly to wipe off the arrears of rehabilitation and secondly to meet the additiona demands due to increased production in the country in different spheres.
48	111	The figures of anticipated Rolling Stock on the 31st March, 1961 cannot be regarded as excessive and there will still be considerable scope left for adding to their strength to meet the increasing requirements of traffic.
49(*a*).	115	The Committee suggest that the sites for new workshops should be carefully selected from the point of view of the suitability of the place
49(*b*)	116	The Committee welcome the proposal of the Railway Ministry to instal two locomotive spare part production units in the country and hope that this proposal will be given effect to without undue delay. The Committee would also recommend that a careful investigation should be carried out to see whether there would be necessity of establishing similar units of the spare parts of carriages and wagons. If this investigation reveals any necessity of such units, immediate steps should be taken to instal such units at suitable points. The Committee lay great stress on the timely availability of spare parts of the Rolling Stock required in the workshops, running sheds and sick lines, because it came to their notice that in several instances the repairs and periodical overhaul of

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		the Rolling Stock were held up for want of spare parts.
50	117	The Committee feel rather concerned about the workshop management of Indian Railways, because it came to their notice that the efficiency of Railway staff in the workshops was at a low ebb. Heavy arrears of replacement of Rolling Stock consequent to the War, increase in the number of classes of locomotives involving multiplicity of parts to be manufactured, general shortage of raw material, thefts of duplicates and unavoidable dilution in skilled and supervisory staff as a result of partition, have been adverse factors that have caused undue strain on the workshop management. As the arrears of Rolling Stock are gradually wiped off, as more and more locomotives of standard design are brought into use and as the position in regard to the supply of raw materials including components improves, the situation in the Railway workshops will also ease. In the meantime, a special drive will have to be initiated to improve the efficiency of Railway workshops and to increase their output. The question of workshop management assumes a special importance in the present context in view of the general shortage of Rolling Stock on Indian Railways. The percentage of Rolling Stock under or awaiting repairs is on a high side and can be reduced by adopting two methods, namely, (*i*) by increasing the speed with which the Rolling Stock is repaired or periodically overhauled and (*ii*) by improving the standard of repairs in periodical overhaul. Both these items are closely connected with the efficiency of the workshops.
51	120	The Committee also observe that the mileage given by the locomotives is low and that there is considerable scope for improvement in this direction. One effective method of improving the mileage taken out of the locomotives is to resort to increased pooling of locomotives. Experience in the past has shown that pooling of locomotives could be effected successfully

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		only if the standard of maintenance and the periodical overhaul in the running sheds and workshops is high.
52	122	In view of the shortage of coaches on Indian Railways, the Committee recommend that the Railway Board should take early steps to step up the capacity to the figures assessed by the Workshop Reviewing Committee. The Committee also recommend that the Railway Board should prepare a final construction programme for the Second Five Year Plan period without any delay and authorise the Railways to enter into commitments to the limit of their building capacity for procuring such items which would be essentially required for coach building purposes. The question of setting up a manufacturing unit for the construction of underframes should also be examined and decided by the Railway Ministry at a very early date.
53	123	The Committee understand that the Railway Workshop Reviewing Committee have already standardised the sizes of general purposes machine tools in consultation with the Indian Machine Tools Manufacturers' Association. The Committee hope that no time will be lost in implementing recommendations of the Railway Workshop Reviewing Committee. The Committee also recommend that the question of introducing multiple shifts in certain sections of the workshops should be considered seriously with a view to obtain the maximum output from costly machinery and plant.
54	124	The Workshop Reviewing Committee have suggested that if complete new fire-boxes for Broad and Metre Gauge boilers are manufactured at Chittaranjan and TELCO respectively, it would be possible for the Railways to effect renewal of fire-boxes. In that case it will not be necessary to order loco boilers for replacement in future thus resulting in a saving of Rs. 1·75 crores per annum. The Committee recommend that this proposal may be given earnest consideration and early decision arrived at.

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55	126-127	The Committee recommend that the Railway Ministry should immediately initiate measures with a view to achieve the following targets of Standard Time for P.O.H. of B.G. Rolling Stock : Locomotives . . 18 working days Carriages . . 20 working days Wagons . . 4 working days Similar targets should be laid down for the periodical overhaul of M.G. Rolling Stock also. The Committee understand that by the introduction of systematic working on the above lines, the time for periodical overhaul at Jodhpur was reduced from 8·5 working days to 2·6 working days for M.G. wagons.
56	128	The Committee recommend that proper organisation for production control should be set up in each major workshop on Indian Railways.
57	129	The Committee recommend that each Railway should evolve the system of piece-work rating and bonuses in its major workshops and the co-operation of the National Federation of Indian Railwaymen and its local branches should be sought in this matter with a view to complete the scheme as early as possible. The Committee do appreciate, that to start with, the standards in different workshops will have to be different in view of the local conditions such as the type of plant and machinery, nature of work etc. but uniformity should be gradually attained.
58	130-131	The progress made on Indian Railways with regard to introduction of a proper system of costing in Railway workshops is very slow. A cost accounting unit on modern lines has been set up at the Locomotives Manufacturing Works, Chittaranjan. The Committee recommend that the officers from the Indian Railways should be sent to Chittaranjan for a short period to take intensive